DEC 3000 Model 800/800S/900 AXP

Owner's Guide

Order Number: EK–FLMUL–OG. B01

Contents

Part I   Basic Operations

1   Introduction to Your System

2   Preparing to Install the System

3 Installing a Workstation System

4 Installing a Server System

5 Connecting the System to a Network

6 Starting Up the System

7 Turning Off the System

8 Maintaining the System

Part II   Advanced Operations

9 Using Console Commands

10 Changing Environment Variables

11   Using the Password Security Feature

12   Using an Alternate Console

Part III   Handling Problems

13   Identifying a Problem

14 Running Diagnostic Tests

Part IV Appendixes

A Hardware Specifications

B Port Pin-outs

C European Economic Community (EEC) Considerations

D Associated Documents

E Special Information for PTT Network Users

Glossary

Index

Figures

Tables

Preface

Purpose of This Guide

This guide is intended for all users of the DEC 3000 Model 800 /800S/900 AXP system. It describes how to install and operate the DEC 3000 Model 800/900 AXP workstation and the DEC 3000 Model 800S AXP server. To install options in the system, refer to the *DEC 3000 Model 800/800S/900 AXP Options Guide* and the documentation for specific options.

Structure of This Guide

This guide consists of 14 chapters, 5 appendices, a glossary of technical terms, and an index, and is organized into four parts as Table 1 describes:

Table 1 Parts Description

Part	Title	Description
I	Basic Operations	Chapters in Part I describe basic operations for using your workstation or server system, including installing, turning on, and maintaining your system. These chapters are for all DEC 3000 Model 800/800S/900 AXP system users.

Table 1 (Cont.)   Parts Description

Part	Title	Description
II	Advanced Operations	Chapters in Part II describe advanced operations for your system, including use of console commands and the alternate console feature. These chapters are for users who understand advanced system operations.
III	Troubleshooting	Chapters in Part III describe what to do in the event of a system problem. These chapters are applicable only if your system is not working properly or is displaying error messages.
IV	Appendixes	The appendixes in Part IV provide information such as specifications, and port pinouts.

Conventions   The following conventions are used in this guide:

Convention	Description
RZ2x	RZ2x refers to the RZ-series fixed disk drives.
Return	A key name in a box indicates that you press a named key on the keyboard.
Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key.
show config	Lowercase type in this format indicates a command that you must enter exactly as shown. For example: >>> show config Return
variable	Lowercase italics indicate a variable value that you must provide. For example: >>> set *variable* Return
CAUTION	Cautions provide information to prevent damage to equipment or software. Read these carefully.
WARNING	Warnings contain information to prevent personal injury. Read these carefully.

Task Symbols

All of the tasks described in this guide have been assigned a symbol indicating the level of difficulty in completing the task. The task symbols that appear in the margin next to the task should be used as a guide to help you decide whether you wish to complete the task, or request help.

Different tasks within a category may require different levels of expertise. For instance, one intermediate task may require software expertise, while another intermediate task may require hardware expertise. Check the *Before You Begin* section at the beginning of most chapters, for the specific kind of experience required to complete a task. This section will be identified by the information icon, explained below.

Information
This icon indicates a section that contains important background information to help you perform required tasks and operate your system correctly.

Task Categories

The tasks fall into three categories indicated by three symbols:

Basic Task
This task does not require any specific experience to complete.

Intermediate Task
Some specific experience is required to complete this task.

Advanced Task
Specific experience is highly desirable to complete this task.

Part I

Basic Operations

Part I provides an overview of the DEC 3000 Model 800/800S/900 AXP system and its configurations. It also describes how to install the system and how to perform basic operations. This part includes the following chapters:

Chapter	Title
1	Introduction to Your System
2	Preparing to Install the System
3	Installing a Workstation System
4	Installing a Server System
5	Connecting the System to a Network
6	Starting Up the System
7	Turning Off the System
8	Maintaining the System

1

Introduction to Your System

Chapter Overview

Introduction   The DEC 3000 Model 800/800S/900 AXP systems are high-performance, deskside units that provide all the advantages of a 64-bit computing environment. These systems incorporate Digital's DECchip RISC processors, which are part of the Alpha AXP architecture.

In This Chapter   This chapter covers the following topics:

- System Configurations
- An Overview of the System
- Operating Systems
- Software Product Descriptions (SPD)
- Graphics Capabilities
- Integrated Services Digital Network (ISDN)
- Audio Capabilities
- Available Options

System Configurations

Two System Configurations

The DEC 3000 Model 800/800S/900 AXP system is available in two configurations:

- A workstation, Model 800 or 900

- A server, Model 800S

This guide explains the installation and setup of both configurations. Chapter 3 describes how to install a workstation system. Chapter 4 describes how to install a server system.

An Overview of the System

**System
Components:
Workstation**

When configured as a workstation, the system consists of four
components: a system unit, a monitor, a keyboard, and a mouse.
Figure 1–1 shows a basic workstation configuration.

Figure 1–1   The DEC 3000 Model 800/900 AXP Workstation

MLO-007581

**System
Components:
Server**

When configured as a server, the DEC 3000 Model 800S
AXP system does not include a monitor, keyboard, or mouse.
Figure 1–2 shows a typical DEC 3000 Model 800S AXP
configuration, with an optional terminal and keyboard.

Figure 1–2 The DEC 3000 Model 800S AXP Server
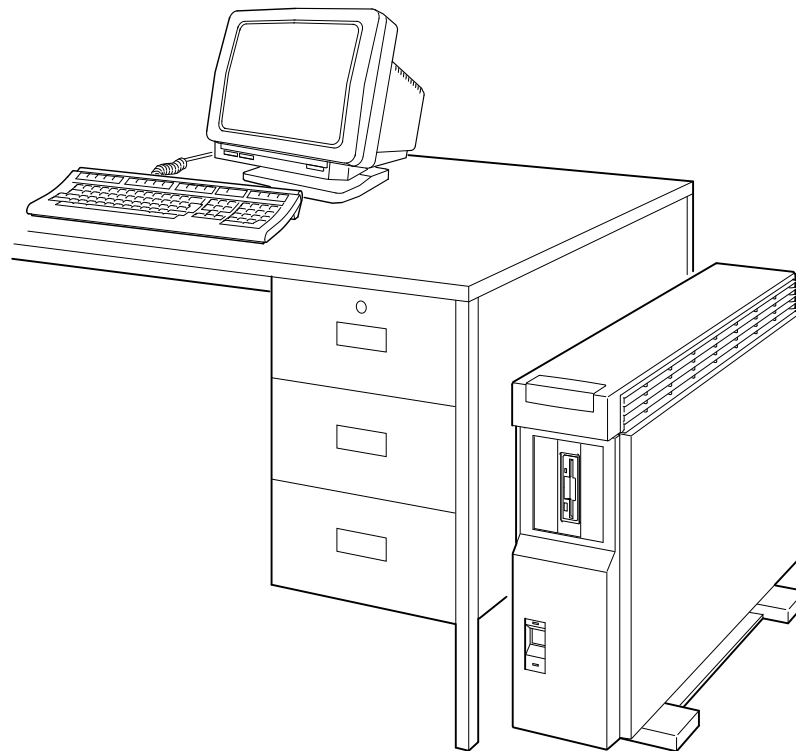
MLO-007569

System Highlights

The DEC 3000 Model 800/800S/900 AXP system provides the following special features:

This system feature...	Provides...
Full 64-bit Alpha RISC architecture	Double the 32-bit memory address.
Up to 1 gigabyte of memory	Expandable memory using 32-,64-,128-, and 256-megabyte memory options.
Multihead graphics support	Support for multiple graphics heads. The number of graphics heads supported depends on the operating system.
Internal and external options	Increased storage capacity, graphics, communications, and other capabilities to your system.
SCSI	SCSI-1 (slow SCSI) allows transmission rates up to 5 megabytes per second; SCSI-2 (fast SCSI) allows transmission rates up to 10 megabytes per second.
An Attachment Unit Interface (AUI) Ethernet port	Connection to an AUI Ethernet (Thickwire) network.
A 10BASE-T network port	Connection to a twisted-pair network
ISDN network ready	An industry-standard port for an ISDN network connection.
Six TURBOchannel slots	Access to high-performance module interconnect technology that allows a variety of options, including graphics, multimedia, communications, and other third-party options.
Audio technology	Built-in telephone-quality audio input and output capabilities.
Secure console mode feature	Limited access to core console functions for added system security.
A password security feature	Additional system security for privileged commands when the system is in secure console mode.
Two supported operating systems	Support for the OpenVMS AXP and the DEC OSF/1 AXP operating systems.

Operating Systems

A Choice of Operating Systems

Digital's Alpha AXP architecture allows you to choose from various operating systems for use on your DEC 3000 Model 800/800S/900 AXP system. The operating system is the core software installed on your DEC 3000 Model 800/800S/900 AXP system, which allows you to install and run applications.

Supported Operating Systems

The following operating systems are supported for use on your DEC 3000 Model 800/800S/900 AXP system:

- OpenVMS AXP
- DEC OSF/1 AXP

OpenVMS AXP Operating System

The OpenVMS AXP operating system is a general purpose, multiuser operating system that can be used in many different environments for a wide variety of applications. The OpenVMS AXP operating system promotes ease of use and improved programming productivity, and it facilitates system management.

Features of OpenVMS AXP

OpenVMS AXP offers a combination of commercial features and open system benefits, including the following capabilities:

- Integrated networking
- System security
- Distributed computing
- Windowing capabilities

Additionally, OpenVMS AXP supports a large number of industry standards to facilitate application portability and interoperability.

DEC OSF/1 AXP Operating System

DEC OSF/1 AXP is Digital Equipment Corporation's implementation of the Open Software Foundation (OSF) operating system components and Motif graphical user interface and programming environment.

Description of DEC OSF/1 AXP

DEC OSF/1 AXP is compliant with the OSF Application Environment Specification (AES), which specifies the interface to support portable applications designed to run on a variety of hardware platforms.

In addition, the DEC OSF/1 operating system complies with these standards and industry specifications:

- FIPS 151-1

- POSIX (IEEE Std. 1003.1-1988)

- XPG3 BASE branding

- XTI

- AT&T System V Interface Definition (SVID) Issue 2 (Base System and Kernel Extensions)

DEC OSF/1 AXP Architecture

The DEC OSF/1 AXP operating system is an advanced kernel architecture based on Carnegie Mellon University's Mach V2.5 kernel design with components from Berkeley Software Distribution 4.3 (BSD) and other sources. DEC OSF/1 AXP provides numerous features to assist application programmers in developing applications that use shared libraries, multithread support, and memory mapped files.

To ensure a high level of binary compatibility with the ULTRIX operating system, the DEC OSF/1 AXP operating system is compatible with the Berkeley 4.3 programming interfaces.

You May Have Factory-Installed Software

If there is a yellow sticker over the system power connector on your DEC 3000 Model 800/800S/900 AXP system, the operating system is factory-installed on an internal fixed disk drive, and you can start it on your system using either the OpenVMS AXP Factory Installed Software (FIS) procedure, or the DEC OSF/1 AXP Factory-Installed Software (FIS) Startup Procedure.

Chapter 6 describes how to start your system if it has a factory-installed operating system.

Software Product Descriptions (SPD)

**SPD
Description**

The Software Product Description (SPD) is the official defining document for software products licensed by Digital Equipment Corporation, including third-party products licensed by Digital. An SPD describes all important functional characteristics of the software. The terms and conditions under which the corporation sells and licenses its software products identify SPDs as the documents that specify Digital's obligation under software warranty.

SPDs also describe a software product's system environment and identify required and optional hardware and software. All information contained in the SPD is valid in the international marketplace.

For more information on the SPD for your operating system, please contact your Digital sales representative.

Graphics Capabilities

**Optional
Graphics**

Workstation graphics and multimedia options are available via the use of a TURBOchannel graphics module that can be purchased separately and installed in your system. All preconfigured DEC 3000 Model 800/900 AXP workstations are shipped with a TURBOchannel graphics module installed. TURBOchannel-based graphics provide a wide variety of Digital and third-party graphics options. For information on supported options, refer to the Software Product Description, available through your Digital sales representative.

**DEC Open3D
Software**

Three dimensional (3D) graphics support is provided by the DEC Open3D software which is included in Factory-Installed Software (FIS) systems. If you do not have Factory-Installed Software and need 3D graphics support, contact your Digital sales representative for availability of the Open3D software as a layered product for both the OpenVMS AXP and the DEC OSF/1 AXP operating systems.

**Multiple
Graphic
Devices**

Your system is capable of supporting multiple 2D graphics devices. For a list of graphics options, refer to the Software Product Description, available from your sales representative.

Integrated Services Digital Network (ISDN)

Note: ISDN Not Yet Available

Though your system can provide ISDN capabilities, they are not yet agency approved or available. Currently, a plug has been placed in the ISDN port pending approval of ISDN licenses. Once agency approval of ISDN for the DEC 3000 Model 800 /800S/900 AXP system has been granted, you will be contacted by your Digital sales representative to inform you of the ISDN certification. At that point, you must remove the plug from the ISDN port before connecting the ISDN network.

The following information explains the ISDN capabilities for your system pending license approval.

Australian ISDN Connections

The ISDN interface in this equipment has not completed Australian ISDN network connection certification testing and as such does not have an AUSTEL permit for connection. In Australia it is an offence to connect non-permitted devices to a public telecommunications network and may attract a fine of up to $12,000.

ISDN Capabilities

ISDN is a digital telecommunications network, providing connectivity for voice and data applications. Your system includes an ISDN Basic Rate S/T interface, which includes:

- two 64 kilobits per second B channels
- one 16 kilobits per second D channel

Use of ISDN B Channels

The B channels can be used for digitized voice and circuit-switched data transmission at up to 64 kilobits per second, or for packet-switched data transmission.

Use of ISDN D Channels

The D channel uses a protocol standardized by the International Telegraph and Telephone Consultative Committee (CCITT) for setting up these connections. The D channel can also be used for low-speed packet transmission.

Audio Capabilities

Audio Overview   Your system features telephone-quality audio features, providing
audio input and output capabilities. The audio ports are located
on the front of the system unit, behind the front access door.
Figure 1–3 shows the audio ports: the microphone input jack ❶,
the speaker/
headphone jack ❷, the telephone handset jack ❸, and the audio
input jack ❹.

**Figure 1–3   Audio Ports on the DEC 3000 Model 800/800S/900
AXP**
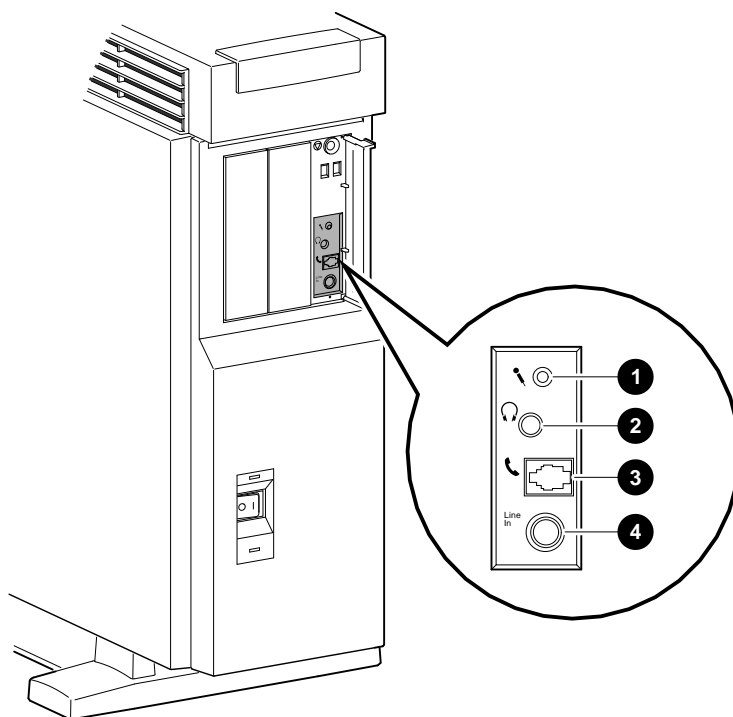
MLO-007498

Port pin-outs for the telephone handset jack on the system unit
are provided in Appendix B.

**DECsound
Application**

The DECsound application, shipped with your DEC 3000 Model
800/900 AXP as part of the OpenVMS AXP DECwindows Motif
layered product kit, is an easy-to-use software application that
lets you play back recorded messages, record audio messages,
mail recorded messages, and include recorded messages in
compound documents.

Available Options

**Internal
Options**

You can install the following hardware options inside the system
unit:

Option	Capabilities Provided
Four RZ2x-series 3½-inch fixed disk drives	Additional storage capacity.
Two 5¼-inch removable media devices (RMD)	Additional data storage on any of several devices: diskette drive, compact disc drive, tape drive, and quarter-inch cartridge tape drive.
Up to 1 gigabyte of total memory	Increased performance.
Up to six TURBOchannel modules	A variety of TURBOchannel options, including 2D and 3D graphics and communication options.

TURBOchannel Options	There are six TURBOchannel option slots on your system.
Installing Internal Options	For more information about adding TURBOchannel and other internal options to your system, see the *DEC 3000 Model 800 /800S/900 AXP Options Guide*.
External Options	You can add one or more of the following external options to your system.

- A printer such as a PostScript laser printer.

- A modem

- A puck or stylus tablet

- A storage expansion box that can hold the following devices:

  - RZ2x-series fixed disk drives

  - compact disc drive

  - quarter-inch tape drive

  - Digital audio tape (DAT) drive

Adding External Options	For more information about external options and how to add them to your system, refer to the documentation for the specific options.
Ordering Options	Contact your Digital sales representative for more information about ordering system options.

2

Preparing to Install the System

Chapter Overview

Introduction   Before you install your system, you need to prepare your site and familiarize yourself with your system hardware.

In This Chapter   This chapter covers the following topics:

- Choosing a Location
- Customizing Your Work Area
- Moving Your System
- Unpacking a Workstation System
- Unpacking a Server System
- A Closer Look at a Pedestal System
- System Unit Symbols
- Where to Go Next

Choosing a Location

**Space
Requirements**

When choosing a location, consider the system measurements
as shown in Figure 2–1, and allow 7.6 centimeters (3 inches)
ventilation space between the system unit and the desk.

Figure 2–1 Dimensions of System
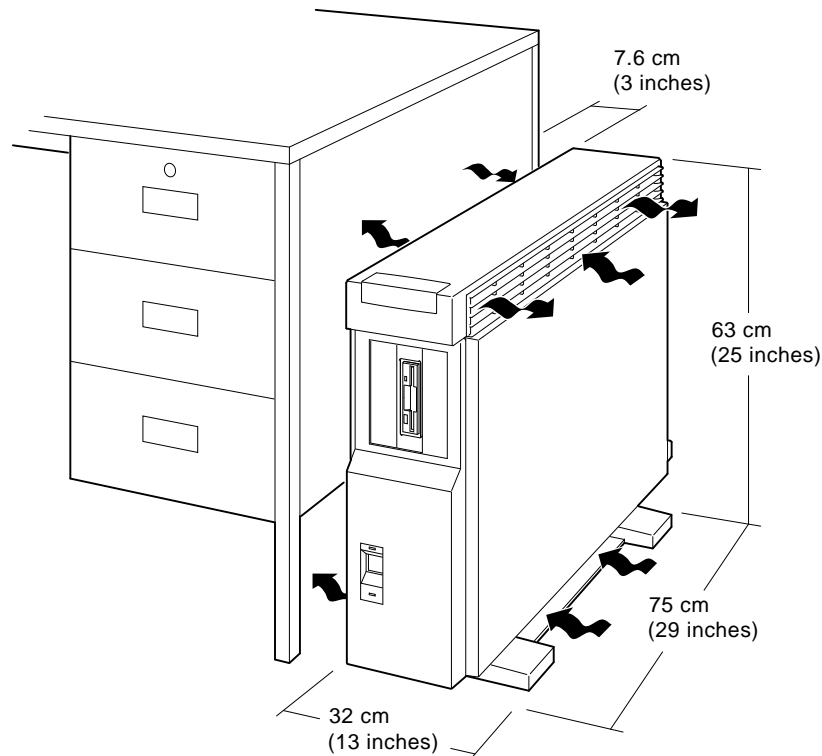
MLO-007592

**Monitor
Requirements**

When allocating space for your new DEC 3000 Model 800/900
AXP workstation, consider also the size of your monitor and the
length of your monitor video cable.

Location Requirements

Choose a location for your system that meets the following requirements:

Requirement	Explanation
Appropriate dedicated power source with an isolated ground	Power source must be 110–120 volts alternating current (VAC) or 220–240 VAC, used solely for system unit and monitor.
Moderate temperature	Room temperature should remain between 15°C and 32°C (59°F and 90°F).
Moderate humidity	Relative humidity should range between 30 percent and 70 percent.
Ample circulation	Provide a minimum of 7.6 centimeters (3 inches) of clearance all around the workstation. This allows air to circulate around the workstation to prevent excess heat buildup and to keep the system air vents clean.
Working room	Leave enough room on your desktop for your keyboard, mouse pad, and any papers and materials that you may need.

What to Avoid in a Location

When choosing a location for your workstation, try to avoid the following hazards:

Hazard	How to Avoid
Dust and dirt	Position the system unit in a clean, dust-free location. Dust and dirt damage system components.
Heat and sunlight	Do not place your system in direct sunlight, close to a heater, or near a photocopier.

Customizing Your Work Area

●

Ergonomic Considerations

Considering the ergonomics of your working environment before installing your system can help you to perform your job more effectively once you begin using your system.

Comfort in your workplace can be achieved by making sure that your chair, monitor, keyboard, and mouse are set at the right height and distance for you and the work that you are doing, as shown in Figure 2–2 and explained in Table 2–1.

Figure 2–2 Positioning Components

MLO-010354

**Positioning
Components**

Table 2–1 explains the numbered elements in Figure 2–2.

Table 2–1 Positioning Your System Components

	Adjust your chair so that...
❶	Your feet are flat on the floor—use a footrest if needed.
❷	Your legs form a right angle to the floor.
❸	The backs of your knees are free from the seat pan.
❹	The body weight rests on the spine with support at the lower back region.
	Adjust your monitor and keyboard so that...
❺	Your wrists are straight and supported. Keyboard, mouse, and mousepad are at elbow height.
❻	Your elbows are close to your sides, with your upper arms perpendicular to the floor.
❼	You maintain a neutral neck posture with the top of the video screen no higher than eye level.
	Adjust lighting and monitor so that...
❽	Light is directed away from the screen to reduce glare. Look away to distant objects frequently. Use the tilt and swivel capabilities of your monitor to place it in the most comfortable position for your own use.
❾	The screen is at the correct distance for your vision.

Moving Your System

●

**Locate the
Handle**

The handle by which to move your system unit is located on
the front, at the top, under the product medallion ❶, as shown
in Figure 2–3. Grasp this area firmly and pull the system unit
towards you any time you wish to move it. The low-friction feet
on the bottom of the pedestal allow the unit to be moved easily
across the floor.

Figure 2–3   The System Handle
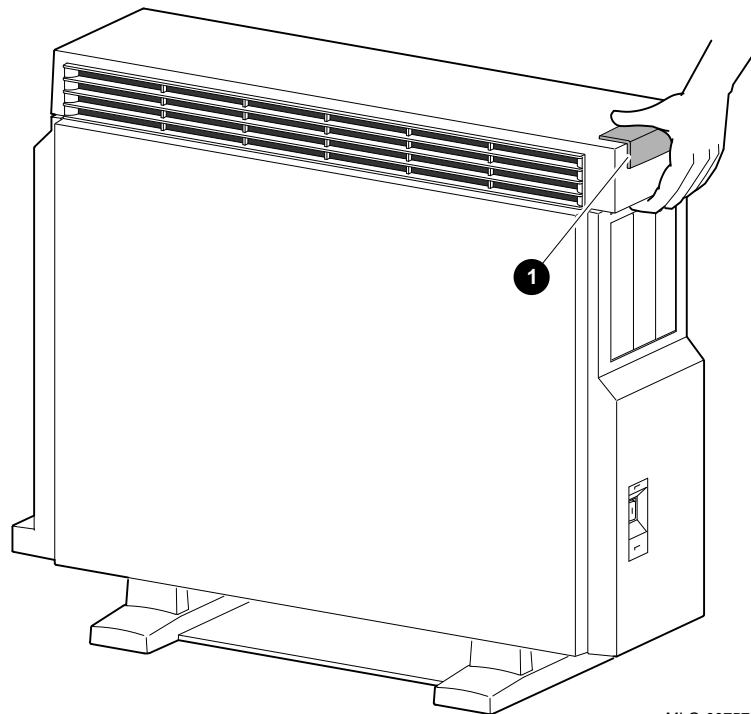
MLO-007579

CAUTION: Two People to Lift the System Unit

Two people are needed to lift the system unit, which is quite heavy. The unit is designed to be lifted using the front handle ❶ and the rear of the system unit at the top ❷, as shown in Figure 2–4.

Do not attempt to lift the system unit from the bottom, as you may cause damage to the front or side panels, which are not designed to hold the weight of the system unit.

Figure 2–4 Lifting the System Unit
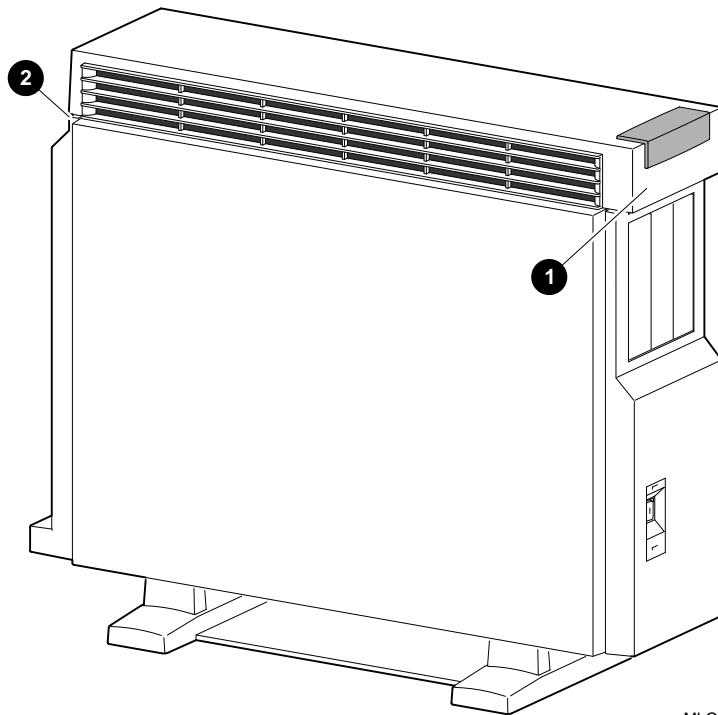
MLO-009873

Unpacking a Workstation System

●

Checking the Box Contents	Your workstation system arrives in two boxes, one for the system unit and accessories, the other for the monitor.
	Before installing your system, check to see that you have all of the parts shown in Figure 2–5. The contents shown are for preconfigured systems. If you did not order a preconfigured system, check your packing slip to make sure that whatever you ordered has arrived in your shipment.
If Parts Are Missing	If you are missing any parts for your DEC 3000 Model 800/900 AXP workstation, contact your Digital sales representative immediately.
WARNING: Two People Required	The workstation and the monitor shipped with your system are both quite heavy. Have someone help you remove these items from the shipping boxes, as indicated on the packing cartons.

Parts Required for Installation

The accessory kit for your system includes many parts, some of which you do not need during the system installation. See Figure 2–5 for the parts you need.

Figure 2–5 Workstation Components and Parts

System Unit

Monitor Video Cable

Monitor Power Cord

Keyboard/Mouse Extension Cable

Owner's Guide, Options Guide, Other Documentation

System Power Cord

Universal Strain Relief Strap

Keyboard

Headset

Mouse with Mousepad

Keys (Attached to System Unit)

Ethernet Loopback Connector

MLO-010853
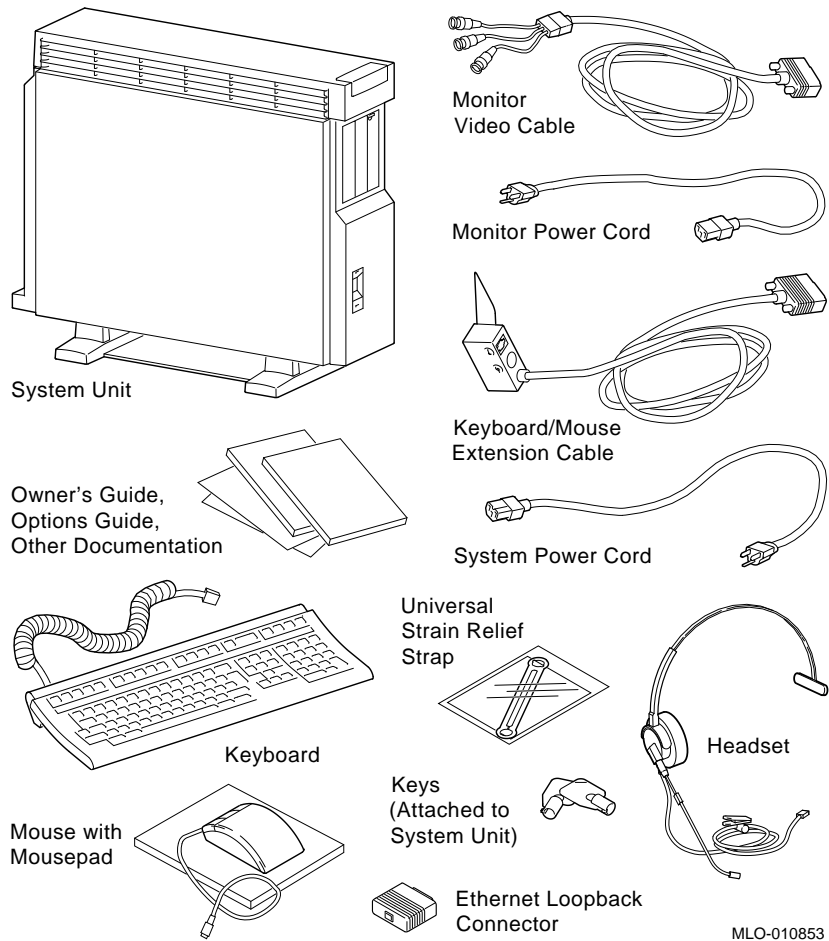
**Save These
Parts for Later**

The parts shown in Figure 2–6 can be stored for use later. You
do not need them for system installation.

Figure 2–6 Components and Parts to Save
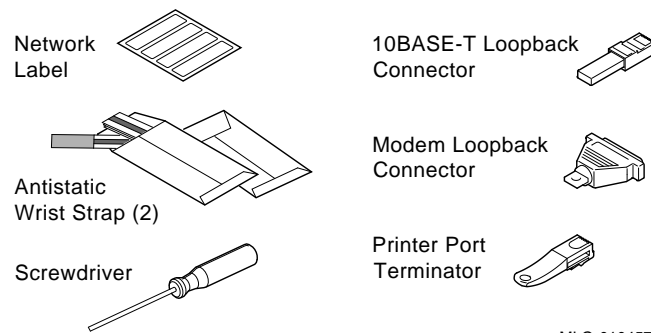
Network
Label

10BASE-T Loopback
Connector

Antistatic
Wrist Strap (2)

Modem Loopback
Connector

Screwdriver

Printer Port
Terminator

MLO-010457

**For Users in
Germany**

To comply with certain international standards, Digital includes
German regulatory information (sometimes referred to as the
FTZ card) in every system and monitor box. Disregard this
material if your system is not located in Germany.

**For Users in
Australia**

The yellow Austel warning label, part number 36-39563-01,
attached to the shipping container and system unit, is required
by the country of Australia for systems that provide ISDN
functionality but are not yet certified for use in Australia.
Disregard these labels if your system is not located in Australia.

Unpacking a Server System

●

Checking the Box Contents

Before installing your server system, check to see that you have all of the parts shown in Figure 2–7. The contents shown are for preconfigured systems. If you did not order a preconfigured system, check your packing slip to make sure that whatever you ordered has arrived in your shipment.

If Parts Are Missing

If you are missing any parts for your DEC 3000 Model 800S AXP server, contact your Digital sales representative immediately.

WARNING: Two People Required

The server system unit is quite heavy and requires two people to remove it from the shipping box, as indicated on the packing carton.

Parts Required for Installation

The accessory kit for your system includes many parts, some of which you do not need during the system installation. See Figure 2–7 for the parts you need.

Figure 2–7 Required Server Components and Parts

Documentation

Keys
(Attached to System Unit)

Ethernet Loopback Connector

System Power Cord

System Unit

MLO-010458
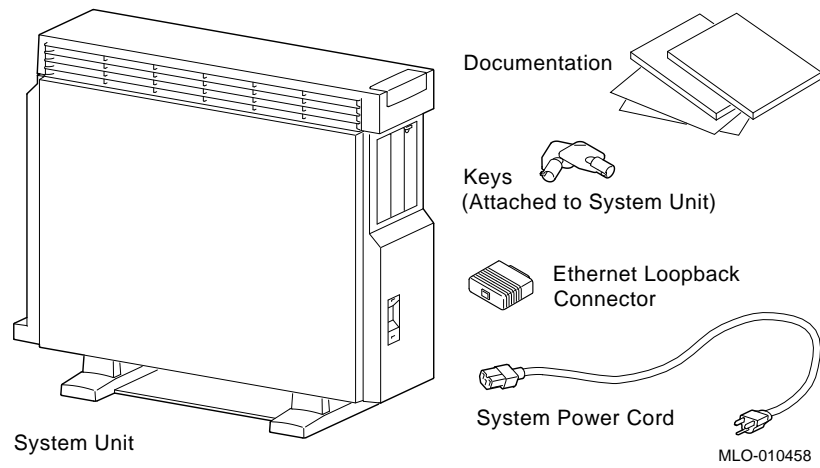
Save These Parts for Later

The parts shown in Figure 2–8 can be stored for use later. You do not need them for system installation.

Figure 2–8 Components and Parts to Save
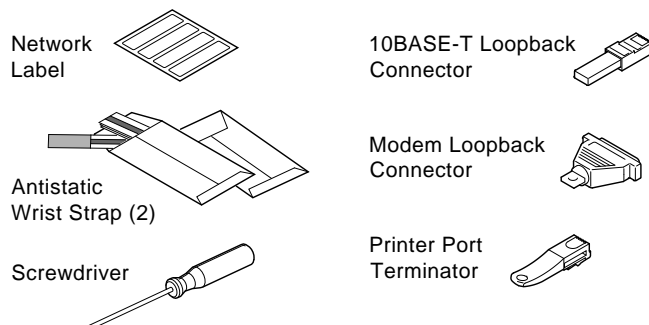
Network
Label

10BASE-T Loopback
Connector

Antistatic
Wrist Strap (2)

Modem Loopback
Connector

Screwdriver

Printer Port
Terminator

MLO-010457

For Users in Germany

To comply with certain international standards, Digital includes German regulatory information (sometimes referred to as the FTZ card) in every system and monitor box. Disregard this material if your system is not located in Germany.

For Users in Australia

The yellow Austel warning label, part number 36-39563-01, attached to the shipping container and system unit, is required by the country of Australia for systems that provide ISDN functionality but are not yet certified for use in Australia. Disregard these labels if your system is not located in Australia

A Closer Look at a Pedestal System

Back of the System Unit Familiarize yourself with the ports, switches, and indicators on the back of the system unit, shown in Figure 2–9, and explained in Table 2–2.

Figure 2–9 Back of System Unit
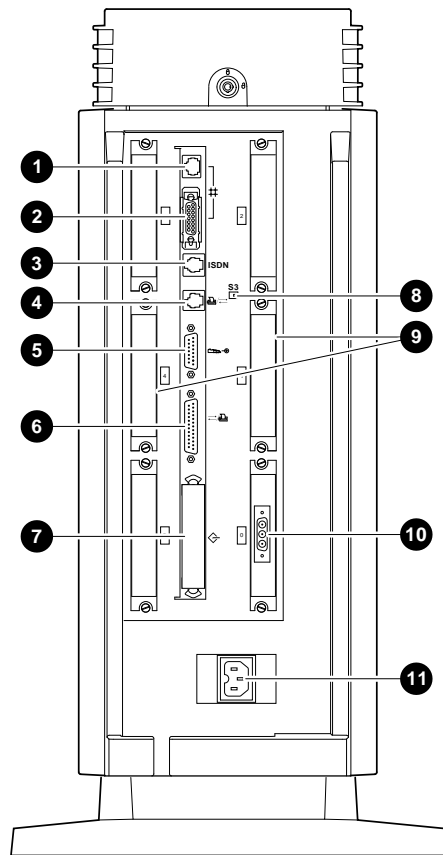
MLO-010854

Table 2–2 Back of the System Unit

Feature	Function
❶ 10BASE-T port	To connect a 10BASE-T Ethernet network cable.
❷ AUI port	To connect an AUI (Attachment Unit Interface) Ethernet network cable (sometimes referred to as standard or thickwire Ethernet).
❸ ISDN port	To connect an Integrated Services Digital Network (ISDN) cable.
❹ Alternate console/printer port	To connect a terminal as an alternate console, or a printer.
❺ Keyboard/mouse port	To connect the keyboard/mouse extension cable.
❻ Synchronous /asynchronous communications port	To connect a communications device such as a printer, plotter, modem, or console terminal.
❼ External SCSI port	To connect Small Computer System Interface (SCSI) peripheral devices. The SCSI port has the SCSI terminator shipped in place.
❽ Alternate console switch	Toggle switch to direct console output to a monitor (switch right) or to an alternate console such as a terminal (switch left).
❾ TURBOchannel slots	To connect TURBOchannel options, such as 2D or 3D graphics modules, SCSI adapters, and Ethernet adapters. There are a total of six slots.
❿ Monitor Video Port	To connect the monitor video cable.
⓫ System power socket	To connect the system unit power cord.

**Front of the
System**

Familiarize yourself with the front of the system unit, shown in
Figure 2–10 and explained in Table 2–3.

Figure 2–10 Front of System Unit
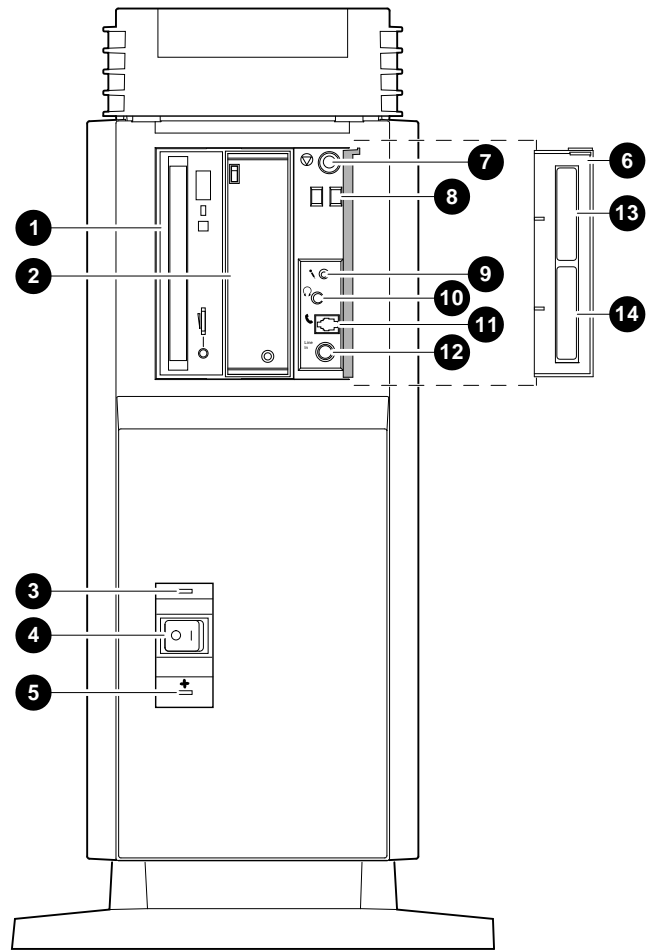
MLO-007553

Table 2–3 Front of the System Unit

Feature	Function
❶ and ❷ Removable media devices (Optional)	Devices that provide additional data storage on removable media, such as diskettes, compact discs, cassette tapes, or cartridge tapes.
❸ Power indicator light	When lit, indicates that the system unit is on.
❹ Power On/Off switch	To turn the system unit power on (	) and off (O).
❺ Fan failure light	When lit, indicates that a fan has failed and the power supply has been shut down.

Feature (Behind front access door ❻)	Function
❼ Halt button	To place the system in console mode.
❽ Diagnostic display	Used for diagnostic testing purposes.
❾ Microphone input jack	To connect a microphone to the system.
❿ Speaker output jack	To connect a speaker or headphone for audio output.
⓫ Telephone handset jack	To connect a telephone handset.
⓬ Audio input port	To connect an audio input line.
⓭ Model and serial number label	To find the model number and serial number of your system.
⓮ Network label position	Area to place optional network label that is included in the system's accessory kit.

System Unit Symbols

Explanation of Symbols

On the front and rear of your system unit symbols appear next to most of the controls and ports. The following list explains these symbols.

Halt Button
Press the halt button to halt the system and put the system into console mode.

Network Interface Port
Insert the cable for a network connection.

ISDN

ISDN Interface Port
Insert the cable for an ISDN network connection.

Handset Jack
Insert a telephone-style handset into this jack to use the audio input and output features of the system.

S3

Alternate Console Switch
Indicates the alternate console switch that directs console output to the monitor or to an alternate console, such as a terminal.

Alternate Console/Printer/Communications Port
Connect an alternate console, such as a terminal or a printer, to this port. You can also connect a communications device, such as a modem, here.

Keyboard/mouse Port
Attach the Keyboard/mouse extension cable to this port.
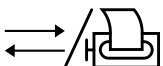
Communications/Printer Port
Connect a communications device, such as a modem, to this port. You can also connect a printer or terminal to this port.

SCSI Port
Attach a SCSI cable or terminator to this port.

Where to Go Next

**Determine Your
Next Step**

Use Table 2–4 to determine which chapter to read next.

Table 2–4   Where to Go Next

If you...	Go to...
Are installing a workstation	Chapter 3
Are installing a server	Chapter 4
Installed your system using the *Setting Up Your Workstation* card or the *Setting Up Your Server* card and you want to:	
a. Connect to a network	Chapter 5
b. Start up your system	Chapter 6

3

Installing a Workstation System

Chapter Overview

Introduction   If your system is configured as a workstation, see the installation instructions in this chapter. For a server configuration, see Chapter 4. Your workstation is designed to be installed quickly and easily. The information in this chapter explains how to connect the cables to the system unit and to the monitor, and how to prepare the workstation for startup. Starting your workstation is explained in Chapter 6.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Task Overview
- Connecting the Workstation
- System Unit Cover Lock
- Checking Your Installation
- Where to Go Next

Before You Begin

**What You
Should Have
Done Already**

Before you install your system components, you should have already completed the following tasks:

- Determined any ergonomic considerations you may have.

- Chosen a location for your system.

- Unpacked your system.

- Familiarized yourself with the ports and controls on the rear of the system unit.

If you have not performed all of these tasks, do so now. They are covered in Chapter 2.

**What You
Should Know
Beforehand**

Note that:

- Installing your system requires little or no previous knowledge of computer systems. Connecting your workstation should take about 15 minutes.

- This chapter covers connecting your system as a standalone workstation. You may connect your workstation to a network with a few minor adjustments to the procedures in this chapter. Chapter 5 explains how to connect to a network.

- The accessory bag shipped with your workstation includes parts that you do not need during installation. Save any terminators and additional parts in case you need them later.

Task Overview

Parts for Installation

Figure 3–1 lists the parts required to install your workstation.

Figure 3–1 Parts Needed to Install Your Workstation

System Unit

Monitor Video Cable

Monitor Power Cord

Keyboard/Mouse Extension Cable

System Power Cord

Owner's Guide, Options Guide, Other Documentation

Universal Strain Relief Strap

Headset

Keyboard

Mouse with Mousepad

Keys (Attached to System Unit)

Ethernet Loopback Connector

MLO-010853
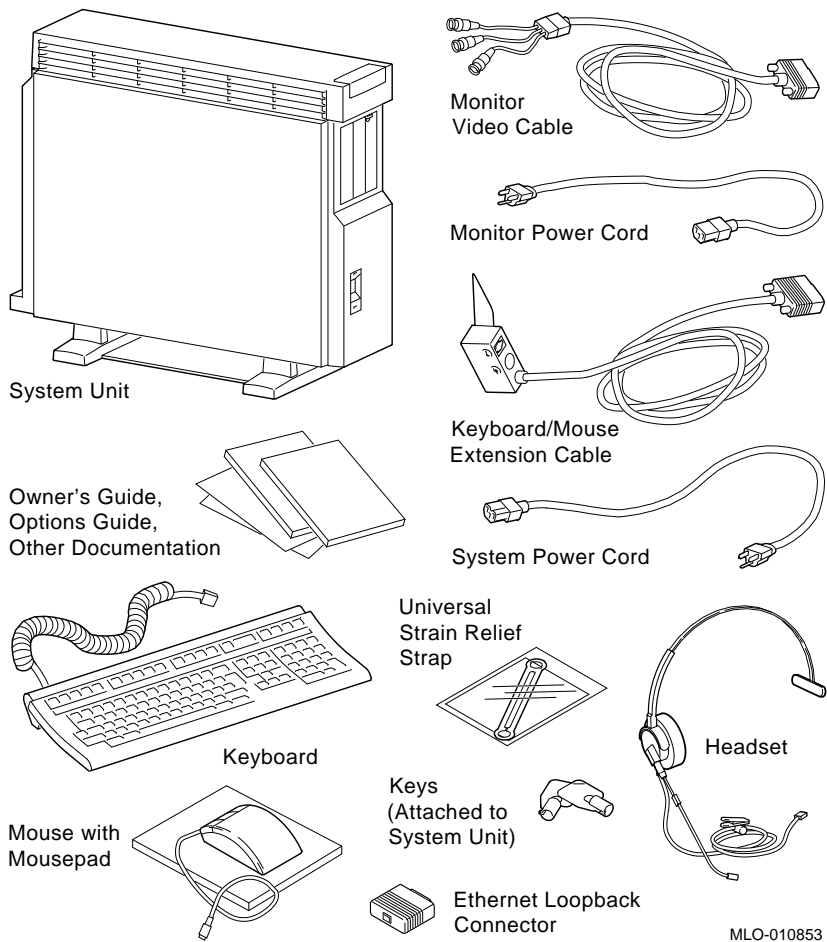
Installation Steps

Table 3–1 gives an overview of the steps involved in installing your DEC 3000 Model 800/900 AXP workstation system components.

Table 3–1 Steps to Install Your DEC 3000 Model 800/900 AXP Workstation

Step	Connect the...	To the...
1	Ethernet loopback connector	AUI Ethernet port
2	Keyboard/mouse extension cable	Keyboard/mouse port
3	Keyboard cable and mouse cable	Keyboard/mouse extension cable
4	Universal strain relief strap	Monitor video cable
5	Monitor cables and power cord	Rear of the monitor
6	Monitor video cable	Graphics connector on a TURBOchannel slot.
7	System unit power cord	System unit power socket
8	System unit power cord	Appropriate outlet
9	Headset cable (optional)	System unit audio I/O port
10	Modem cable (optional)	Synchronous/asynchronous port
11	Printer cable (optional)	Printer port

Step	Check the...	On the...
12	Alternate console switch to make sure it is in the correct position	Rear of the system unit

Connecting the Workstation

●

Step 1: Attach the Ethernet Loopback Connector

Attach the Ethernet loopback connector to the AUI Ethernet port on the system unit, as shown in Figure 3–2. If you plan to connect to an AUI Ethernet network or a ThinWire Ethernet network using a DECXM transceiver, you may omit this step. After you have completed the connections in this chapter, see Chapter 5 for information about network connections.

Figure 3–2 Attaching the Ethernet Loopback Connector
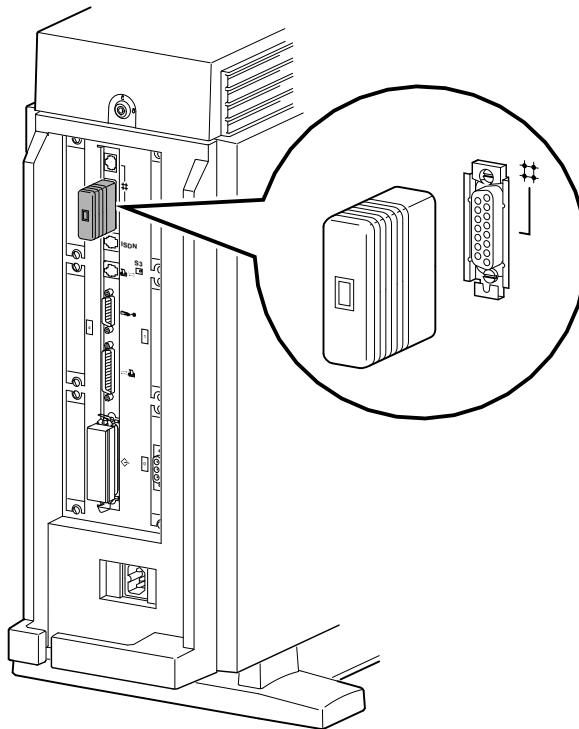
MLO-010856

**Step 2:
Connect the
Keyboard/Mouse
Extension
Cable**

Connect the keyboard/mouse extension cable to the keyboard/
mouse port on the system unit, as shown in Figure 3–3.

Figure 3–3 Connecting the Keyboard/Mouse Extension Cable
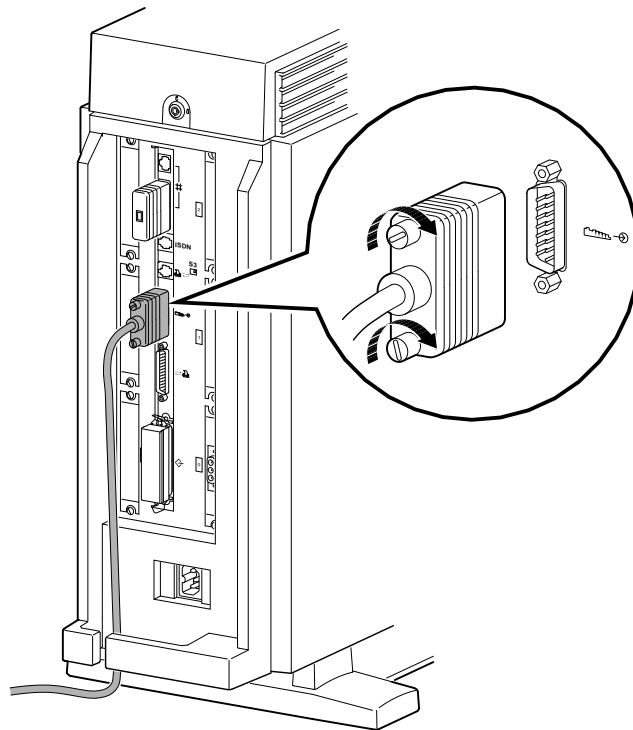
MLO-010857

**Step 3:
Connect the
Keyboard Cable
and Mouse
Cable**

Connect the keyboard cable and the mouse cable to the connector block on the keyboard/mouse extension cable ❶, as shown in Figure 3–4. The extension cable is provided so that the mouse and keyboard can be located away from the system unit.

**Figure 3–4 Connecting the Keyboard and Mouse to the
Keyboard/Mouse Extension Cable**
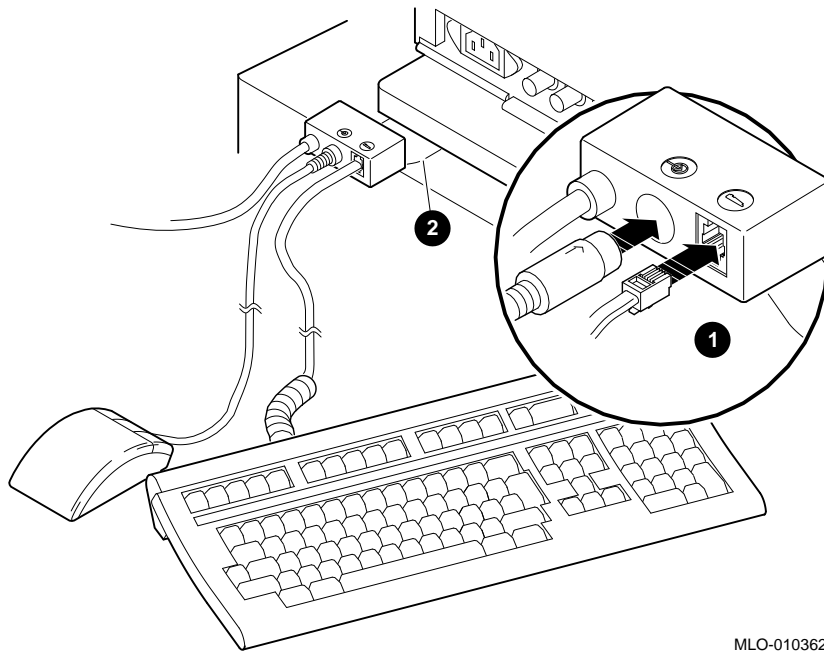
MLO-010362

**The Plastic
Mylar Tab**

To keep the keyboard/mouse extension cable in one location, you can place the plastic Mylar tab ❷ on the connector block of the keyboard/mouse extension cable under the base of your monitor.

Step 4: Attach the Universal Strain Relief Strap

Attaching the universal strain relief strap to your monitor video cable can prevent the weight of the cable's junction block from pulling the cables out of the connectors on the back of the monitor.

Attach the universal strain relief strap to the monitor video cable by performing the following tasks:

1. Insert the three BNC connectors ❶ and cable junction block ❷ of the video cable through the center slot of the universal strain relief strap ❸, making sure the strap is under the cable junction block.

2. Pull the video cable into the slotted hole at the bottom end of the universal strain relief strap. Bring the strap flush with the cable junction block.

3. Align the green (G) BNC connector with the two keyslots of the closed hole at the top end of the universal strain relief strap, and snap the BNC connector into the hole.

Figure 3–5 shows a universal strain relief strap properly attached.

Figure 3–5   Connecting the Universal Strain Relief Strap
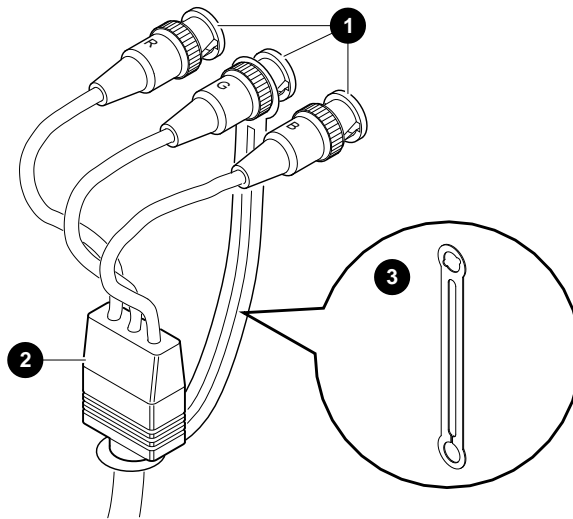
MLO-008592

Step 5: Monitor Cables to Monitor

Complete the following steps to connect the monitor cables to the back of the monitor.

- Step ❶ for a color monitor.

- Step ❷ for a monochrome or greyscale monitor.

- Step ❸ for all monitors. Table 3–3 shows the locations of the connectors on the backs of various monitors. Shaded areas indicate location of connectors.

Table 3–2 Making Monitor Connectors

Step	See diagram with...	Then...
❶	Three connectors (color monitor)	Connect all three cable connectors to the monitor, matching the color cables, red (R), green (G), and blue (B), with the corresponding connectors marked R, G, and B on the monitor.
	Five connectors (color monitor)	Do not use the H/C and V connectors. Connect the other three cable connectors as described above.
	Six connectors (Video In and Video Out)	Use the three Video In connectors. Connect the three cable connectors as described above.
❷	One connector (monochrome or greyscale monitor)	Connect only the middle, green (G) cable connector to the monitor.
❸	Monitor power cord	Connect the monitor power cord to the power socket on the rear of your monitor. The power socket may be in a different location than the position shown here. Make sure the On/Off switch is in the Off (O) position, and then plug the other end of the monitor cord into an appropriate outlet.

Table 3–3 Connecting the Monitor Cords

❶   **Connect the cable to a color monitor...**   **Like this...**

MLO-010574
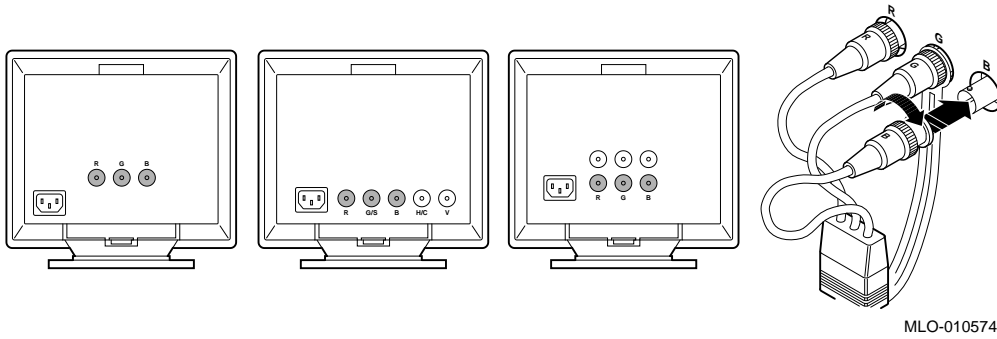
❷   **Connect the cable to a monochrome monitor...**   **Like this...**

MLO-010662
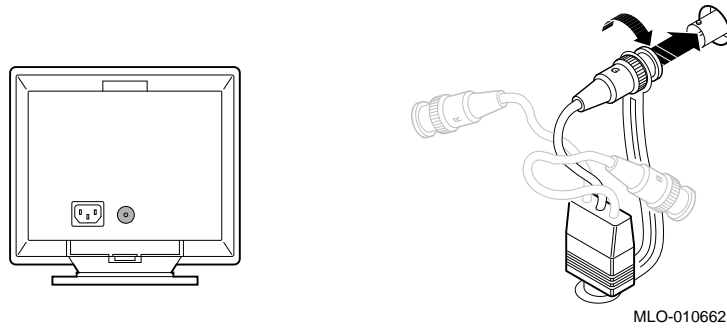
❸   **Connect the monitor power cord...**   **Like this...**

MLO-009415
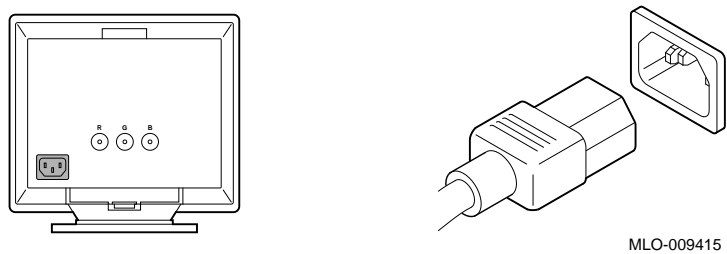
**Step 6:
Connect the
Monitor Video
Cable**

Connect the monitor video cable to the graphics connector on the system unit, as shown in Figure 3–6. The graphics connector extends from one of the TURBOchannel slots on the rear of the system unit. Preconfigured systems use Slot 0.

Figure 3–6   Connecting the Monitor Video Cable
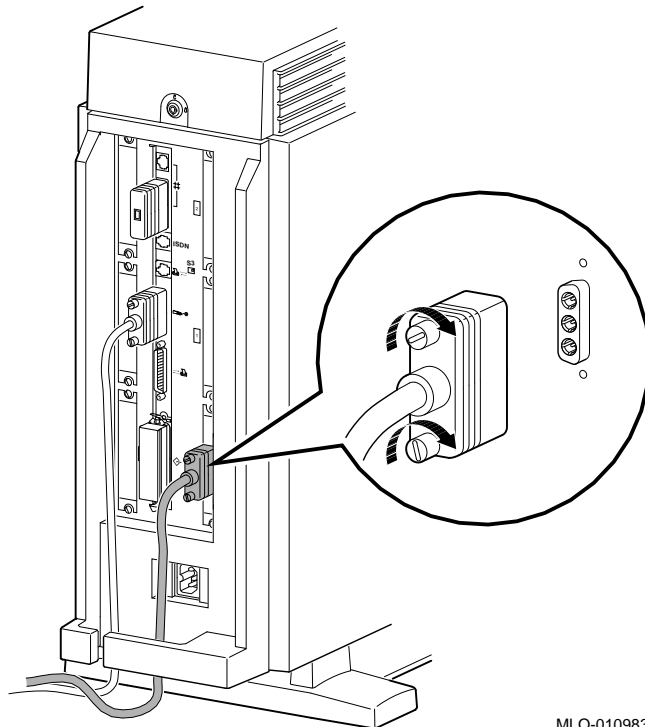
MLO-010983

Yellow Label on Power Socket   If there is a label similar to the one shown in Figure 3–7 covering the system power socket on the rear of the system unit, your system already has either the OpenVMS AXP or the DEC OSF/1 AXP operating system, factory-installed on an internal fixed disk.

Figure 3–7 Factory-Installed Software Label
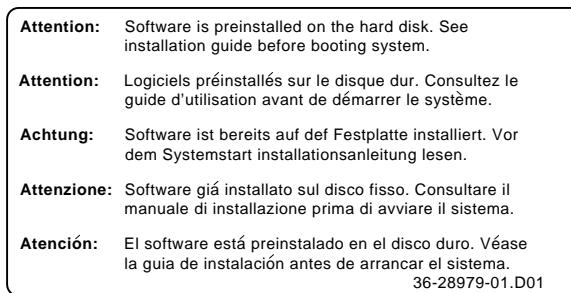
Attention:	Software is preinstalled on the hard disk. See installation guide before booting system.
Attention:	Logiciels préinstallés sur le disque dur. Consultez le guide d'utilisation avant de démarrer le système.
Achtung:	Software ist bereits auf def Festplatte installiert. Vor dem Systemstart installationsanleitung lesen.
Attenzione:	Software giá installato sul disco fisso. Consultare il manuale di installazione prima di avviare il sistema.
Atención:	El software está preinstalado en el disco duro. Véase la guia de instalación antes de arrancar el sistema.

36-28979-01.D01

MLO-007596

When you are ready to start your system, refer to the *OpenVMS AXP Factory Installed Software (FIS) User Information* to start your OpenVMS AXP operating system, or to the *DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* to start your DEC OSF/1 AXP operating system. One of these documents will be shipped with your system, depending on which operating system you have ordered.

**Step 7:
Connect the
System Power
Cord**

Connect the system power cord to the workstation system unit,
as shown in Figure 3–8. The system power cord is the thicker of
the two power cords shipped with your system, and is specially
keyed to fit in the system power socket.

Figure 3–8 Connecting the System Power Cord to System

MLO-010858
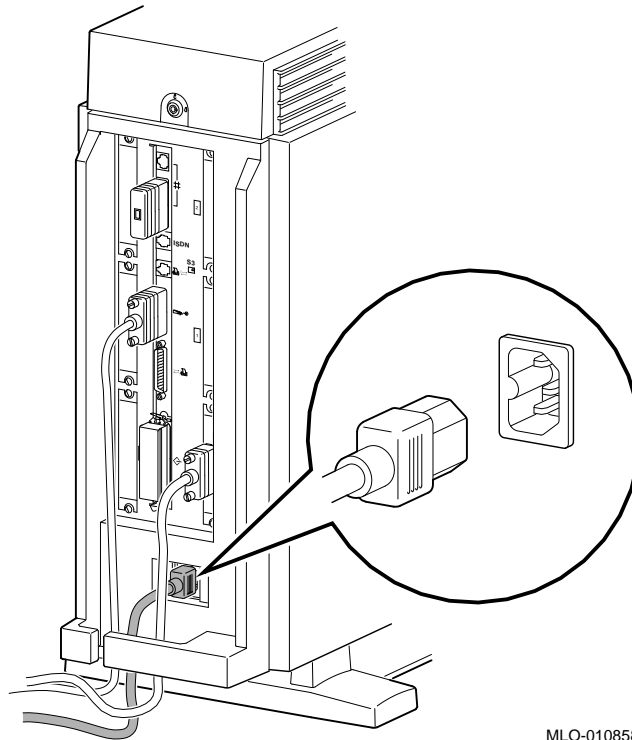
**Step 8: Plug
Cord into
Power Outlet**

Make sure that the power On/Off switch is in the Off (O)
position, and then plug the other end of the power cord into an
appropriate outlet.

**Step 9:
Headset**

Connect the headset to the audio I/O port on the front of the
system unit as shown in Figure 3–9. You can use the headset
as an alternative to a telephone handset to input and output
audio.

Figure 3–9 Connecting the Headset
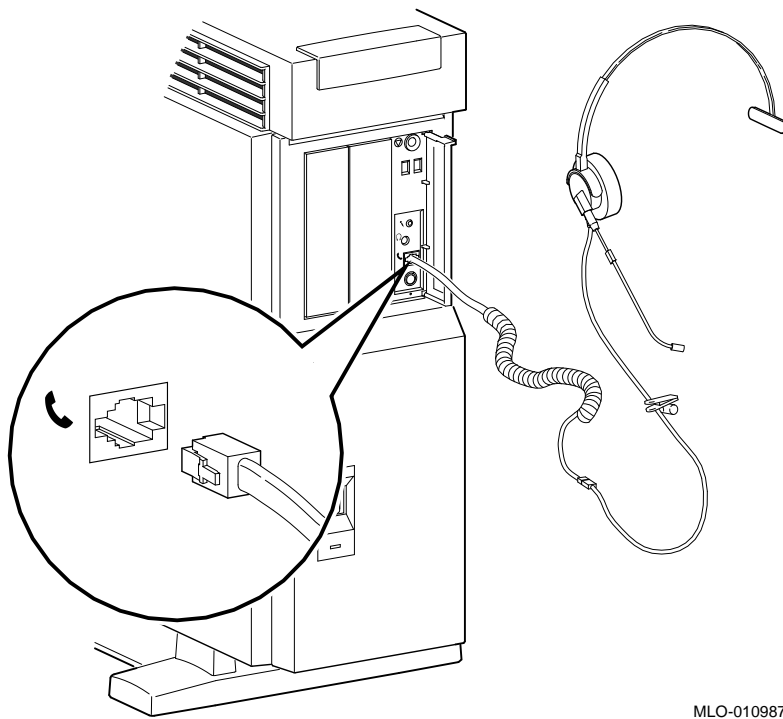
MLO-010987

**Step 10:
Modem**

Connect a modem to the synchronous/asynchronous port on the back of the system unit as shown in Figure 3–10. The modem converts computer signals into signals that can be sent over a telephone line. Your Digital sales representative can provide more information about the various modems that can be used with your system.

Figure 3–10   Connecting a Modem
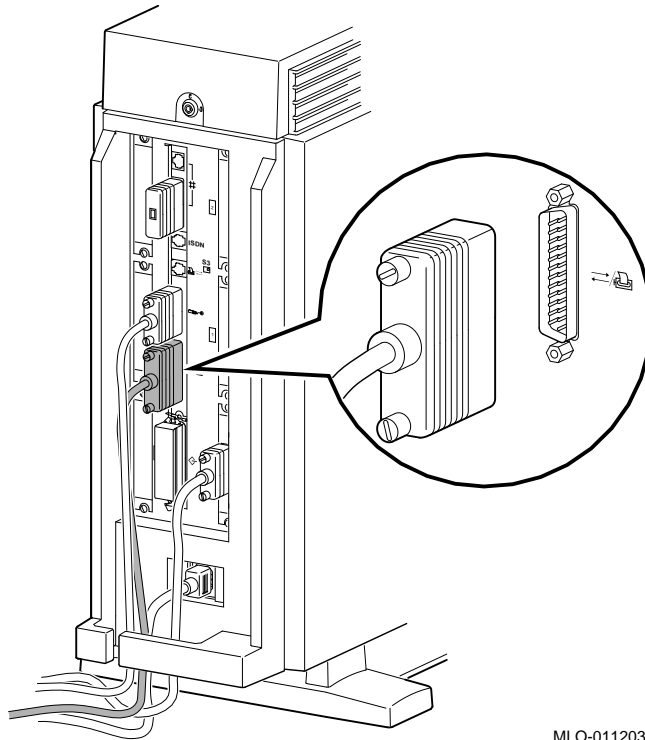
MLO-011203

Step 11: Printer   Connect the printer to the printer port on the back of the system unit as shown in Figure 3–11. For information about the various printers that can be used with your system, contact your Digital sales representative.

Figure 3–11   Connecting a Printer
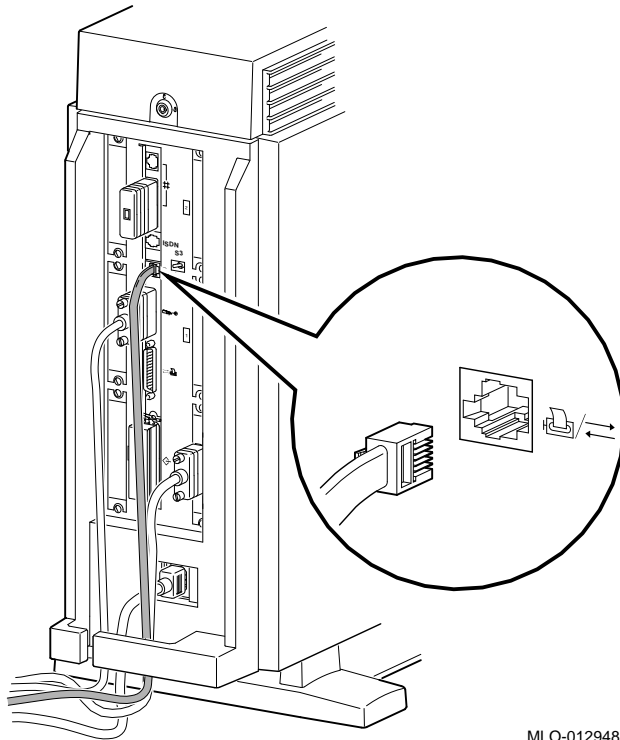
MLO-012948

Step 12: Check the Alternate Console Switch

Check to make sure the alternate console switch on the system unit is set to the correct position, which is to the right when you are using a monitor, as shown in Figure 3–12.

Refer to Chapter 12 for more information on the alternate console switch.

Figure 3–12 Checking the Alternate Console Switch
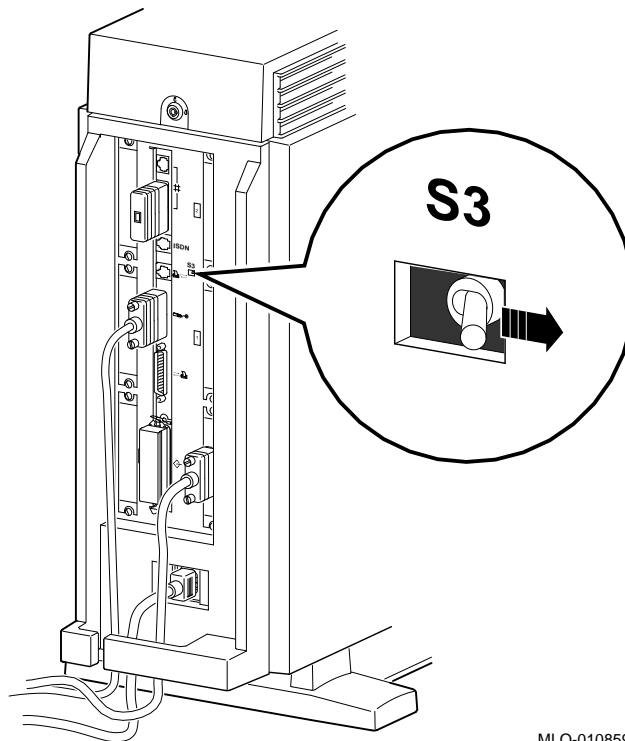
MLO-010859

System Unit Cover Lock

**Additional
System Unit
Security**

Your workstation comes with a cover lock on the system unit to provide additional security. The system is shipped with a set of two keys attached to the top cover of the system unit, as shown in Figure 3–13.

Figure 3–13   System Unit Cover Keys
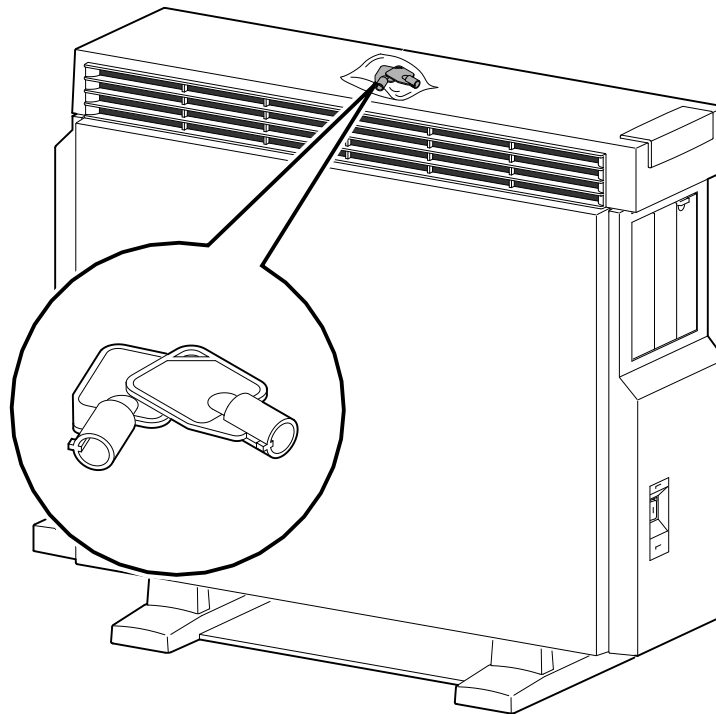
MLO-012896

If You Lose the Keys

If you lose the keys to your system unit cover lock, you will need to call your Digital service representative, as described in the section on reporting problems to Digital services in Chapter 14.

Locking the Cover

To lock the workstation system unit, insert the key and turn it clockwise, as shown in Figure 3–14.

Figure 3–14 Locking the System Unit Cover
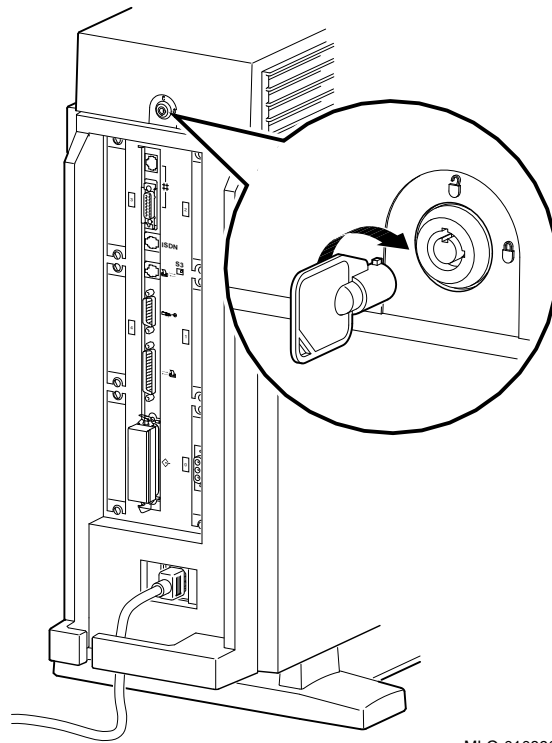
MLO-010890

Checking Your Installation

An Installed Workstation

Check your system against the diagram in Figure 3–15 to make sure that you have connected everything correctly.

Figure 3–15   A Connected Workstation
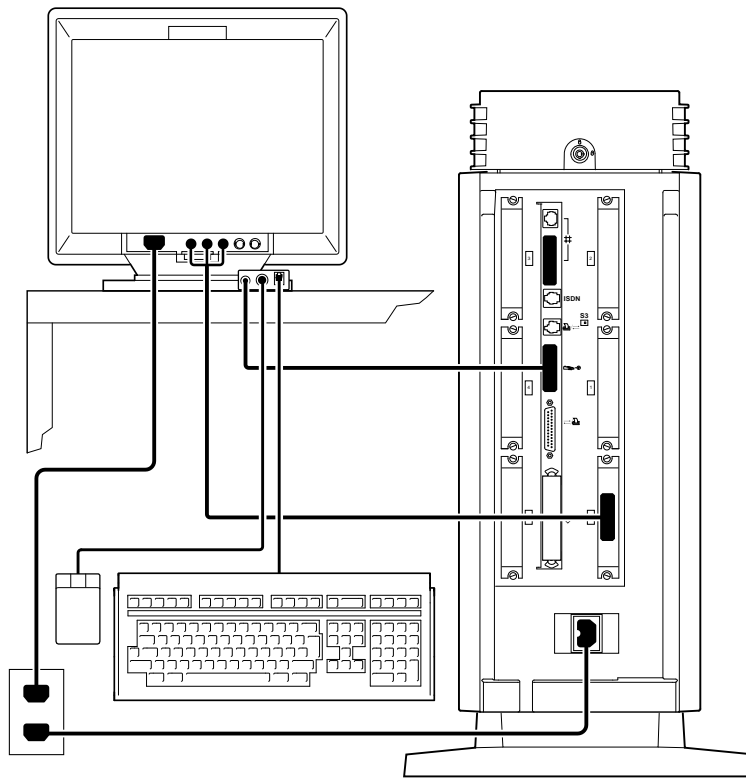
MLO-010891

Where to Go Next

Determine Your Next Step

After you have completed the tasks in this chapter, refer to Table 3–4 for information on where to go next.

Table 3–4 Where to Go Next

If you want to...	Go to...
Connect your system to a network	Chapter 5
Start up your system	Chapter 6

4

Installing a Server System

Chapter Overview

Introduction   If your system is configured as a server, see the installation instructions in this chapter. For a workstation configuration, see Chapter 3. Your DEC 3000 Model 800S AXP server is designed to be installed quickly and easily. The information in this chapter explains how to install the server system and how to prepare it for startup. Starting your server system is explained in Chapter 6.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Task Overview
- Connecting the Server
- System Unit Cover Lock
- Checking Your Installation
- Where to Go Next

Before You Begin

**What You
Should Have
Done Already**

Before you can proceed with this chapter to install your system components, you should have already completed the following tasks:

- Chosen a location for your server.

- Unpacked your server.

- Familiarized yourself with the ports and controls on the rear of the system unit.

If you have not peformed all of these tasks, do so now. They are covered in Chapter 2.

**What You
Should Know**

Note that:

- Installing your system requires little or no previous knowledge of computer systems. Connecting your system should take about 15 minutes.

- This chapter covers connecting your server as a standalone system. You may connect your server to a network with a few minor adjustments to the procedures in this chapter. Chapter 5 explains how to connect to a network.

Task Overview

Parts for Installation

The accessory kit shipped with your system includes parts that you do not need during installation. Figure 4–1 identifies the parts required to install your server. Save any terminators and additional parts in case you need them later.

Figure 4–1 Parts Needed to Install Your Server

System Unit

Documentation

Keys
(Attached to System Unit)

Ethernet Loopback
Connector

System Power Cord

MLO-010458
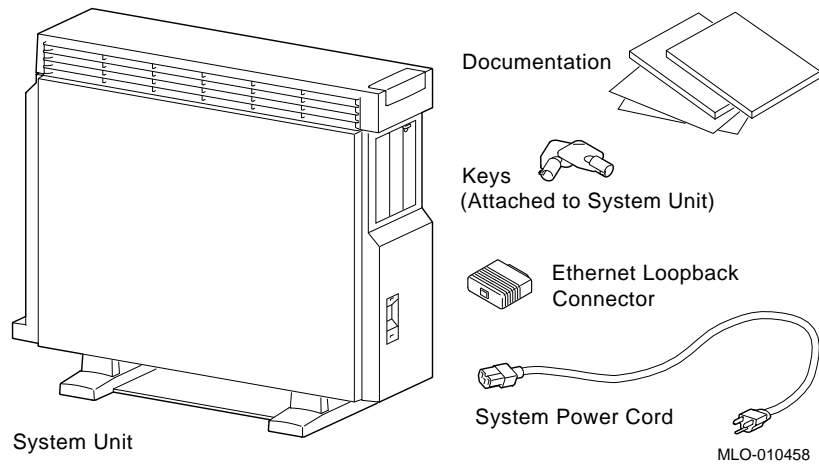
Installation Steps

Table 4–1 gives an overview of the steps involved in installing your DEC 3000 Model 800S AXP server system components.

Table 4–1 Steps to Install Your DEC 3000 Model 800S AXP Server

Step	Connect the...	To the...
1	Ethernet loopback connector	AUI Ethernet port
2	Terminal cable (optional)	Alternate console/printer port
3	System power cord	System power socket
4	System power cord	Appropriate outlet
5	Modem cable (optional)	Synchronous/asynchronous port
6	Printer cable (optional)	Printer port

Step	Check the...	On the...
7	Alternate console switch to make sure it is in the correct position	Rear of the system unit

Connecting the Server

Step 1: Attach the Ethernet Loopback Connector

Attach the Ethernet loopback connector to the AUI Ethernet port on the system unit, as shown in Figure 4–2. If you are planning to connect to an AUI Ethernet network or a ThinWire Ethernet network using a DECXM transceiver, you may omit this step. After you have completed the connections in this chapter, see Chapter 5 for information about network connections.

Figure 4–2 Connecting the Ethernet Loopback Connector
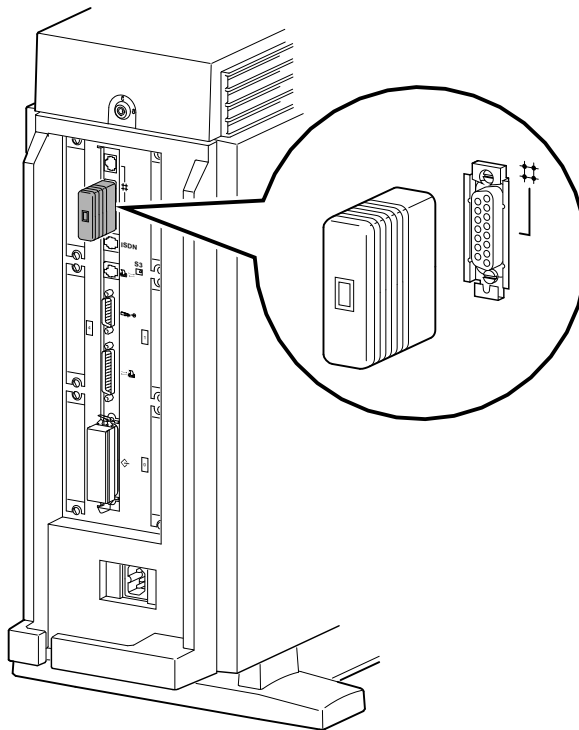
MLO-010984

Step 2: Connect a Console Terminal	Connect a terminal to the alternate console/printer port on the rear of the system unit, as shown in Figure 4–3, in order to display console and startup information. Make sure the terminal baud rate is set to 9600 baud. See Chapter 12 for more information on using an alternate console device.

Figure 4–3 Connecting a Terminal to the Server
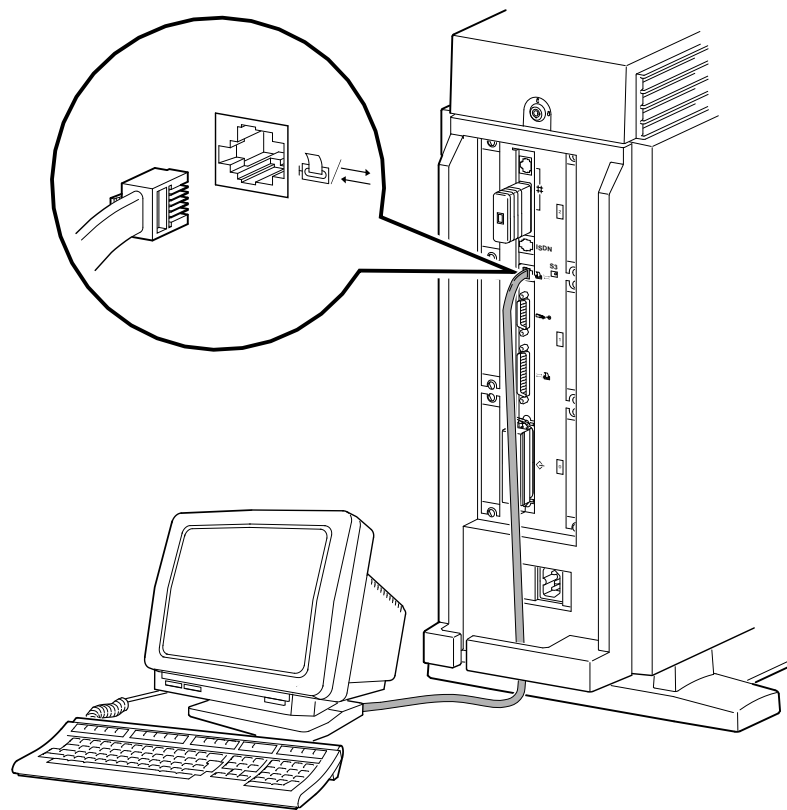
MLO-010892

**Yellow Label on
Power Socket**

If there is a label similar to the one shown in Figure 4–4 covering the power socket on the rear of the system unit, your system already has either the OpenVMS AXP or the DEC OSF/1 AXP operating system factory-installed on an internal fixed disk.

Figure 4–4 Factory Installed Software Label
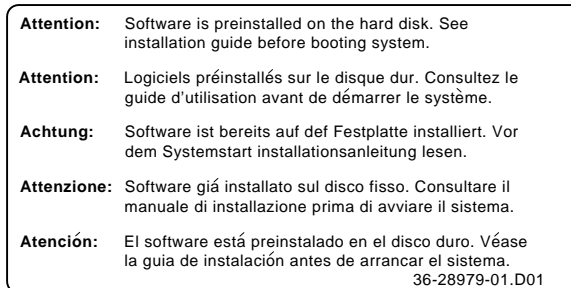
Attention:	Software is preinstalled on the hard disk. See installation guide before booting system.
Attention:	Logiciels préinstallés sur le disque dur. Consultez le guide d'utilisation avant de démarrer le système.
Achtung:	Software ist bereits auf def Festplatte installiert. Vor dem Systemstart installationsanleitung lesen.
Attenzione:	Software giá installato sul disco fisso. Consultare il manuale di installazione prima di avviare il sistema.
Atención:	El software está preinstalado en el disco duro. Véase la guia de instalación antes de arrancar el sistema.

36-28979-01.D01

MLO-007596

When you are ready to start your system, refer to the *OpenVMS AXP Factory Installed Software (FIS) User Information* to start your OpenVMS AXP operating system, or to the *DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* to start your DEC OSF/1 AXP operating system. One of these documents will be shipped with your system, depending on which operating system you have ordered.

Step 3: Connect the System Power Cord

Connect the system power cord to the workstation system unit, as shown in Figure 4–5. The system power cord is specially keyed to fit in the system power socket.

Figure 4–5 Connecting Power Cord to System Unit
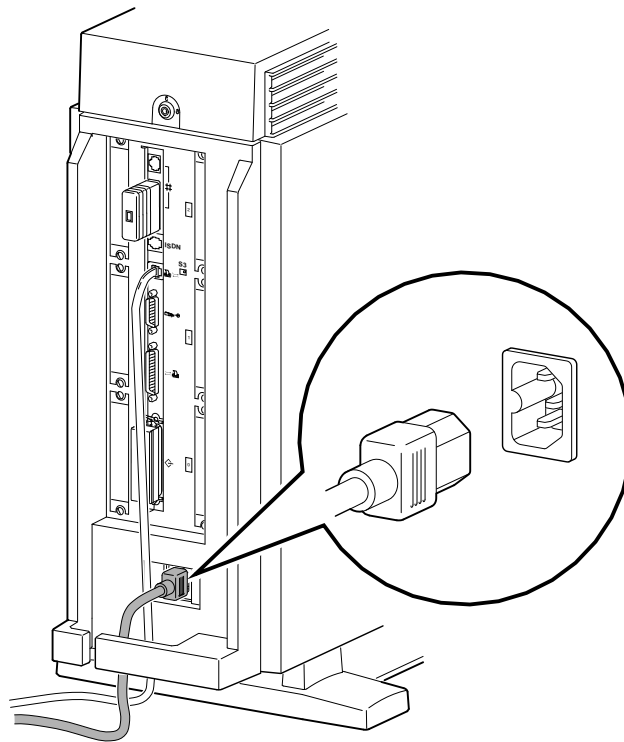
MLO-010893

Step 4: Plug Cord into Power Outlet

Make sure that the power On/Off switch is in the Off (O) position, and then plug the other end of the power cord into an appropriate outlet.

Step 5: Modem

Connect a modem to the synchronous/asynchronous port on the back of the system unit as shown in Figure 4–6. The modem converts computer signals into signals that can be sent over a telephone line. Your Digital sales representative can provide more information about the various modems that can be used with your system.

Figure 4–6 Connecting a Modem
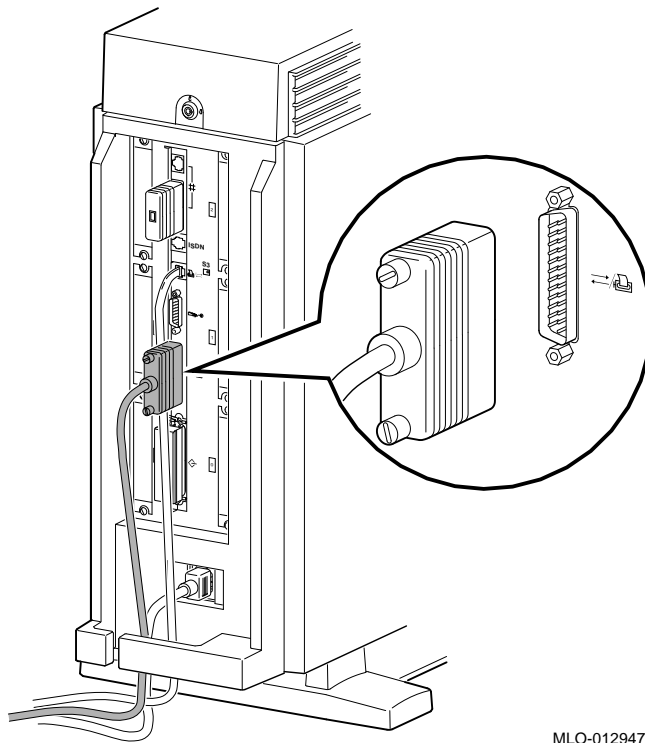
MLO-012947

Step 6: Printer   Using an adapter on the printer cable connector, connect the printer to the printer port shown in Figure 4–7. For information about the various printers that can be used with your system, contact your Digital sales representative.

Figure 4–7 Connecting a Printer Cable
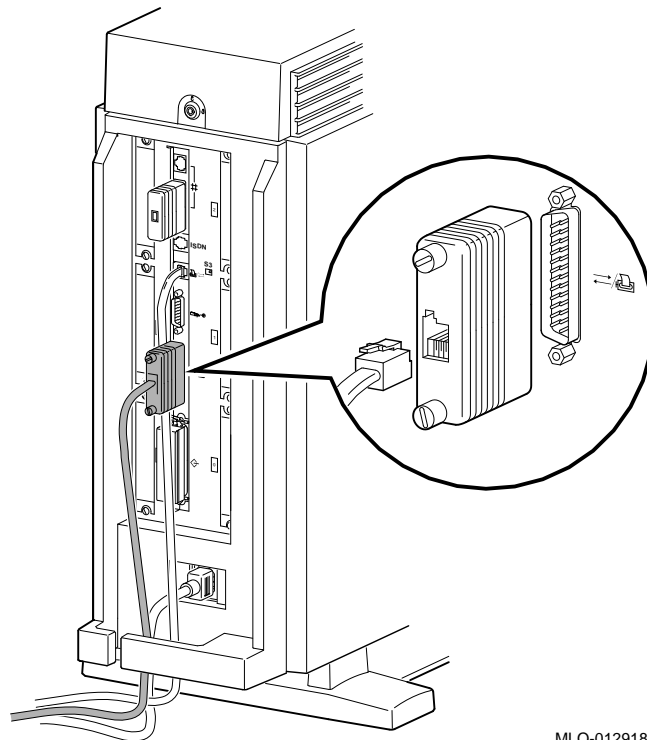
MLO-012918

Step 7: Check the Alternate Console Switch   The alternate console switch on the rear of the system unit directs console output to one of two destinations: a monitor (workstation) or an alternate console device, such as a terminal (server).

If you have connected a terminal to display console information, the switch should be in the left position as shown in Figure 4–8. Refer to Chapter 12 for more information on the alternate console switch.

Figure 4–8 Checking the Alternate Console Switch
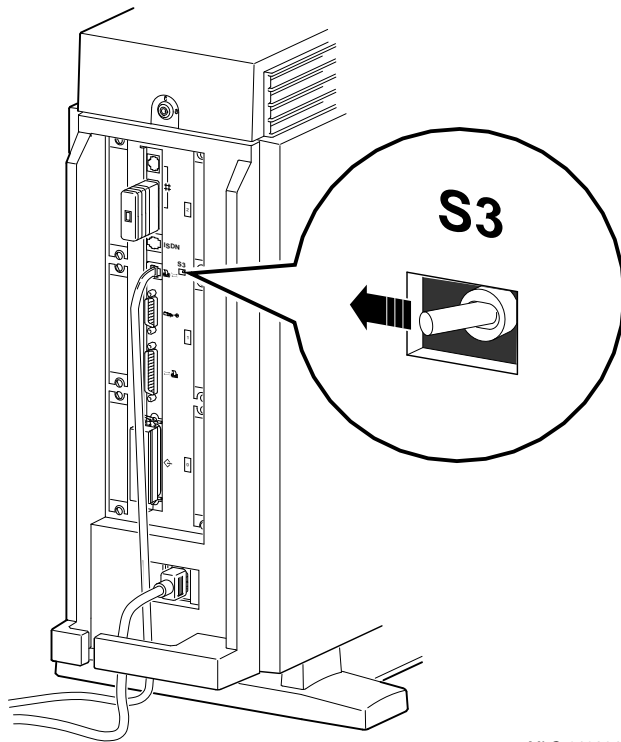
MLO-010894

System Unit Cover Lock

Additional System Unit Security

Your server comes with a cover lock on the system unit to provide additional security. The system is shipped with a set of two keys attached to the top cover of the system unit, as shown in Figure 4–9.

Figure 4–9 System Unit Cover Keys
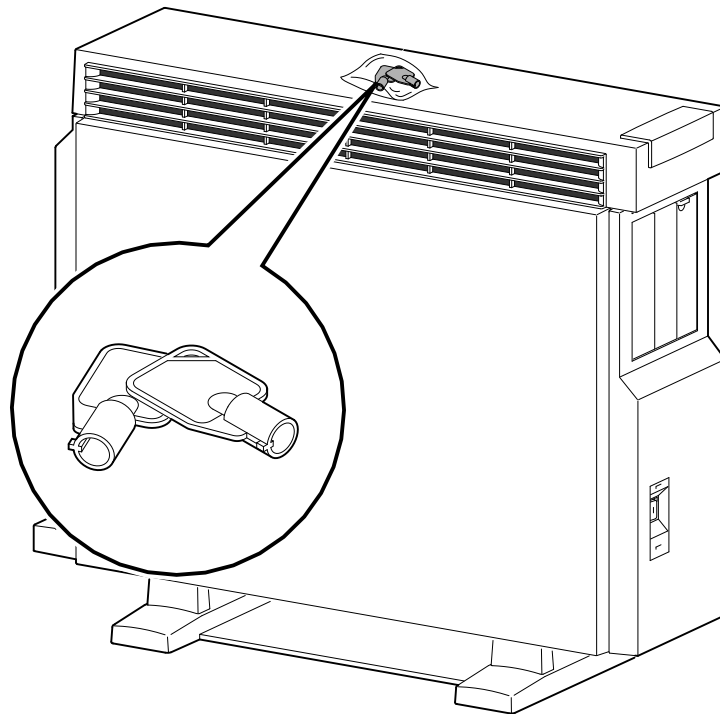
MLO-012896

**If You Lose the
Keys**

If you lose the keys to your sytem unit cover lock, you will need
to call your Digital service representative, as described in the
section on reporting problems to Digital services in Chapter 14.

**Locking the
Cover**

To lock the system unit, insert the key and turn it clockwise, as
shown in Figure 4–10.

Figure 4–10 Locking the System Unit Cover
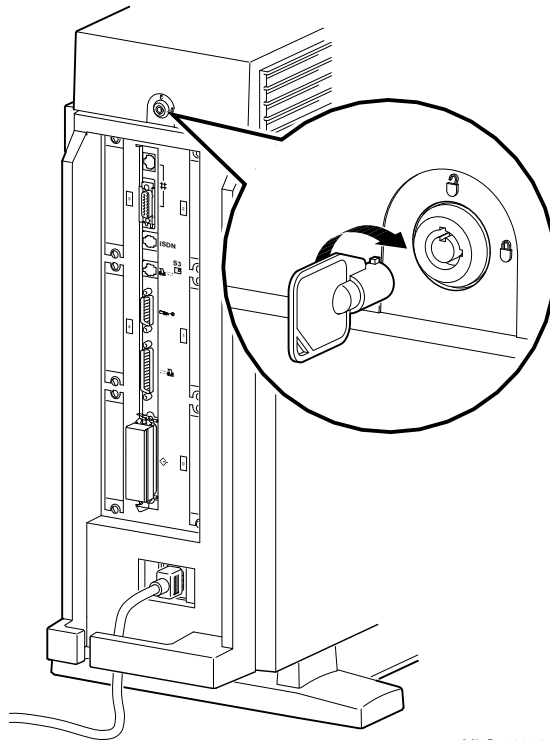
MLO-010985

Checking Your Installation

An Installed Server

Check your system against the diagram in Figure 4–11 to make sure you have connected everything correctly.

Figure 4–11   A Connected Server
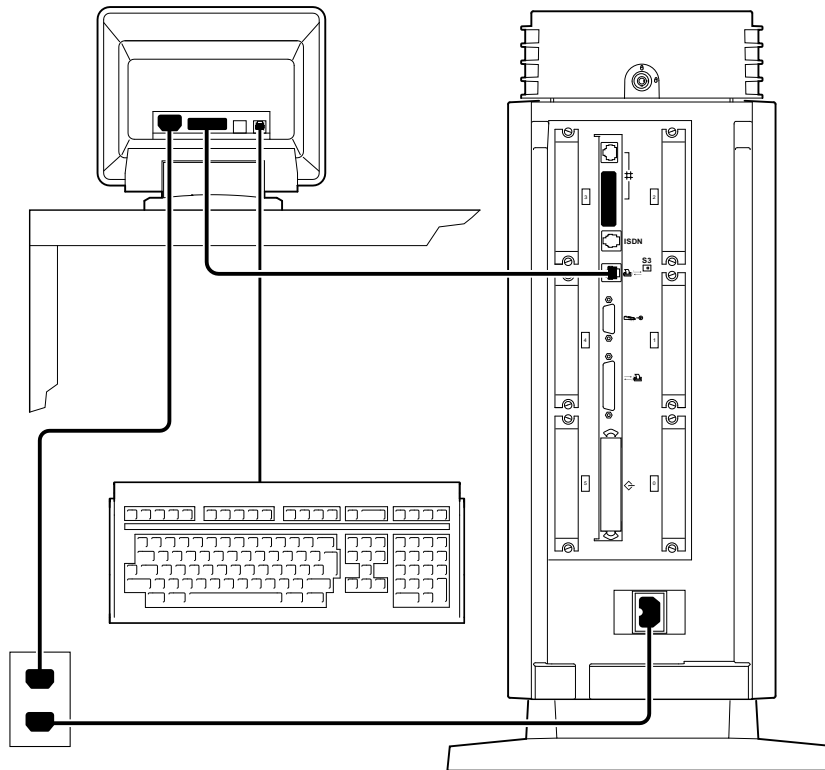
MLO-010895

Where to Go Next

**Determining
Your Next Step**

After you have completed the tasks in this chapter, refer to
Table 4–2 for information on where to go next.

Table 4–2   Where to Go Next

If you want to...	Go to...
Connect your system to a network	Chapter 5
Start up your system	Chapter 6

5

Connecting the System to a Network

Chapter Overview

Introduction At some point, you may want to connect your system to a network at your site. There are two parts to the task: making the hardware connections and establishing the networking software connection.

In This Chapter This chapter describes how to complete the hardware connections to a network. For the networking software connection, see your system or network administrator at your site.

This chapter covers the following topics:

- Before You Begin
- Connecting to an AUI Ethernet Network
- Connecting to a 10BASE-T Network
- Connecting to a 10BASE2 Network
- Setting and Verifying the Network Connection
- Completing the Network Connection

Before You Begin

**What You
Should Do First**

Before connecting your DEC 3000 Model 800/800S/900 AXP
system to a network, you need to:

1. Turn off your system if it is already on. See Chapter 7.

2. Determine the network type at your site.

3. Understand the network connectors on your system.

4. Obtain the correct Ethernet cables or connectors to connect to
    the appropriate network port on the rear of your workstation.

5. Obtain and register your network information, if necessary.

**Knowledge
Required**

The tasks described in this chapter require the same basic level
of hardware knowledge needed to install the system.

**Determining
Your Network
Type**

See your network administrator to find out the network type at
your site. If there is more than one network, find out to which
one you will be connecting your system.

Network Labels

For your convenience, network labels are shipped with your
system. Use the network labels to record pertinent information
about your system, such as the network node name and/or
number. You can adhere the label to the front of your system
behind the front access door on the front of the system. (See
Figure 2–10 for the location of the front access door.)

Available Networks

You can connect four different types of networking cables to your DEC 3000 Model 800/800S/900 AXP system:

1. AUI Ethernet

2. 10BASE2 (ThinWire) Ethernet (by attaching a DECXM transceiver to the AUI Ethernet port)

3. 10BASE-T Ethernet

4. ISDN (Integrated Services Digital Network), when available. See Chapter 1 for a description of the ISDN services and availability.

Network Cables and Adapters

Once you determine your network type, be sure that you have the cables and connectors listed in Table 5–1 before trying to connect your system to a network.

Table 5–1   Required Network Cables

Network	Cable	Adapter
AUI Ethernet	BNE4C-xx	–
10BASE-T Ethernet	BN24F-xx or BN26K-xx twisted-pair cable	–
10BASE2 (ThinWire) Ethernet	BNE4C-xx or BNE4D-xx, BC16M-xx ThinWire cable	DECXM-AA transceiver and H8225 ThinWire terminator[1]

[1]Terminator required only if DEC 3000 Model 800/800S/900 AXP system is the last system on a ThinWire cable

Registering Network Information

All networks require you to register network information, such as a node name and number. You must complete this task before you can start using your system on the network. See your system or network administrator for assistance.

Connecting to an AUI Ethernet Network

●

Procedure Overview

To connect your system to an AUI Ethernet network, sometimes referred to as thickwire or standard Ethernet, complete the steps in Table 5–2.

Table 5–2 Steps for Connecting an AUI Ethernet Network

Step	Action
1	Removing loopback connector.
2	Connect the AUI Ethernet cable.
3	Move the sliding lock.

Step 1: Loopback Connector

If the loopback connector is still connected to your system, remove it now. Keep the loopback connector in a safe place. You may need it later for testing purposes.

Step 2: AUI Ethernet Cable

Connect the AUI Ethernet cable (BNE4C–xx) to the AUI port on the rear of the system unit as shown in Figure 5–1. Be sure to attach the cable securely.

Figure 5–1 Connecting to an AUI Ethernet Network
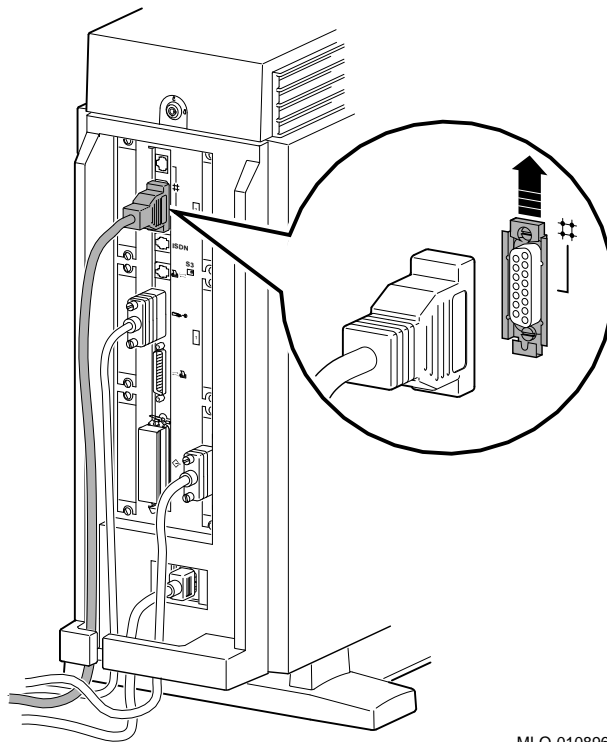
MLO-010896

Step 3: Sliding Lock

Push the sliding lock on the AUI Ethernet cable connector up, using your finger. The sliding lock prevents the cable from becoming disconnected.

Connect the other end of the cable to the AUI Ethernet network transceiver or DELNI unit.

Connecting to a 10BASE-T Network

●

**Procedure
Overview**

To connect your system to a 10BASE-T network, also called a
twisted-pair network, complete the following tasks.

1. Connect the 10BASE-T cable securely to the 10BASE-T port
   on the back of the system unit as shown in Figure 5–2.

2. Connect the other end of the cable to the network connection.

Figure 5–2   Connecting a 10BASE-T Network Cable
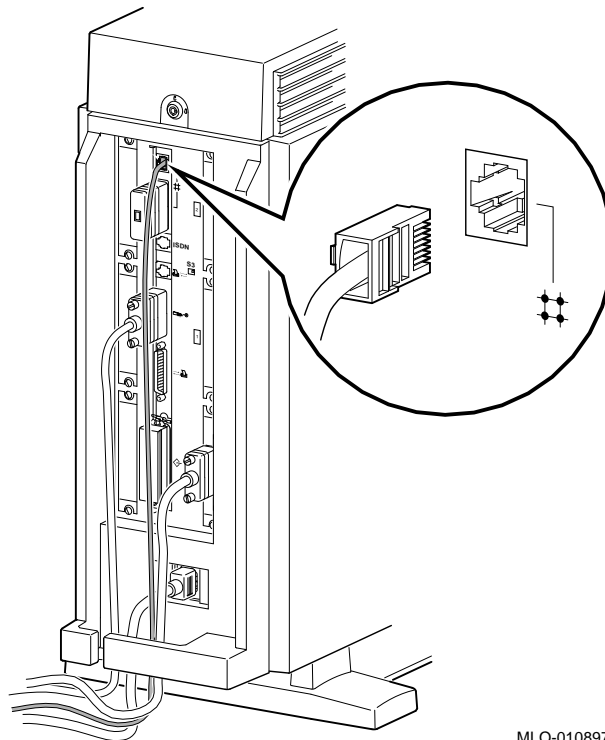
MLO-010897

Connecting to a 10BASE2 Network

■

**10BASE2
Ethernet
Connection
Procedure**

You can connect your system to a 10BASE2 Ethernet network by attaching an Ethernet cable (BNE4C–xx) to the AUI Ethernet port on the system unit, and then attaching a DECXM transceiver to the cable.

To connect your system to a 10BASE2 (ThinWire) Ethernet network, complete the steps listed in Table 5–3.

Table 5–3   Steps for Connecting a 10BASE2 Ethernet Network

Step	Action
1	Remove loopback connector.
2	Connect a standard Ethernet cable to the AUI port on the system unit.
3	Attach the cable to a DECXM transceiver.
4	Connect ThinWire cable and T-connector to the DECXM transceiver.
5	Terminate the T-connector (if necessary).

**Step 1:
Loopback
Connector**

If the Ethernet loopback connector is still connected to your system, remove it now. Keep the loopback connector in a safe place. You may need it for testing purposes later.

Step 2:
Ethernet Cable

Connect an AUI Ethernet cable to the AUI port on the rear of the system unit, shown in Figure 5–1 of this chapter.

Step 3:
DECXM
Transceiver

Connect the other end of the AUI Ethernet cable to the AUI port on the DECXM transceiver as shown in Figure 5–3.

Figure 5–3 Connecting the AUI Ethernet Cable to the DECXM Transceiver
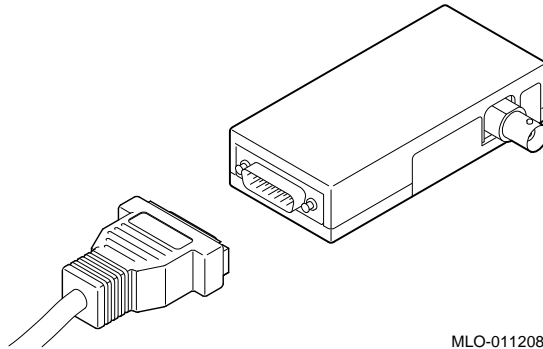
MLO-011208

**Step 4:
ThinWire
Cable and
T-Connector**

Connect the ThinWire network cable to the T-Connector and then the T-connector to the DECXM transceiver as shown in Figure 5–4.

Figure 5–4   Connecting the ThinWire Cable and T-Connector to the DECXM Transceiver

MLO-011209
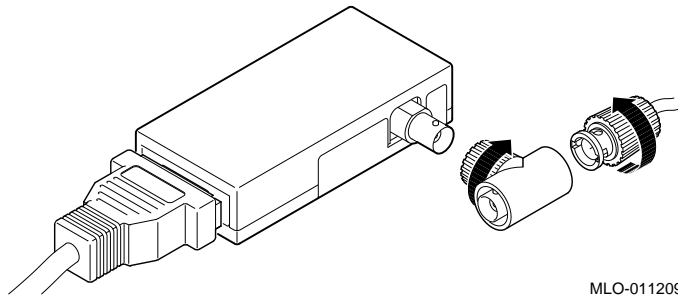
**Step 5:
Terminate
Connection**

If your workstation is the last one on a ThinWire network, you need to terminate the network connection. Do this by connecting a terminator, rather than a ThinWire network cable, to one side of the T-connector on the DECXM transceiver as shown in Figure 5–5.

Figure 5–5   Terminating the Ethernet Connection

MLO-011210
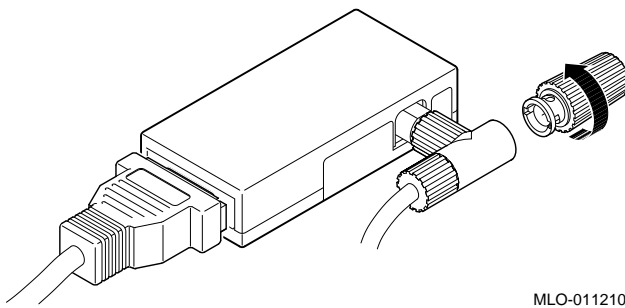
For information on correct settings for your DECXM, refer to
Table 5–4 for documentation shipped with the units.

Table 5–4 DECXM Documentation

For this transceiver or adapter...	See this document...
DECXM transceiver	*DECXM–AA Transceiver Installation*, Part Number EK–DECXM–IC.

Setting and Verifying the Network Connection

■

After Cable Connections

After completing the hardware network connections to your system, you must complete the following tasks:

1. Set the network connection type.

2. Verify the network connection.

Two Network Settings

There are two network settings recognized by your system–THICK for AUI Ethernet or 10BASE2 (ThinWire) Ethernet, and TENBT for 10BASE-T Ethernet. The default setting is THICK. See Table 5–5 for the network setting you should use.

Table 5–5   Network Settings

For this network...	Use this network setting...
AUI Ethernet	THICK
10BASE2 (ThinWire) Ethernet	THICK
10BASE-T Ethernet	TENBT

**Set the Network
Type**

You set the network type from console mode. To set the network
type, complete the following steps:

1. Start your system as Chapter 6 describes.

2. If your system does not stop at the console prompt after
   the startup tests, press the halt button on the front of
   your system unit to display the console prompt (>>>). See
   Figure 2–10 for the location of the halt button.

3. Enter the following command and press the Return key:

   ```
   >>> set ethernet network_type  Return
   ETHERNET = network_type
   ```

   The variable *network_type* is either THICK or TENBT,
   depending on which network you are using.

**Verify the
Network
Connection**

Once you have set the network type, you can verify the network
connections by entering the test ni command at the console
prompt as follows. The test ni command tests the Ethernet
network interface (NI).

```
>>>test ni  Return
```

**Successful
Result of
test ni**

If the test ni test is successful, you will see a display similar to
the following:

```
>>> test ni  Return

T-STS-NI - OK

>>>
```

**Error Detected
During test ni**

If the network test detects an error, you will see a display similar
to the following:

```
>>> test ni  Return

T-ERR-NI - Ext Lpbk test failed

?? 000 NI 0x00f2

  84 FAIL

>>>
```

If the Test Fails   When the system is connected to a heavily loaded active
network, failure may occur. If the `test ni` test fails, repeat
the test several times. If the test continues to fail, connect the
loopback connector as shown in Figure 4–2, and run the test
again. If an error message appears, see Chapter 13 for more
information.

Completing the Network Connection

●

Contact Your   Once you determine that your network cables are connected
Network   securely, and your system starts up and tests without errors,
Administrator   contact your network administrator to configure your workstation
as part of your network.

If your system displays any error messages during the startup
test, see Chapter 13 to determine the problem.

6
Starting Up the System

Chapter Overview

Introduction   Once you have installed your workstation or server and,
optionally, connected to a network, you are ready to start the
system.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Turning On the System
- Reviewing the Startup Display
- Starting a System with Factory-Installed Software
- Loading Operating System Software
- Where to Go Next

Before You Begin

**What You
Should Have
Done Already**

Before you start up your workstation or server system, you should have already completed the following tasks:

- The installation tasks described in Chapter 3 or Chapter 4.

- The network connection steps described in Chapter 5 if your system is to be networked.

If you have not performed these tasks, do so now.

**What You
Should Know
Beforehand**

The tasks in this chapter require some experience with computer tasks such as turning on the power switch, entering console commands, and responding to questions that appear on-screen during the factory-installed software procedures.

**Factory-Installed
Software**

Preconfigured workstation and server systems with an internal fixed disk drive include a factory-installed operating system.

Turning On the System

●

**Turning on
Your System
in the Correct
Order**

Whenever you turn your system on, always turn on the system unit last.

For example, if your system has a monitor or an expansion box connected to it, turn on the units in this order:

1. Monitor

2. Expansion box

3. System unit

By turning on your system components in the correct order, you help to ensure that your system can detect all connected devices.

**CAUTION:
System Unit
Cover**

If you have removed the system unit cover for any reason, be sure to replace it on the system unit and close it securely before turning on the system. It is important that the system unit cover and side panels be in place while the system is operating to insure proper cooling of the system components and devices.

Workstation Startup Procedure

To start up the DEC 3000 Model 800/900 AXP workstation system, perform the steps in Table 6–1.

Table 6–1 Steps for Starting a Workstation

Step	Description
1	Turn the monitor power switch to the On position (|).
2	Turn on the power switch to any other devices, such as a BA350 expansion box.
3	Turn the On/Off switch ❶ on the front of the system unit to the On (|) position, as shown in Figure 6–1.

Server Startup Procedure

To start up the DEC 3000 Model 800S AXP server system, perform the steps in Table 6–2.

Table 6–2 Steps for Starting a Server

Step	Description
1	Turn the terminal power switch to the On position (|).
2	Turn on the power switch to any other devices, such as a BA350 expansion box.
3	Turn the On/Off switch ❶ on the front of the system unit to the on (|) position, as shown in Figure 6–1.

The power indicator light ❷ on the front of the system unit lights if the system has started up successfully. If the power light does not come on, or the fan failure light ❸ comes on, see Chapter 13.

Figure 6–1 Turning On the DEC 3000 Model 800/800S/900 AXP System
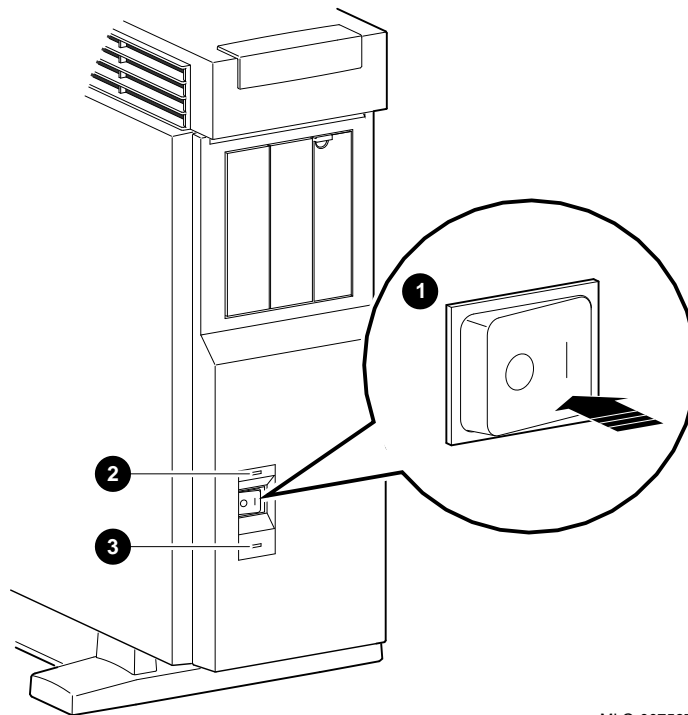
MLO-007597

What You Should See on a Workstation

When you turn on your workstation monitor and then the system unit, you should see the graphics option diagnostic startup tests displayed on the monitor screen. The monitor display will flash colors (if you have a color monitor), and change patterns for a few seconds, and then you should see a display similar to that in Figure 6–2.

What You Should See on a Server

If you have connected an alternate console device to your server system, you should see a system startup display similar to that shown in Figure 6–2 on your terminal screen.

No Startup Display

If you do not see a startup display on your monitor or alternate console device, see Chapter 13.

Reviewing the Startup Display

●

Startup Display   As your system starts up, it performs a series of diagnostic tests.
A display similar to the one in Figure 6–2 appears on the screen
before the console prompt appears. The console prompt is three
greater-than symbols (>>>).

Figure 6–2 Startup Display

```
DEC 3000 - M800
Digital Equipment Corporation
System conducting power up tests.
--------------------------------------------------

Devnam          Devstat
--------        ----------
    CPU         OK KN17-AA - V3.0-S080-IO60 - DECchip 21064 P3.0
   ASIC         OK
    MEM         OK  128MB
    NVR         OK
    SCC         OK  ptr(0) = Present keybd(2) = Present
     NI         OK  Ethernet Address: 08-00-2B-1D-1E-EF , THICK
   SCSI         OK
   ISDN         OK
    TC0         OK - PMAGB-BA
--------------------------------------------------
System power up OK.
Enter B to boot software from DKA300

>>>
```

**Understanding
the Startup
Display**

The startup display provides the status of hardware components
in your system. The two columns provide the following
information:

• Devnam indicates the device (or component) name

• Devstat lists the device status following the initial hardware
  startup tests.

Table 6–3 describes the startup display in more detail.

Table 6–3   Startup Display Information

Item	Description
CPU	Lists the revision level of the system board, the firmware revision numbers and the type of processor.
ASIC	Status of application-specific integrated circuits (ASICs) on the system board and on the I/O board.
MEM	Total amount of memory and its status.
NVR	Status of non-volatile RAM and time-of-year (TOY) component.
SCC	Status of the Serial Communication Controller, which includes the keyboard and mouse tests.
NI	Status of the Ethernet network interface (NI).
SCSI	Status of SCSI bus.
ISDN	Status of ISDN/Audio chip.
TC0	Status of TURBOchannel device(s). There are six TURBOchannel slots available: 0, 1, 2, 3, 4, and 5. This example indicates one TURBOchannel device installed in slot 0.

Startup Errors

If you see any error messages on the startup display screen, see Chapter 13 for more information.

The show Commands

The `show` console commands test your system and display the status of its components, memory modules, and optional devices. The `show config` command lists the status of system components, revisions, and installed TURBOchannel options. The `show device` command lists the status of the Ethernet interface and any optional devices, such as SCSI internal disk drives. For information about using these commands and interpreting the results, see Chapter 13.

If You Have a Server

Ensure that the server environmental variable is set to on. See Chapter 10 for more information.

Starting a System with Factory-Installed Software

Factory-Installed Software Procedure

If your system has factory-installed software (a yellow label was covering the power connector), the factory-installed software startup procedure will run the first time you start your system.

Factory-Installed Software Documentation

For more information about using the factory-installed software on your system, refer to the documents listed in Table 6–4. Depending on the operating system ordered with your system, one of these documents is included with your shipment.

Table 6–4   Factory-Installed Software Documentation

For information on...	Refer to the...
OpenVMS AXP operating system	*OpenVMS AXP Factory Installed Software (FIS) User Information* shipped with your system.
DEC OSF/1 AXP operating system	*DEC OSF/1 AXP Factory-Installed Software (FIS) User Information* shipped with your system.

OpenVMS AXP Initial Startup Screen

If your system has the OpenVMS AXP operating system factory-installed, you will see a display similar to the one shown in Figure 6–3 when you first turn on your system and after the system startup messages are completed.

Figure 6–3 OpenVMS AXP Initial Startup Display

```
+--------------------------------------------------------------------+
|                      OpenVMS Operating System                      |
|                                                                    |
|                Factory Installed Software Procedure                |
+--------------------------------------------------------------------+

Welcome to the OpenVMS Factory Installed Software (FIS) procedure.

Please wait while the FIS procedure initializes the system.  This will
take between one and five minutes, depending on the type of computer.

System initialization continuing,  please wait...
System initialization continuing,  please wait...
System initialization continuing,  please wait...
```

OpenVMS AXP Startup Dialog

The OpenVMS AXP Factory Installed Software (FIS) procedure that runs when you first start your system prompts you to answer some questions, and then restarts your system. To get help on any question, press ? and press the Return key at any of the prompts. Follow the instructions on the screen to complete the dialog.

Log In to Your System

After the OpenVMS AXP Factory Installed Software (FIS) procedure is complete, you can log in to your system as follows:

• If your system is configured as a workstation, the DECwindows Motif Start Session screen, shown in Figure 6–4 will be displayed.

Figure 6–4 OpenVMS AXP DECwindows Motif Start Session Screen
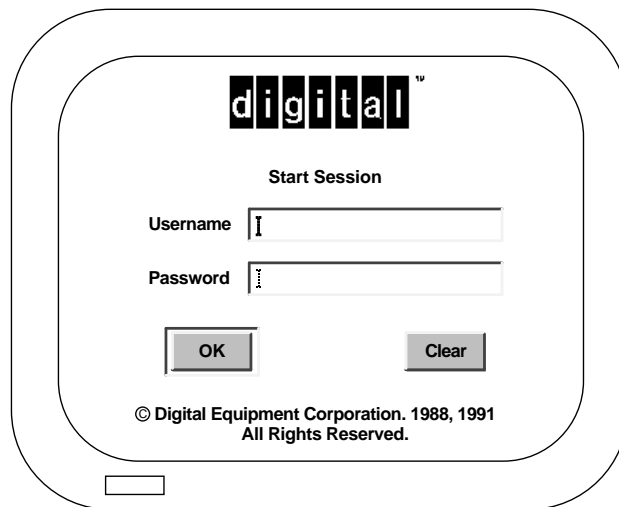
ZK–3620A–GE

- If your system is a server and you have connected an alternate console device, press the Return key to display the Username login prompt, and continue as follows.

Screen Prompt:	Your Input:
Username:	Type SYSTEM, and press Return to get to the next prompt.
Password:	Enter the password you entered during the FIS procedure, and press Return to continue.

DEC OSF/1 AXP Initial Startup Screen

If your system has the DEC OSF/1 AXP operating system factory-installed, you will see a display similar to the one shown in Figure 6–5 when you first turn on your system and after the system startup messages are completed.

Figure 6–5 DEC OSF/1 AXP Initial Startup Display

```
***********************************************************
*   Welcome to the DEC OSF/1 AXP(tm) Factory-Installed   *
*   Software Startup Procedure.                          *
***********************************************************

During this startup procedure, you will be prompted to enter
the following information:

 o  a system name

 o  a new superuser password

 o  your local time zone

 o  the date and time

To discontinue this procedure and halt your system,
enter n at the following prompt.

Would you like to continue?  (y/n):
```

DEC OSF/1 AXP Startup Dialog

The DEC OSF/1 AXP Factory-Installed Software procedure that runs when you start your system prompts you to answer some questions and gives you instructions for completing installation of your DEC OSF/1 AXP operating system.

Log In to Your System

After the DEC OSF/1 AXP FIS procedure completes, you can log in to your system as follows:

- If your system is configured as a workstation, the DECwindows Motif Start Session screen shown in Figure 6–6 will be displayed.

Figure 6–6   DEC OSF/1 AXP DECwindows Motif Start Session Screen
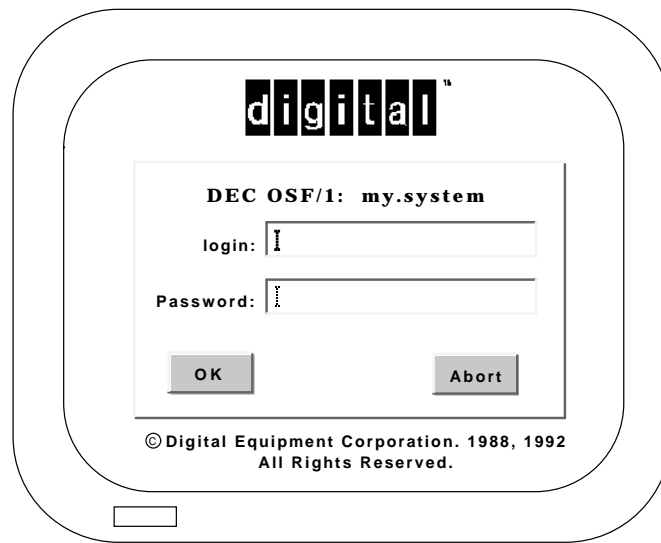
ZK–0766U–R

- If your system is a server and you connected a terminal as an alternate console device, continue as follows at the login prompt.

Screen Prompt:	Your Input:
login:	Type root, and press Return to get to the next prompt.
Password:	Enter the password you entered during the FIS procedure, and press Return to continue.

Loading Operating System Software

No Factory-Installed Software

If your system was not preconfigured with an internal fixed disk drive, you do not have factory-installed software on your system. To install the operating system, you must start your system and load your operating system software from a compact disc. Instructions for handling and using compact discs are included with the operating system software.

Loading the Operating System

Loading your operating system software from a compact disc requires specific operating system instructions. These instructions are available in the documents listed in Table 6–5. These documents are included with your operating system software shipment.

Table 6–5 Start the Operating System

For this operating system...	Refer to...
OpenVMS AXP	*OpenVMS AXP Upgrade and Installation Manual*
DEC OSF/1 AXP	*Guide to Installing DEC/OSF1 Alpha*

Note: OpenVMS AXP Conversational Boot

If your system hangs or fails to boot completely, you may need to perform a conversational boot, also known as a minimum boot. Information on this procedure is described in detail in the document listed in Table 6–5.

Where to Go Next

**After Your
System Starts**

Once your workstation or server has started, use Table 6–6 to determine what to read next.

Table 6–6 Where to Go Next

If you want to...	Go to...
Start using your system	Your operating system or application software documentation for more information.
Change the default startup procedure for your system	Chapter 10

7
Turning Off the System

Chapter Overview

Introduction   This chapter describes the steps you should take to turn off your system.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Task Overview
- Shutting Down the System
- Halting the System

Before You Begin

What You Should Do First

Before turning off your system, determine the current status of your workstation or server system, as Table 7–1 describes.

Table 7–1 Current System Status

If your system is...	Then you should...
Networked, or part of a cluster	See your system manager before shutting down your system.
Not networked, but running the operating system	See Step 1: Shut Down Operating System.
At the console prompt (>>>)	See Step 2: Turn Off the Hardware.

What You Should Know Beforehand

Shutting down your system may require knowledge of file backup and operating system shutdown procedures.

The following privileges may also be required:

- For the OpenVMS AXP operating system, the shutdown procedure usually requires certain software privileges

- For the DEC OSF/1 AXP operating system, you may require superuser privileges to shutdown the system

If you do not have the required system privileges, ask your system manager for assistance in this task.

Task Overview

**System
Shutdown
Steps**

Table 7–2 gives an overview of the steps involved in shutting
down your system.

Table 7–2 Steps to Shutting Down Your System

Step	Action
1	Shut down the operating system (if it is running).
2	Turn off the hardware.

Shutting Down the System

■

**Step 1:
Shut Down
Operating
System**

If your system is connected to a network or is part of a cluster, be sure to contact your system manager for further instructions before shutting down the operating system on your system.

Refer to the documentation in Table 7–3 for information about the operating system shutdown procedure:

Table 7–3 Operating System Shutdown Procedure

For...	Refer to...
OpenVMS AXP	*OpenVMS AXP Upgrade and Installation Manual* or the *OpenVMS System Manager's Manual*
DEC OSF/1 AXP	*System Management, Vol 2, Guide to System Shutdown and Startup.*

**Step 2:
Turn Off the
Hardware**

After shutting down the operating system software, you can turn off the hardware by completing the following steps. Server systems may not have a monitor.

1. Turn off (O) the system unit by pressing the On/Off switch, Figure 7–1.

2. Turn off (O) all expansion boxes.

3. Turn off (O) all peripheral devices (such as printers and modems).

4. Turn off (O) the monitor.

Figure 7–1 Turning Off the System Unit
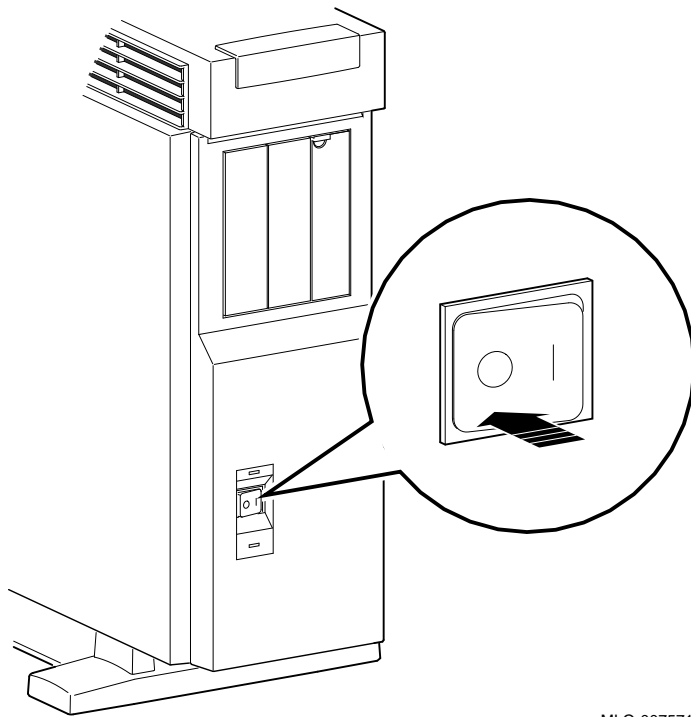
MLO-007571

Halting the System

When to Halt the System

While turning off the hardware usually requires that you first run the operating system shutdown procedures, it may be necessary to halt your system for other reasons. Halting the system returns control from program mode (operating system) to the console mode, and displays the console prompt (>>>).

Table 7–4 describes when to halt the system.

Table 7–4   Halting the Operating Systems

For this operating system...	Halt the system if you...
DEC OSF/1 AXP	Cannot run the operating system shutdown procedures and need to reboot the system. Do not halt the system while the operating system is actively running, since you may lose data or damage the system disk.
OpenVMS AXP	Cannot run the operating system shutdown procedures and need to reboot the system
	Want to return to console mode to issue the console commands listed later in this chapter.

Table 7–2 lists the documentation describing operating system shutdown procedures.

**Pressing the
Halt Button**

To halt the system, locate the halt button on the front of the
system unit, press it once and release it, as shown in Figure 7–2.

Figure 7–2 Pressing the Halt Button
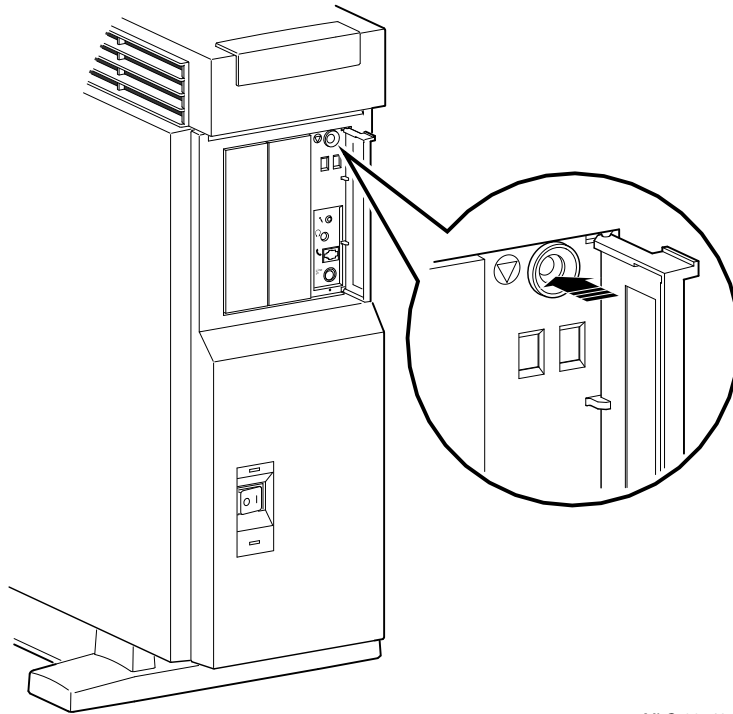
MLO-007497

System Halt Display

When you press the halt button, you may see a system halt message similar to the one shown in Figure 7–3.

Figure 7–3 System Halt Message

```
>>>
  ?02 EXT HLT
    PC= 00000000.20000000   PSL= 00000000.00001F00
```

This message indicates that the halt button has been pressed. It does not signify an error. Note that a halt message is not always displayed.

If you have halted your system to access console commands, you can continue now.

Console Commands You Can Issue

You can use only the following commands when your system is halted while running the OpenVMS AXP operating system:

- continue, to exit from console mode on the alternate console and return to the operating system

- help

- help advanced

- help mips_emulator

- help set

- help show

- printenv

- set

- show

Using other console commands may affect memory contents and thus prevent the system from being able to return to the operating system.

**Returning to
Program Mode**

To return to the program mode of your operating system, enter
the `continue` command as follows:

>>>continue `Return`

You can return to program mode only if you were running the
OpenVMS AXP operating system and you are using an alternate
console.

8
Maintaining the System

Chapter Overview

Introduction
While your system is designed to function in a range of environmental conditions, it is an electrical device that should be treated with care and maintained properly.

Correct use and maintenance of your system unit, monitor, keyboard, and mouse not only ensures that the system functions properly, but also helps avoid more serious problems that could cause permanent damage.

In This Chapter
This chapter covers the correct use and maintenance of your system, but does not cover the maintenance that your Digital service representative can perform. The following topics are included:

- Before You Begin
- Maintaining the System Unit and Keyboard
- Cleaning the Monitor
- Cleaning the Mouse
- Removing the Front Access Door

Before You Begin

**What You
Should Do
First**

Before performing any maintenance tasks, take these steps:

1. Complete the tasks outlined in Chapter 7 to turn off your system.

2. Prepare any cleaning materials you may need.

You can then complete your system maintenance tasks.

Maintaining the System Unit and Keyboard

**Caring for the
System Unit**

The system unit requires adequate ventilation. Ideally, the system unit should be positioned in as dust-free an environment as possible. Also, never position the system unit in direct sunlight where it may become too hot.

Clean your system regularly by wiping dust and particles from the system unit and the keyboard with a soft cloth.

**CAUTION: Food
and Liquid**

Do not place food or liquid on or near your system.

Liquid on the System Unit

If you inadvertently spill liquid on the system unit and it goes inside, turn off the system as soon as possible and contact your Digital service representative as indicated in Chapter 13.

Accidental Spills on the Keyboard

While care should be taken not to spill food or liquid on the system unit or the keyboard, follow these steps if you spill water on the keyboard:

1. Unplug the keyboard from the system unit.

2. Wipe up the excess water immediately.

3. Turn your keyboard over to drain any remaining water.

4. Leave the keyboard to dry on its own for several hours before connecting it to your system again.

If the keyboard does not work correctly when you reconnect it, contact your Digital service representative, as described in Chapter 13.

If you spill something like a carbonated drink, tea, or coffee on the keyboard, disconnect the keyboard from the system unit and call your Digital service representative immediately.

Cleaning the Monitor

●

Cleaning Procedure

To clean the monitor screen, follow these steps:

Step	Action	Result or Comment
1	Turn the monitor power switch to the off position (O).	The monitor is powered off.
2	Using any reputable household glass cleaner, spray the cleaner onto a soft cloth and wipe the screen.	Do not spray the cleaner directly onto the monitor screen.
3	Remove dust and particles from the monitor casing with a soft, dry cloth.	

Cleaning the Mouse

●

When to Clean the Mouse

Clean the outside of the mouse with a soft damp cloth whenever necessary.

When to Clean the Rubber Ball

If the arrow or pointer on your screen does not move freely as you direct it with the mouse, you may need to clean the rubber ball inside the mouse as Table 8–1 describes.

Table 8–1 Steps for Cleaning the Mouse

Step	Description
1	Turn the mouse upside down and remove the cover plate ❶ as shown in Figure 8–1.

Figure 8–1 Removing/Replacing the Mouse Cover Plate

MLO-010355
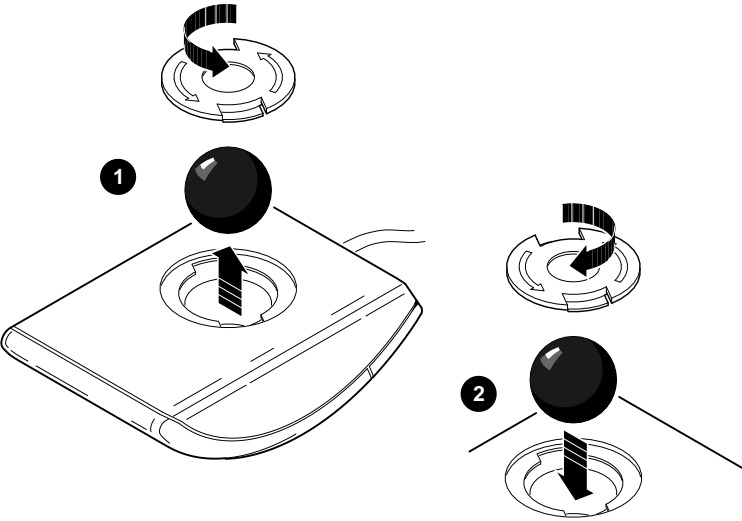
| 2 | Remove the rubber ball and clean it with lukewarm water. If necessary, use a mild soap. Do not use any kind of organic solvents to clean the rubber ball as they can damage the coating. Dry the rubber ball with a soft cloth. |
| 3 | Return the rubber ball to the mouse unit and replace the cover plate ❷ making sure that it is locked into position so that the rubber ball cannot fall out. |

Removing the Front Access Door

●

Procedure to Remove Front Access Door

If you wish to remove the front access door to have improved access to the audio ports, halt switch and indicator lights, follow the steps listed in Table 8–2 and see Figure 8–2.

Note that your system serial number is duplicated on the door.

Table 8–2 Steps to Remove the Front Access Door

Step	Procedure
1	Place thumbs in center of front access door
2	Place index fingers on either end of door
3	Gently apply pressure to middle of door with thumbs
4	As door is bent inward, slide door free of hinge

Figure 8–2 Removing the Front Access Door
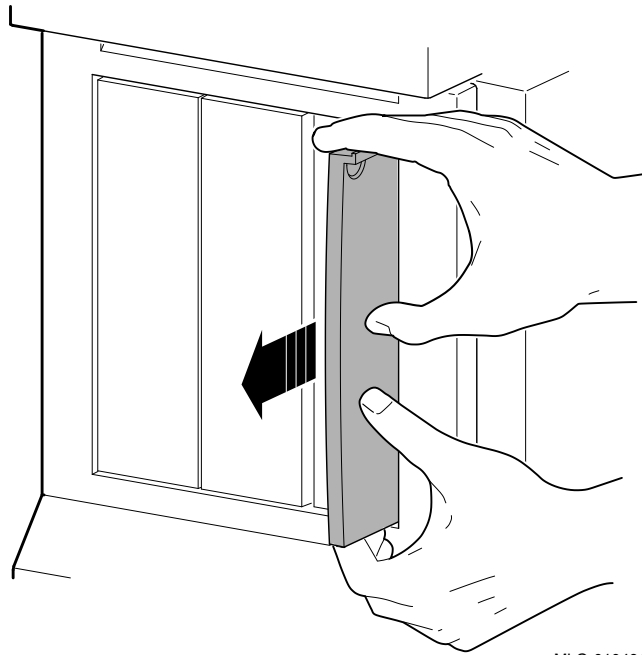
MLO-010461

Part II

Advanced Operations

Part II describes how to perform advanced operations with the DEC 3000 Model 800/800S/900 AXP system. This part includes the following chapters:

Chapter	Title
9	Using Console Commands
10	Changing Environment Variables
11	Using the Password Security Feature
12	Using an Alternate Console

9

Using Console Commands

Chapter Overview

Introduction This chapter explains how to use the system in console mode and describes some of the available console commands.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Modes of System Operation
- Console Mode User Interface
- Console Commands
- The boot Command
- The continue Command
- The halt Command
- The help Command
- The help advanced Command
- The set or setenv Command
- The show or printenv Command
- The test Command

Before You Begin

What You Should Do First

Before using any console commands, you should complete these tasks:

- Put your system in console mode. If your system is not displaying the >>> prompt, refer to Chapter 7 to shut down your operating system and/or halt your system.

- Read this entire chapter before continuing.

What You Should Know Beforehand

Using console commands requires at least an intermediate, and sometimes advanced, knowledge of your system and its components, and the effect that console commands can have on your system.

CAUTION: Control of System Devices

Console commands control system devices and memory. Do not use console commands without fully understanding the effect that they can have on your system.

For instance, some advanced-level commands, such as deposit and set let you manipulate nonvolatile and system memory. Using the deposit command to place a value in a location of memory containing the actual console firmware could either hang the system or prevent it from restarting after it was powered off.

If you are not sure about using console commands, ask your system manager for help.

Advanced Console Command Information

This document does not describe all console commands, especially those commands requiring extensive technical knowledge. For a complete description of all console commands and how to use them, see the *DEC 3000 Models 600/600S AXP and 800/800S AXP Service Information* and the *DEC 3000 Models 700 AXP and 900 AXP Service/Upgrade Information Addendum*.

Modes of System Operation

Two Modes of Operation

Your system can run in either of two modes:

1. Console mode
2. Program mode

Console Mode: Definition

In console mode, the system operates under the control of the console subsystem, rather than the operating system. All user input is passed directly to the console.

Console mode is in effect when the system is turned on and the operating system software has not been started, or has been interrupted, by pressing the halt button, for example.

Program Mode: Definition

In program mode, the system and console are under control of the operating system. All user input is passed to the operating system. You cannot issue console commands without returning to console mode.

Program mode is in effect when the system is turned on and the operating system software has started. In program mode, the user can manage the system, run software applications, and perform network tasks.

When Console Mode is Used

By definition, you will interact directly with the console subsystem under the following circumstances:

*   Before booting the operating system software
*   While setting environment variables (see Chapter 10)
*   When using the Firmware Update Utility (see the *Alpha AXP Systems Firmware Release Notes* for more information)
*   When trying to identify and resolve system problems or errors (see Chapter 13)

Console Mode User Interface

Console Interface Components

The console mode user interface is made up of the following elements:

- Console prompt
- Special keys and control characters
- Console commands

Console Prompt

The console mode prompt looks like this:

>>>

You can enter control characters and console commands at the console prompt.

Console Mode Keys and Control Characters

Control characters are entered by holding down the key labeled Ctrl while pressing another key, for example, Ctrl/C .

Table 9–1 lists the keys and control characters that you can use while operating in console mode.

Table 9–1 Supported Keys and Control Characters

Key or Control Character	Function
Return	The Return key executes the command that you enter at the console prompt.
⊲x̄	The delete key deletes one character to the left of the current command line position. On video terminals, deleted characters will be erased from the screen. On hardcopy terminals, deleted characters display within a pair of backslash delimiters (\ \) as they are deleted.
Ctrl/C	This character aborts the current command. This command has no effect once control has been passed from console mode to another program, such as the operating system or a loadable diagnostic application. This command appears as ^C on the screen.
Ctrl/O	This character suppresses output to the console terminal until the Ctrl/O control character is pressed again. This command appears as ^O on the screen.
Ctrl/S	This character suspends output to the console terminal until you press Ctrl/Q.
Ctrl/Q	This character resumes the display that was previously suspended by pressing Ctrl/S.

Console Commands

Levels of Commands

Console commands can be divided into two groups:

- Basic
- Advanced

Basic Console Commands List

All of the basic commands are described in this document. Table 9–2 lists the basic commands and indicates where you can find information about using them.

Advanced Console Commands List

It should rarely be necessary for you to use the advanced console commands. Table 9–3 provides a brief explanation of the advanced commands and tells where to find information about using them. The remainder of this chapter deals primarily with the basic console commands.

Table 9–2 Basic Console Commands

Command	Function	See
boot	Starts the operating system or other loadable software	The boot Command
continue	Returns from console mode to operating system level	The continue Command
halt	Halts the system	The halt Command
help	Displays help for console commands	The help Command
help advanced	Displays help about comprehensive help commands	The help advanced Command
help mips_emulator	Displays help for various TURBOchannel device tests	The help Command
help set	Displays information about the set or setenv command	The help Command
help show	Displays information about the show or printenv command	The help Command
printenv	Shows environment variables	The show or printenv Command, Chapter 10, and Chapter 14
set	Sets an environment variable	The set or setenv Command and Chapter 10
setenv	Sets an environment variable	The set or setenv Command and Chapter 10
show	Shows environment variables	The show or printenv Command, Chapter 10, and Chapter 14
test	Executes diagnostic tests	The test Command and Chapter 14

Table 9–3 Advanced Console Commands

Command	Function	See
deposit	Writes to specific memory, I/O, and register locations from the console	The help advanced Command
examine	Displays contents of specific memory, I/O, and register locations from the console	The help advanced Command
initialize	Initializes the console, a device, or a specified processor	The help advanced Command
login	Accesses the system when the password security feature is in use	Chapter 11
repeat	Executes diagnostic tests repeatedly	The help advanced Command
start	Starts program execution at a given address	The help advanced Command

The boot Command

Description

The `boot` command initializes the system and starts the boot program, which loads and starts the operating system software.

Command Syntax

Issue the `boot` command using the following syntax:

```
>>> boot <-flags> <-filename> boot_device Return
```

Command Description

The `boot` command and its parameters are described in Table 9–4.

Table 9–4 Boot Command Parameters/Qualifiers

Parameter	Specified as	Description
-flags	-fl *<value>*	ASCII string of up to 23 characters.
-filename	-fi *<filename>*	A filename of up to 23 characters, used when booting to specify the name of a file to load into the system. The filename must be enclosed in quotation marks and typed in exactly the form recognized by the device.
boot_device	Device name, such as DKA200	A device from which the system attempts to boot.

Default Boot Flags

If you do not use the -fl parameter with the `boot` command, the system uses the value stored in the environment variable `boot_osflags`, which defaults to 0, 0.

Information about using boot flags is provided in your operating system documentation:

For the...	Refer to the...
OpenVMS AXP operating system	*OpenVMS AXP Upgrade and Installation Manual*
DEC OSF/1 AXP operating system	*Guide to Installing DEC/OSF1 Alpha*

Overriding the Default Boot Flag Value

You can override any current default settings by specifying a parameter with the `boot` command, for example:

```
>>> boot -fi "myboot.com" Return
```

The parameter you specify overrides any current default settings, but does not change the default values stored as environment variables. See Chapter 10 for information about changing environment variables.

Boot Device Naming Conventions

You can specify the boot device name in two ways, using either an OpenVMS- or a DEC OSF/1-style device name. Table 9–5 provides a list of the device naming conventions, which can be used for the boot command in either operating system. The command syntax is described in the example `boot` commands that follow Table 9–5.

Table 9–5 Device Naming Conventions

OpenVMS AXP	DEC OSF/1 AXP	Device Type
DK	RZ	Fixed or removable disk
MK	TZ	Tape
ES	ES	Ethernet, MOP protocol
N/A	EZ	Ethernet, BOOTP protocol

For operating system-specific information about how to use the `boot` command, see your operating system documentation. Refer to Table 6–5 for more information.

**Example:
OpenVMS AXP
boot Command**

The following example indicates the command to boot the
OpenVMS AXP operating system from a fixed disk drive with the
default flags:

```
>>> boot dka100  Return
```

The device name elements in this boot command are defined as
follows:

- dk–the device type, in this instance an internal fixed disk
  drive

- a–the SCSI device controller (could be a or b)

- 100–the SCSI ID number

**Example: DEC
OSF/1 AXP
boot Command**

The following example indicates the command to boot the DEC
OSF/1 AXP operating system with the default flags from an
internal fixed disk drive:

```
>>> boot rz1a  Return
```

The device name elements of the OSF/1-style boot command are
defined as follows:

- rz–the device type, in this instance an internal fixed disk
  drive

- 1–the SCSI ID number (unlike the OpenVMS-style command,
  only the single digit number is used, such as 1 rather than
  100)

- a–the SCSI device controller (could be a or b)

**TURBOchannel
Command
Syntax**

To boot from a TURBOchannel device, issue the boot command
using the following syntax:

```
>>> boot "#/device" <-flags> <-filename>  Return
```

where # is the slot number of the device and device is the device
name.

**Example:
TURBOchannel
boot
Commands**

The following commands indicate how to:

- boot from a TURBOchannel Ethernet option card in
  TURBOchannel slot 1, using the MOP protocol:

  ```
  >>> boot "1/esa0"  Return
  ```

- boot from a TURBOchannel SCSI option card in
  TURBOchannel slot 1, using the BOOTP protocol:

  ```
  >>> boot "1/ez0"  Return
  ```

- boot from device dka400 connected to TURBOchannel slot 2:

  ```
  >>> boot "2/dka400"  Return
  ```

- perform a MOP boot from a device connected to
  TURBOchannel slot 3:

  ```
  >>> boot "3/esa0" -fi "filename.sys"  Return
  ```

- perform a BOOTP boot (tftp) from a device connected to
  TURBOchannel slot 4:

  ```
  >>> boot "4/ez0" -fi "/tmp/vmunix"  Return
  ```

The continue Command

Description

The `continue` command returns the system to operating system level after console mode has been invoked.

DEC OSF/1 AXP Operating System

This command is not applicable for systems running the DEC OSF/1 AXP operating system. You can halt the system, enter console commands, and then return to program mode using the `continue` command only on systems running the OpenVMS AXP operating system.

Command Syntax

Issue the `continue` command as follows:

```
>>> continue  Return
```

Your operating system should resume execution after you enter this command, providing that the contents of memory used by the operating system have not been altered or corrupted. Commands that can corrupt or alter system memory include the `test`, `init`, and `deposit` commands.

The halt Command

Description

The `halt` command halts the system. There are no parameters associated with this command.

Command Syntax

Issue the `halt` command as follows:

>>> halt [Return]

The system halts and the following message displays:

```
   ?2E HLTD

 >>>
```

The help Command

Description

The `help` command displays a brief list of console commands, parameters, and qualifiers. You can specify one of the following topics with the `help` command, to display specific information:

- `help mips_emulator`
- `help set`
- `help show`

Command Syntax

Issue the `help` command as follows:

>>> help [Return]

Your system displays a list of topics similar to the following:

```
BOOT
HELP ADVANCED
INITIALIZE
SET[ENV] <envar> <value>
SHOW | PRINTENV [<envar>]
TEST
>>>
```

**Command
Example**

The following command indicates how to obtain help on the `show`
command:

>>> `help show` `Return`

The system responds with the following display:

```
PRINTENV |
SHOW { AUTO_ACTION     | BOOTDEF_DEV    | BOOT_OSFLAGS  |
       BOOT_RESET      | CONFIG         | DEVICE        |
       DIAG_LOE        | DIAG_QUICK     | DIAG_SECTION  |
       ENABLE_AUDIT    | ETHERNET       | ERROR         |
       FAST_SCSI_A     | FAST_SCSI_B    | LANGUAGE      |
       MEMORY          | MOP            | RADIX         |
       SCSI_A          | SCSI_B         | SCSI_RESET    |
       SECURE          | SERVER         | TRIGGER       |}

    >>>
```

The help advanced Command

Description

The `help advanced` command displays a list of all help topics
available, including advanced console commands, parameters,
and qualifiers.

**Command
Syntax**

Issue the `help advanced` command as follows:

>>> `help advanced` `Return`

**Command
Example**

When you issue the `help advanced` command, your system
displays a list of topics similar to the following:

```
BOOT [- FL <bflg> ] [-FI <filnam> ] <devlist>
CONTINUE
DEPOSIT [{-B | -W | -L | -Q | -A }][{-PM | -VM }][-G][-U][-N:<n>]
        [{<addr> | <sym>| + | - | * | @ } [<datum>]]
EXAMINE [{-B | -W | -L | -Q | -A }][{ -PM | -VM }][-G][-U][-N:<n>]
        [{<addr> | <sym>| + | - | * | @ }]
HALT
HELP [MIPS_EMULATOR | SET | SHOW]
INITIALIZE
LOGIN
REPEAT <cmd>
SET[ENV] <envar> <value>
SHOW | PRINTENV <envar>
START <addr>
TEST <devnam> [<tstnam>]
```

The set or setenv Command

Description

The `set` or `setenv` command lets you set an environment
variable.

**Command
Syntax**

Issue the `set` or `setenv` command as follows:

>>> setenv *environment_variable* `Return`

The *environment_variable* parameter can be any of the
environment variables listed in Table 10–1. Setting the password
environment variable is described in Chapter 11.

**Command
Example**

See Chapter 10 to see how to use the `set` command to change
environment variables.

The show or printenv Command

Description

The show or printenv command provides information about the current setting for one or all environment variables. Entering the show or printenv without a parameter displays a list of all current environment variable settings.

Command Syntax

Issue the show or printenv command as follows:

>>> show *variable_name* [Return]

In the command above, *variable_name* can be any of the environment variables described in Chapter 10.

Command Example

To show the current setting for the auto_action environment variable, enter the following command:

>>> show auto_action [Return]

The system responds with the following information:

```
AUTO_ACTION=HALT
>>>
```

Information about the show command is also provided in Chapter 10.

The test Command

Command Description

The test command lets you run diagnostic tests on the components listed in Table 9–6:

Table 9–6   Diagnostic Tests

Component	Device Tested
ASIC	Application-specific integrated circuit
MEM	Memory
NVR	Non-volatile RAM and time-of-year (TOY) clock
SCC	Serial communications controller
NI	Network interface (Ethernet)
SCSI	SCSI device(s)
ISDN[1]	79C30A AMD chip
TC*n*	TURBOchannel options, where *n* is the number of the TURBOchannel device you wish to test

[1]Running ISDN diagnostic tests also tests the audio port

Command Syntax

Issue the test command as follows:

```
>>> test component  Return
```

where *component* is any of the components listed previously. If you issue the test command without specifying a component, the system will test all components. For more information about the test command, see Chapter 14.

10

Changing Environment Variables

Chapter Overview

Introduction Environment variables are firmware parameters that can be changed to suit your specific system needs. You set environment variables while your system is in console mode. Your system is shipped with default values set for all available environment variables. The environment variable settings include the following startup information:

- The device from which your system boots

- The default startup action each time your system is turned on or a halt instruction is executed by software

- The language used in console mode

This chapter describes the available environment variables and how to display or change the current settings.

In This Chapter This chapter includes the following topics:

- Before You Begin

- Available Environment Variables

- Displaying Current Environment Variables

- Changing the Default Startup Action (auto_action)

- Changing the Default Boot Device (bootdef_dev)

- Changing the Default Diagnostic Startup Mode (diag_quick)

- Changing the Default Keyboard Language (language)

Before You Begin

What You Should Do First

Before changing any environment variables, you should complete these tasks:

- Put your system in console mode. If your system is not displaying the >>> prompt, refer to Chapter 7 to shut down your operating system, and/or halt your system.

- Read Chapter 9 and the rest of this chapter before continuing.

What You Should Know Beforehand

Changing environment variables requires an understanding of what each of the environment variables does, and how changing the defaults will affect your system. Do not change any environment variable without fully understanding the effect that the change may have on your system.

If you are not sure about changing environment variables, ask your system manager for help.

Available Environment Variables

Description of Environment Variables

Table 10–1 describes the system environment variables and their default values. Information about environment variables not documented in this chapter or in Chapter 11 can be obtained via the `help advanced` command.

Table 10–1 Environment Variables

Variable	Description	Default
auto_action	Specifies the action the console should take any time the system is turned on.	HALT
bootdef_dev	Sets the default boot device.	{null}
boot_osflags	Sets the boot flags. This environment variable is usually operating system-dependent.	0, 0
boot_reset	Determines whether the system should be reset before attempting to boot.	ON
diag_loe	Determines whether the diagnostic test loop-on-error flag is set. This is available for loadable diagnostics only.	OFF
diag_quick	Sets the TURBOchannel diagnostic startup mode to normal or fast startup testing.	OFF (normal)
diag_section	Sets the diagnostic operating environment. (Used by Digital Services.)	1
enable_audit	Sets whether console audit messages are displayed during the boot process.	ON
ethernet	Sets the Ethernet type for the system, either THICK or TENBT.	THICK
fast_scsi_a	Enables slow or fast SCSI on all internal SCSI devices.	ON (fast SCSI)
fast_scsi_b	Enables slow or fast SCSI on all external SCSI devices.	OFF (slow SCSI)
language	Sets the console keyboard mapping to a supported language.	3 (English)
mop	Sets the Ethernet network listener during console mode.	ON
password	Sets the password to enable the password security feature.	No password
radix	Sets the default input radix to a specified value.	0 (Hexadecimal)
scsi_a	Sets the host ID number for the SCSI_A port.	7
scsi_b	Sets the host ID number for the SCSI_B port.	7
scsi_reset	Sets the time to wait to reset the SCSI device before booting.	4
secure	Sets the password security feature.	OFF
server	Sets the system server status to On or Off, thus determining which startup tests are performed.	OFF (ON for server)
trigger	Sets the remote trigger to On or Off.	OFF

Displaying Current Environment Variables

●

Using the show Command	You can use the show command to display one or all of the environment variables in Table 10–1.
Displaying Current Environment Variable Values	To display a list of the current values for all environment variables, enter the show command as follows and press the Return key.

```
>>> show  Return

AUTO_ACTION = HALT
BOOTDEF_DEV = {null}
BOOT_OSFLAGS = 0,0
ENABLE_AUDIT = ON
BOOT_RESET = ON
SCSI_RESET = 4
DIAG_LOE = OFF
DIAG_QUICK = OFF
DIAG_SECTION = 1
ETHERNET = 08-00-2B-10-07-29, THICK
FAST_SCSI_A = ON
FAST_SCSI_B = OFF
LANGUAGE = 3
MOP = ON
SECURE = OFF
RADIX = 0
SCSI_A = 7
SCSI_B = 7
SERVER = OFF
TRIGGER = OFF
```

You can change any of the environment variables with the set or setenv command.

Changing the Default Startup Action (auto_action)

Description

The `auto_action` environment variable determines the default startup action–the action the console takes any time the system is halted by software (not by pressing the halt button) or turned on.

Available Settings for auto_action

Table 10–2 lists the three different startup actions you can specify for the `auto_action` environment variable and the command parameters to use for each. Note that the parameter can be either a word, such as *boot*, or a corresponding number, such as *2*.

Table 10–2 Parameters for Setting Startup Action

Startup Action	Parameter
Restart. Boot automatically when system is turned on or following a software `halt` instruction.	*restart* or *1*
Boot. Boot automatically only when system is turned on.	*boot* or *2*
Halt. Halt at the console prompt (>>>) when system is turned on or following a software `halt` instruction.	*halt* or *3*

Changing the Default Startup Action (auto_action)

Default Setting   The default setting for the `auto_action` environment variable
depends on whether your system is preconfigured at the factory
with factory-installed software. All preconfigured systems,
workstation and server configurations, are set to BOOT, all other
systems are set to HALT.

**Command
Syntax**   To set the `auto_action` environment variable, enter the following
command:

```
>>> set auto_action parameter
Return
```

Enter the parameter of your choice from Table 10–2 to set the
default startup action.

**Command
Example**   This command sets the default startup action to halt at the
console prompt each time your system is turned on. The system
responds with a confirmation of the action you have chosen.

```
>>> set auto_action 3  Return

AUTO_ACTION = HALT
>>>
```

Changing the Default Boot Device (bootdef_dev)

Description
The bootdef_dev environment variable determines the default boot device, or devices, from which the system attempts to boot.

The system boots from the default boot device each time it is turned on (if auto_action is set to boot or restart), or each time the user enters the boot command.

Available Settings
You can set the bootdef_dev environment variable to any appropriate device or devices on your system.

Boot Device Naming Conventions
You can specify the boot device name in two ways, using either an OpenVMS- or a DEC OSF/1-style device name. Table 10–3 provides a list of the device naming conventions, which can be used for the boot command in either operating system. For a description of the boot device name elements, see Chapter 9.

Table 10–3 Device Naming Conventions

Device Naming Conventions		
OpenVMS AXP	**DEC OSF/1 AXP**	**Device Type**
DK	RZ	Fixed or removable disk
MK	TZ	Tape
ES	ES	Ethernet, MOP protocol
N/A	EZ	Ethernet, BOOTP protocol

Default Setting
The default setting for the bootdef_dev environment variable is set at the factory to boot from the internal fixed disk drive that has been loaded with factory-installed software.

Command Syntax

To set the `bootdef_dev` environment variable, enter the following command:

```
>>> set bootdef_dev device  Return
```

Enter the device from which you want your system to boot. If you do not know which devices your system contains, enter the `show device` command as the next section explains.

Listing Available Devices

To see a list of devices installed in your system, issue the `show device` command at the console prompt and press the Return key. The system responds with a display similar to the one shown in Figure 10–1.

Figure 10–1 The show device Display

```
>>> show device  Return

  BOOTDEV     ADDR         DEVTYPE     NUMBYTES     RM/FX   WP   DEVNAM    REV
  -------     ----         -------     --------     -----   --   ------    ---
  ESA0        08-00-2B-12-00-9C
  DKA0        A/0/0        DISK          1.05GB     FX           RZ26      T368
  DKA100      A/1/0        DISK        426.25MB     FX           RZ25      0700
  DKA200      A/2/0        DISK        426.25MB     FX           RZ25      0700
  DKA300      A/3/0        DISK        426.25MB     FX           RZ25      0700
  DKA400      A/4/0        RODISK        .....      RM      WP   RRD42     4.3d
  ..HostID..  A/7          INITR
  ..HostID..  B/7          INITR
```

Understanding the show device Display

The `show device` command displays several columns of information. The sample `show device` display indicates that there is one RZ26 device with device name DKA0, three RZ25 devices with device names DKA100, DKA200, and DKA300, and one RRD42 device with device name DKA400 installed in the system. For a complete description of the `show device` command, see Chapter 14.

Command Example Using a Device List

You can set the `bootdef_dev` environment variable so that the systems tries to boot from a list of devices, rather than from a single device.

To set the `bootdef_dev` environment variable to a list of devices, enter a command similar to the following, substituting your system's boot device names:

>>> set bootdef_dev dka100,esa0 ⌐Return⌐

In this instance, the system would first try to boot from the drive called dka100. If that drive was unavailable, or the boot failed, the system would then try to boot from a remote device across an Ethernet connection (esa0).

You can enter a maximum of 20 characters following the `bootdef_dev` variable.

Changing the Default Diagnostic Startup Mode (diag_quick)

■

Description

The `diag_quick` environment variable determines the TURBOchannel diagnostic test mode. The system enters the diagnostic test mode each time the system is powered on.

Available Settings

You can set the `diag_quick` environment variable to *on* or *off*:

• *on* to perform quick diagnostic tests of TURBOchannel devices

• *off* to perform normal diagnostic tests of TURBOchannel devices

Default Setting   The default setting for the `diag_quick` environment variable is
off, so that normal diagnostic tests of TURBOchannel devices are
performed at each system startup.

If `diag_quick` is set to *on*, some TURBOchannel devices may not
be tested. If it is set to *off*, all installed TURBOchannel options
will be tested when the system power up self tests (POST).

**Command
Syntax**   To set the `diag_quick` environment variable, enter the following
command. The system responds as shown.

```
>>> set diag_quick on  Return
DIAG_QUICK = ON
>>>
```

Using the *on* parameter changes the default setting.

Changing the Default Keyboard Language (language)

■

Description   The `language` environment variable sets the console keyboard
layout to one of sixteen available languages. This command is
applicable only for a DEC 3000 Model 800/900 AXP workstation
with a TURBOchannel graphics option.

**Available
Settings for
language**   You can set the `language` environment variable to any of the
supported languages.

Default Setting   The default setting for the `language` environment variable is
English.

**Command
Syntax**   To set the `language` environment variable, enter the following
command:

```
>>> set language    Return
```

**Command
Example**

The system displays a list of languages, each with a designated
number. To set the language environment variable to Svenska,
for example, you would enter 14 as shown in the example.

```
>>> set language Return

 0)  Dansk                    8)  Francais (Suisse Romande)
 1)  Deutsch                  9)  Italiano
 2)  Deutsch (Schweiz)       10)  Nederlands
 3)  English                 11)  Norsk
 4)  English (British/Irish) 12)  Portugues
 5)  Espanol                 13)  Suomi
 6)  Francais                14)  Svenska
 7)  Francais (Canadien)     15)  Vlaams


 3 >>>14 Return

LANGUAGE = 14
>>>
```

Changing the Default Fast SCSI (fast_scsi_a)(fast_scsi_b)

Description

The `fast_scsi_a` and `fast_scsi_b` environment variables
initialize the SCSI controllers. The variable `fast_scsi_a` is for
bus A (internal) devices, and `fast_scsi_b` is for bus B (external)
devices. When fast SCSI devices are connected and `fast_scsi_a`
`/b` is set to `on`, the SCSI firmware will operate in fast SCSI
mode. If both slow and fast SCSI devices are connected to the
same bus and the `fast_scsi_a/b` environment variable is *on*, the
firmware will differentiate between devices.

Note that the recommended maximum bus length is 4 meters
for slow SCSI devices and 3 meters for fast SCSI devices. When
these limits are exceeded, the SCSI bus is likely to have errors.
If your total bus length, including internal and external cables,
is greater than three meters, you must set the `fast_scsi_a/b`
environment variable for that bus *off*.

Changing the Default Fast SCSI (fast_scsi_a)(fast_scsi_b)

Available Settings

You can set the fast_scsi_a and fast_scsi_b environment variables to *on* or *off*:

- *on* to operate in slow and fast SCSI mode, device dependent.
- *off* to operate in slow SCSI mode.

Default Settings

The default settings for the environment variables are: *on* for fast_scsi_a and *off* for fast_scsi_b. Thus, the external SCSI controller will be initialized to operate in slow SCSI mode, and the internal SCSI controller in fast SCSI mode.

Command Example

To set the fast_scsi_a and fast_scsi_b environment variables, enter the appropriate command. The system responds as shown.

```
>>> set fast_scsi_a on  Return
FAST_SCSI_A = ON
>>>
```

Using the *on* parameter changes the default setting.

11

Using the Password Security Feature

Chapter Overview

Introduction   The password security feature lets you prevent unauthorized personnel from accessing privileged console commands on your workstation or server.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Task Overview
- Entering a Password
- Enabling System Security
- Forgetting the Password
- Disabling or Changing the Password

Before You Begin

Important: Secure Console Mode

In order to use the password security feature, your system must be in secure console mode, with the secure system jumper inside the system unit enabled. Your system is shipped from the factory with this secure system jumper disabled. You must contact your Digital service representative to have the jumper enabled. See Chapter 14 for information on how to contact your Digital service representative.

Note: No Functionality

Please note that none of the functionality of the password security feature will be available until your system is set to secure console mode. Once your system has been set to secure console mode by your Digital service representative, you can proceed with this chapter.

What You Should Do First

Before using the password security feature, you should complete the following tasks:

- Put your system in console mode. If your system is not displaying the >>> prompt, refer to Chapter 7 to halt your system.

- Read Chapter 9 and this chapter before continuing.

What You Should Know

Using the password security feature requires an intermediate knowledge of your system, and it is advised that you have some level of software experience. Do not use the password security feature without fully understanding the effect that the change may have on your system. Using console commands incorrectly could lock you out of your system. Make sure that you note your password once you have set it.

If you are not sure about using the password security feature, ask your system manager for help.

When to Use the Security Feature

If the password security feature is not enabled, whenever a user enters console mode, he or she can use all of the the privileged console commands, such as `halt`, `set`, `deposit`, and `boot`. By using the password security feature, you can restrict access to these key console mode functions.

Privileged Commands

Once you invoke the password security feature, certain console commands become privileged—you can issue these commands only if you use the password when you enter the `login` command at the console prompt.

In general, any commands that modify memory and registers, or that transfer CPU control from the console monitor to another program, such as `halt` or `start`, are considered privileged commands.

List of Privileged Commands

Table 11–1 lists both privileged and nonprivileged console commands.

Table 11–1 Console Command Access

Privileged Commands	Nonprivileged Commands
`boot` (with parameters)	`boot` (with no parameters)
`deposit`	`login` (to allow password entry to the privileged state)
`examine`	`continue` (if you inadvertently push the halt button, this command lets you continue operations in a nonprivileged mode)
`halt`	`help`
`initialize`	`!` (to enter comment text that the system does not act upon)
`repeat`	–
`set`	–
`show`	–
`start`	–
`test`	–

Continuing Privileged Access

Access to privileged console commands continues until you leave the console mode by using the `boot`, `continue`, `halt`, or `start` commands. You can then enter the privileged mode only by using the 16-character password.

Task Overview

●

Steps to Making the System Secure

Making your system secure requires software and hardware tasks. Table 11–2 describes the steps required to secure your system.

Table 11–2 Steps to Making the System Secure

Step	Description
1	Enter a password
2	Enable security
4	Log in to the system

Each of these tasks is described in this chapter.

If you wish to use the password security feature, call Digital service because an internal jumper must be moved.

Entering a Password

●

Enter a New Password

When your system arrives from the factory, the password security feature is not enabled and no password has been entered in the system. The password you enter must be a character string of exactly 16 hexadecimal characters (0 through 9, A through F). To enter a password on your system, enter the commands shown in Table 11–3, starting at the console prompt.

Table 11–3 Entering a Password

Enter this command:	System responds...
>>> set password	PSWD1>
PSWD1> *new_password* Return	PSWD2>
PSWD2> *new_password* Return	>>>

As you enter the password, what you type does not display on the screen. If the two passwords you entered match, your password is preserved in nonvolatile memory, which means that the system saves your password value even when the system unit is turned off.

If You Make an Error

If the two passwords you enter do not match, the console aborts the password command and displays the following error message:

? 30 ILL PSWD

Try to reset the password by repeating the set password command.

Note Your Password

Be sure to make a note of your password and store it in a secure place. If you forget your console mode password, see Forgetting the Password later in this chapter, or call your Digital service representative to regain access to the privileged console mode.

Enabling System Security

●

**Enable Secure
Environment
Variables**

Once you have entered and confirmed your password, you must
enable the password security feature by following the steps listed
in Table 11–4.

Table 11–4 Enabling System Security

Step	Description
1	Check the current status of the password security feature by entering the show secure command at the console prompt as follows:
	>>> show secure `Return`
	SECURE = OFF
	An off response indicates that the password security feature is not enabled.
2	Enable the password security feature with the following command:
	>>> set secure on `Return`
	The system responds with the following display:
	SECURE = ON

Forgetting the Password

Erase the Current Password

If you forget your password, you must complete the steps in Table 11–5 to erase your password and regain access to your system.

Table 11–5 Steps to Access System

Step	Description
1	Make sure the secure system jumper is in the disabled position. See Chapter 14 for information on how to contact your Digital service representative to have him perform this task.
2	Enter the deposit command as explained in the next section.
3	Enable the secure system jumper.

Entering the deposit Command

To erase the current password, you must disable the secure system jumper. Then enter the deposit command with the exact parameters shown. There is no system response to this deposit command.

```
>>> deposit /u/q-n:2 1E0200088 0  [Return]
```

Once your password is erased, you can enter a new password as explained in the section Entering a Password earlier in this chapter.

Disabling or Changing the Password

Disabling the Password

To disable the password security feature, enter the `login` command and your password. Then enter the following command at the console prompt:

```
>>> set secure off
```

The system responds with the following display:

```
SECURE = OFF
```

Changing the Password

To change the password, enter the commands listed in Table 11–6. Note that passwords must be exactly 16 digits in length and use the values 0 through 9 or A through F. Alphanumeric passwords are not accepted as console passwords.

Table 11–6 Entering a Password

Enter this command:	System responds...
`>>> set password`	PSWD0>
PSWD0> *old_password* Return	PSWD1>
PSWD1> *new_password* Return	PSWD2>
PSWD2> *new_password* Return	>>>

If the two passwords you entered match, your password is changed.

If You Make an Error

If the two passwords you enter do not match, the console aborts the password command and displays the following error message:

```
? 34 ILL PSWD
```

Enter the `set password` command password to retry the password change.

12

Using an Alternate Console

Chapter Overview

Introduction   The alternate console feature of your system lets you direct
console input and output from a monitor to another device, such
as a terminal.

In This Chapter   This chapter covers the following topics:

- Before You Begin
- Using the Alternate Console Feature

Before You Begin

**What You
Should Know
Beforehand**

If you do not understand the alternate console feature, read the
next section, Using the Alternate Console Feature, and then
return to Table 12–1 to determine the status of your system and
where to go next.

Table 12–1 Current System Status

If your system is...	Refer to...
Running the operating system	Chapter 7 to get to the console prompt (>>>).
At the console prompt (>>>)	Step 1: Connect a Terminal or Printer, in this chapter.

**Alternate
Console/Printer
Port
Information**

The alternate console/printer port is set to the parameter
settings listed in Table 12–2. These settings cannot be changed.

Table 12–2 Alternate Console/Printer Port Parameters

Parameter	Setting
Baud rate	9600
Parity	None
Stop bit	1
Bits per character	8

Using the Alternate Console Feature

When to Use an Alternate Console

The alternate console feature lets you direct console output to an output device such as a terminal or a printer. Possible reasons for using an alternate console are these:

- You want to display screen output on a server system that does not include a monitor.

- You want to save a hard copy of screen display output. For example, when installing the OpenVMS AXP operating system, you can connect a printer to the alternate console port and direct screen output to that printer to create a printed copy of the installation screens.

- You cannot display output on your monitor because it is not working properly.

Task Overview

Table 12–3 describes the steps to complete to use the alternate console feature.

Table 12–3 Using the Alternate Console

Step	Procedure
1	Connect a terminal or printer.
2	Change the alternate console switch.
3	Redirect output to an alternate console if you started by displaying console output on a monitor.

The following sections describe these steps in detail.

**Step 1:
Connect a
Terminal or
Printer**

To connect a terminal or printer as an alternate console device
(server), connect the terminal or printer cable to the alternate
console/printer port on the system unit as shown in Figure 12–1.

**Figure 12–1   Attaching a Device to the
Alternate Console/Printer Port**

MLO-010898
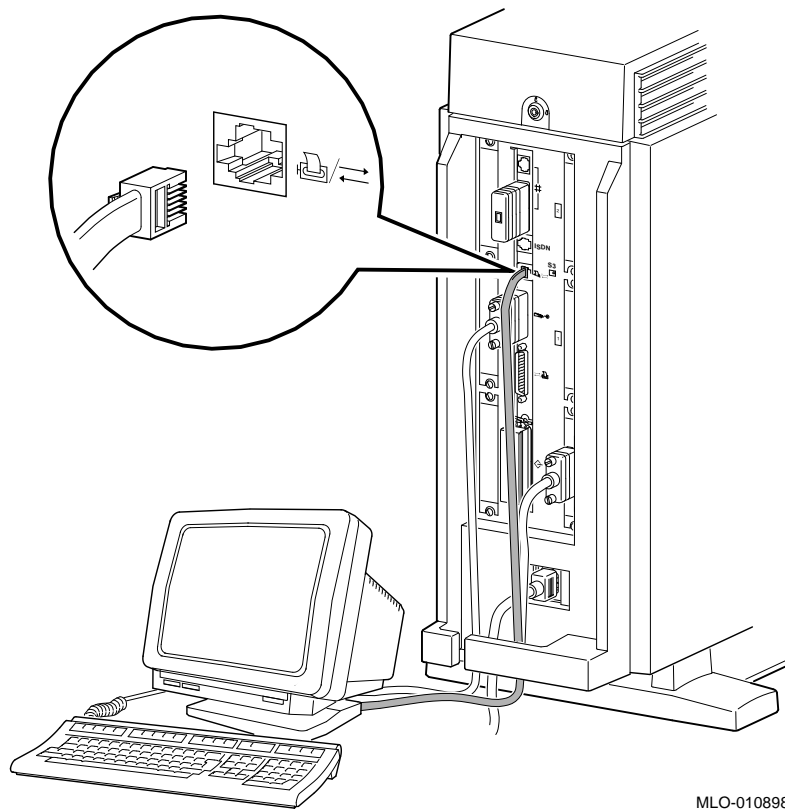
Step 2: Change the Alternate Console Switch

The alternate console switch on the rear of the system unit directs console output to one of two destinations: a monitor (workstation) or an alternate console device, such as a terminal or a printer.

To direct console output to a console device, the alternate console switch should be set to the left as shown in Figure 12–2.

Figure 12–2 Changing the Alternate Console Switch
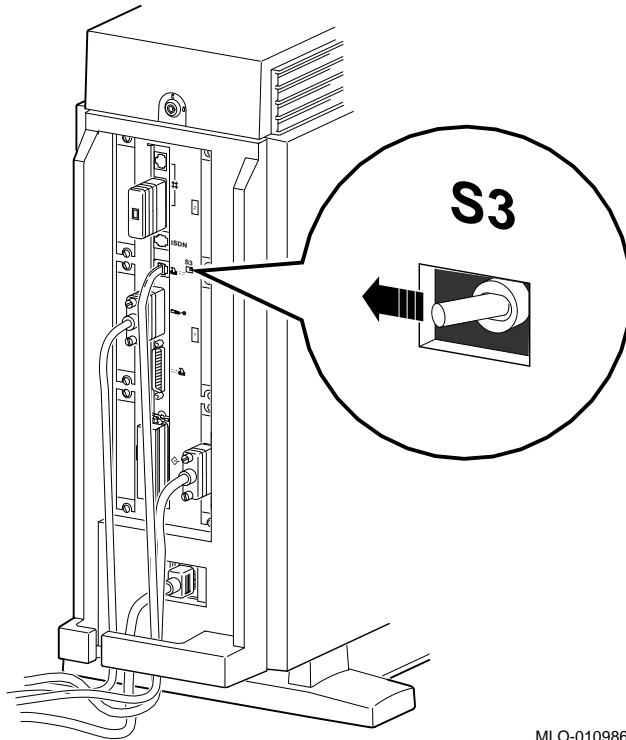
MLO-010986

**Step 3:
Redirect
Console Output**

If you were using a monitor to display console output before you connected an alternate console device, you must restart your system to redirect console output. (Restarting the system is sometimes referred to as power cycling the system.) If you do not restart your system, the console output will not display on the terminal or printer you connected.

**Restarting the
System**

To change console output from the monitor to the alternate console, restart your system as follows:

1. Turn off your system unit by switching the power On/Off switch to the off (O) position. See Figure 7–1 for the location of the power switch.

2. Wait 10 to 15 seconds.

3. Turn on the system unit (by switching the power On/Off switch to the on (|) position).

**Look for
Display**

Console output should now be displayed on the alternate console device.

Part III

Handling Problems

Part III describes how to handle problems with the DEC
3000 Model 800/800S/900 AXP system. This part includes the
following chapters:

Chapter	Title
13	Identifying a Problem
14	Running Diagnostic Tests

13
Identifying a Problem

Chapter Overview

Introduction Though your system is a high-quality, thoroughly tested product, it is also an electrical device that may exhibit problems on occasion. If you are experiencing problems with your system, this chapter will help you identify and possibly fix the problem.

In This Chapter This chapter covers the following topics:

- Before You Begin
- Task Overview
- Determining Type of Problem
- Startup Problems
- Interpreting the show Command Display
- Display Problems
- Mouse and Keyboard Problems
- SCSI Device Problems
- Network Problems
- Where to Go Next

Before You Begin

Two Ways to Solve System Problems

There are two ways to solve problems with your system:

1. Use the chapters in Part III of this manual to help identify and possibly fix the problem yourself.

2. Contact your Digital service representative to diagnose and fix the problem for you.

Methods to Identify Problems

Table 13–1 lists ways to identify problems, and indicates where each method is described:

Table 13–1 How to Identify a Problem

To identify a problem this way...	Refer to...
Use the troubleshooting tables	This chapter
Run diagnostic tests	Chapter 14

Using the troubleshooting tables in this chapter is the easiest and most direct approach to identifying and correcting a problem with your system. Therefore, this is the method with which you should begin.

The diagnostic tests described in Chapter 14 let you test specific devices and provide information on the source of your problem.

Task Overview

●

Steps to Identifying a Problem

Table 13–2 describes the steps required to identify and possibly fix system problems.

Table 13–2 Steps to Resolving Problems

Step	Description
1	Determine type of problem.
2	Locate problem in troubleshooting tables.
3	Follow suggested actions to resolve problem.
4	If unable to resolve problem, see Chapter 14.

The next sections describe these steps.

Determining Type of Problem

**Types of
System
Problems**

The following sections describe various problems and their possible causes, as well as some corrective actions that you can take.

If you cannot isolate the problem, or if the corrective actions do not resolve the problem, see the section Reporting Problems to Digital Services.

Table 13–3 lists the problems described in the following sections.

Table 13–3 Type of Problem

This section...	Describes these problems...
Startup Problems	Power indicator light off
	No startup display
	Error message in startup display
	Boot failure
Errors in the show Command	Error in `show config` Command
	The `show device` Command
	Error in `show error` Command
	The `show memory` Command
Display Problems	Cursor in corner of screen
	Distorted display on monitor
	No display on monitor
Mouse and Keyboard Problems	Pointer missing from screen
	Keyboard keys not working
SCSI Device Problems	Internal device not working
	Software does not boot
	Diskette device problems
	Add tape drive problems
Network Problems	NI error message
	Unable to boot from network

Startup Problems

Overview

There are many different causes of system startup problems. Locate the problem you are having in the following sections.

Power Indicator Light Off

If the power indicator light does not come on when you turn on your system, see Table 13–4. The indicator light ❶ is shown in Figure 13–1.

If the fan failure lights ❷ comes on, you will need to contact your Digital Services representative, as described in Chapter 14.

Table 13–4 Power Indicator Light Failure

Possible Cause	Corrective Action
Power cord is not connected.	Check the power cord connections at both ends.
Wall socket is inoperative.	Try a different wall socket, or try an electrical device that you know works in the wall socket.
Defective power supply.	Contact your Digital service representative.

Figure 13–1 Power Indicator Light
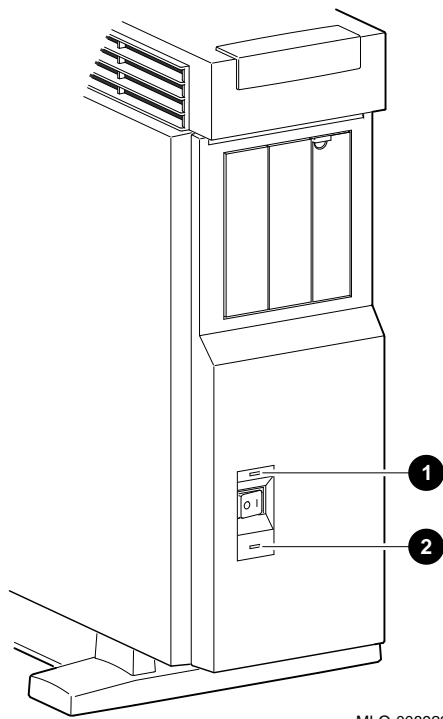
MLO-008922

Diagnostic Lights Display Error Code	On the front of the system unit, there are two diagnostic display lights, as shown in Figure 13–2.

If the diagnostic display lights do not display the code DD as shown, check Table 13–5 to determine a possible cause and corrective action. If Table 13–5 does not provide a solution, see Chapter 14.

Figure 13–2 Position of Diagnostic Display Lights
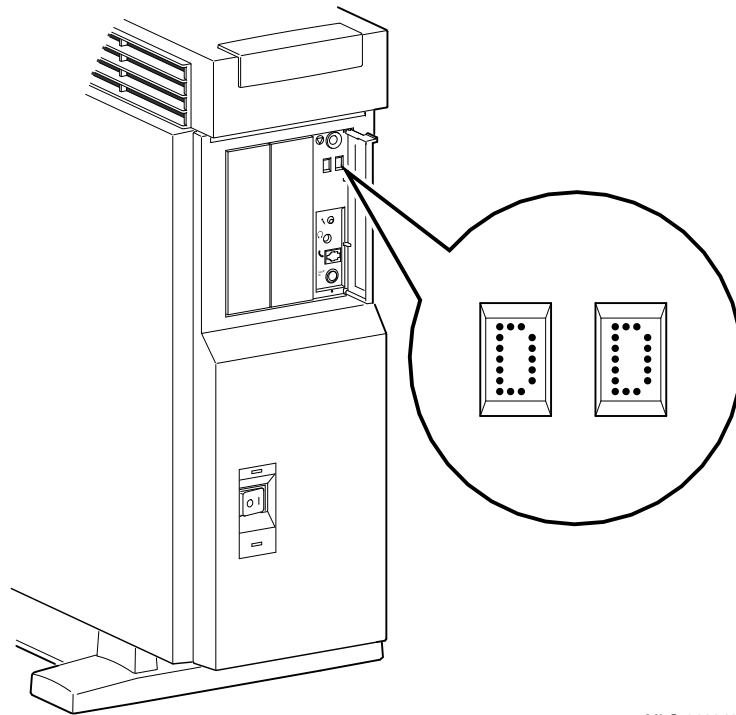
MLO-012949

No Startup Display on Workstation

If there is no startup display after one minute when you turn on your workstation, which contains a graphics options card, see the possible causes in Table 13–5.

Table 13–5 Missing Startup Display

Possible Cause	Corrective Action
Monitor is not plugged in.	Plug the monitor power cord into a power outlet of the correct voltage.
Monitor is not turned on.	Turn on the monitor. Monitor power LED should be on.
Monitor brightness and contrast controls are too dark to see the screen display.	Adjust the monitor brightness and contrast controls. Verify that the monitor power switch is on.
Monitor cable or video cable is not connected.	Check that the monitor cable and video cable are plugged in at both ends. (See Chapter 3 for installation instructions.)
Monitor fuse is blown.	See the monitor guide for fuse replacement instructions.
Wall socket may not be operative.	Try a different wall socket, or try an electrical device that you know works in the wall socket.
Console switch is in the wrong position	Check that the switch is in the correct position.

Error in Startup Display

After the system startup messages, you may see an error message rather than the system power up OK message. Figure 13–3 shows a startup display with an error message.

Figure 13–3 Startup Display with Error

```
DEC 3000 - M800
Digital Equipment Corporation
System conducting power up tests.
--------------------------------------------------
Devnam    Devstat
--------   ----------
    CPU    OK KN17-AA - V3.0-S080-IO60 - DECchip 21064 P3.0
   ASIC    OK
    MEM    OK  128MB
    NVR    OK
    SCC    ?? 003 0050 ptr(0) = Not Present keybd(2) = Not Present
     NI    OK  Ethernet Address: 08-00-2B-1D-1E-EF
   SCSI    OK
   ISDN    OK
    TC0    OK - PMAGB-BA
--------------------------------------------------
System power up tests detected error(s).
See your system documentation for more information.

   >>>
```

Whenever errors are detected, a line on the system startup display begins with two question marks, followed by a message.

Common Startup Errors

There are many reasons for startup errors. When you first install your system, one of the most common causes of startup errors is loose cable connections. Table 13–6 provides the device components likely to have loose connections.

Table 13–6 Startup Error Codes

If ?? appears next to this component...	This item may be loose or missing...
NI	Ethernet loopback connector or cable
SCC	Keyboard/mouse cable to keyboard/ mouse port
SCC	Keyboard or mouse to keyboard/mouse connector block

If an error indicator appears next to one of the Devnam items listed above, check the appropriate cable or connector to make sure it is connected securely. Instructions on how to complete workstation and server connections are described in Chapter 3 and Chapter 4, respectively.

If the cables or connectors are not loose, or an error indicator appears next to other items in the Devnam column, refer to Chapter 14, which explains how to run diagnostic tests.

Boot Failure   If your system does not boot the operating system after
completing system startup tests, see Table 13–7.

Table 13–7   Startup Without Booting

Possible Cause	Corrective Action
The default startup action environment variable is set to halt at the console.	Change default startup action as Chapter 10 describes.
Software is not installed.	Install the system software. Refer to the software documentation for installation instructions.
Incorrect boot device was specified.	Change the default boot device bootdef_dev environment variable, explained in Chapter 10.
Boot device is not properly configured.	Enter a show device command as described in the next section, and check to see that all devices are configured properly. If not, check the SCSI ID numbers and SCSI cables, also described in that chapter.
The scsi_reset variable is not properly set.	Set scsi_reset to 4 to allow the SCSI devices enough time to recover from a SCSI bus reset.
The boot_reset variable is not properly set.	Set boot_reset to ON so that firmware will initialize the kernel hardware and any TURBOchannel devices.
Software problem.	Check your operating system documentation for information or call your Digital service representative.
The boot_osflags variable is incorrectly set.	Consult your operating system documentation.

Interpreting the show Command Display

Overview

Your system includes various elements: components, memory modules, and optional devices. The show console commands test your system and display the status of these elements. Table 13–8 lists some of the show console commands and the information each provides:

Table 13–8 Information Provided by the show Console Commands

This command...	Lists the status of...
show config	System components, revisions, and installed TURBOchannel options
show device	The Ethernet interface and any optional devices, such as SCSI internal and external disk drives
show error	Any errors detected on your system
show memory	All memory modules

Each of these commands is described in the following sections.

Error in show config Display

The show config command tests and displays information about system components and memory modules. The command also indicates whether errors were detected during the diagnostic test.

**show config
Error Display**

Figure 13–4 shows a show config command display that includes
an error.

Figure 13–4 Configuration Display with Error

```
>>>show config Return

  DEC 3000 - M800
  Digital Equipment Corporation
      VPP PAL X5.41-82000101 - Built on 10-MAY-1993 00:00:00.00

  TCINFO     DEVNAM     DEVSTAT
  ------     --------   ---------
                CPU     OK KN17-AA-V3.0-SO86-IO62-DECchip 21064 P3.0
                ASIC    OK
                MEM     OK
  8
  7
                NVR     OK
                SCC     ? 60
                NI      OK
                ISDN    OK
  6
                SCSI    OK
  1-PMAGB-BA    TC1     OK

  >>>
```

Elements in the show config Display

The `show config` command displays three columns of information described in Table 13–9.

Table 13–9   The show config Display Described

Display Heading	Description
TCINFO	TURBOchannel device information. Information next to the TCx component indicates which TURBOchannel option is installed and the slot number it occupies.
DEVNAM	Name of system component or module.
DEVSTAT	Status of system component or module.

Interpreting the show config Display

If no errors are detected when you enter a `show config` command, you will see the message OK next to each device name. If an error is detected for one or more system components, a question mark (?) error indicator will be displayed in the DEVSTAT column next to the corresponding device name.

If you see an error indicator next to any device name, as shown in Figure 13–4, note the error number and the DEVNAM on the Handling Problems worksheet at the end of Chapter 14. If you wish, you can test the device that shows an error in the `show config` display by following the instructions in Chapter 14.

The show device Display

The show device command provides a list of all installed devices on your system, including information about the type of device, its write/read capabilities, its capacity, and the device name.

Figure 13–5 shows an example of a show device command display.

Figure 13–5 The show device Display

```
>>>show device  Return

  BOOTDEV    ADDR     DEVTYPE      NUMBYTES    RM/FX   WP  DEVNAM    REV
  -------    ----     -------      --------    -----   --  ------    ---
  ESA0       08-00-2B-12-00-9C , THICK
  DKA0       A/0/0    DISK          1.05GB     FX          RZ26      T368
  DKA100     A/1/0    DISK        426.25MB     FX          RZ25      0700
  DKA200     A/2/0    DISK        426.25MB     FX          RZ25      0700
  DKA300     A/3/0    DISK        426.25MB     FX          RZ25      0700
  DKA400     A/4/0    RODISK         .....     RM      WP  RRD42     4.3d
  ..HostID.. A/7      INITR
  ..HostID.. B/7      INITR
```

While the show device display does not indicate the status of a device, it can be used for troubleshooting problems that may occur due to duplicate SCSI device ID numbers.

Elements in the show device Display

The show device command displays eight columns of information described in Table 13–10.

Table 13–10 The show device Display Described

Display Heading	Description
BOOTDEV	The boot device name. In this example, the boot device name of the RRD42 compact disc drive is DKA400. Boot device names for disk drives also indicate the SCSI bus and ID number–DKA400 indicates that the RRD42 disc drive is connected to the SCSI_A bus, and that the SCSI ID number is 4.
ADDR	The internal address of the device. For SCSI devices, indicates the SCSI bus and SCSI ID number.
DEVTYPE	The type of device. DISK indicates a disk drive, and RODISK indicates a read-only device, such as an RRD42 compact disc drive.
NUMBYTES	The disk drive capacity in megabytes.
RM/FX	Type of drive–RM indicates removable, and FX indicates fixed.
WP	Write protection indicator–if WP appears, the drive is write-protected.
DEVNAM	Device name. This column usually lists the Digital product name of the drive, such as the RZ25 disk drive.
REV	The revision number of the disk drive's firmware.

Interpreting the show device Display

The information presented in the show device display should correspond to the devices that are installed in your system. For instance, if you install a new drive in your system, that drive should be listed on the show device display after you complete the installation instructions. If you inadvertently used a SCSI ID number for the new drive that was already in use, the new drive would not be listed when you issue the show device command.

For more information about SCSI ID numbers, see the next section.

You can also use the show device command to determine device names when setting the bootdef_dev environment variable. Chapter 10 describes how to set and change environment variables.

Understanding SCSI ID Numbers

Your system contains SCSI devices and allows you to add SCSI devices. Each SCSI device has an ID number (from 0 to 7) that must be unique within your system.

A common error is to add a SCSI device with an ID number that is already being used by another device in your system. Since this error does not produce an error message, you must determine whether there are duplicate numbers yourself.

Do not set any of the SCSI device ID numbers to 7. This number is used for the SCSI controller on the system.

Determining Duplicate SCSI ID Numbers

To see whether two SCSI devices have the same ID number, perform the following steps:

1. Use the show device command to see which devices are installed in your system.

2. Record which SCSI ID number is assigned to each device.

3. See if the list of devices that your system displays matches the number of devices that are actually installed or attached to your system.

If the system list does not correspond with the number of devices actually installed, one of the devices may have a duplicate SCSI ID. If no SCSI ID numbers are duplicated, you will see the new device with a new SCSI ID number on the show device display.

**The show error
Command**

The `show error` command displays specific information about any error that is occurring within your DEC 3000 Model 800/800S /900 AXP system.

Table 13–11 lists the devices that the `show error` command provides information about.

Table 13–11   System Device Errors

Test Name	Device Tested
ASIC	Application-specific integrated circuit
MEM	Memory
NVR	Non-volatile RAM and time-of-year (TOY) clock
SCC	Serial communications controller
NI	Network interface (Ethernet)
SCSI	SCSI device(s)
ISDN[1]	79C30A AMD chip
TCn	TURBOchannel options, where n is the number of the TURBOchannel device you wish to test

[1]Running ISDN diagnostic tests also tests the audio port

Error information about TURBOchannel devices is not displayed by the `show error` command. Refer to the *DEC 3000 Models 600/600S AXP and 800/800S AXP Service Information* and the *DEC 3000 Models 700 AXP and 900 AXP Service/Upgrade Information Addendum* for error information on TURBOchannel devices.

The show error Display

Figure 13–6 shows an example of a `show error` command indicating a device that is failing.

Figure 13–6 The show error Display

```
>>>show error  Return
? 003    SCC  0x0050
  ? T-ERR-SCC-LK401 - 0 char rcvd
      T-STS-SCC-LK401 - char = 700
```

Elements in the show error Display

If any errors are detected, the `show error` command displays an error message, described in Table 13–12.

Table 13–12 Error Message Elements

Error Message Element	Description
?	Error message indicator.
003	Field Replaceable Unit (FRU) number. The FRU is a Digital number allocated to a component or module in your system.
SCC	The name of the diagnostic test that detected an error.
0x0050	The error number in hexadecimal format.

For a complete list of FRU numbers and diagnostic test error numbers, see the *DEC 3000 Models 600/600S AXP and 800 /800S AXP Service Information* and the *DEC 3000 Models 700 AXP and 900 AXP Service/Upgrade Information Addendum*.

Interpreting the show error Display

In addition to displaying an error message, the `show error` display also indicates test status messages, such as the message `T-ERR-SCC-LK401` shown in Figure 13–6. Information about interpreting these messages is beyond the scope of this document. If you are contacting Digital Services, record the test status message(s) on the Handling Problems Worksheet at the end of Chapter 14.

The show memory Command

The show memory command displays information about all of the memory in your system. This command lists a line of information about each memory bank. Note that the display will not indicate an error found in memory. You can only display memory errors using the show error or the test mem command. The test commands are described in Chapter 14.

The show memory Display

Figure 13–7 shows an example of a show mem command display.

Figure 13–7 The show memory Display

```
>>> show memory

DEC 3000 - M800 Memory: 128 Mbytes
------------------------------------------
BANK #       MEMORY_SIZE       START_ADDRESS
------       -----------       -------------
  0          032 Mbytes        0x00000000
  1          032 Mbytes        0x02000000
  2          032 Mbytes        0x04000000
  3          032 Mbytes        0x06000000
  4          000 Mbytes        0x00000000
  5          000 Mbytes        0x00000000
  6          000 Mbytes        0x00000000
  7          000 Mbytes        0x00000000

>>>
```

Elements in the show memory Display

Figure 13–7 indicates that memory banks 0, 1, 2, and 3 each have 32 megabytes of memory. There is no memory in banks 4, 5, 6, and 7 on this system.

Display Problems

■

Overview

If there appears to be some problem with your monitor display, try to locate the problem in this section.

Cursor in Corner of Screen

If your monitor displays diagnostic startup tests when you turn on your system, but then displays only the cursor in the lower left-hand corner of the screen (rather than displaying the system startup test information), the alternate console switch is in the wrong position.

Corrective Action

Locate the alternate console switch, on the rear of the system unit. Refer to Figure 12–2 to see the switch position. If the switch is set to the left, it is incorrect for a workstation. Complete these steps to change the switch position:

1. Turn off the system unit (power switch to the O position).

2. Move the alternate console switch to the right. Use a small pointed object to set the switch, but do not use a pencil; the graphite will damage the switch. See Chapter 12 for more information.

3. Turn on the system unit (power switch to the | position).

Distorted Display on Monitor

If your monitor is displaying information but appears distorted or unclear, see the possible causes in Table 13–13.

Table 13–13 Monitor Display Problems

Possible Cause	Corrective Action
If your monitor has a total of six connectors, marked Video In and Video Out, the monitor video cable may be connected to the Video Out ports.	Turn the monitor power switch to the off (O) position. Unscrew the video monitor cable from the Video Out ports and connect them instead to the Video In ports. See Table 3–3 for more information. Turn the monitor power switch to the on (	) position.
If multiple graphics devices are in use, monitors may be too close together.	Make sure monitors are spaced at least 18 inches apart.
Refresh rate may be set to wrong position on TURBOchannel graphics card.	Refer to the separate documentation shipped with the TURBOchannel option for instructions on how to change the refresh rate setting.

No Display on Monitor

If your monitor does not display information after system startup, see Table 13–14.

Table 13–14 Monitor Display Problems

Possible Cause	Corrective Action
Monitor is not plugged in.	Plug the monitor power cord into a power outlet of the correct voltage.
Monitor is not turned on.	Check the monitor on/off switch. Check that the monitor power cord is connected at both ends.
Contrast and brightness controls are too dark to see the screen display.	Adjust the contrast and brightness controls. Refer to the monitor guide for more information.
System board or graphics board failure.	Refer to Chapter 14 for information on running diagnostic tests.
Monitor cable or video cable is not connected.	Check that the monitor cable and video cable are connected at both ends.
Monitor fuse is blown.	See your monitor guide for fuse replacement instructions.
Defective monitor.	Contact your Digital service representative.
Alternate console switch is in the wrong position.	Move the switch to the right (monitor position).

Mouse and Keyboard Problems

■

Pointer Missing from Screen

If the mouse or optional tablet pointer does not appear on the screen, or if the monitor does not respond to your pointing device commands, see Table 13–15.

Table 13–15 Mouse Problems

Possible Cause	Corrective Action
Pointing device cable is installed incorrectly or is loose.	Turn off the system unit. Unplug and then replug the keyboard/mouse connector block as Chapter 3 describes. Turn on the system unit again.
The system is in console mode. No pointer appears on the screen.	Change the system to operating system level by entering boot at the console prompt (>>>).
Faulty pointing device.	Replace the pointing device.

Keyboard Keys Not Working

If you are having trouble with the keys on your keyboard, see Table 13–16.

Table 13–16 Keyboard Problems

Possible Cause	Corrective Action
Hold Screen key is active.	If the Hold screen light is on, press the Hold Screen key to release hold on screen.
Keyboard cable is loose or not connected.	Check the keyboard cable at both ends.
Keyboard has failed.	Replace the keyboard. If the problem persists, contact your Digital service representative.

SCSI Device Problems

■

Overview   If you are having trouble with a SCSI device, such as an internal
disk drive, or a tape drive in an expansion box, locate the
problem in the next sections. For specific information about your
SCSI device, refer to the documentation that was shipped with
your system, or in the case of an option, with the option kit.

Internal Device   If you are having problems with an installed disk drive, see
Not Working   Table 13–17. Do not set any of the SCSI device ID numbers to 7.
This number is used for the SCSI controller on the system.

Table 13–17 Installed Disk Drive Problems

Possible Cause	Corrective Action
Two SCSI identifiers are set to the same number.	Enter the show device command as described earlier in this chapter. If a drive is not recognized, reset each SCSI ID to a unique number. (See the previous section on Understanding SCSI ID Numbers, or refer to the option documentation for more information on setting SCSI IDs for optional devices.)
Loose cables.	Check to make sure all cables are connected.
Defective drive.	Refer to Chapter 14 for information on running diagnostic tests.

**Software on
Disk Drive
Does Not Boot**

If you know that the operating system is installed on the disk drive that your are trying to boot, but you cannot bring it up, see Table 13–18.

Table 13–18 Installed Software Problems

Possible Cause	Corrective Action
Default boot device is set incorrectly.	See Chapter 10 to set or change the default boot device.
Default startup action may be set to halt.	See Chapter 10 to change the default startup action.
System startup command procedure was modified incorrectly.	Refer to your operating system documentation for help.
A problem exists with the fixed disk.	Refer to Chapter 14 for information on running diagnostic tests.
A problem exists with the operating system software (if installed) on the fixed disk.	Refer to your operating system software documentation for help.
The scsi_reset variable is not properly set.	Set scsi_reset to 4 to allow the SCSI devices enough time to recover from a SCSI bus reset.
The boot_reset variable is not properly set.	Set boot_reset to ON so that firmware will initialize the kernel hardware and any TURBOchannel devices.
Incorrect SYSGEN parameters for OpenVMS AXP operating system.	Perform conversational or minimum boot. Refer to your OpenVMS AXP operating system documentation listed in Table 6–5.
The boot_osflags variable is incorrectly set.	Consult your operating system documentation.

Network Problems

■

Overview   If you are having trouble with your network, locate the problem in this section.

NI Error Message in Screen Displays   If an error message is displayed next to the identifier "NI" in the device name column in the startup display or when verifying or testing the Ethernet connection, see Table 13–19.

Table 13–19   Resolving NI Errors

Possible Cause	Corrective Action
No Ethernet loopback connector or cable was installed.	Attach the Ethernet loopback terminator shipped with your system. See Figure 3–2 or Figure 4–2.
Terminator is missing from network.	Check to see if a ThinWire cable was removed. If so, replace the cable with a terminator.
Ethernet cable connection is loose.	Check that all connections on the Ethernet segment are secure.
Incorrect network type.	Use the set ethernet command described in Chapter 5 to make sure that the Ethernet type is set correctly.
Busy network.	Repeat test ni test several times. If test continues to fail, connect loopback connector as shown in Figure 4–2, and run test again. If error message appears, see Chapter 13.

Unable to Boot from Network
If you are unable to boot from the network, but there is no error message on the system startup display, see Table 13–20.

Table 13–20   Problems When Booting from the Network

Possible Cause	Corrective Action
Local network problem.	Check the customer server system or the network.
Defective network interface.	Refer to Chapter 14 for information on running diagnostic tests.

After Solving an NI Problem
To test for a network problem, type test ni and press the Return key to run the Ethernet test again. This either clears the error or displays a message to let you know the problem still exists.

Where to Go Next

Determine Your Next Task
If you were unable to resolve your problem using the information in this chapter, contact Digital Services (instructions are provided in Chapter 14), or run system tests, also described in that chapter.

14
Running Diagnostic Tests

Chapter Overview

Introduction   This chapter contains information about running diagnostic tests
and contacting Digital Services. Diagnostic tests can help you
identify the specific part or module that is causing errors in your
system.

In This Chapter   This chapter covers the following topics:

- Before You Begin

- Task Overview

- Running Diagnostic Tests

- Recording the Diagnostic Display Light Pattern

- Reporting Problems to Digital Services

- Handling Problems Worksheet

Before You Begin

Purpose of Tests
If you cannot locate and/or resolve the system problem using the troubleshooting tables in Chapter 13, you can run diagnostic tests. Diagnostic tests can help to identify the source of a problem and provide specific information to present to your Digital service representative over the telephone.

Your Digital service representative may also request that you run diagnostic tests.

What You Should Have Done Already
Before running diagnostic tests on your system to identify a defective component or module, you should have already completed these tasks:

- Put your system in console mode. (See Chapter 7.)

- Tried to locate and resolve the problem with the information in Chapter 13.

- Used the show commands to determine the system component or device with an error. (See Chapter 13.)

If you have not completed any of these tasks, please refer to the relevant section in this guide.

Task Overview

●

**Steps to
Running
Diagnostic
Tests**

Table 14–1 summarizes the steps to perform when running
diagnostic tests in order to identify or resolve a system problem.

Table 14–1 Steps to Diagnostic Tests

Step	Procedure
1	Run the diagnostic test on the component, module or device that is causing an error.
2	Note the diagnostic test results.
3	Record the diagnostic display lights pattern.
4	Contact your Digital service representative.
5	Connect loopback connectors if necessary.

These steps are described in detail in the following sections.

Running Diagnostic Tests

▲

Diagnostic Tests

If an error message is displayed next to a device name when you issue one of the show commands described in Chapter 13, you can test the device listed in the error message by using the test command.

Using this command, you can run a number of diagnostic tests to help you determine the status of a system module or device.

List of Device Tests

Table 14–2 provides a list of the available diagnostic tests and indicates whether the tests require a loopback connector. The tests are listed by the name of the device they test. Refer to Figure 3–2 to see how to connect the Ethernet loopback connector.

Table 14–2 Diagnostic Tests

Device Name	Device Tested	Loopback Required
ASIC	Application-specific integrated circuit	No
MEM	Memory	No
NVR	Non-volatile RAM and time-of-year (TOY) clock	No
SCC	Serial communications controller	No
NI	Network interface (Ethernet)	Yes[1]
SCSI	SCSI device(s)	No
ISDN[2]	79C30A AMD chip	No
TC*n*	TURBOchannel options, where *n* is the number of the TURBOchannel device you wish to test	No

[1]Or system must be connected to a network.

[2]Running ISDN diagnostic tests also tests the audio port.

Using the test Command

Depending on the way you enter the `test` command, you can run a single test or multiple tests on a component.

Single Test Syntax

Use the following syntax to run a single test:

>>> test *device_name* `Return`

where *device_name* is one of the device names listed in Table 14–2.

Multiple Test Syntax

Use the following syntax to run multiple tests:

>>> test *device_name1:device_name2* `Return`

where *device_name1* is the device you want to start with, and *device_name2* is the last device you want to test. The diagnostic tests are run in the same order as the list of device name tests in Table 14–2.

>>> test `Return`

runs all tests including TURBOchannel tests.

Example Diagnostic Test

One diagnostic test is the SCC test, which tests the communication devices attached to your system unit, such as the keyboard and mouse. Figure 14–1 shows an example of an SCC test display.

Figure 14–1 SCC Diagnostic Test Display

```
>>> test scc  Return
T-STS-SCC-OK
>>>
```

Example Diagnostic Test with Error

If a diagnostic test fails, a display similar to the one shown in Figure 14–2 appears, containing information important to helping you determine the source of the problem.

Figure 14–2 SCC Test Display with Error

```
>>> test scc

? T-ERR-SCC-MOUSE - 0 char rcvd
?? 004      SCC 0x0060

  84 FAIL

>>>
```

Understanding the test Command Display

In the previous example, the SCC test failed during testing of the mouse line. This means that the mouse is not being seen by the system. Check the mouse connector to make sure that it is properly connected to the mouse/keyboard connector. If it is properly seated, you may have a defective mouse. Contact your Digital service representative, as described in Chapter 13.

TURBOchannel Test Syntax

Use the following syntax to run a test on a TURBOchannel option connected to a specific slot number:

>>> test *device_name*   Return

where *device_name* is the TURBOchannel device name followed by the slot number of the device you wish to test.

Use the following syntax to execute a selected test in a TURBOchannel option:

>>> test *device_name* *test_name*   Return

where *device_name* is the TURBOchannel device name and *test_name* is one of the test names listed in TURBOchannel Test Commands.

TURBOchannel Test Commands

Table 14–3 shows the TURBOchannel test commands.

Table 14–3 TURBOchannel Tests

Command	Description
test device_name cnfg	Show configuration of option in TURBOchannel slot.
test device_name init	Initialize option in TURBOchannel slot.
test device_name ls	List the contents of the option ROM and the scripts available. All items listed are not to be used as a script_name.
test device_name cat script_name	List the contents of an option's scripts.
test device_name script_name	Run the script script_name on the option in the TURBOchannel slot.

Example TURBOchannel Test

To test a device connected to slot 2, enter the following command:

```
>>> test tc2   Return
```

To show the configuration of a device connected to slot 2, enter the following command:

```
>>> test tc2 cnfg   Return
```

If *test_name* contains a slash (/) or a hyphen (-), enclose *test_name* in double quotes.

Initializing Your System

After you have run a test, you should use the following command to initialize your system to clear the error log from the system register. Figure 14–3 shows an example of the init command.

Figure 14–3 Initializing Your System

```
>>> init   Return

INIT-S-CPU...
INIT-S-RESET_TC...
INIT-S-ASIC...
INIT-S-MEMO...
INIT-S-NVR...
INIT-S-SCC...
INIT-S-NI...
INIT-S-SCSI...
INIT-S-ISDN...

>>>
```

If the problem with your system has been fixed, after you
initialize your system, you should be able to issue the `show
config` command and not see any errors listed in the screen
display.

**Note: Another
Way to Initialize
Your System**

You can also initialize your system after running diagnostic tests
by running the same test again. If the problem has been fixed,
the test, which failed before, will complete successfully.

Figure 14–4 shows a sample display of a successful SCC test.

Figure 14–4 Initializing the System with the SCC Test

```
>>> test scc

T-STS-SCC-OK
>>>
```

Recording the Diagnostic Display Light Pattern

Diagnostic Display Lights Location

On the front of the system unit, there are two diagnostic display lights, as shown in Figure 14–5.

Figure 14–5 Position of Diagnostic Display Lights
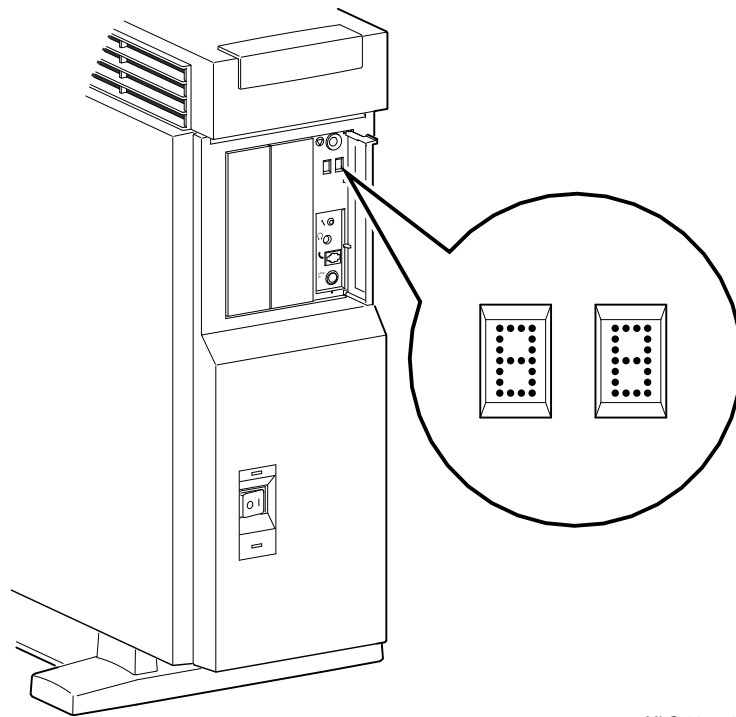
MLO-007570

The diagnostic display lights can provide your Digital service representative with important information in determining the source of a problem.

Understanding the Diagnostic Lights

During system startup, the diagnostic display lights flash an array of different numbers and letters as the system startup tests are performed. The numbers on the display are not random. They represent the hexadecimal number of a test action or result.

For instance, when the startup tests are completed successfully and your system is in console mode, the diagnostic display lights display the hexadecimal code DD, as shown in Figure 14–6.

Figure 14–6 Diagnostic Display Lights

MLO-010467
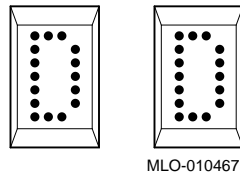
When your system is in program mode, the diagnostic display lights display the hexadecimal code 00 or 90.

When to Record the Diagnostic Display Lights

If a problem is detected during system startup or when you run diagnostic tests, you should record the diagnostic display light pattern on the appropriate section of the Handling Problems Worksheet at the end of this chapter.

Be sure to note when the display occurred, for instance, during startup or after entering the show config command.

Reporting Problems to Digital Services

●

If You Need Help

If you are unable to resolve problems with your system, you should contact your Digital service representative.

Digital Support Centers

Digital service representatives are available at Digital support centers for on-site warranty and service contract customers. If you are not currently eligible to receive this support, but wish to, please contact either a Digital support center listed in Table 14–4, or your local Digital office.

How to Report Problems

If you are unable to locate the problem from the descriptions in the previous sections of this chapter, or the corrective actions suggested could not resolve the problem, you need to contact your Digital service representative. Before calling your Digital service representative to report a problem, complete these steps.

1. Write down the the model and serial number ❶ of your system on the Handling Problems Worksheet at the end of this chapter.

   Both of these numbers are located on a label on the front door of the system unit, as indicated in Figure 14–7. Your Digital service representative will need this information when you call.

Figure 14–7   Serial and Model Numbers
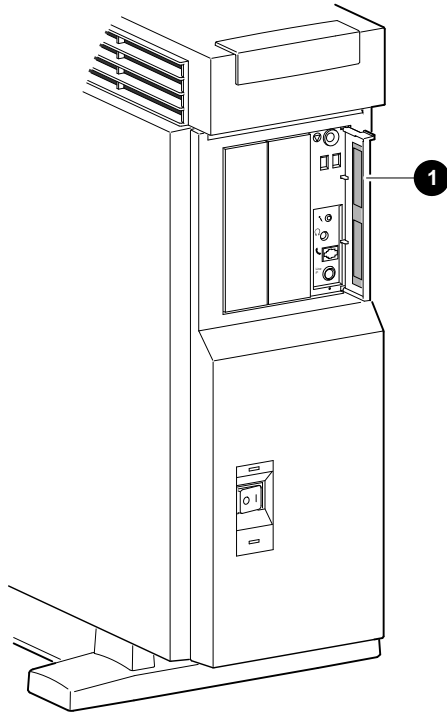
MLO-008571

2. Fill in the status checklist on the Handling Problems Worksheet at the end of this chapter.

3. Note the problem, possible causes if you know them, and solutions suggested in the previous sections. Also indicate what actions (if any) you have already taken to try to correct the problem.

4. Be prepared to read information from the screen and to enter commands at the keyboard while you talk to your Digital service representative on the telephone.

Digital Support Center Contact Numbers

Table 14–4 lists the telephone numbers for contacting a Digital service representative at your Digital support center.

If a Digital support center for your area is not listed below, please contact your local Digital office for assistance.

Table 14–4 Telephone Numbers of Digital Support Centers

Country	Telephone Number
United States	1-800-354-9000
Canada	1-800-267-5251
Canada (Quebec)	1-800-267-2603
United Kingdom	[44]256 59200
France	[33]92955111
Germany	[49]-(89)-95913218
Australia	009 252-277

Installing Loopback Connectors

Your Digital service representative may ask you to install one or more of the following loopback connectors that were shipped with your system:

- 10BASE-T loopback connector
- Alternate console/printer port loopback connector
- Modem loopback connector
- SCSI terminator
- Ethernet loopback connector

While your Digital service representative will provide verbal instructions, the following diagrams indicate where these loopback connectors should be attached to your system unit.

**10BASE-T
Loopback
Connector**

If your Digital service representative requests that you connect
the 10BASE-T loopback connector, connect it as shown in
Figure 14–8.

Figure 14–8 Connecting the 10BASE-T Loopback Connector
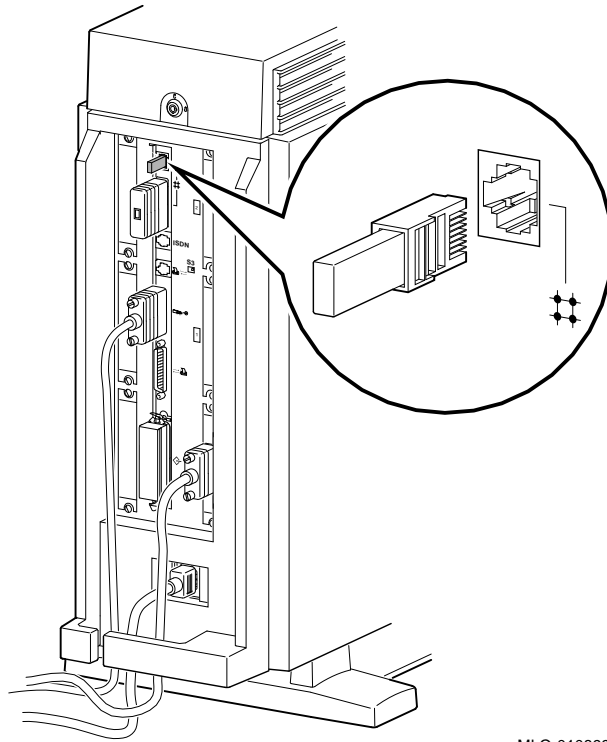
MLO-010899

Reporting Problems to Digital Services

Alternate Console/Printer Loopback Connector

If your Digital service representative requests that you connect the alternate console/printer loopback connector, connect it as shown in Figure 14–9.

Figure 14–9 Connecting the Alternate Console/Printer Loopback Connector
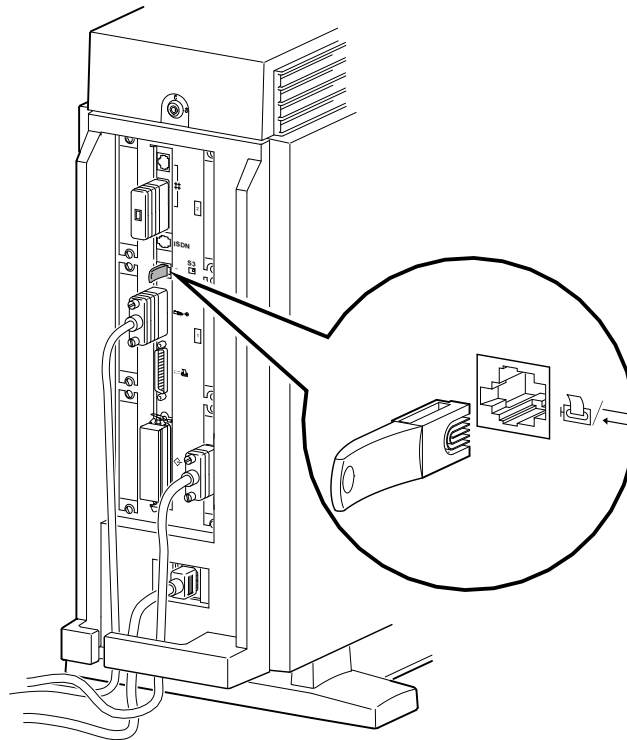
MLO-010900

**Modem
Loopback
Connector**

If your Digital service representative requests that you connect the modem loopback connector, connect it as shown in Figure 14–10.

Figure 14–10 Connecting the Modem Loopback Connector
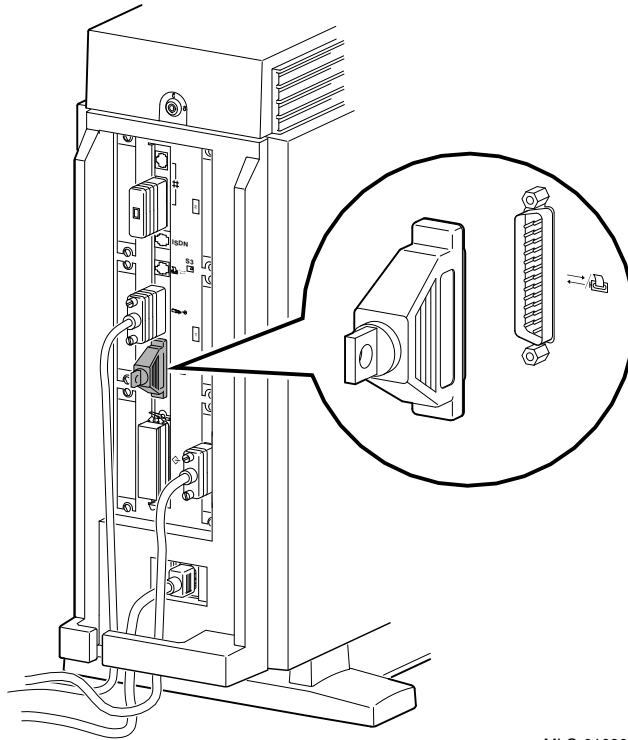
MLO-010901

Handling Problems Worksheet

●

Taking Notes   Use the worksheet on the next page to record system
information. After your have recorded all system information
indicated on the worksheet, have the sheet available when you
call your Digital service representative.

DEC 3000 AXP
Handling Problems Worksheet

DEC service representative telephone number: _____

Model (circle one):   800 800S 900   **Serial #:** _____

System Status (indicate which applies)**:**

Item:	**Yes**	**No**
System plugged into outlet	____	____
Power indicator light lit	____	____
Diagnostic display lights lit*	____	____
Monitor power light lit	____	____
Keyboard working	____	____
Mouse working	____	____
Console prompt appears	____	____
Startup error message displayed	____	____
Operating system boots	____	____
Software is frozen	____	____

*Indicate diagnostic display lights here:

Diagnostic test screen display:

_____
_____
_____

Actions taken so far:

_____
_____
_____

Additional notes:

_____
_____
_____

MLO-012889

Part IV

Appendixes

Part IV provides technical and other information about your system. This section includes the following appendixes:

Appendix	Title
A	Hardware Specifications
B	Port Pin-outs
C	European Economic Community (EEC) Considerations
D	Associated Documents
E	Special Information for PTT Network Users

A

Hardware Specifications

Appendix Overview

Introduction   This appendix lists the hardware specifications for your DEC
3000 Model 800/800S/900 AXP system.

**In This
Appendix**   This appendix covers the following topics:

- System Unit Dimensions: Pedestal, Table A–1.

- System Electrical Specifications, Table A–2.

- General System Specifications, Table A–3.

- Environmental Limitations, Table A–4.

- International Power Cord Part Numbers, Table A–5.

System Specifications

System Unit Dimensions: Pedestal

Table A–1 lists the dimensions of the system pedestal.

Table A–1   System Unit Dimensions: Pedestal

Weight	Height	Width	Depth
34.92–42.18 kg	62.74 cm	33.66 cm	75.44 cm
(77–93 lb)	(24.7 in)	(13.25 in)	(29.7 in)

System Electrical Specifications

Table A–2 lists the electrical specifications for the system.

Table A–2   System Electrical Specifications

Input voltage	Automatically adjusting AC input from 100–120 VAC to 220–240 VAC
Amperage	10/5 A
Frequency range	50 to 60 Hz
Power	400 $\approx$ 686 watts input maximum, system only, power factor 0.6 maximum

General System Specifications

Table A–3 lists specifications of the system components.

Table A–3 General System Specifications

Processor (Models 800/800S)	DECchip 21064 Alpha AXP microprocessor, with 8 KB data cache, 8 KB instruction cache and floating-point unit, running at 200 MHz.
Processor (Model 900)	DECchip 21064A Alpha AXP microprocessor, with 16 KB data cache, 16 KB instruction cache and floating-point unit, running at 275 MHz.
Secondary cache	2 MB
SIMM memory	32 MB minimum, 1 GB maximum
ROM memory	512 KB
Optional fixed disk	Four 3½-inch fixed disks
Optional removable media	3½-inch, half-height diskette drive; up to two 5¼-inch, half-height devices: compact disc drive, tape drive, or diskette drive.
Optional expansion box	BA350 Expansion Box
Interfaces	Two single-channel SCSI-2 compliant controllers (one internal and one external) that support both synchronous and asynchronous devices, one 10BASE-T Ethernet port, one AUI Ethernet port, one ISDN port, one synchronous/asynchronous communications port, one printer port, one MMJ alternate console port, four audio ports.

Environmental Limitations

Table A–4 provides information about the environmental conditions in which the DEC 3000 Model 800/800S/900 AXP system can operate.

Table A–4 System Environmental Specifications

Nonoperating Conditions, Packaged	
Temperature range	–40°C to 66°C (–40°F to 151°F)
Relative humidity	10% to 95% (noncondensing)
Altitude	0 to 3600 m (0 to 12,000 ft)
Maximum wet bulb temperature	46°C (115°F)
Minimum dew point	N/A
Temperature rate of change	20°C per hour (36°F per hour)

Storage Conditions, Unpackaged	
Temperature range	5°C to 50°C (41°F to 122°F)
Relative humidity	10% to 95% (noncondensing)
Altitude	0 to 3600 m (0 to 12,000 ft)
Maximum wet bulb temperature	32°C (90°F)
Minimum dew point	2°C (36° F)
Temperature rate of change	20°C per hour (36°F per hour)

(continued on next page)

Table A–4 (Cont.)   System Environmental Specifications

Operating Conditions	
Temperature range	10°C to 40°C (50°F to 104°F)
Temperature change rate	11°C per hour (20°F per hour) maximum
Relative humidity	10% to 90% (noncondensing, no diskette)
Maximum altitude	2000 m (6562 ft)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)

International Power Cord Part Numbers

Table A–5 shows the power cord part numbers for countries in which the DEC 3000 Model 800/800S/900 AXP system can operate.

Table A–5   Power Cord Part Numbers

Country	Part Number
Australia/N.Z	BN15A-2E
Austria	BN13A-2E
Belgium	BN13A-2E
Canada	BN20A-2E
Canada (French)	BN13A-1K
Denmark	BN16A-2E
Finland	BN13A-2E
France	BN13A-2E
Holland	BN13A-2E
India	BN18V-2E
Israel	BN18W-2E
Italy	BN17A-2E

Table A–5 (Cont.)   Power Cord Part Numbers

Country	Part Number
Japan	BN20A-2E
Norway	BN13A-2E
Portugal	BN13A-2E
Spain	BN13A-2E
Sweden	BN13A-2E
Switzerland	BN14A-2E
UK/Ireland	BN12A-2E

B

Port Pin-outs

Appendix Overview

Introduction

This appendix is for users who want to connect communications devices to their system. The tables in this appendix explain the functions of the pins on the system unit ports.

In This Appendix

This appendix covers the following topics:

- Alternate Console/Printer Port
- Synchronous/Asynchronous Communications Port
- External SCSI Port
- Keyboard/Mouse or Tablet Port
- AUI Ethernet Port
- ISDN Port
- 10BASE-T Port
- Audio Port

Alternate Console/Printer Port

**Alternate
Console/Printer
Port Diagram**

Figure B–1 shows the pin layout for the alternate console/printer port.

Figure B–1 Alternate Console/Printer Port

MLO-008613
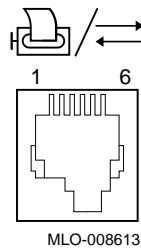
**Alternate
Console/Printer
Port Pin-outs**

Table B–1 describes pin usage for the alternate console/printer port.

Table B–1 Alternate Console/Printer Port Pin-outs

Pin	Description
1	Data terminal ready
2	Transmit data
3	Chassis ground
4	Receive return
5	Receive data
6	Data set ready

Synchronous/Asynchronous Communications Port

**Synchronous/
Asynchronous
Communication
Port Diagram**

Figure B–2 shows the pin layout for the synchronous
/asynchronous communications port.

Figure B–2 Synchronous/Asynchronous Communications Port

MLO-008585
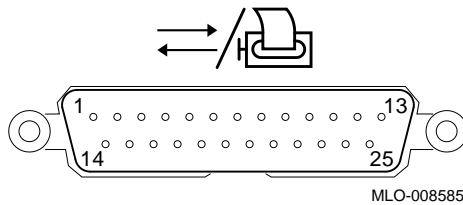
**Synchronous/
Asynchronous
Communications
Port Pin-outs**

Table B–2 describes pin usage for the synchronous/asynchronous
communications port.

**Table B–2 Synchronous/Asynchronous Communications Port
Pin-outs**

Pin	Source	Signal	CCITT[1]	EIA[2]	Description
1		GND	102	AB	Signal ground
2	System	TX	103	BA	Modem transmitted data
3	Modem/printer	RX	104	BB	Modem received data
4	System	RTS	105	CA	Request to send
5	Modem/printer	CTS	106	CB	Clear to send
6	Modem/printer	DSR	107	CC	Data set ready
7		GND	102	AB	Signal ground

[1]International Telegraph and Telephone Consultative Commiittee (CCITT), an
international consultative committee that sets international communications
standards.
[2]Electronic Industries Association

(continued on next page)

Table B–2 (Cont.) Synchronous/Asynchronous Communications Port Pin-outs

Pin	Source	Signal	CCITT[1]	EIA[2]	Description
8	Modem/printer	CD	109	CF	Carrier detector
9					Not used
10					Not used
11					Not used
12					Not used
13					Not used
14					Not used
15					Not used
16					Not used
17					Not used
18					Not used
19					Not used
20	System	DTR	108.2	CD	Data terminal ready
21					Not used
22	Modem/printer	RI	125	CE	Ring indicator
23					Not used
24					Not used
25					Not used

[1]International Telegraph and Telephone Consultative Commiittee (CCITT), an international consultative committee that sets international communications standards.

[2]Electronic Industries Association

External SCSI Port

External SCSI Port Diagram

Figure B–3 shows the pin layout for the external SCSI port.

Figure B–3 External SCSI Port

MLO-008586
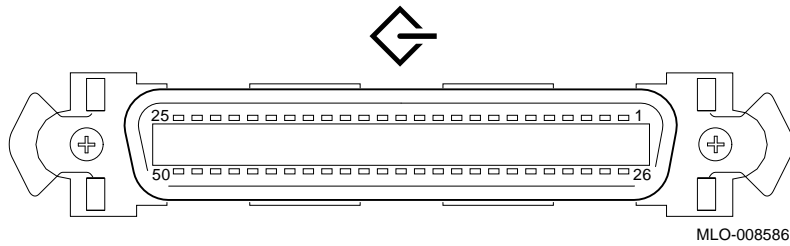
External SCSI Port Pin-outs

Table B–3 describes pin usage for the external SCSI port.

Table B–3 External SCSI Port Pin-outs

Pin	Description	Pin	Description
1	Chassis ground	26	SCSI bus data [0]
2	Chassis ground	27	SCSI bus data [1]
3	Chassis ground	28	SCSI bus data [2]
4	Chassis ground	29	SCSI bus data [3]
5	Chassis ground	30	SCSI bus data [4]
6	Chassis ground	31	SCSI bus data [5]
7	Chassis ground	32	SCSI bus data [6]
8	Chassis ground	33	SCSI bus data [7]
9	Chassis ground	34	SCSI bus data parity
10	Chassis ground	35	Chassis ground
11	Chassis ground	36	Chassis ground

External SCSI Port

Table B–3 (Cont.)   External SCSI Port Pin-outs

Pin	Description	Pin	Description
12	Not used	37	Not used
13	Not used	38	Terminal power
14	Not used	39	Not used
15	Chassis ground	40	Chassis ground
16	Chassis ground	41	SCSI bus ATN
17	Chassis ground	42	Chassis ground
18	Chassis ground	43	SCSI bus BSY
19	Chassis ground	44	SCSI bus ACK
20	Chassis ground	45	SCSI bus RST
21	Chassis ground	46	SCSI bus MSG
22	Chassis ground	47	SCSI bus SEL
23	Chassis ground	48	SCSI bus CD
24	Chassis ground	49	SCSI bus REQ
25	Chassis ground	50	SCSI bus I/O

Keyboard/Mouse or Tablet Port

Keyboard/Mouse or Tablet Port Diagram

Figure B–4 shows the pin layout for the keyboard/mouse port.

Figure B–4 Keyboard/Mouse or Tablet Port

MLO-008584
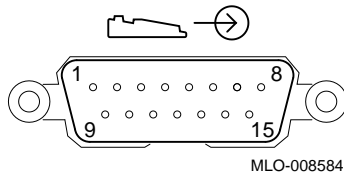
Keyboard/Mouse or Tablet Port Pin-outs

Table B–4 describes pin usage for the keyboard/mouse port.

Table B–4 Keyboard/Mouse or Tablet Port Pin-outs

Pin	Source	Signal	Description
1		GND	Chassis ground
2		KEY.TX	Keyboard transmitted data
3	Keyboard	KEY.RX	Keyboard received data
4		+12V	Keyboard/tablet power
5		GND	Chassis ground
6	Mouse/tablet	MSE.RX	Mouse received data
7		MSE.TX	Mouse transmitted data
8		GND	Chassis ground
9		GND	Chassis ground
10		NC	Not used
11		NC	Not used
12		NC	Not used
13		+5V	Mouse power
14		-12V	Mouse power
15		GND	Chassis ground

AUI Ethernet Port

AUI Ethernet Port Diagram

Figure B–5 shows the pin layout for the AUI Ethernet port.

Figure B–5 AUI Ethernet Port

MLO-008583
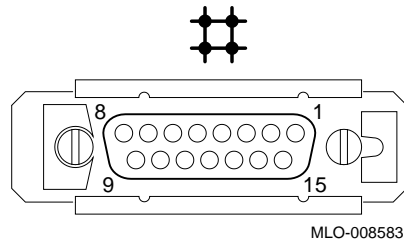
AUI Ethernet Port Pin-outs

Table B–5 describes pin usage for the AUI Ethernet port.

Table B–5   AUI Ethernet Port Pin-outs

Pin	Source	Signal	Description
1			Chassis ground
2	XCVR	ACOL+	Collision presence
3	System	ATX+	Transmit
4		GND	Chassis ground
5	XCVR	ARX+	Receive
6	XCVR	GND	Power return
7		CTL+	Not used
8		GND	Chassis ground
9	XCVR	ACOL-	Collsion, active low
10	System	ATX-	Transmit, active low
11		GND	Chassis ground
12	XCVR	ARX-	Receive, active low
13	System	+12V	Power
14		GND	Chassis ground
15		CTL-	Control output

ISDN Port

**ISDN Port
Diagram**

Figure B–6 shows the pin layout for the ISDN port.

Figure B–6 ISDN Port

MLO-008611
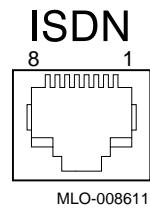
**ISDN Port
Pin-outs**

Table B–6 describes pin usage for the ISDN port.

Table B–6 ISDN Port Pin-outs

Pin	Description
1	Not used
2	Not used
3	Transmit-
4	Receive+
5	Receive-
6	Transmit+
7	Not used
8	Not used

10BASE-T Port

10BASE-T Port Diagram

Figure B–7 shows the pin layout for the 10BASE-T port.

Figure B–7 10BASE-T Port

MLO-008912
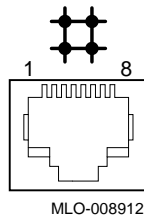
10BASE-T Port Pin-outs

Table B–7 describes pin usage for the 10BASE-T port.

Table B–7 10BASE-T Port Pin-outs

Pin	Description
1	Transmit
2	Transmit, active low
3	Receive
4	Not used
5	Not used
6	Receive, active low
7	Not used
8	Not used

Audio Port

**Audio Port
Diagram**

Figure B–8 shows the pin layout for the audio port.

Figure B–8 Audio Port
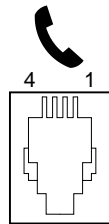
MLO-008612

**Audio Port
Pin-outs**

Table B–8 describes pin usage for the audio port.

Table B–8 Audio Port Pin-outs

Pin	Description
1	Audio in
2	Audio out
3	Audio out return
4	Audio in return (ground)

This adapter is pin-compatible with a telephone handset.

C

European Economic Community (EEC) Considerations

Appendix Overview

Introduction

This appendix is for users in the EEC who must attach nonshielded cables to their DEC 3000 Model 800/800S/900 AXP system.

In This Appendix

This appendix covers:

- EEC Installation Instructions for Nonshielded Cables

EEC Installation Instructions for Nonshielded Cables

Compliance With EEC Regulations

In order to comply with radio interference regulations in the European Economic Community (EEC), shielded data cables must be used. To meet this requirement, users of nonshielded cables must ground the following ports, which use MMJ connectors, by using a pigtail ground wire:

- ISDN port (❶ in Figure C–1)

- Alternate console/printer port (❷ in Figure C–1)

Attaching the Pigtail Grounding Wire

To attach the pigtail grounding wire, complete the following steps and refer to Figure C–1.

1. Unscrew a TURBOchannel slot screw nearest to the port you are grounding.

2. Align the hook of the pigtail grounding wire with the screw hole.

3. Tighten the screw of the TURBOchannel slot until the grounding wire is secure.

Figure C–1   Connecting a Pigtail Grounding Wire
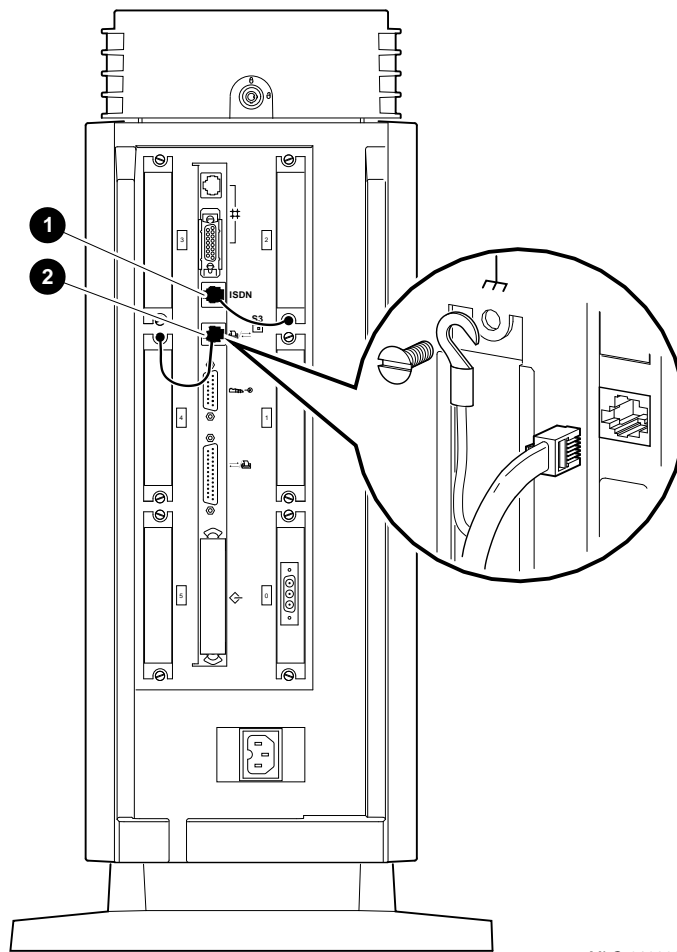
MLO-010903

D

Associated Documents

Appendix Overview

Introduction   This appendix provides information about available documentation. For option and system hardware part numbers, consult your Digital sales representative.

Not all of the following documents are available in every country. Check with your Digital sales representative for availability.

In This Appendix   This appendix covers the following topics:

- Associated Printed Documents
- OpenVMS AXP Documentation
- DEC OSF/1 AXP Documentation

Associated Printed Documents

Related Printed Books

Table D–1 lists the DEC 3000 Model 800/800S/900 AXP documents that are available in printed form.

Table D–1   Associated Printed Documents

TITLE	ORDER NUMBER
DEC 3000 Model 800/800S AXP Information Kit: Owner's Guide, Options Guide, Setting Up Your System cards	EK–FLMWS–DK
DEC 3000 Models 600/600S AXP and 800/800S AXP Service Information	EK–FLSPC–SV
DEC 3000 Models 700 AXP and 900 AXP Service/Upgrade Information Addendum	EK–FLSPC–AD
DEC 3000 Model 800/800S AXP Technical Summary	EC–N0094–51
OpenVMS AXP Factory Installed Software (FIS) User Information	EK–A0377–UG
DEC OSF/1 AXP Factory-Installed Software (FIS) User Information	EK–SFFIS–UG
Alpha AXP Systems Firmware Release Notes	AA–PW8YA–TE
DEC 3000 Models 300/400/500/600/800 System Programmer's Manual	EK–D3SYS–PM

Workstation Handbook

Table D–2 lists the associated workstation handbook documentation.

Table D–2   Handbook Series

TITLE	ORDER NUMBER
Workstation Family Technical Summary	EC–H0742–51

OpenVMS AXP Documentation

General Documentation

Table D–3 lists general OpenVMS AXP operating system associated documents.

Table D–3 General OpenVMS AXP Operating System Documents

TITLE	ORDER NUMBER
OpenVMS AXP Upgrade and Installation Manual	AA–PV6XA–TE
OpenVMS System Manager's Manual: Essentials	AA–PV5MA–TK
OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems	AA–PV5NA–TK
OpenVMS Alpha Layered Products Compact Disc User's Guide	AA–PSQVC–RE
OpenVMS AXP Version 1.5 Release Notes	AA–PV72A–TE
Overview of OpenVMS Documentation	AA–PV6YA–TK

DEC OSF/1 AXP Documentation

Available Documentation

The following sections list the DEC OSF/1 AXP operating system documentation kits and their contents:

- User Documentation
- Server Documentation

User Documentation

Table D–4 lists available subkits of the DEC OSF/1 AXP operating system user documentation.

Table D–4   User Documentation, QA–MT4AB–GZ

TITLE	ORDER NUMBER
Startup Documentation Subkit	**QA–MT4AC–GZ**
Guide to Installing DEC OSF/1	AA–PS2DA–TE
Quick Reference (card)	AV–PS3KA–TE
Read This First Letter	AV–PS3JA–TE
Release Notes	AA–PS2BA–TE
General User Documentation Subkit	**QA–MT4AD–GZ**
DEC OSF/1 User's Guide	AA–PS2HA–TE
Network and Communications Overview	AA–PS2MA–TE
Reader's Guide	AA–PS2JA–TE

Table D–4 (Cont.)   User Documentation, QA–MT4AB–GZ

TITLE	ORDER NUMBER
System and Network Management Documentation Subkit	**QA–MT4AE–GZ**
DEC Verifier and Exerciser Tool User's Guide	AA–PTTMA–TE
Guide to Kernel Debugging	AA–PS2TA–TE
Network Administration and Problem Solving	AA–PS2SA–TE
Configuring Your Network Software	AA–PS2GA–TE
Guide to Prestoserve	AA–PQT0A–TE
Guide to Software License Management	AA–PS2EA–TE
Guide to System Administration	AA–PS2RA–TE
Migration Documentation Subkit	**QA–MT4AF–GZ**
System V to DEC OSF/1 Migration Guide	AA–PS3DA–TE
ULTRIX to DEC OSF/1 Migration Guide	AA–PS3EA–TE

Server Documentation

Table D–5 lists the available documentation about servers.

Table D–5   Server Documentation Kit, QA–MT4AL–GZ

TITLE	ORDER NUMBER
Guide to Sharing Software on a Local Area Network	AA–PS3LA–TE

E

Special Information for PTT Network Users

Appendix Overview

Introduction The United Kingdom and other countries require that certain installation information be provided about the system communications, which is hosted within the DEC 3000 Model 800/800S/900 AXP system.

In This Appendix This appendix describes the appropriate installation information for the 54-21147 module and includes the following topics:

- Service Categories
- Host Power Rating
- Module Isolation
- Safety Status
- Cable Approval
- Equipment Between the Approved Module and a Digital Circuit (PTT)

Service Categories

Overview Table E–1 describes the services specifications for the 54-21147 module.

Table E–1 BABT-Approved Service Specifications for the 54-21147 Module for UK Compliance

Service Category	Interface Type (CCITT recommendation)	Service Requirements (Electrical)	(Physical)	Data Rate	Public Telecommunications Operators[1] BT	Hull	MCL
1	X.21bis	V.24 /V.28	ISO 2110, BS.6623: part1, 1985.	2400 bps 4800 bps 9600 bps 19200 bps	Yes Yes Yes No	Yes Yes Yes No	Yes Yes Yes Yes
		Approved extension cables[2]: BC22F-25 (25 feet) and BC22F-10 (10 feet)					

[1]BT — British Telecommunications plc.
 Hull — Kingston Communications (Hull) plc.
 MCL — Mercury Communications Limited.

[2]The total length of cable used must not exceed 27 feet.

Host Power Rating

Correct Power Rating

You must ensure that the total power drawn by the 54-21147 module, the host, and other auxiliary equipment drawing power from the host, is within the rating of the host power supply.

Digital has designed all permutations of the host configuration (including the DEC 3000 Model 800/800S/900 AXP system) to operate within the limits of the host power rating, as shown in Table E–2.

Table E–2 Module Power

Nominal Voltage	Minimum Voltage (Volts)	Maximum Voltage (Volts)	Maximum Input Current (Amperage)[1]	Maximum Input Current (Amperage)[2]
+5.1V	+4.896	+5.304	5.0	17.0
+12.1V	+11.616	+12.584	0.3	1.8
-12.0V	-11.4	-12.6	0.1	0.1

[1]Without TURBOchannel option slots populated.

[2]With three TURBOchannel option slots populated. This is a worst-case current situation as specified in TURBOchannel hardware specification.

Module Isolation

Clearance and Creepage Defined

Clearance and creepage distances must be maintained on your 54-21147 module. Clearance is the shortest distance in air between two points. Creepage is the shortest distance along a continuous surface between those same two points.

Creepage distances apply when the 54-21147 module system is installed in a controlled environment. You can check creepage distances by measuring the distance between adjacent parts.

If in doubt, you should seek the advice of a telecommunications safety engineer. Failure to install the 54-21147 module in accordance with these instructions will invalidate the approval.

Clearance and Creepage Distances

Except at the connector that plugs into the host, clearance and creepage distances of Xmm and Ymm, as listed in Table E–3, must be maintained between the approved module and other parts of the host, including expansion cards. Digital has ensured that when the 54-21147 module is installed within the DEC 3000 Model 800/800S/900 AXP system, the creepage and clearance distances to the host are met.

Table E–3 Clearance and Creepage Distances

Clearance (Xmm)	Creepage (Ymm[1])	Voltage Used or Generated by Other Parts of the Host or Expansion Card (Vrms or Vdc)
2.0	2.4 (3.8)	Up to 50
2.6	3.0 (4.8)	Up to 125
4.0	5.0 (8.0)	Up to 250
4.0	6.4 (10.0)	Up to 300

[1]The distances shown in parentheses apply in an uncontrolled environment where heat, humidity, and temperature may fluctuate.

Safety Status

All interconnection points on this product are either TNV and/or SELV circuits and should only be connected to products with like circuits.

- Asynchronous/Synchronous Communication Port - TNV /SELV

- ISDN Port - TNV (Not currently supported)

- All other ports - SELV

Cable Approval

Cable Connection to Digital Circuits

The 54-21147 module is approved for direct connection to a particular digital circuit. This approval includes an interconnecting cable with mating connectors that conform to the British standard BS6623, parts 1 and 4. If the module is connected to the service with anything other than its own approved cables, those cables must benefit from relevant general approval NS/G/1235/100009 and/or conform to any other applicable requirements.

Connector Diagram

Figure E–1 shows the pin layout for the connector.

Figure E–1 Connector Pin Layout

MLO-008585
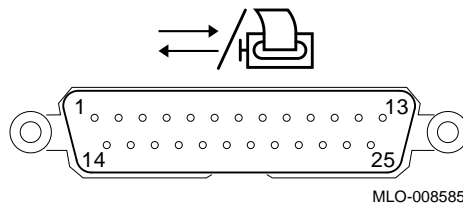
**Connector
Pin-Outs**

Table E–4 describes pin usage for the connector.

Table E–4 Connector Pin-Outs Described

Pin	Description	Pin	Description
1	Ground	14	Not used
2	Transmit data	15	Transmit clock
3	Receive data	16	Not used
4	Request to send	17	Receive clock
5	Clear to send	18	Not used
6	Data set ready	19	Not used
7	Ground	20	Date terminal ready
8	Carrier detect	21	Not used
9	Not used	22	Ring indicator
10	Not used	23	Data signal rate selector
11	Not used	24	Not used
12	Speed indicate	25	Not used
13	Not used		

Equipment Between the Approved Module and a Digital Circuit (PTT)

Equipment Requirements

If any other equipment, including cables or wiring, is to be connected between the 54-21147 module and the point of connection to any particular digital circuit, that equipment must conform as follows:

- The overall transmission characteristics of all other equipment must not have any material effect on the electrical conditions between the equipment and the digital circuit.

- All other equipment must comprise only the following:

  - Approved equipment, which may be subject to limitations on its use, for the purpose of connection between it and a particular digital circuit.

  - Cable or wiring that complies with a code of practice for the installation of equipment covered by this standard or other requirements that may be applicable.

Glossary

10BASE2 Ethernet network

An IEEE standard 802.3-compliant Ethernet network connected with coaxial cable in a bus configuration. Also called ThinWire Ethernet. *Compare with* 10BASE-T Ethernet network and AUI Ethernet network.

10BASE-T Ethernet network

IEEE standard 802.3-compliant Ethernet products used for local distribution of data. These networking products characteristically use a cable made by twisting together two insulated conductors with no common covering. (Commonly known as twisted-pair cable.) *Compare with* AUI Ethernet network and 10BASE2 Ethernet network.

accelerator

A hardware graphics processor that produces faster images than a CPU and frees the CPU to do other work.

alternate console

A terminal connected to the system unit to allow you to receive system messages, direct system activities, and diagnose problems with the machine without use of the on-board graphics capability.

ANSI

Abbreviation for American National Standards Institute, an organization that develops and publishes standards for the computer industry.

antistatic wrist strap

A grounded strap you connect to your wrist and the system unit while handling internal devices that are sensitive to static. This strap prevents electrostatic discharge that could result in loss of data.

applications

Programs, such as a financial spreadsheet program, that perform end-user tasks.

application-specific integrated circuit (ASIC)

An integrated circuit programmed to perform one specific task.

architecture

The internal configuration of a computer including its registers, instruction set, and input/output structure.

ASIC

See application-specific integrated circuit.

asynchronous transmission

A type of communication in which data is transmitted at different time intervals. *Compare with* synchronous communication.

AUI (Attachment Unit Interface) Ethernet network

An IEEE standard 802.3-compliant Ethernet network connected with standard Ethernet cable, as opposed to 10BASE2 Ethernet cable or twisted-pair Ethernet cable. Also called standard or thickwire Ethernet. *Compare with* 10BASE2 Ethernet network and 10BASE-T Ethernet network.

autoboot

The process by which the system boots automatically.

availability

The amount of scheduled time that a computing system provides application service during the year. Availability is typically measured as either a percentage of uptime per year or as system unavailability: the number of hours or minutes of downtime per year.

backup copy

A copy of files or software made for safekeeping. Making a backup copy of the data stored on your disk allows you to recover that data after an accidental loss. You can make backup copies on tape cartridges, or over a network using the Remote System Manager.

baud rate

The speed at which signals are serially transmitted over a communications line. Baud rates can be measured in bits per second or characters per second. One baud equals one bit per second; eight bauds equals one character per second.

bit

A binary digit; the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

BIU

See bus interface unit.

boot

Short for bootstrap, meaning to bring a device or system to a defined state where it can operate on its own.

boot (or bootstrap) device

The memory storage device that holds the software that carries out a system bootstrap procedure.

boot flag

An indicator bit, set by the system manager, that contains information that is read and used by the bootstrap software during a system bootstrap procedure. Default boot flags should already be set when you receive your system.

bootp

An Internet protocol used for network booting. It is based on UDP (the Internet User Datagram Protocol) which is a simple, reliable datagram protocol. The bootp protocol allows a diskless machine to find its Internet address, the address of a bootserver, and the name of a file to boot.

boot server

A system that provides boot services to remote devices such as network routers and VAXcluster satellite nodes.

buffer

An internal memory area used for temporary storage of data records during input or output operations.

bus

A group of signals consisting of transmission lines or wires to create a common channel or pathway. The bus interconnects either internal computer system components to provide communications paths for addresses, data, and control information or external terminals and systems in a communications network.

bus interface unit

Hardware designed to interface internal logic, a module, or a chip, to a bus.

byte

A group of eight contiguous binary digits (bits). Bits are numbered from right to left, 0 through 7, with bit 0 being the low-order bit. *See also* kilobyte and megabyte.

cable

A sheathed group of electrical conductors.

cable junction box

A small box attached to the monitor cable from which the BNC connectors emerge.

cache

See cache memory.

cache memory

A small, high-speed area of memory placed between slower main memory and the processor. Cache memory increases memory transfer rates.

caddy

The holder for the compact disc used in a CD–ROM drive.

CD

See compact disc.

CD–ROM

See compact disc read-only memory.

central processing unit (CPU)

The unit of the computer that is responsible for interpreting and executing instructions.

channel

A path along which digital information can flow in a computer. Also, the main current path between the source and drain electrodes in a semiconductor device. *See also* bus.

checksum

A sum of digits or bits that is used to verify the integrity of a piece of data.

CISC

See complex instruction set computer.

client

A piece of hardware or software that obtains a specific set of services from a server.

client-server computing

An approach to computing that enables personal computer and workstation users—the "clients"—to work cooperatively with software programs stored on a mainframe or minicomputer—the "server."

clock

A signal used to synchronize the circuits in a computer system.

cluster

A group of networked computers that communicate over a common interface to share disk storage, application programs, and other computer resources. *See also* VMScluster system.

CMOS

See complementary metal-oxide semiconductor.

coaxial cable

A two-conductor wire in which one conductor completely wraps the other, with the two separated by insulation.

command

A request made to the operating system to perform a specific function, for example, a request to run a program or show the configuration of a system.

communications

The transmission of digital data from one point (the source) to another (the receiver).

compact disc

A removable flat circular plate, used in the compact disc drive on which read-only optical data is stored. A laser optical reader retrieves this information.

compact disc read-only memory (CD–ROM)

The removable disc used in the compact disc drive. Data can be stored on this disc and retrieved from it.

complementary metal-oxide semiconductor (CMOS)

A silicon device that requires very little power and can operate at very high speeds.

complex instruction set computer (CISC)

A computer that uses an instruction set consisting of a large number of complex instructions that are managed by microcode. *Contrast with* RISC.

component

A basic part, or element, of your system that can be either internal or external. *Compare with* device.

configuration

See system configuration.

connector

Hardware that connects directly to a port on the system.

console

A device through which an operator communicates with the computer.

console commands

Commands that the user can input when the system is in console mode.

console mode

The state in which the computer is controlled directly by user commands from the console terminal rather than indirectly through the operating system. Console mode is in effect when the system is turned on and the operating system software has not been started, or the operating system software has been interrupted by pressing the halt button on the system unit. Console mode is indicated by the console prompt (>>>) on the monitor screen. *Compare with* program mode.

console password

The password used to access privileged console commands.

console program

The code that the CPU executes during console mode.

console prompt

The prompt (>>>) that appears on the screen when the system is in console mode.

console subsystem

The subsystem that provides the user interface to the system when operating system software is not running. The console subsystem consists of the following components:

    console program
    console terminal
    console terminal port
    remote access device
    remote access port
    Ethernet ports

console terminal

The video or hardcopy terminal used to start the system and direct activities between the computer operator and the console subsystem.

console terminal port

The connector to which the console terminal cable is attached.

control and status register (CSR)

A register inside the CPU that can contain processor control bits and processor status.

controller

A system component, usually a printed circuit board, that regulates the operation of one or more devices.

CPU

See central processing unit.

CSR

See control and status register.

cursor

A blinking symbol on the screen that indicates where the next character you type will appear.

cycle

One clock interval.

data

A formal representation of information suitable for communication, interpretation, and processing by humans or computers.

database

A collection of interrelated data on one or more mass storage devices. The collection is organized to facilitate efficient and accurate inquiry and update.

data bus

A pathway used to carry data signals between two or more components of the system.

data transmission

The movement of data in the form of electrical signals along a communications line.

DECchip

This CPU microprocessor chip is a CMOS superscalar (dual instruction issue), super-pipelined implementation of the Alpha AXP architecture.

DECconnect

Digital's cabling system for extending Ethernet and terminal interconnections into offices and work areas.

DECnet network

Digital networking software that runs on nodes in both local and wide area networks.

DEC OSF/1 AXP operating system

A general-purpose operating system based on the Open Software Foundation OSF/1 1.5 technology.

DEC VET

A Digital trademark used to describe the Digital DEC Verifier and Exerciser Tool. DEC VET is a multipurpose system maintenance tool that performs exerciser-oriented maintenance testing. It consists of a manager and exercisers that test system hardware and the operating system. The manager controls the exercisers.

DECwindows Motif

An interface to the operating system that allows a workstation screen to be divided into windows where several application programs can appear simultaneously, and commands can be executed using menus and a mouse. This interface is fully compliant with the OSF/Motif Graphical User Interface standard from the Open Software Foundation. *See also* window.

default

A computer value or setting that is automatically in effect unless or until another value is specified. There are some default values that you cannot override.

default recovery action

The action that the system takes after a power or system failure.

desktop enclosure

A type of system cabinet that is small enough to sit on top of a desk. *Compare with* pedestal and rackmount enclosure.

device

The general name for any hardware unit connected to the system and capable of receiving, storing, or transmitting data. Examples of devices are drives and units that you can install into or externally connect to the system unit or an expansion box.

device name

The name by which a device or controller is identified in the system. The name that a particular operating system uses to access a particular store device. Also called the device mnemonic.

diagnostics

Programs, located in read-only memory, that detect and identify abnormal system hardware operation.

digital data

Information recorded and transmitted in binary coded form.

direct memory access (DMA)

A transfer of data directly from one memory to another without going through the main processor.

disc

See compact disc.

disk

A flat circular plate with a magnetic coating on which data is magnetically stored in concentric circles (tracks). A fixed disk resides permanently inside a disk drive, whereas a diskette is removable.

disk drive

A device that holds a disk. The drive contains mechanical components that spin the disk and move the read and write heads that store and read the information on the surface of the disks.

diskette

A flexible disk contained in a square jacket. Diskettes can be inserted and removed from diskette drives.

diskette drive

A disk drive that reads from or writes to a removable diskette, such as an RX26 diskette.

disk fragmentation

The writing of files in noncontiguous areas on a disk. Fragmentation can cause slower system performance because of repeated read or write operations on fragmented data.

diskless system

A system that has no storage capacity of its own.

distributed processing

A processing configuration in which each processor has its own autonomous operating environment. In a distributed processing environment, the processors are not tightly coupled and globally controlled as they are with multiprocessing. Instead, an application is distributed over more than one system. The application must therefore have the ability to coordinate its activity over a dispersed operating environment.

DMA

See direct memory access.

DRAM

See dynamic random-access memory.

drive plate

A removable section of the system unit on which you can mount one removable-media drive, such as a compact disc, and two 3½-inch fixed drives, such as the RZ family of drives.

dynamic random-access memory (DRAM)

Read/write memory that must be refreshed (read from or written to) periodically to maintain the storage of information.

ECC

See error correction code.

ECC error

A memory error of two possible types: an ECC correctable error is usually a single-bit error that can be successfully detected and corrected by the system; an ECC uncorrectable error is usually a multiple-bit error that can be detected but not corrected by the system.

EEPROM

Electrically-erasable programmable read-only memory. A programmable read-only memory whose individual calls can be erased by using electrical signals instead of ultraviolet (uV) light. *Contrast with* FEPROM.

environment variable

A global data structure that can be accessed only from console mode. The setting of these data structures determines how a system starts up, boots operating system software, and operates.

error correction code (ECC)

Code that carries out an automatic error correction by performing a bit-wise exclusive-OR (XOR) operation on the transferred data and using the result to generate a correction mask. *Compare with* parity.

error message number

A number that appears on the error line representing a particular system or component problem.

Ethernet

A local area network (LAN) or wide area network (WAN) that connects (by coaxial cable) multiple computers that are running a variety of network operating systems. Ethernet transmits 10 megabits per second and does not require switching logic or control by a central computer.

Ethernet controller

An interface unit that connects a system to the Ethernet.

Ethernet hardware address

The unique Ethernet physical address associated with a particular Ethernet communications controller.

Ethernet ports

The connectors on the system unit through which the Ethernet is connected to the system.

Ethernet subsystem

The Ethernet controller chip built into the system module.

expansion box

An external unit connected to the system to add additional I/O slots or storage capacity.

Factory-Installed Software (FIS)

Operating system software that is loaded into an internal fixed disk and installed in the system unit during manufacture. On site, the FIS is bootstrapped through the system disk, prompting a predefined menu of questions on the final configuration.

fast SCSI

An optional mode of SCSI-2 that allows transmission rates of up to 10 megabytes a second.

FDDI

See Fiber Distributed Data Interface.

FEPROM

Flash-erasable programmable read-only memory. A memory device from which data can be erased in large amounts at a time using electrical signals. *Contrast with* EEPROM.

Fiber Distributed Data Interface (FDDI)

An ANSI-standard high-speed network technology that uses fiber optics as the transmission medium. FDDI employs a ring topology and operates up to 100 km in total network length. It uses 1300 nM wavelength light, which optimizes fiber bandwidth.

field replaceable unit

Any system component that can be replaced by your Digital service representative.

file

A collection of related information treated by the system as a unit.

firmware

Software code preprogrammed into a read-only memory device that is wired into the system. The firmware executes when the system is turned on, during operating system boot and restarts, and as a result of operator intervention or a fatal system error.

FIS

See Factory-Installed Software.

fixed disk

A disk that resides permanently inside a disk drive. *Compare with* diskette.

fixed disk drive

The disk drive that holds and reads from or writes to a fixed disk.

floating point

A number that may be positive or negative but that has a whole (integer) portion and a fractional (decimal) portion; an arithmetic operation in which the decimal point is not fixed, but placed automatically in a correct position in a computer word.

floor stand

A stand that allows the desktop system unit to be positioned vertically on the floor. *Compare with* desktop, pedestal, and rackmount enclosure.

frame buffer

An area of memory that contains a pixel-level description of a displayed image. The frame buffer is also used to refresh the raster display.

FRU

See Field Replaceable Unit.

gigabyte (GB)

The measure used to refer to memory or secondary storage capacity, equal to 1,024 megabytes or 1,073,741,824 bytes.

GKS (Graphical Kernal System) application

An application that uses the GKS graphics system and language to create two-dimensional (2D), three-dimensional (3D), and raster images on the screen. A GKS application can be developed on one system and easily move to another system.

graphics

A computer output of drawings, charts, and graphs.

half-height disk

Any 1 5/8-inch (4.1-centimeter) high, fixed drive that is 3½ inches (9-centimeters) wide, such as those in the RZ family; or a 1 5/8-inch high removable drive that is 5-inches (12.7-centimeters) wide, such as a compact disc.

halt

The action of stopping the CPU from processing, which involves console mode and brings the system under the control of the console program. A halt can occur when an internal system error is detected, when you enter the HALT command at the console terminal, or when you press the Halt button on the back of the system unit.

hardware

The physical equipment—mechanical and electrical—that makes up a system. *Compare with* software.

hexadecimal

A numbering system using the base 16 that is a shorthand method for representing binary numbers. Using this method, each four bits is converted into a single hexadecimal digit. For example, 1001 in binary is equal to 9 in hexadecimal.

hit

A signal sent from the cache control logic to the CPU to indicate that a valid copy of a desired memory location is currently in cache.

icon

A graphical symbol on the system unit that identifies drives, ports, switches, and indicators.

IEEE

Abbreviation for Institute of Electrical and Electronics Engineers.

initialization

The sequence of steps that prepare the system to start. Initialization occurs automatically after a system has been turned on.

input/output (I/O) device

A piece of equipment that transmits data to (input) and from (output) the system. For example, a terminal or a mouse.

Integrated Services Digital Network (ISDN)

An international telecommunications standard that allows a communications channel to simultaneously carry voice, video, and data.

interface

An electronic circuit board that links an external device to a computer. Also, a device or piece of software that allows a user to communicate with the system or allows the components of the system to communicate with each other.

internal cache

Cache memory located in the DECchip. *See also* primary cache *and* cache memory.

internal processor register (IPR)

A register internal to the CPU chip.

I/O

See input/output device.

ISDN

See Integrated Services Digital Network.

jack

A receptacle into which you insert a plug.

kilobyte (KB)

The measure used to refer to memory or secondary storage capacity, equal to 1,024 bytes.

LAN

See local area network.

light-emitting diode (LED)

A semiconductor device that glows when supplied with a specific voltage. The operator control panel contains LEDs that indicate the status of the modules in the computer.

local

In close proximity or connected directly to the computer. *Compare with* remote.

local area network

A high-speed network communications system that connects a variety of multiple computers within a limited geographical area, such as one building or a group of buildings. It is a privately owned communication network whose speed is upward of one megabit per second. Using a LAN, multiple users can share devices and files at higher speeds, faster response times,and lower costs than with telephone lines.

local area VMScluster system

A type of configuration in which cluster communication is carried out over the Ethernet by software that emulates certain computer interconnect port functions.

local console mode

A mode in which you interact directly with the console subsystem without requiring the password security feature. *Compare with* privileged console mode.

local device

A disk drive, tape drive, or other device that is only available to the computer to which it is connected.

logic

A sequence of hardware or software operations. Hardware logic consists of chips and circuits that compute and control computer operations. Software logic (also called program logic) is the sequence of program instructions.

log in

To identify yourself to the operating system. When you log in, you type an account name and password. If the name and password match an account on the system, you are allowed access to that account.

login command

The command issued at the operating system prompt that allows access to and communication with the system.

loopback connector

An Ethernet or communications connector used on the back of the system unit when testing the Ethernet subsystem or the synchronous communications adapter.

loopback tests

Diagnostic tests used to isolate a failure by testing segments of a particular control or data path.

magnetic tape

A tape, made of plastic and coated with magnetic oxide, that is used to store data. Also called magtape.

Maintenance Operations Protocol (MOP)

The transport protocol for network bootstraps and other network operations.

mass storage device

An input/output device on which data is stored. Typical mass storage devices include fixed disks, compact discs, magnetic tapes, and diskettes.

Mb

See megabit.

MB

See megabyte.

media

The physical material on which data is recorded, for example, magnetic disks, diskettes, and compact discs.

megabit

A unit of measure equal to a million bits.

megabyte

A unit of measure equal to 1,024 kilobytes or 1,048,576 bytes.

memory

The area of the system that electrically stores instructions and data, often temporarily.

memory module

See single inline memory module (SIMM).

memory mother board (MMB)

A module that plugs into the system card and that can hold SIMMs.

millions of instructions per second (MIPS)

A unit of measure for recording the execution rate of a computer, for example 0.5 MIPS is equal to 500,000 instructions per second.

miss

A signal sent from the cache control logic to the CPU to indicate that a valid copy of a desired memory location is not currently in the cache.

MMB

See memory mother board.

modem

A device that converts computer signals to audio tones that can be sent over a telephone line.

module

An etched circuit board that contains electrical components and electrically conductive pathways between components on which logic devices (such as transistors, resistors, and memory chips) are mounted.

monitor

A video device that displays data.

MOP

See Maintenance Operations Protocol.

mouse

A hand-held input device that is moved across the desktop to move the pointer or cursor on the monitor screen and to select menu options and draw graphics. The mouse is palm-sized and contains up to three buttons (function keys).

multiplex

To transmit several messages or signals simultaneously on the same circuit or channel.

multiprocessing

A processing method that replicates the sequential computer and interconnects the collection so that each processor can execute the same or a different program at the same time.

multiprocessing system

A system that executes multiple tasks simultaneously.

nanosecond (nS)

A unit of measure equal to one billionth of one second, used to measure the speed of memory and logic chips.

network

Two or more computers linked by communication lines to share information and resources.

network administrator

The person who manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

node

A device that has an address on, is connected to, and is able to communicate with other devices on the bus. In a computer network, an individual computer system connected to the network that can communicate with other systems on the network.

node name

A name that identifies a unique node.

nonvolatile random-access memory (NVRAM)

Memory, such as magnetic tape or core memory, in which values are stored even when the system is turned off.

nS

See nanosecond.

null modem

A connection box or cable that replaces two modems and their connecting wires. This box allows two devices that are designed to interact through modems to be locally connected.

NVRAM

See nonvolatile random-access memory.

online documentation

Documents that can be read directly on your monitor screen. Online documentation is stored on a compact disc, local disks, or the network and includes all text and illustrations found in the printed manuals. Fast access time and cross-referencing are two advantages of online documentation.

Open Software Foundation (OSF)

A foundation formed to develop open design software based on the UNIX standard. Development to date includes the OSF/1 operating system, the Distributed Computing Environment (DCE), and the Distributed Management Environment (DME).

open system

A system that implements open specifications for interfaces, services, and supporting formats so that applications software can:

- be ported across a wide range of systems with minimal changes

- interoperate with other applications on local and remote systems

- interact with users in a style that facilitates user portability

OpenVMS AXP operating system

Digital's open version of the OpenVMS AXP operating system, which runs on Alpha AXP machines.

operating system

An integrated collection of programs that controls the operation of the system and allows users access to data files, input/output devices, and application programs.

operating system mode

The state in which the system console terminal is under the control of the operating system software. Also called program mode. *See also* program mode.

OSF

See Open Software Foundation.

PAL

See Privileged Architecture Library (software) and programmable array logic (hardware).

PALcode

Privileged Architecture Library code, written to support Alpha AXP processors. PALcode implements architecturally defined behavior.

parameter

A variable given a specific value that is passed to a program before execution. The system console code uses many such parameters.

parity

A method for checking the accuracy of data by calculating the sum of the number of ones in a piece of binary data. Even parity requires the correct sum to be an even number, odd parity requires the correct sum to be an odd number. *Compare with* error correction code.

password

A unique string of characters, numbers, or both that identifies you to the computer.

password security feature

The feature that restricts access to certain console commands. To use all console commands, users must enter a password.

pedestal

A system enclosure that stands on a support or base, usually positioned on the floor. *Contrast with* desktop and rackmount enclosure.

peripheral device

An internal or external device that provides the central processing unit (CPU) with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, printers, and expansion boxes.

PEX-based application

An application that runs on Software PEX (software PEX server). Software PEX allows a three-dimensional (3D) application to run without specialized 3D hardware.

PHIGS

Programmer's Hierarchical Interactive Graphics System application. An application that uses the PHIGS graphics system and language to create two-dimensional (2D) and three-dimensional (3D) images on the screen.

pipeline

A CPU design technique whereby multiple instructions are simultaneously overlapped in execution.

pointing device

A terminal input device that allows you to make a selection from a menu or to draw graphics. *See* mouse and tablet.

port

A socket on the front or back of the system unit to which a terminal, printer, modem or other device is connected.

port pin-outs

The description of the function of electronic signals transmitted through each pin in a port connector.

power up

To initiate the sequence of events that starts the flow of electrical current to a system or its components.

primary cache

The cache that is the fastest and closest to the processor. The DECchip CPU contains an instruction cache and a data cache. *See also* cache memory.

Privileged Architecture Library (PAL)

A set of software routines to implement architecturally-defined behavior, such as memory management. *See also* PALcode.

privileged console commands

The commands allowed by the password security feature. *See also* password security feature.

privileged console mode

The state the system is in when the password security feature is enabled. When the system is in this mode, certain console commands can be issued only after a password is provided. *Compare with* local console mode. *See also* password security feature.

process

A program currently using memory and running on the system.

processor module

A module that contains the CPU chip.

program

The sequence of instructions the system uses to perform a task. *See also* software.

programmable array logic (PAL)

A hardware device that can be programmed by a process that blows individual fuses to create a circuit.

program mode

The state in which the computer is controlled by the operating system. After the operating system is invoked, the system always operates in program mode, unless you put it into console mode. In program mode, the user can manage the system, run software applications, and perform network tasks. *Compare with* console mode.

prompt

A symbol or message displayed by a program or an operating system, asking you to provide input.

puck

A palm-sized device that slides on a tablet's surface. The puck and tablet together function as a pointing device. *See also* pointing device and tablet.

rackmount enclosure

A type of system cabinet for which components are built to fit into a metal frame.

random access memory (RAM)

Memory that can be both read from and written to and that can randomly access any one location during normal operations. The type of memory the system uses to store the instructions of programs currently being run.

read-only memory (ROM)

Memory that cannot be modified. The system can use (read) the data contained in ROM but cannot change it.

reduced instruction set computer (RISC)

A computer with an instruction set that is reduced in complexity, but not necessarily in the number of instructions. RISC architectures typically require more instructions than complex instruction set computer (CISC) architectures to perform given operations, because an individual RISC instruction performs less work than a CISC instruction.

register

A temporary storage location in hardware logic other than main memory.

remote

Physically distant from a computer, but linked to a computer by communication lines. *Compare with* local.

remote console port

The port that connects a remote access device to a system.

removable-media drive

A drive, such as a compact disc drive, tape drive, or diskette drive, from which the storage medium is removable.

restore

In software, to recover files or software that were backed up, copying the material from the backup medium (such as a tape or diskette) to the medium you normally use.

In hardware, to return the system to an operating condition.

RISC

See reduced instruction set computer.

ROM

See read-only memory.

satellite

A node that is booted remotely from the system disk on the boot node. Also, a computer system that obtains a specific set of services from a server system.

SCSI

See Small Computer System Interface.

SCSI bus

A communications pathway between the Small Computer System Interface (SCSI) and other internal devices. The SCSI bus consists of an address bus, which selects the location of the data, and a data bus, which transfers the data.

SCSI controller

The device that directs the operations of the Small Computer System Interface (SCSI) with synchronous and asynchronous capabilities.

SCSI jumpers

Removable electrical connectors on some of the drives, such as the RRD42, that determine the SCSI ID setting on a drive. Each installed drive must have a unique setting for proper communication between the system and all drives.

SCSI switches

Electrical switches on the side or back of some drives, such as the RX26, that determine the SCSI ID setting of the drive. Each installed drive must have a unique setting for proper communication between the system and all drives.

secondary cache

A cache that resides in the system between the processor's primary cache and the system memory. *Compare with* primary cache.

segment

A length of 10BASE2 Ethernet cable made up of one or more cable sections connected with barrel connectors or T-connectors.

self-test

A test that is invoked automatically when the system starts up.

serial port

A port dedicated to hookups with serial line devices such as terminals or printers. Serial devices transmit data one word after another (serially) along a single pair of lines from a sending device to a receiving device.

server

Hardware or software that provides a specific set of services to a satellite or client.

single inline memory module (SIMM)

A small module, holding several DRAM chips, that plugs into a memory mother board (MMB) to provide main memory to the system.

SIMM

See single inline memory module.

Small Computer System Interface (SCSI)

An ANSI-standard interface designed for connecting disks and other peripheral devices to computer systems, SCSI is used by many computer and peripheral vendors throughout the industry. The SCSI-1 protocol results in data transfer rates approaching 5 MB/sec, while the SCSI-2 protocol results in data transfer rates approaching 10 MB/sec.

smart frame buffer (SFB)

A frame buffer for graphics images which can manipulate video memory independently of the CPU.

soft error

A recoverable error.

software

Instructions executed by the system to perform a chosen or required function. *Compare with* hardware.

SPEC

See Standard Performance Evaluation Corporation.

SPECmark

The geometric mean of the normalized results from the benchmarks defined by SPEC. *See also* Standard Performance Evaluation Corporation (SPEC).

SROM

Serial read-only memory. A device that loads a set of instructions into the CPU to bootstrap the system at power-up.

standalone network

A network that starts and operates alone, without being connected to another network.

standalone workstation

A workstation that starts and operates alone, without being connected to another computer.

standard Ethernet network

See AUI Ethernet network.

Standard Performance Evaluation Corporation (SPEC)

A nonprofit corporation formed to establish, maintain, and endorse a standardized set of relevant benchmarks that can be applied to the newest generation of high-performance computers.

startup procedure

The sequence of events that occurs when you supply power by turning on the system or its components.

storage device

A device, such as a diskette or tape, capable of recording information.

storage expansion box

See expansion box.

strain relief strap

See universal strain relief strap.

stylus

A penlike device that draws on the surface of a tablet and functions as a pointing device.

superpipelined

Describes a pipelined machine that has a larger number of pipe stages and more complex scheduling and control. *See also* pipeline.

superscalar

Describes a machine that issues multiple independent instructions per clock cycle.

synchronous communication

A type of communication in which data is transmitted at equal time intervals. This type of communication allows you to connect your system to others in one of two ways: through a modem to a wide area network (WAN), or directly to another system through a null modem. *Compare with* asynchronous communication.

system

A combination of hardware, software, and peripheral devices that together perform specific processing operations.

system configuration

The combined layout of hardware and software that makes up a usable computer system.

system disk

The disk that stores the operating system and that starts the system and allows it to run properly.

system unit

The part of the system that contains the drives, memory, power supply, and the computer itself.

tablet

An absolute-positioning input device composed of a flat-surfaced digitizing tablet that functions as a drawing surface. Two pointing devices, a puck and a stylus, are used with the tablet to move the cursor on the monitor screen, draw graphics, and make selections from the menu. *See also* mouse.

tape cartridge

Housing for magnetic tape. The cartridge contains a reel of tape and a take-up reel. A cartridge is similar to a cassette, but of slightly different design.

tape drive

A device that contains mechanical components and holds, turns, reads, and writes on magnetic tape.

T-connector

A connector used to join 10BASE2 Ethernet cable sections.

terminal

A device for entering information into a computer system and displaying it on a screen. A typewriter-like keyboard, mouse, tablet or other pointing devices are used to enter information.

terminator

A connector used on one or both ends of an Ethernet segment that provides the 50-ohm termination resistance needed for the cable. A terminator is also required on unused ports and on the end of a SCSI bus to complete the bus.

thickwire Ethernet network

See AUI Ethernet network.

ThinWire Ethernet network

A Digital trademark used to describe its 10BASE2 Ethernet products. *See* 10BASE2 Ethernet network.

three-dimensional graphics

Images that are displayed on the screen in 3D. These graphics require the use of a 3D graphics option, such as the PXG+, and Open-3D software or Software PEX (software PEX server). Software PEX allows a 3D application to run without specialized 3D hardware.

timesharing

A system in which two or more programs are allotted, in turn, equal time or use of a computer or computer device.

turn off

The sequence of steps that stops the flow of electricity to a system or its components.

TURBOchannel module

High-performance interconnection hardware that allows you to use a variety of Digital and third-party graphics, multimedia, and communications options. The TURBOchannel module is a synchronous asymmetrical I/O channel that connects option modules to the system module. With this connection, the system module and an option module have read or write access to each other, but option modules have no access to other option modules.

TURBOchannel extender

An external option that can be added to increase the number of available TURBOchannel slots.

twisted-pair cable

A cable made by twisting together two insulated conductors.

twisted-pair Ethernet network

See 10BASE-T Ethernet network.

two-dimensional graphics

Images that are displayed on the screen in 2D. These graphics require the use of a 2D graphics option, such as the HX 8-plane smart frame buffer TURBOchannel graphics option.

universal strain relief strap

A plastic strap used when connecting the monitor video cable to the back of the monitor. The strap prevents the weight of the cable junction box from pulling the cables out of the BNC connectors.

user interface

The style of interaction between the computer and the user of that computer.

video refresh rate

The speed at which the image on the screen is restored.

VMScluster system

A highly integrated organization of Digital's OpenVMS AXP systems that communicate over a high-speed communications path. VMScluster configurations have all the functions of single-node systems, plus the ability to share CPU resources, queues, and disk storage.

volatile memory

Memory from which values are lost when the system is turned off.

WAN

See wide-area network.

wide-area network (WAN)

A high-speed public or private data communications system that connects multiple users in different geographical areas, such as different cities or states. In a WAN, transmissions are carried primarily over telephone lines.

window

An area on your monitor screen in which you can start, run, and view a separate process. Windowing capability is supported by both OpenVMS AXP and DEC OSF/1 AXP workstation software.

work group

Several workstations, connected together on a network, that perform similar tasks and share information or databases.

workstation

A single-user system that offers high-performance, high-resolution graphics, and can function in a network environment.

wrist strap

See antistatic wrist strap.

write-enabled

The condition that enables a tape or diskette to be written to. *Compare with* write-protected.

write-protected

The condition that prevents a tape or diskette from being accidentally overwritten. *Compare with* write-enabled.

Z-buffering

An advanced graphics term for attaching a depth value to every pixel as a means of determining which parts of the objects in a scene must be discarded from the processing because they would be hidden from view by other opaque objects (hidden surface removal).

Index

U

United Kingdom requirements
See PTT Network Users, E–1
Universal strain relief strap
    connecting, 3–8
Unpacking

checking contents, 2–8
two people required, 2–8, 2–11

W

Workstation configuration
    installation overview, 3–4
    steps to install, 3–3
    unpacking, 2–8