InfoServer 150

Installation and Owner's Guide

Order Number: EK–INFSV–OM–001

This manual describes how to install, test, operate, and maintain the InfoServer 150 system.

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Contents

Preface vii

1 InfoServer 150 System Overview

1.1 System Highlights 1–2
1.2 Storage Devices 1–3
1.2.1 Internal RZ Hard Disk 1–3
1.2.2 RRD42 Compact Disc Drive 1–3
1.3 Console Terminal 1–4

2 Installing Your System

2.1 Choosing the Right Location for the System 2–1
2.2 Unpacking and Inspecting System Components 2–2
2.3 Connecting System Components 2–4
2.3.1 Identify the System Unit Ports and Connectors 2–4
2.3.2 Install the SCSI Terminators 2–5
2.3.3 Install the Connector Covers 2–5
2.3.4 Attach the Ethernet Terminators 2–6
2.3.5 Connect the System Unit Power Cord 2–9
2.3.6 Connect a Console Terminal 2–10
2.3.7 Connect External Expansion Boxes 2–11
2.4 Starting the System 2–11
2.5 Loading a Compact Disc 2–12
2.6 Unoading a Compact Disc 2–16
2.7 Connecting the System to a Network 2–17
2.8 Turning Off the System 2–18
2.9 Bootstrapping the System 2–18
2.9.1 Bootstrapping the System Automatically Without a Console 2–18
2.9.2 Starting the System with a Console, Only If Necessary 2–18
2.9.3 Recovering from Bootstrap Failures 2–19

3 Expanding Your System

3.1 Guidelines for Connecting Expansion Boxes 3–1
3.2 Preparing Your System for an Expansion Box 3–2
3.3 Unpacking an Expansion Box 3–3
3.4 Connecting One Expansion Box 3–3
3.5 Connecting Two Expansion Boxes 3–5
3.6 RRD42 Compact Disc Expansion Box 3–6
3.6.1 Verifying the SCSI ID Number on the RRD42 Expansion Box 3–7
3.6.2 Resetting the SCSI ID on the Second RRD42 Expansion Box 3–7
3.7 Preventive Maintenance 3–8

4 Connecting to a Network

4.1 Connecting to a ThinWire Ethernet Network 4–1
4.1.1 Check the Network Select Button 4–1
4.1.2 Verify Your ThinWire Ethernet Network Installation 4–2
4.1.3 Connect Your System to ThinWire Ethernet Cable 4–3
4.2 Creating a ThinWire Ethernet Work Group 4–4
4.2.1 Connecting Your System to a DECconnect Faceplate 4–5
4.2.2 Troubleshooting the ThinWire Segment 4–6
4.3 Connecting to a Standard Ethernet Network 4–9
4.3.1 Check the Network Select Button 4–9
4.3.2 Verify Your Standard Ethernet Network Installation 4–9
4.3.3 Connect a Transceiver Cable to Your System 4–10
4.3.4 Troubleshooting the Standard Ethernet Connection 4–10

5 Solving Problems

5.1 Checking Cable Connections 5–1
5.2 Using the Troubleshooting Table 5–2
5.3 Interpreting Power-Up Error Messages 5–5
5.4 Running Self-Tests 5–7
5.5 Displaying System Configuration Information 5–8
5.6 Displaying Device Information 5–9
5.7 Using the System Exerciser 5–10
5.8 Running Test Utilities for Expansion Boxes 5–12
5.9 Restarting the System after Running Tests 5–12
5.10 Reestablishing Console Parameters 5–12
5.11 Service Information 5–13
5.12 Command Summary 5–13

A SCSI ID Numbers

A.1 SCSI ID Default Settings A–1
A.2 Determining SCSI ID Numbers A–2
A.3 Setting RRD42 ID Numbers A–3

B System Specifications

Glossary

Index

Figures

1–1 InfoServer 150 System Enclosure 1–1
1–2 Front Panel of Embedded RRD42 Drive 1–2
2–1 InfoServer 150 System Components 2–3
2–2 Ports and Connectors 2–4
2–3 Rear Panel with SCSI Terminators Installed 2–5
2–4 Connector Covers 2–6
2–5 Attaching T-connectors 2–7
2–6 Connecting the Power Cord 2–9
2–7 Connecting the Console Terminal Cable 2–10
2–8 Opening the Caddy 2–13
2–9 Loading the Disc 2–14
2–10 Loading the Caddy in the Drive 2–15
2–11 Ejecting the Caddy from the Drive 2–16
2–12 Front Panel of RRD42 Drive 2–17
3–1 Removing SCSI Terminator 3–2
3–2 Connecting One RRD42 Expansion Box 3–4
3–3 Connecting Two RRD42 Expansion Boxes 3–6
3–4 RRD42 Real Panel 3–7
4–1 Position of Network Select Button and Ethernet Lights 4–2
4–2 Position of Halt Button 4–3
4–3 Attaching T-Connector with Cable Segment to BNC Connector 4–4
4–4 Connecting to DECconnect Faceplate 4–6
4–5 Disconnecting T-connector 4–8

4–6 Securing Standard Ethernet Connector 4–10

Tables

1 Related Documents viii
3–1 SCSI Devices Self-Test Status Codes 3–8
5–1 Troubleshooting Basic System Problems 5–3
5–2 Power-Up and Self-Test Display Identifiers 5–6
5–3 Definition of Mnemonics 5–9
5–4 SET Command Summary 5–13
5–5 TEST Command Summary 5–14
5–6 SHOW Command Summary 5–15
A–1 SCSI ID numbers for InfoServer 150 System A–2

Preface

Document Purpose

This document describes how to install, test, operate, and maintain the InfoServer 150 system. This system is a general-purpose disk storage server that quickly and efficiently transfers data between disks connected to the server and remote network client systems.

For information on session management and software commands, see the *InfoServer System Operations Guide*.

Intended Audience

This document addresses persons responsible for installing, operating, or maintaining the InfoServer 150 system.

Document Structure

This document is organized as follows:

- Chapter 1 provides an overview of the InfoServer 150 system.
- Chapter 2 provides instructions for installing new InfoServer 150 systems.
- Chapter 3 provides information on installing and using add-on storage devices and software-loading devices such as compact disc drives.
- Chapter 4 explains how to connect your system to a ThinWire Ethernet or standard Ethernet network. The chapter also explains how to connect systems into a simple ThinWire work group.
- Chapter 5 provides troubleshooting information.

Appendixes provide information on the following topics:

- Appendix A discusses setting SCSI ID numbers on drives for custom configurations.
- Appendix B provides system specifications.

The Glossary explains technical terms used in the document.

Related Documents

Consult your Digital sales representative for information on obtaining the documents listed in Table 1.

Table 1 Related Documents

Titles	Order Number
InfoServer Documentation	
InfoServer System Operations Guide	AA–PJXJA–TE
InfoServer 100 Installation and Owner's Guide	EK–DIS1K–IN
Client Documentation	
VMS LAD Control Program Manual	AA–PD1LB–TE
SCSI Device Documentation	
RRD40 Disc Drive Owner's Manual	EK–RRD40–OM
RRD42 Disc Drive Owner's Manual	EK–RRD42–OM
TK50Z User's Guide	EK–OTK50–UG
DECconnect System Documentation	
DECconnect System General Description	EK–DECSY–GD
DECconnect System Requirements Evaluation Workbook	EK–DECSY–EG
DECconnect System Installation and Verification Guide	EK–DECSY–VG
DECconnect System Standalone ThinWire Networks: Planning and Installation Guide	EK–DECSY–TG
DECconnect System Planning and Configuration Guide	EK–DECSY–CG

Conventions

The following conventions are used in this document:

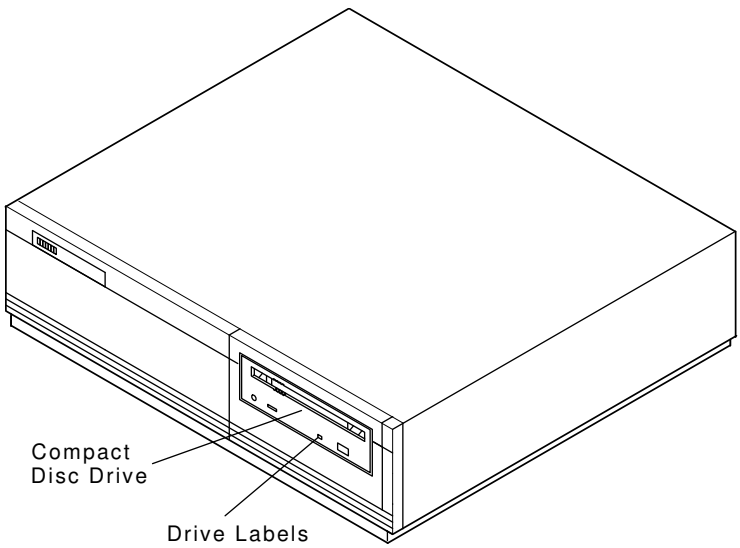
Return	A key name is shown enclosed to indicate that you press a key on the keyboard.
I O	The on/off power switch on equipment. You press | to turn power on, or O to turn power off.
`red ink`	Red ink indicates information that you must enter from the keyboard or a screen object that you must choose or click on. For online versions of the book, user input is shown in **bold**.
boldface text	Boldface text represents the introduction of a new term defined the glossary or a phrase that is emphasized in text. Boldface text is also used to show user input in online versions of the book.
italic text	Italic text represents information that can vary (for example, *device*).
UPPERCASE TEXT	Uppercase letters indicate that you must enter a command (for example, enter TEST 50).
numbers	Unless otherwise noted, all numbers in the text are assumed to be decimal. Nondecimal radixes—binary, octal, or hexadecimal—are explicitly indicated.

1

InfoServer 150 System Overview

The InfoServer 150 system is a general-purpose disk storage server that quickly and efficiently transfers data between disks connected to the server and remote network **client systems**. It provides users with a low-cost data sharing capability that is flexible and easy to manage. Figure 1–1 shows the InfoServer 150 system enclosure.

Figure 1–1 InfoServer 150 System Enclosure



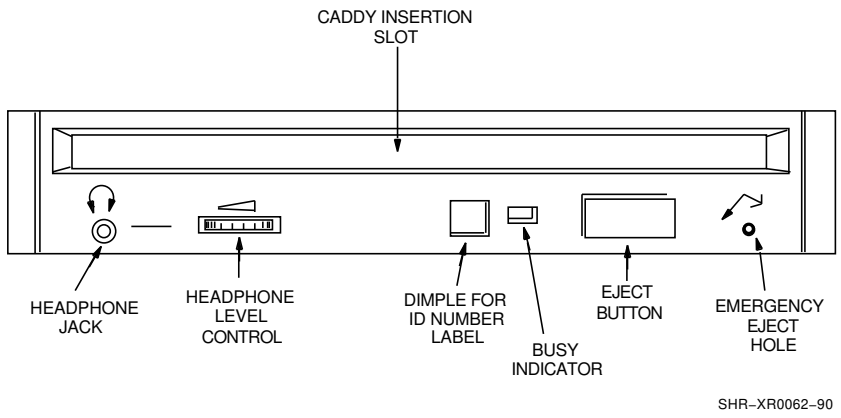
The InfoServer system can support many diverse applications. For example, VMS and other client systems can share software distribution and documentation on compact discs connected to the server. Some VAX systems can use the server to load their **bootstrap** program and then to perform a VMS operating system installation from a compact disc in the server.

1.1 System Highlights

Your InfoServer 150 system has many special features:

- **Memory**
  The system comes with 4 MB of internal random access memory (RAM).
- **ThinWire and standard Ethernet connectability**
  You can connect the InfoServer system to standard Ethernet or ThinWire Ethernet work groups and networks but not to both types at the same time.
- **RRD42 compact disc drive**
  One RRD42 compact disc drive is mounted at the front on the server. Figure 1–2 shows the drive's front panel.

Figure 1–2 Front Panel of Embedded RRD42 Drive



- **Internal hard disk drive**
  The InfoServer 150 system includes one internal disk drive. This drive stores server configuration information. The drive can also be served to client nodes as writable storage. The InfoServer 150 system configuration comes with an RZ23L drive; the InfoServer 150VXT system configuration comes with an RZ24 drive.
- **Self-sensing power supply**
  The system power supply accepts power inputs in the ranges of 100 Vac to 120 Vac and 200 Vac to 240 Vac, at 50 or 60 Hertz. A selection switch is not needed.

- **Communication ports**
  A single DEC-423 asynchronous port (with MMJ connector for VT series terminals) is provided as standard. You can use this port to connect a terminal to the server to establish a local server management session. (See Section 2.3.6 and the *InfoServer System Operations Guide* for more information). This port is preset to run at 9600 baud, so any terminal connected to this port must be set at 9600 baud.
- **SCSI connectability**
  The small computer systems interconnect (SCSI) is an industry standard for connecting mass storage devices.
- **Add-on storage devices**
  You can purchase external expansion boxes to provide added storage capability. These external boxes must be qualified by Digital in order to meet the system requirements. You can connect up to 12 external drives to the server, provided you observe SCSI bus length guidelines.

1.2 Storage Devices

The InfoServer 150 system uses the following internal storage devices:

- RZ23L hard disk (InfoServer 150 system configuration)
- RZ24 hard disk (InfoServer 150VXT system configuration)
- RRD42 compact disc drive

Figure 1–1 shows the location of the RRD42 compact disk drive in the system enclosure.

1.2.1 Internal RZ Hard Disk

The server has one internal RZ drive. After the initial system bootstrap, the server uses this drive as its primary bootstrap device. For the initial bootstrap, the server uses the software compact disc supplied with the system.

The server also uses the RZ drive to save server characteristics and network configuration information for use at subsequent server bootstraps.

1.2.2 RRD42 Compact Disc Drive

A compact disc is an optical, read-only storage media. The InfoServer 150 system comes with one RRD42 compact disc drive. The system can bootstrap from compact disc, although the internal RZ hard disk drive is the primary bootstrap device.

You can use the RRD42 drive for many purposes, such as software installation and database storage.

You can increase the number of compact disc drives on your server by using RRD42 expansion boxes. See Chapter 3 for information about these add-on devices.

1.3 Console Terminal

The InfoServer 150 system is designed to require a minimum amount of system management. You normally issue server commands by using a LAT terminal session created to the InfoServer 150 system from a terminal server. In the rare event that your server has problems communicating with client systems, you can connect a terminal to MMJ port 1 on the back of the system unit (see Section 2.3.6) and follow instructions in Chapter 5 to troubleshoot the problem. The recommended console terminal is a VT300 series terminal.

2

Installing Your System

Setting up your InfoServer 150 system is easy. This chapter provides step-by-step instructions on how to perform the following operations:

- Choose the right location for the system
- Unpack and inspect system components
- Connect system components
- Start the system
- Load and unload compact discs
- Connect the system to the network
- Turn off the system
- Bootstrap the system
- Recover from bootstrap failures

2.1 Choosing the Right Location for the System

Use the following checklist to keep your system operating at its best:

- Carefully read all installation instructions before you turn on the power.
- Keep the air well circulated to prevent excess heat and dust from accumulating.
- Keep your equipment away from heaters, photocopiers, direct sunlight, and abrasive particles.
- Before you set up your system, select a surface that is large enough to hold the system unit. Your desk or work table is a good choice.
- Keep the area clean. Do not place food or liquid on or near your equipment, and do not place your system unit directly on the floor. Dust and dirt will damage the system components.

- Keep air vents clear on each side of the system unit for proper ventilation.

  Do not place the system unit on its side. Blocking the air vents can cause the system unit to overheat.

- Connect your system to a dedicated grounded circuit.

  If you have several pieces of equipment that need to be plugged into a power outlet, use a grounded power strip. Many power strips come with an on/off switch and a surge protector.

  Do not exceed the current capacity of the circuit.

- To avoid damaging equipment that has been moved inside from a cold environment, let the equipment warm to room temperature before you turn it on.

2.2 Unpacking and Inspecting System Components

The InfoServer 150 system is shipped in two boxes, one for hardware and one for software. The larger box contains the InfoServer 150 hardware with accessories and documentation. The smaller box, packed inside the larger box, contains the software compact discs with licenses and instructions.

Figure 2–1 shows the components shipped for the InfoServer system. Check the contents of the cartons against the shipping list provided. Expansion devices are packed in separate cartons (Section 3.3), Chapter 3).

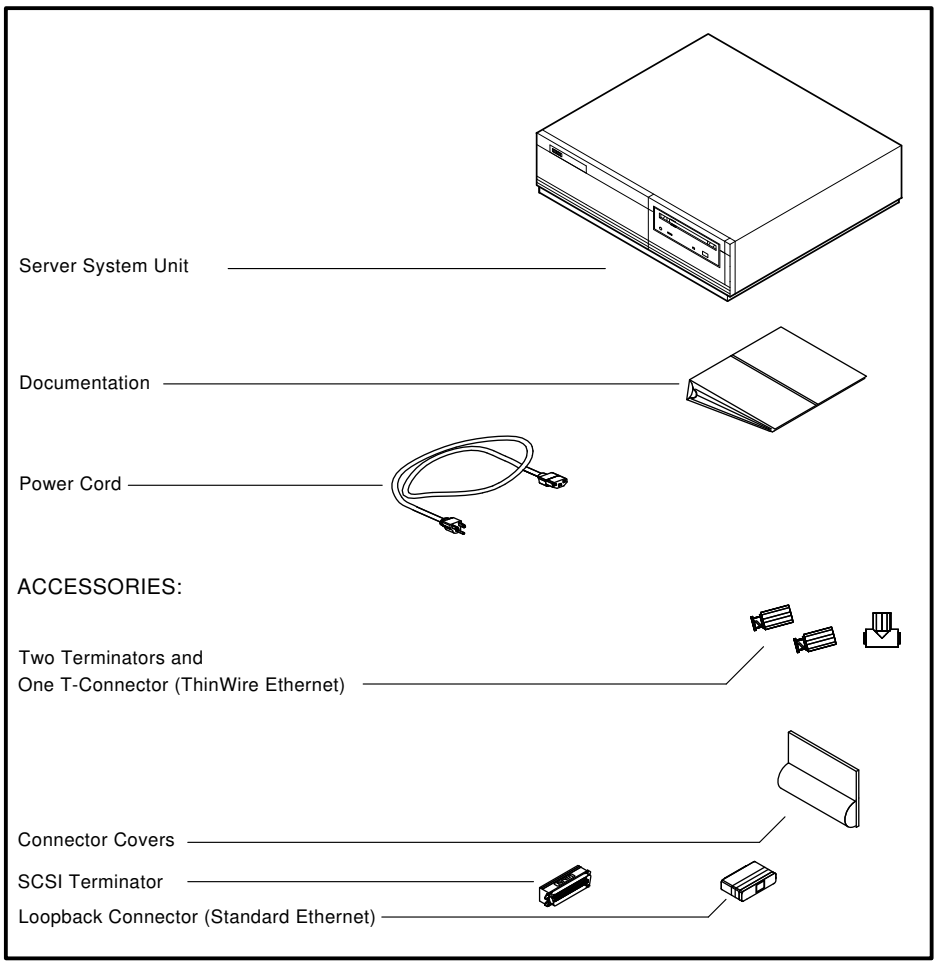
Note

Depending on how you set up your system, you might not use all the components supplied with your system. Store any unused parts safely for future use.

If You Move the System . . .

Always repack the system unit in its original packing material when moving or relocating your system. This precaution will protect the hardware from damage.

Figure 2–1 InfoServer 150 System Components



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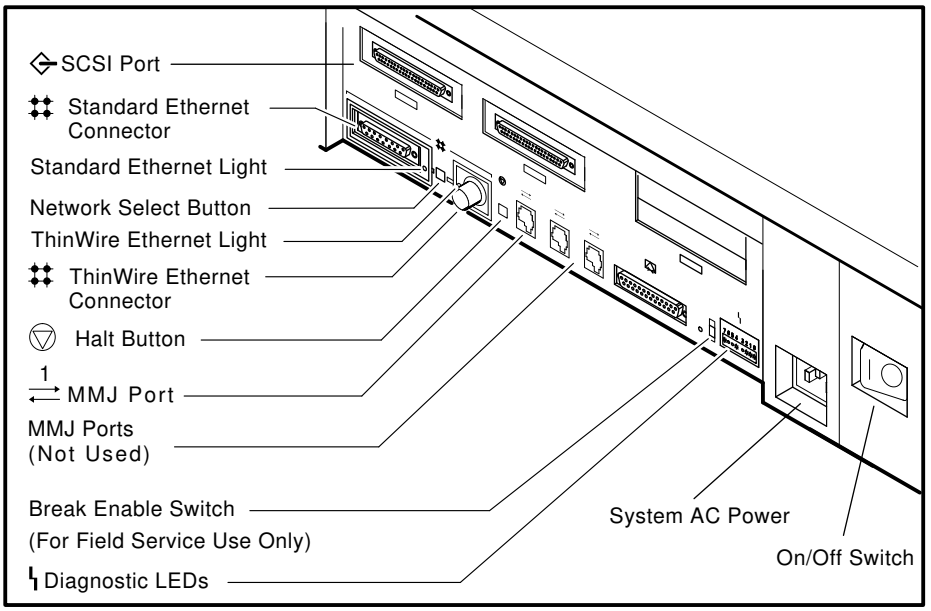
2.3 Connecting System Components

After unpacking, follow the instructions in Sections 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, and 2.3.7 to connect system components.

2.3.1 Identify the System Unit Ports and Connectors

Figure 2–2 shows all the ports and connectors on the rear of an InfoServer 150 system. Take some time to become familiar with the ports and connectors. Symbols (called icons) identify each port and connector you will use when installing your system. Note that there are two SCSI ports. SCSI port A is at the upper left and SCSI port B is next to it.

Figure 2–2 Ports and Connectors



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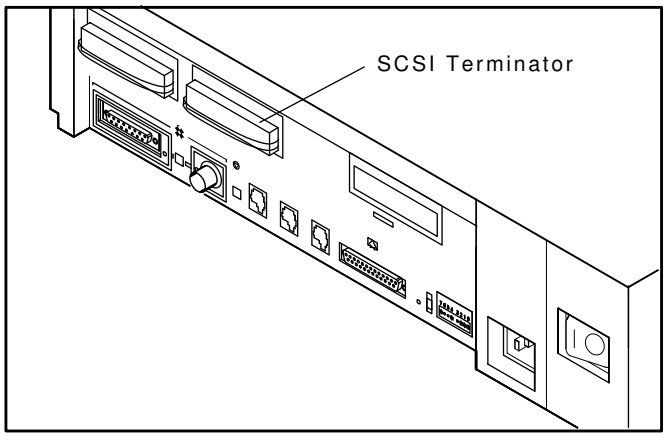
Note

Not all of the connectors shown are usable. In particular, MMJ ports 2 and 3 and the modem port (to the left of MMJ port 1) are not supported by the server.

2.3.2 Install the SCSI Terminators

If you do not intend to connect additional drives to your system, be sure that the SCSI terminators are installed on the SCSI ports at the rear of the system unit, as shown in Figure 2–3.

Figure 2–3 Rear Panel with SCSI Terminators Installed



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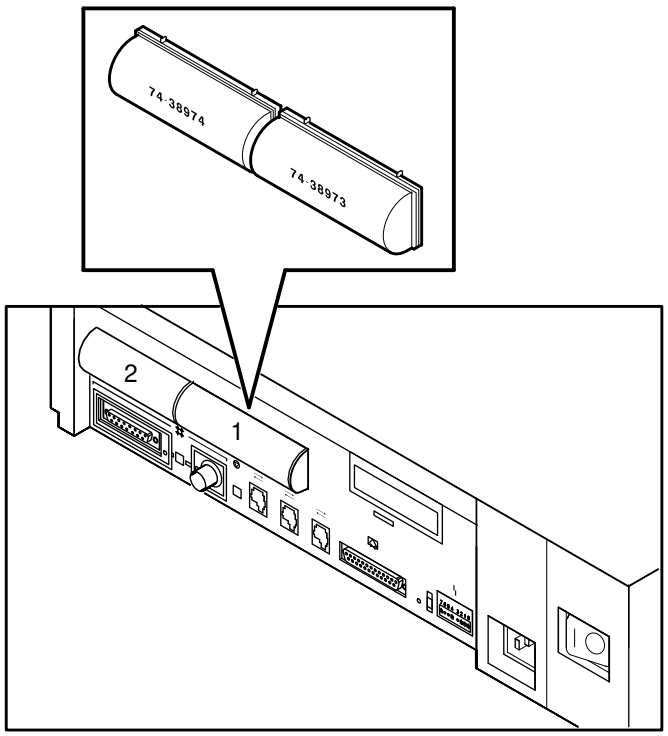
2.3.3 Install the Connector Covers

You system comes with two connector covers to protect the unused connectors on the rear panel of the system unit, as shown in Figure 2–4.

Figure 2–4 Connector Covers



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2.3.4 Attach the Ethernet Terminators

You must connect the T-connector, two Ethernet terminators, and the loopback connector (Figure 2–1) to the system unit, so that you can run diagnostic tests to verify the Ethernet circuits.

Note

The system does not boot if the power-up self-test detects an Ethernet error.

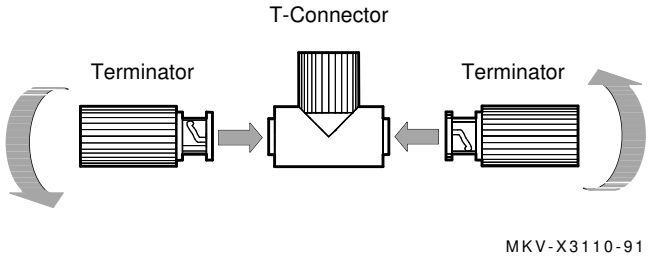
For diagnostic purposes, note the following:

- The T-connector and two terminators complete the ThinWire Ethernet circuit. Later, when you decide to connect to a network, you exchange ThinWire cable sections for one or both terminators, depending on your network setup.
- The loopback connector completes the standard Ethernet circuit.

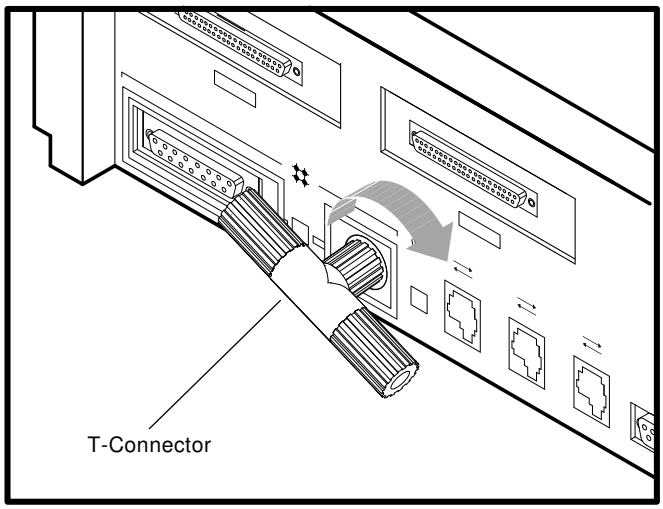
To connect the T-connector and loopback connector, follow these steps:

1. Push one terminator into one side of the T-connector, then turn the terminator clockwise until it locks in place.
2. Push the second terminator into the other side of the T-connector, then turn the terminator clockwise until it locks in place, as shown in Figure 2–5.

Figure 2–5 Attaching T-connectors



3. Connect the T-connector to the ThinWire Ethernet connector on the rear of the system unit by turning the T-connector clockwise until it locks into place.



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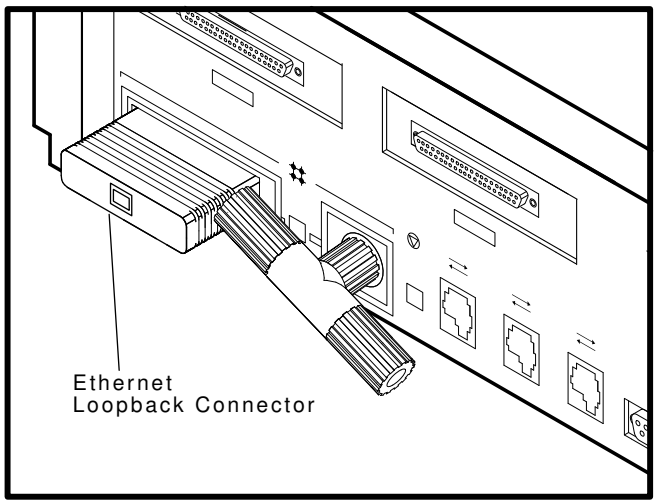
4. Connect the loopback connector to the standard Ethernet port on the back of the system unit. If needed, rotate the T-connector slightly to make room for the loopback connector.



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2.3.5 Connect the System Unit Power Cord

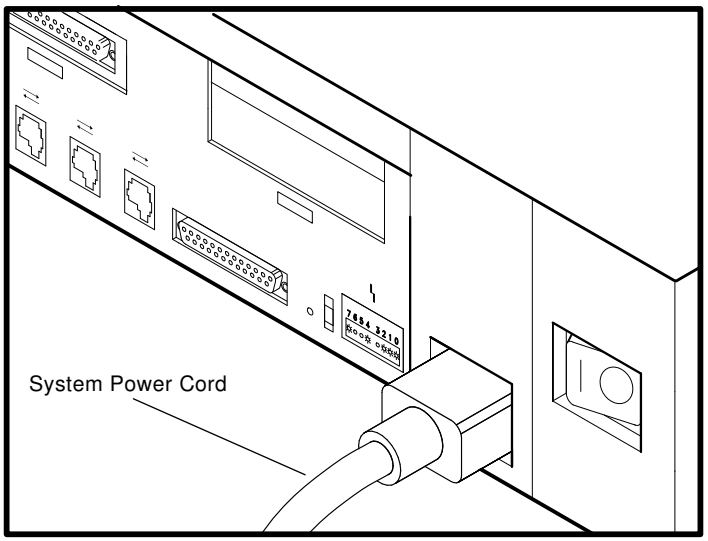
Note

Make sure the | O | power switch on the rear panel of the system unit is off (O).

The system accepts power inputs in the ranges of 100 Vac to 120 Vac and 200 Vac to 240 Vac, at 50 or 60 Hertz. Within these limits the power supply is self-sensing, so the system unit does not need a voltage selection switch.

Connect the supplied power cord to the power socket on the rear panel of the system unit as shown in Figure 2–6. Connect the other end of the power cord to a grounded power outlet.

Figure 2–6 Connecting the Power Cord



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2.3.6 Connect a Console Terminal

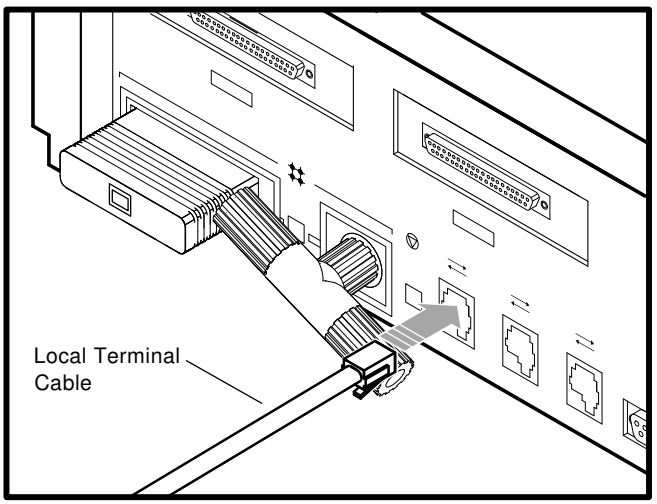
You do not need a locally connected terminal for normal InfoServer operation. However, Digital advises that you connect a local terminal as part of this installation procedure, to ensure that the InfoServer system is operating properly.

The recommended console terminal is a VT300 series terminal. When you connect the terminal cable to one of the MMJ ports on the rear of the VT300 series terminal, the port must be set for DEC-423 operation. See your terminal documentation for details.

To connect a terminal to the server, follow these steps:

1. Make sure the | O | power switch on the terminal is off (O).
2. Connect the terminal cable supplied with the system to MMJ port 1 on the rear panel of the system unit as shown in Figure 2–7.

Figure 2–7 Connecting the Console Terminal Cable



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3. Connect the other end of the console cable to the communications port on the terminal.
4. The terminal must be set at 9600 baud, with 8 bits, and no parity. See your terminal documentation if you need information on setting up your terminal.

During normal operation, you can control the server through a LAT terminal server session, if terminal servers are available on your network. If terminal server access is not available, or if client systems have trouble accessing server services, then a locally connected terminal is needed to manage the server or diagnose server problems. See the *InfoServer System Operations Guide*.

2.3.7 Connect External Expansion Boxes

If you received expansion boxes with your system, you should connect them to your system unit now. See Chapter 3 for information on connecting external expansion boxes.

2.4 Starting the System

To start your system, follow these steps:

1. Turn on any expansion boxes connected to your system.
2. Turn on the console terminal connected to MMJ port 1. See your terminal documentation. Note that a console terminal is required when the server is first installed, to ensure proper startup and cabling.

Note

To view the system power-up self-test display, you must allow time for the console terminal to complete its power-up sequence.

3. Turn on the system unit by setting the ⎓ | I O | power switch on the rear of the system unit to the on (|) position.

   The initial power-up display appears on the console terminal in about 1.5 minutes. If you see a display similar to the following, your system has passed all power-up tests, and the terminal's keyboard language has been set:

```
KA41-2  V1.0

F_..E...D...C...B...A...9_..8...7...6...5...4_..3_..2_..1...

?  E  0040  0000.0005
?  C  0080  0000.4001

 83 BOOT SYS
_DKA100
```

The system now boots the internal RZ disc drive. If the boot is successful, the console screen displays a message like the following:

```
DEC InfoServer 150 V2.0
Copyright (c) 1990, 1991 Digital Equipment Corp.
%ESS-I-INITDISK, Disk initialization complete, 14 devices found
```

4. Enter the system password (ESS) when the system displays the `Enter Password:` prompt.

If you do not see the power-up display or the server fails to bootstrap, turn off the system unit and review each installation step. Repeat the power-up procedure. If the problem continues, see Section 2.9.3.

Note

Check the position of the break enable switch on the rear of the system unit (Section 2.3.1). It should be in the down position.

2.5 Loading a Compact Disc

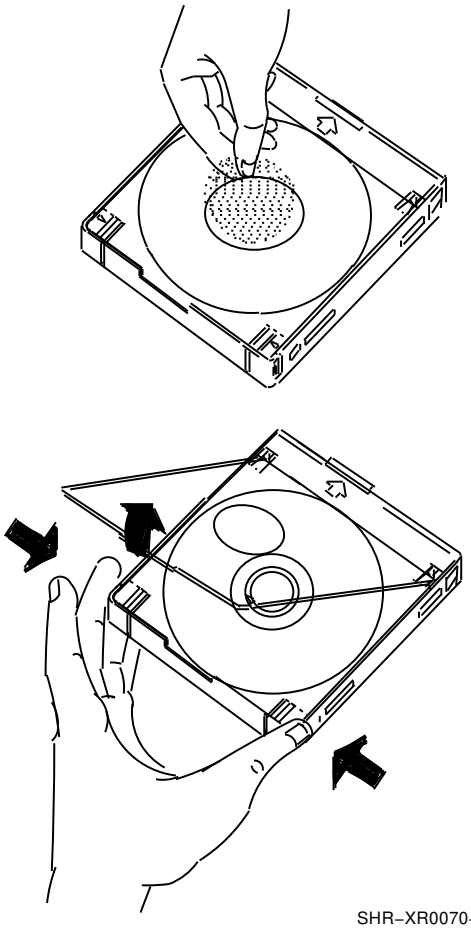
The InfoServer 150 system (Figure 1–1) has one RRD42 compact disc drive on the front of the system unit.

When you load a disc into the compact disc drive, insert the entire disc **caddy** into the disc door on the drive. Do not remove the disc from the caddy.

To load compact discs that you want to serve to the network, follow these steps:

1. Examine the disc caddy. Make sure it is not cracked or damaged. Never load a damaged caddy into a compact disc drive.
2. If a protective film is on the lid of the caddy, remove the film before using the caddy (Figure 2–8).
3. To open the lid of the caddy, press the tabs on both sides and lift the lid (Figure 2–8).

Figure 2–8 Opening the Caddy



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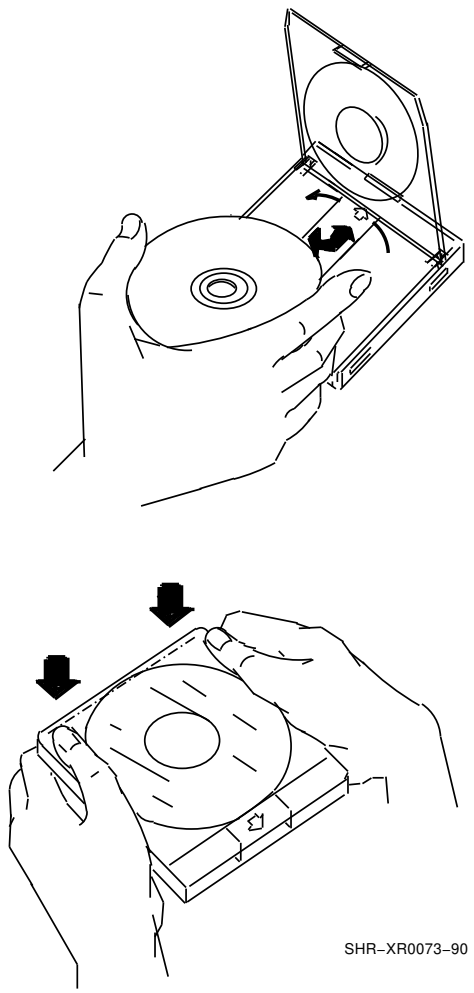
4. To load an empty caddy with a disc, hold the disc by the edges and place the disc (with disc label up) into the caddy (Figure 2–9). Do not touch the surface of the disc. Be sure to place the disc beneath the edge of the caddy.
5. Press both corners firmly to close the lid (Figure 2–9).

Figure 2–9 Loading the Disc

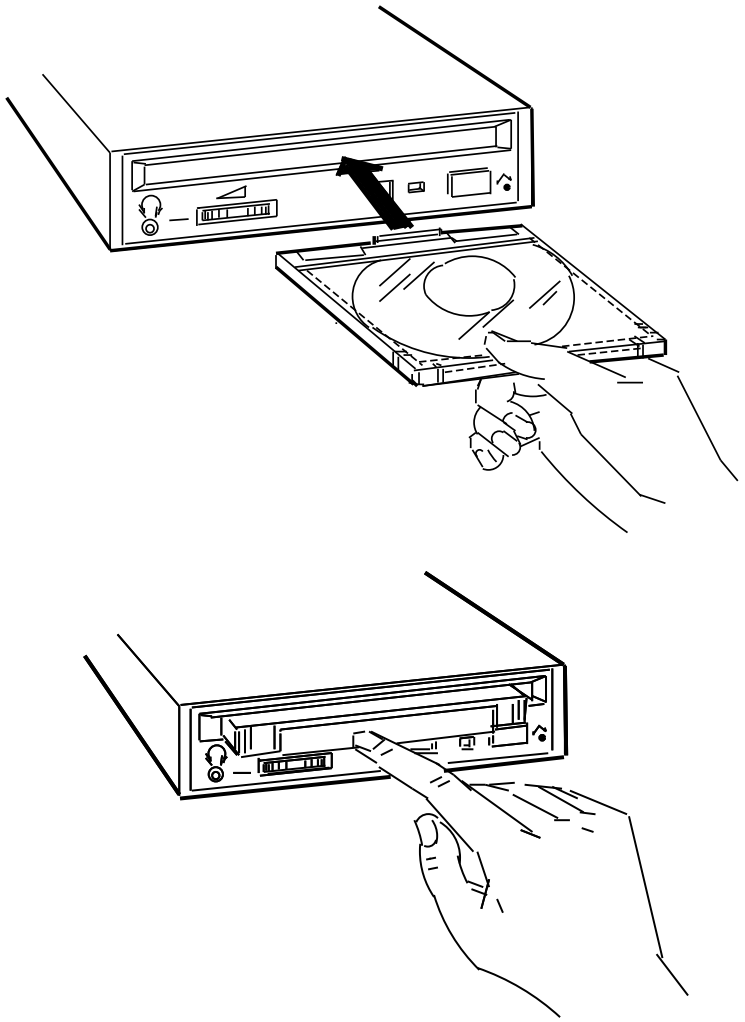


Note

The loading procedure for the RRD42 tabletop and embedded drives is the same with one exception: the tabletop drive requires setting the POWER switch to on. Figure 2–10 shows the tabletop drive.

6. Insert the caddy into the drive (Figure 2–10).

Figure 2–10 Loading the Caddy in the Drive



SHR–XR0074–90

The green activity light should turn on within 5 seconds. If the drive accepts the disc and caddy but the light does not come on, the disc might be sitting incorrectly in the caddy. Remove the disc and check that the label is facing up when you insert the disc into the drive again. If the activity light still does not come on, there might be a problem with the RRD42 drive. Contact your local Digital service representative.

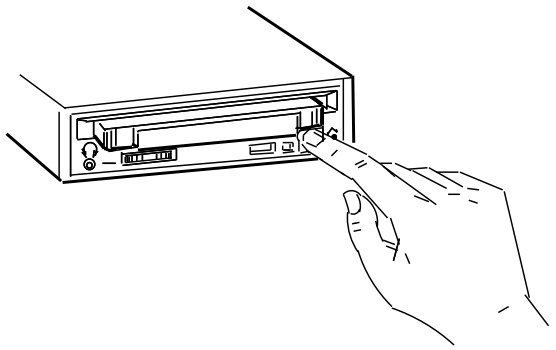
The drive reads the Table of Contents (TOC) on the disc. The BUSY indicator lights while the TOC is read. When the BUSY indicator light goes off, the drive is ready to receive commands.

2.6 Unoading a Compact Disc

Before unloading a compact disc, make sure that the green activity light is not flashing. If the light is flashing, the compact disc drive is transferring data. Wait until the green activity light stops flashing.

Press the EJECT button on the drive to eject the caddy as shown in Figure 2–11.

Figure 2–11 Ejecting the Caddy from the Drive

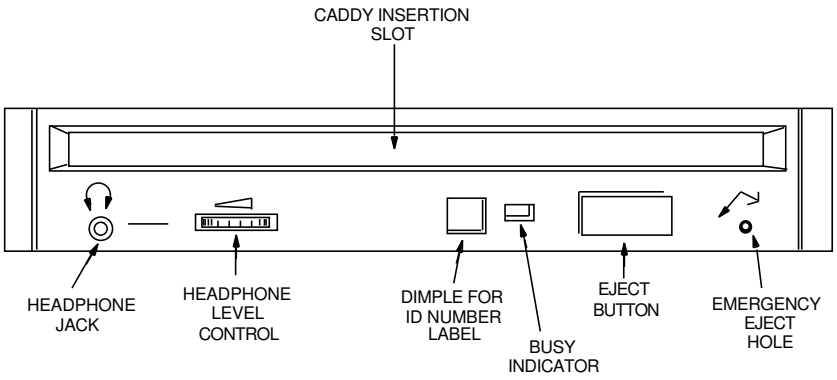


SHR–XR0075–90A

The EJECT button on the RRD42 drive does not function when disabled by software or if power to the drive is turned off. Use the following procedure for manual ejection:

1. Turn off the power to the drive.
2. Insert a steel rod, about 1.2 millimeters in diameter and 35 millimeters or 1.37 inches long, and push into the emergency eject hole at the lower right of the front panel (Figure 2–12). The rod can be made by straightening a large paper clip.

Figure 2–12 Front Panel of RRD42 Drive



2.7 Connecting the System to a Network

After you verify that the InfoServer system passes its power-up self-test sequence, you must connect the InfoServer system to the network to make the system available to client systems. To connect the InfoServer system to a network, follow these steps:

1. Turn the system unit's ⏻ power switch off (O).
2. Read Chapter 4 to learn how to install your network hardware.
3. After making the network connection, turn the system unit's ⏻ switch back on. The server should pass the power-up self-test and reboot successfully.
4. Refer to the *InfoServer System Operations Guide* for information on how to establish a server management session to set up and control the server.

2.8 Turning Off the System

Turn off your equipment in the following order, by setting the ⏻ | I O | switches to O (off):

1. Console terminal
2. Expansion boxes
3. System unit

2.9 Bootstrapping the System

Once the server is booted and running, the diagnostic LEDs on the back of the box light up, rotating from right to left. The following sections explain the automatic and manual processes for booting the server. Use the manual process only if the automatic process fails.

2.9.1 Bootstrapping the System Automatically Without a Console

The InfoServer system's bootstrap program and operating software are programmed onto the system's internal RZ drive at the factory. After the power-up display, the server attempts to boot automatically from the internal drive.

If the diagnostic LEDs on the back of the InfoServer system are not rotating from right to left after the system has been given time to boot, follow instructions in Section 2.9.3.

2.9.2 Starting the System with a Console, Only If Necessary

To start your system with a console, , follow these steps:

1. Turn on any expansion boxes connected to your system.
2. Turn on the console terminal connected to MMJ port 1.

Note

Allow time for the console terminal to complete its power-up sequence. Otherwise, you will not be able to view the system power-up self-test display.

3. Turn on the system unit by setting the ⏻ | I O | power switch on the rear of the system unit to the (I) position.

The initial power-up display appears on the console terminal in about 1.5 minutes. If you see a display similar to the following, your system has passed all power-up tests, and the terminal's keyboard language has been set:

```
KA41-2  V1.0

F_..E...D...C...B...A...9_..8...7...6...5...4_..3_..2_..1...

? E 0040 0000.0005
? C 0080 0000.4001

83 BOOT SYS
-DKA100
```

The system now boots the internal RZ disc drive. If the boot is successful, the console screen displays a message like the following:

```
DEC InfoServer 150
Copyright (c) 1991 Digital Equipment Corporation
%ESS-I-INITDisc, Disc Intialization complete, 14 devices found

Enter Password:
```

2.9.3 Recovering from Bootstrap Failures

If the InfoServer system fails to boot, follow these steps:

1. Remove any CDROM you currently have in the internal RRD42 drive. The system attempts to boot from this drive if the drive contains a bootable disc.
2. Turn the system off and turn it on again.

If the system fails to boot with no CDROM in the RRD42 drive, the internal RZ disc might be corrupted.

Use the following procedure to install the software from the InfoServer Software CDROM to the internal RZ disc. This procedure erases the contents of the interal disc and updates the disc with the software from the InfoServer Software CDROM. The procedure should take less than 60 seconds.

1. Make sure the system unit's ⏻ power switch is off (O).
2. Connect the console terminal, turn it on, and allow it to warm up.
3. Insert the InfoServer Software CDROM into the internal RRD42 drive.
4. Turn the system unit's ⏻ switch on (I).
5. The display shown in step 3 of Section 2.9.2 appears.
6. The `Enter Password:` prompt appears.

7. At the prompt, enter the default password (ESS) or the last saved password.

   If you have forgotten the current password, see the troubleshooting chapter in the *InfoServer System Operations Guide*.

8. The `Xterminal_InfoServer>` prompt appears.

   Enter the following commands:

```
Xterminal_InfoServer> SET STATE OFF
Xterminal_InfoServer> INITIALIZE DK1:
Xterminal_InfoServer> UPDATE SYSTEM DK2:
Xterminal_InfoServer> SET STATE ON
```

   Note

   Do not halt the InfoServer system while the software is copying. If the system is halted accidentally, repeat the procedure described in this section.

9. The following messages should appear after a few seconds:

```
% ESS-I-COPIED, copy operation completed successfully.
% ESS-I-CREATEDBOOT, boot partition created successfully.
```

   If the internal RZ disc is corrupted or the default boot configuration is altered, the system might fail to boot. See the troubleshooting chapter in the *InfoServer System Operations Guide*.

10. Remove the InfoServer Software CDROM from the RRD42 drive.

11. Insert the Function CDROM supplied with your system and enter the following command:

```
Xterminal_InfoServer> UPDATE FUNCTION DK2:
```

12. If the problem continues, see Chapter 5.

3
Expanding Your System

This chapter provides information on installing and using external add-on disk storage devices. An InfoServer 150 system can support 5 external SCSI devices on SCSI bus A and 7 external SCSI devices on SCSI bus B.

Digital qualifies the external expansion boxes recommended for use with the InfoServer 150 system, to ensure that they meet system requirements.

The chapter explains how to perform the following tasks:

- Connect one or two expansion boxes of the same type to your system unit
- Verify the SCSI ID default (factory) setting
- Reset the SCSI ID number

The chapter also provides some specific information for the RRD42 expansion box.

3.1 Guidelines for Connecting Expansion Boxes

Use the following guidelines when connecting expansion boxes:

- You can connect any combination of external expansion boxes, as long as you do not connect more than 12 expansion boxes.
- You must attach the 50-pin terminator that comes with your expansion box to an unused bottom SCSI connector on the back of an expansion box.
- You should plug all expansion boxes into the same grounded power strip or electrical outlet.

CAUTION

Some expansion boxes are restricted to either 110 Vac or 220 Vac operation. Make sure the voltage requirement of any expansion box is compatible with the supply voltage. The RRD42 expansion box accepts power inputs in the ranges of 100 Vac to 120 Vac and 200 Vac to 240 Vac, at 50 or 60 Hertz. Within these limits the power supply

is self-sensing, so the system unit does not need a voltage selection switch.

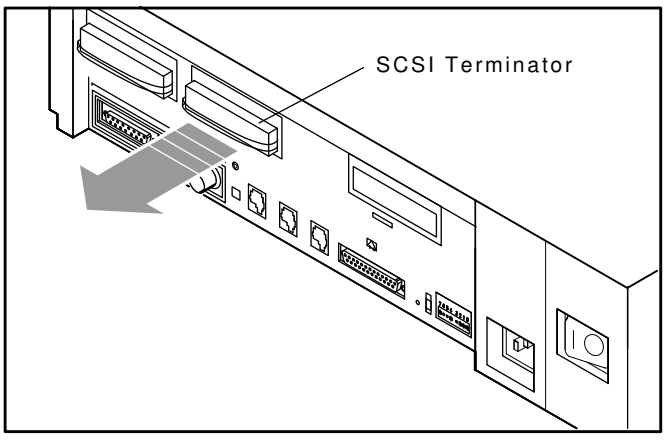
- Turn on all expansion boxes before you turn on your system unit. This step ensures that the device in each expansion box is ready for use, and that the system firmware includes the device in its configuration.

3.2 Preparing Your System for an Expansion Box

If you plan to add an expansion box to your system, you must first remove the SCSI cover and the terminator connected to the SCSI port.

1. Place your fingers under the SCSI cover's locking tab and lift off the SCSI cover. Then remove the SCSI terminator as shown in Figure 3–1.

Figure 3–1 Removing SCSI Terminator



Save the terminator and cover — you must reattach them if you disconnect all expansion boxes from the system unit.

3.3 Unpacking an Expansion Box

SCSI peripherals in external, standalone enclosures usually come with the following accessories:

- One 50-pin to 50-pin cable (part number BC19J-1E). Use this cable to connect the expansion box to other expansion boxes.
- One 68-pin to 50-pin cable (part number BC56H-03). Use this cable to connect the expansion box to the system unit.
- One 50-pin terminator.
- One power cord.

Before you set up your expansion box, make sure you have all these parts. Check the contents of the box against the shipping list.

3.4 Connecting One Expansion Box

To connect a single expansion box to your system unit, follow these steps:

1. Set the $\overline{|\,O\,|}$ power switches on the system unit and expansion box to the off (O) position.
2. Turn the expansion box so that the back is facing you.
3. Set the SCSI ID number.

   Each device is shipped with the SCSI ID number set to 0. Refer to the information provided with the expansion box to verify this setting.

   The RRD42 tabletop drive has a rear-panel pushbutton that spins a wheel and advances a number. To set the device ID number, press the button until the desired number appears.
4. Connect the 68-pin to 50-pin expansion box cable as follows:

   Connect one end of the cable to the SCSI port on the rear of the system unit. Snap the spring locks in place.

   Connect the other end of the cable to the top port on the rear of the expansion box. Snap the bail lock loops in place.
5. Connect a 50-pin terminator to the lower port on the expansion box.

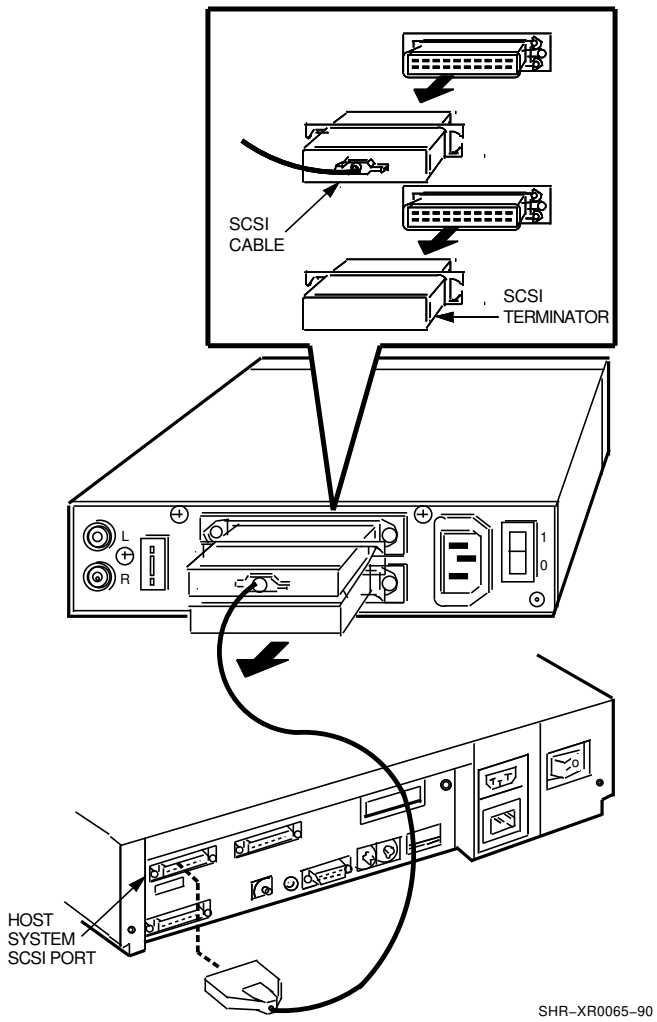
Caution

Check the voltage requirement of the expansion box before powering up.

6. Connect the power cord to the power receptacle on the expansion box, then plug the other end into a grounded power outlet.

Figure 3–2 shows how to connect one RRD42 expansion box to the system.

Figure 3–2 Connecting One RRD42 Expansion Box



3.5 Connecting Two Expansion Boxes

You can add a second expansion box at a later time and link the two expansion boxes together in series. You can stack expansion boxes or place them side by side.

Note

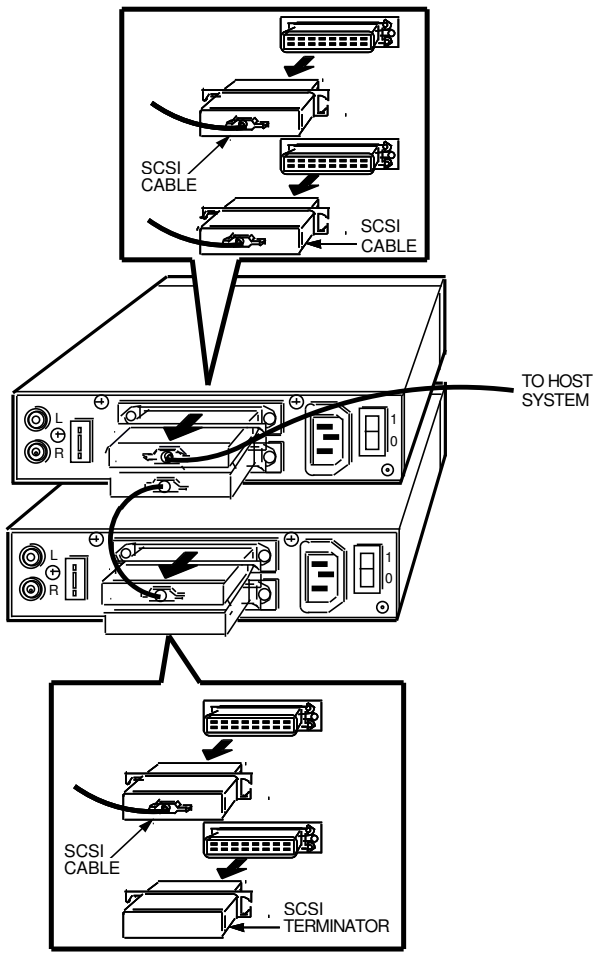
If you have more than one of the same type of device attached to your system, you must change the SCSI ID on the second device to an open ID number on the SCSI bus. See Appendix A.

To link two expansion boxes, follow these steps:

1. Make sure the $\overline{\text{I O}}$ on/off switches on all expansion boxes are set to off (O), then power off the system unit.
2. Remove the 50-pin terminator on the first expansion box. Store the terminator for future use.
3. Connect one end of the 50-pin to 50-pin connector cable to the upper connector on the second expansion box.
4. Connect the other end of the 50-pin to 50-pin connector cable to the lower connector on the first expansion box.
5. Attach a 50-pin terminator to the unused SCSI port on the second expansion box.
6. Connect the power cord of the second expansion box to the power receptacle on the expansion box, then plug the other end into a grounded power outlet. Each expansion box needs its own source of power.

Figure 3–3 shows how to connect two RRD42 expansion boxes to the system in series.

Figure 3–3 Connecting Two RRD42 Expansion Boxes



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3.6 RRD42 Compact Disc Expansion Box

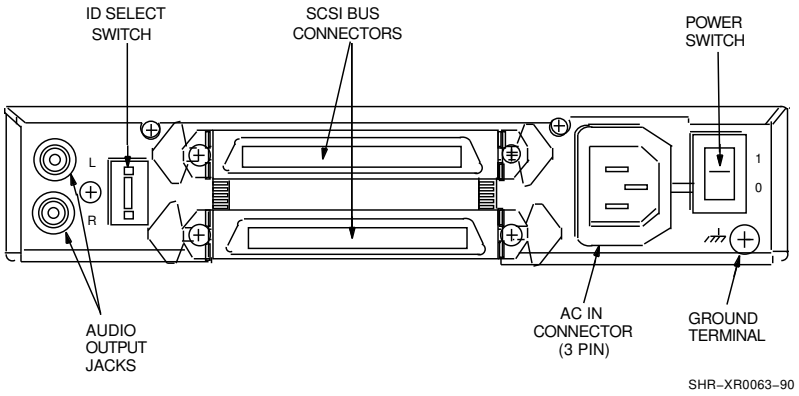
The RRD42 is a read-only storage device that reads data from removable compact discs. See Section 2.5 for information on the handling and storage of compact discs.

If you are installing an RRD42 expansion box, see the beginning of this chapter for unpacking and installation instructions.

3.6.1 Verifying the SCSI ID Number on the RRD42 Expansion Box

Figure 3–4 shows the rear panel of the RRD42 expansion box, which is shipped with the SCSI ID number set to 0. The number is displayed in a window beneath the ID selector switch.

Figure 3–4 RRD42 Real Panel



3.6.2 Resetting the SCSI ID on the Second RRD42 Expansion Box

If you add two RRD42 expansion boxes to your system, you must reset the ID number on the second RRD42 to an open ID — one that is not currently being used. To reset the number, follow instructions in step 3 of Section 3.4. In the following example, ID 0 is an open ID.

To determine available ID numbers on the SCSI-A or SCSI-B bus on your InfoServer 150 system, enter TEST 50 at the console prompt (>>>), then press Return. Your system configuration appears on the screen. FFFFFF05 indicates an open SCSI ID number. Look for a display similar to the following:

```
SCSI-A     1C1C.0001   V1.3
FFFFFF05 00000001 05000001 FFFFFF05 FFFFFF05 FFFFFF05 FFFFFF03 FFFFFF05
  ❶        ❷        ❸        ❹        ❺        ❻        ❼        ❽
```

❶ SCSI ID 0 — open

❷ SCSI ID 1 — R23L internal drive

❸ SCSI ID 2 — RRD42

❹ SCSI ID 3 — open

❺ SCSI ID 4 — open

❻ SCSI ID 5 — open

❼ SCSI ID 6 — SCSI-A controller

❽ SCSI ID 7 — open

```
SCSI-B     1C1C.0001   V1.3
FFFFFF05 05000001 05000001 05000001 05000001 05000001 FFFFFF03 FFFFFF05
  ❶        ❷        ❸        ❹        ❺        ❻        ❼        ❽
```

❶ SCSI ID 0 — open

❷ SCSI ID 1 — RRD42

❸ SCSI ID 2 — RRD42

❹ SCSI ID 3 — RRD42

❺ SCSI ID 4 — RRD42

❻ SCSI ID 5 — RRD42

❼ SCSI ID 6 — SCSI-B controller

❽ SCSI ID 7 — open

Table 3–1 explains the codes used in the example:

Table 3–1 SCSI Devices Self-Test Status Codes

Status Code	SCSI Device
FFFFFF05	Device is off-line or not installed at this address.
FFFFFF03	SCSI bus controller.
FFFFFFFF	Device not tested—possible SCSI bus controller error.
00000001	External or internal hard disk drive.
05000001	RRD42 compact disc drive.

3.7 Preventive Maintenance

The RRD42 does not require periodic cleaning. To maintain maximum performance, ensure that the environment where the drive is installed is free from contamination.

If errors occur, clean the disc with a clean, lint-free cloth. Wipe the disc from the center out. Do not use solvents, such as benzene, thinner, commercial cleaners, or antistatic sprays.

Follow these guidelines to care for the caddy and the disc:

- Do not drop the disc or caddy.
- The caddy's shutter automatically opens when it is inserted into the drive. Do not open the shutter manually and touch the disc.
- When transporting the the InfoServer 150 system or the RRD42 tabletop drive, remove the caddy from the drive.
- Do not put the disc and caddy in a location subject to any of the following:

  Dust
  Direct sunlight
  High temperature
  High humidity

- When a disc is dirty, clean it.

4

Connecting to a Network

This chapter explains how to

- Connect to a ThinWire Ethernet or standard Ethernet network
- Test your system with a T-connector and loopback connector
- Connect several systems together to create a simple ThinWire Ethernet work group

To form a work group, you connect systems together sequentially with cables and connectors.

Connecting a system to a ThinWire Ethernet network or a Standard Ethernet network takes only a few minutes for an experienced user and slightly longer for a new user.

4.1 Connecting to a ThinWire Ethernet Network

The following sections explain how to connect the InfoServer 150 system to a ThinWire Ethernet network.

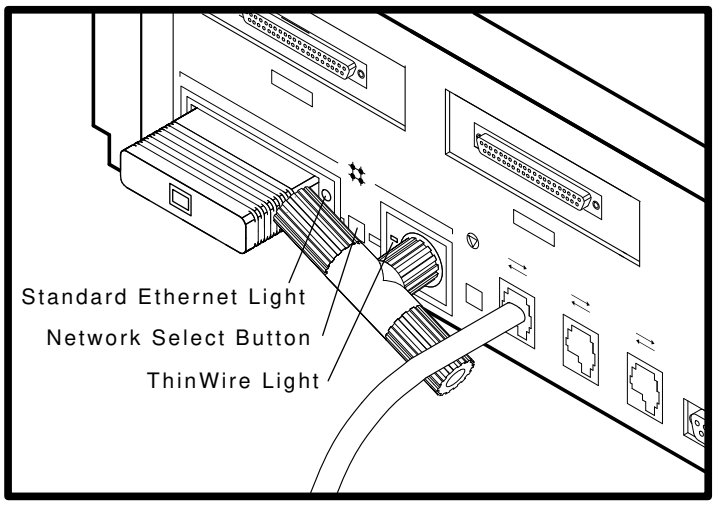
4.1.1 Check the Network Select Button

The InfoServer 150 system has a network select button on the rear of the system unit. When you first receive the system, the button is usually set to the In position. The button can be positioned as follows:

- In — ThinWire Ethernet
- Out — Standard Ethernet

To use ThinWire Ethernet on your system, make sure the button is pressed in. If the button is set correctly, the green light to the left of the ThinWire Ethernet connector comes on when you turn on the system. The standard Ethernet light remains off. When the ThinWire light comes on, you can connect to ThinWire Ethernet. Figure 4–1 shows the position of the network select button and Ethernet lights.

Figure 4–1 Position of Network Select Button and Ethernet Lights



4.1.2 Verify Your ThinWire Ethernet Network Installation

To verify the ThinWire Ethernet installation, you must be correctly connected to a ThinWire Ethernet network. Be sure that the ThinWire Ethernet terminator is attached to your system unit. You also need a console terminal.

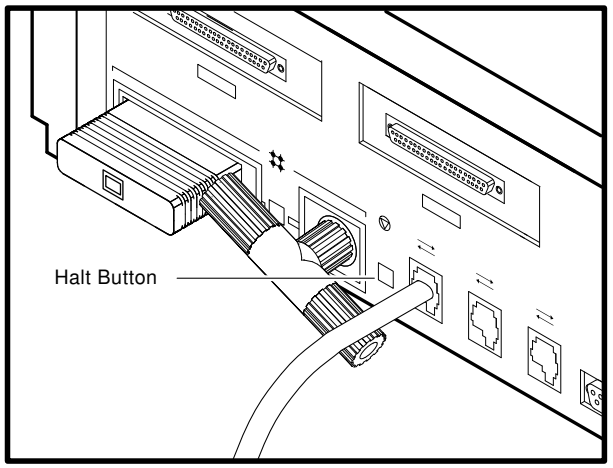
Follow these steps:

1. Turn on your server system. A power-up display similar to the following appears:

   ```
   F_..E...D...C...B...A...9_..8...7...6...5...4_..3_..2_..1
   ```

2. The console prompt >>> also appears. If the console prompt does not appear, press the halt button on the back of the system unit. Figure 4–2 shows the position of the halt button.

Figure 4–2 Position of Halt Button



3. Enter the following command:

   ```
   >>> TEST 50 Return
   ```

   The system responds with another display. If the last line of the display is NI 0100.0001, the Ethernet subsystem is working.

   If a number between 0100.0002 and 0100.7000 appears on that line of the display, there is a failure in the Ethernet subsystem.

   If NI 0100.7000 or any number above 0100.7000 appears on this line, check all Ethernet connections.

4.1.3 Connect Your System to ThinWire Ethernet Cable

To connect the server system to ThinWire Ethernet cable, follow these steps:

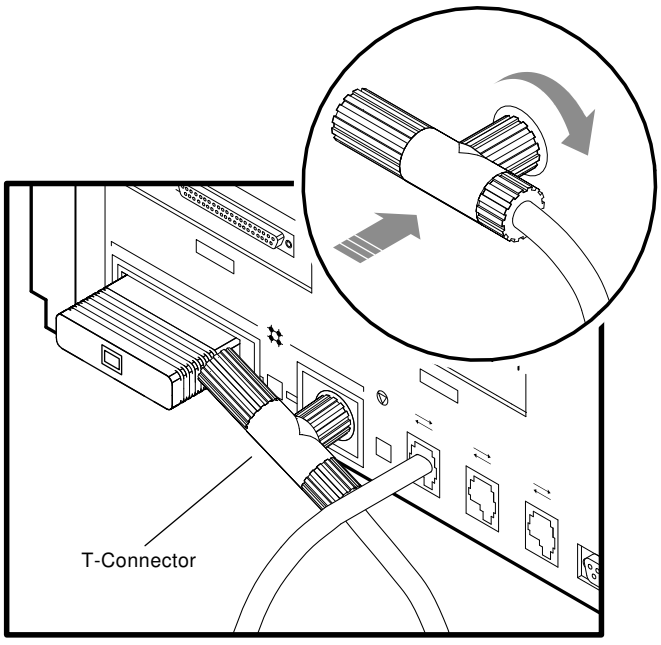
1. Set the I O on/off switch on the back of the system unit to the off (O) position.
2. Attach a ThinWire cable to one side of the T-connector for the system unit. Figure 4–3 shows the position of the T-connector.
3. If your system is the first or last system in a single ThinWire **segment**, leave the terminator attached to one side of the T-connector.

   A segment is a length of cable made up of one or more cable sections connected with **barrel connectors** or T-connectors.

4. If your system is not the first or last system and you want to connect another system to the ThinWire cable, add another section of cable to the T-connector.

   Make sure the T-connector is attached correctly to the back of the system unit. Push the T-connector onto the system unit BNC connector, then turn the T-connector clockwise until it locks in place.

Figure 4–3 Attaching T-Connector with Cable Segment to BNC Connector



4.2 Creating a ThinWire Ethernet Work Group

A work group is a set of systems connected serially on the same ThinWire segment. This segment can work as a standalone network or be connected to a larger network.

The serial configuration lowers the cost of wiring. However, there is a risk that someone might unplug a system and make the network connections inoperative between systems on the ThinWire segment.

4.2.1 Connecting Your System to a DECconnect Faceplate

If your office has been wired with Digital's DECconnect products, then connect your system to the DECconnect faceplate in your office. A **faceplate** is a wall receptacle that provides a single network connection for your system.

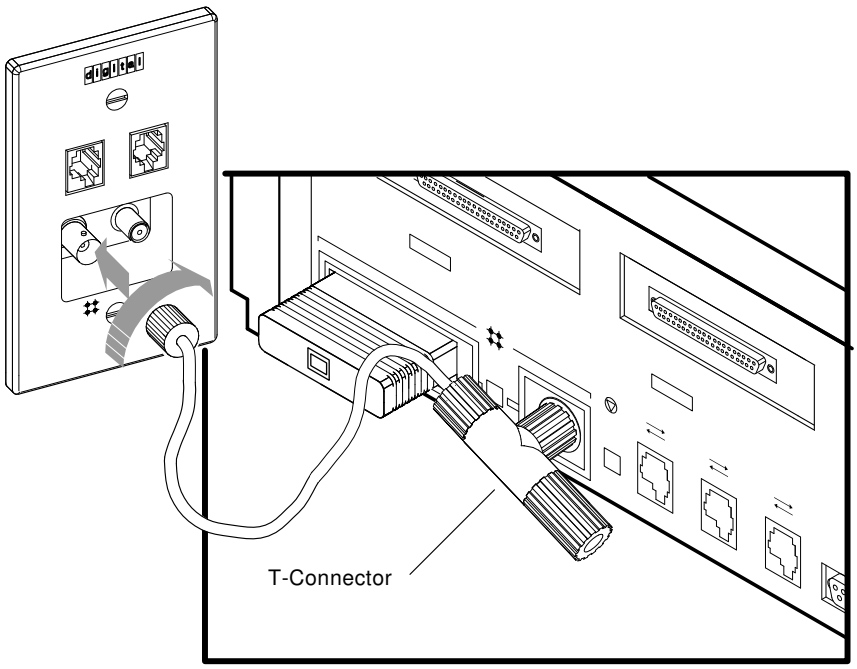
DECconnect cabling components support network configurations ranging from simple standalone ThinWire networks to multimedia local area networks (LANs) that connect PCs, workstations, and VAX systems. No matter how large or how small your network, the most visible DECconnect component in your office is the faceplate. The faceplate has one of the following connectors:

- A ThinWire BNC connector that allows several systems, including InfoServer 150 systems, to be serially connected to one another on the office side of the faceplate.
- A ThinWire Ethernet serial connector that allows several faceplates to be serially connected behind the wall to a single segment of ThinWire cable. One system can be attached to each faceplate.

Your network coordinator knows which type of DECconnect faceplate you have in your office.

To connect your system, attach one end of the ThinWire cable to the office side of the DECconnect faceplate. Attach the other end of the ThinWire cable to the ThinWire connector on the back of your system unit. Figure 4–4 shows these connections.

Figure 4–4 Connecting to DECconnect Faceplate



4.2.2 Troubleshooting the ThinWire Segment

If you find problems during the ThinWire Ethernet installation, use the following checklist to make sure all connections are correct:

1. Check that all connections are secure on the ThinWire Ethernet segment.
2. Check that there is a T-connector between the connector on the ThinWire cable and the system unit.
3. Check that there is no ThinWire segment between the system and the T-connector. The T-connector must attach directly to the system.

4. Check that there are no branches off a ThinWire segment except through a DEMPR multiport repeater.

   A DEMPR provides eight ThinWire Ethernet connections from a single standard Ethernet connection.

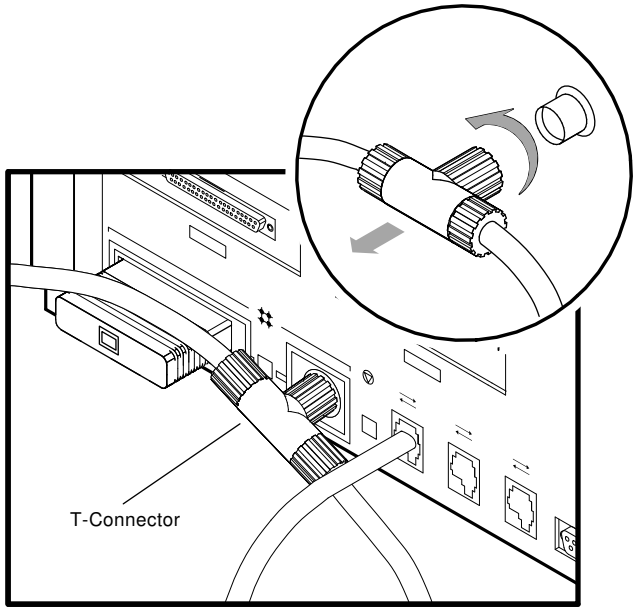
5. Check that a ThinWire segment is not looped from one port on the DEMPR to another port on the DEMPR.

6. Check that the system unit's T-connector has not been disconnected from an operating ThinWire Ethernet segment.

CAUTION

If you need to remove a system from an active ThinWire segment, simply disconnect the center of the T-connector from the system, as shown in Figure 4–5.

Figure 4–5 Disconnecting T-connector



7. Check that you have not disconnected a terminator from an active ThinWire segment. This would disrupt network operation.

After you have checked all ThinWire Ethernet connections, retest the Ethernet. Enter the following command at the console prompt:

```
>>> TEST 1 Return
```

or

```
>>> T 1 Return
```

If a connection is established, the following display and console prompt appear:

```
1...
>>>
```

If a connection is not established, the following message appears:

```
? 84 FAIL
```

4.3 Connecting to a Standard Ethernet Network

This section describes how to connect the InfoServer 150 system to a standard Ethernet system. First, you must check the position of the network select button.

4.3.1 Check the Network Select Button

To use standard Ethernet on your system, press the network select button on the rear of the system unit so that the button is in the out position (Section 4.1). When you turn on your system, the green light near the standard Ethernet connector will turn on. The ThinWire Ethernet light is off. You are ready to connect to a standard Ethernet.

4.3.2 Verify Your Standard Ethernet Network Installation

To verify standard Ethernet installation, you must attach the 15-pin standard Ethernet loopback connector to your system unit.

1. Turn on your system. A power-up display similar to the following appears:

   ```
   F_..E...D...C...B...A...9_..8...7...6...5...4_..3_..2_..1
   ```

   The light at the end of the loopback connector should be on.

   The console prompt (>>>) appears.

2. Enter the following command:

   ```
   >>> TEST 50 Return
   ```

   The system responds with another display. If the last line of the display is NI 0100.0001, the Ethernet subsystem is installed and working.

   If a number between 0100.0002 and 0100.7000 appears on this line, there is a failure in the Ethernet subsystem.

   If NI 0100.7000 or any number above 0100.7000 appears on that line, check all Ethernet connections.

3. After verifying the network successfully, remove the loopback connector and store it for future diagnostic testing. Connect your system to a transceiver cable, as described in the next section.

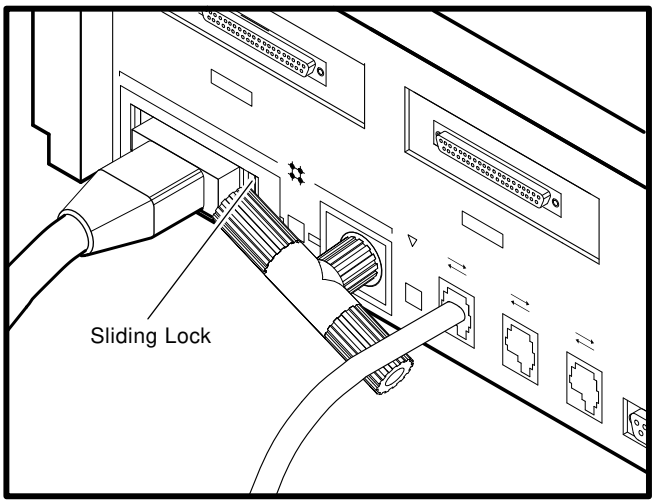
   If you have problems, see Section 4.3.4.

4.3.3 Connect a Transceiver Cable to Your System

A transceiver cable is the physical connection between a standard Ethernet network interface and an InfoServer 150 system. You use a transceiver cable to connect your system to an H4000 transceiver or DELNI unit, which is attached to the standard Ethernet cable. To connect a transceiver cable to your system:

1. Set the | I O | on/off switch on the rear of the system unit to off (O).
2. Connect the 15-pin connector on the transceiver cable to the standard Ethernet connector on the rear of the system unit.
3. Use a screwdriver to move the connector's sliding lock and make the standard Ethernet connection secure as shown in Figure 4–6.

Figure 4–6 Securing Standard Ethernet Connector



MKV-X3124-91

4.3.4 Troubleshooting the Standard Ethernet Connection

If you have problems verifying the standard Ethernet connection, follow these steps:

1. Make sure the loopback connector is securely connected to the system.

   If you are connected to an active Ethernet segment, you can test the system without the loopback connector.

2. Turn your system off, then turn it on again. The system verifies the Ethernet connection during the power-up sequence.
3. After you check all Ethernet connections, retest the Ethernet subsystem. Enter the following command at the console prompt:

   ```
   >>> TEST 1 Return
   ```

4. If a connection is established, the following display appears:

   ```
   1...
   ```

5. If a connection is not established, the following display appears:

   ```
   ? 84 FAIL
   >>>
   ```

5
Solving Problems

This chapter provides information on troubleshooting problems with the InfoServer 150 system. Topics include

- Checking cable connections
- Using the troubleshooting table
- Interpreting power-up error messages
- Running self-tests
- Displaying system configuration information
- Displaying device information
- Using the system exerciser
- Running test utilities for expansion boxes
- Restarting the system after running tests
- Reestablishing console parameters
- Service information
- Command summary

5.1 Checking Cable Connections

If a problem occurs, first make sure that all power and SCSI cables are properly connected. Follow these steps to check the cables:

1. Turn off the console terminal.
2. Turn off all expansion boxes.
3. Turn off the system unit.
4. With all equipment turned off, check that the following cables are correctly connected at both ends:

- Console cable (linking the console terminal to the system unit)
- Terminal power cord
- System unit power cord
- Expansion box connector cable to system unit
- Expansion box power cord

Now, set the ⏻ power switches on your equipment to the on (|) position, in the following order:

1. Turn on the expansion boxes.
2. Turn on the console terminal.
3. Turn on the system unit.

The power-up test display should appear. If it does not, see Section 5.2.

5.2 Using the Troubleshooting Table

Table 5–1 suggests corrective actions for certain system problems. When you have a problem, perform the following steps:

1. Note the symptoms of the problem.
2. Check the symptom column in Table 5–1 for a match.
3. Check the conditions for that symptom in the Possible Cause column. If more than one possible cause is given, check the possible causes and their suggested solutions in the order listed.
4. Follow the advice in the Suggested Solution column.
5. If the problem continues, see Section 5.11.

Table 5–1 Troubleshooting Basic System Problems

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
The system unit power light is off.	The power cord is not connected. The power outlet might not be working.	Check the power cord connections at both ends. Try a lamp that you know works in the power outlet.
		Turn the system off for 10 seconds, then turn it back on. Unplug the terminal cable, communications cable, and printer. Then plug all cables back in and power up the system.
The power-up display does not appear within 20 seconds.	The terminal cable is not connected.	Check that the terminal cable is plugged in at both ends.
	The power outlet might not be working.	Try a lamp that you know works in the outlet.
	The terminal fuse might have blown.	Check the brightness and contrast controls. Replace blown terminal fuse.
	Terminal settings might be incorrect.	See the terminal documentation. The terminal should be set to 9600 baud, 8 bits, and no parity.
	Problem with console port.	Power down the system. Check the position of the break enable switch on the rear of the system unit†. See Section 2.3.1. The switch should be in the down position for the console terminal connected to MMJ port 1.

†The position of the break enable switch is read only during power-up.

(continued on next page)

Table 5–1 (Cont.) Troubleshooting Basic System Problems

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
The power-up display contains question marks or asterisks.	Possible CD drive error.	If question marks or asterisks appear with any numbers in the power-up display, see Section 5.4 and Section 5.7 for further test instructions.
The server system's software `Password:` prompt does not appear on the screen.	InfoServer 150 system software is not installed.	See Section 2.9.3.
The system unit's power light is off.	The system unit's $\overline{\boxed{\text{I O}}}$ power switch is not turned on (|).	Check the setting of the $\boxed{\text{I O}}$ power switch.
	The power cord or data cable is not installed correctly.	Check that the power cord and data cable (if any) are installed correctly at both ends.
Expansion Box Problems		
The power light is off.	The $\overline{\boxed{\text{I O}}}$ power switch is not turned on.	Check the setting of the power switch.
	The power cable or data cable is not installed correctly.	Check that the power cable and data cable (if any) are installed correctly at both ends.
		See the documentation supplied with your external box.

5.3 Interpreting Power-Up Error Messages

The InfoServer 150 system displays important information during its power-up test sequence. A single question mark indicates status information. A double question mark or asterisk indicates possible failures.

Note

If your terminal does not display any information on the screen after the power-up test sequence (approximately 1 second), you might have a terminal or system board failure. Check Table 5–1, the basic troubleshooting table.

Status Information

A single question mark indicates status information. For example:

- `? E 0040 0000.0005` indicates that the system clock is not set.
- `? D 0050 0000.0005` indicates low battery power.

  The system battery's charge is low or completely discharged. Run the system for about 17 hours to recharge the battery fully.

If you see single question marks in the power-up display, but operation of the system seems normal, you can continue to use the system if the question mark is next to a 7 or 6 (the SCSI bus controller tests).

If you continue to see errors of this type during the power-up display, use the information in the rest of this chapter to solve the problems. See Section 5.7 for information on using the system exerciser. If the system continues to display error information or fails to operate normally, call your service representative.

Possible Failures

If double question marks or asterisks appear in the power-up display, failures might exist in the system. Use Table 5–2 to identify the faulty device. An asterisk indicates that read-only memory (ROM) has been found for the option but that no test code exists.

A double question mark indicates a hard error that can affect normal operation and use of some system component. For example:

- `?? 1 00C0 0000.7004`

  This message indicates that the Ethernet subsystem is present in the system but that one or more of the following problems exist:

  – No cable is installed on the ThinWire/standard Ethernet connectors.

  – The loopback connector is not installed on the standard Ethernet port.

  – The terminator is not installed on the ThinWire Ethernet port.

  – The network select switch is set to the wrong position.

  – A cable is faulty.

Table 5–2 Power-Up and Self-Test Display Identifiers

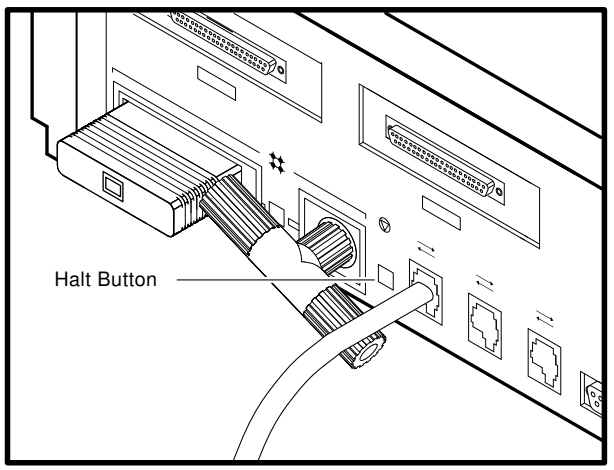
Test Identifier	Device
F	Reserved
E	System clock
D	Nonvolatile RAM
C	Serial line controller
B	Memory
A	Memory management unit
9	Reserved
8	Interval timer
7	SCSI-A bus controller
6	SCSI-B bus controller
5	Interrupt controller and Ethernet ID ROM.
4	Reserved
3	Reserved
2	Reserved
1	Ethernet network interconnect (NI).

5.4 Running Self-Tests

Self-test diagnostic programs reside permanently in your system's read-only memory (ROM). You can run self-tests from the console terminal. After running each self-test, enter the command TEST 50 or T 50 and press Return to display the status of the device tested.

To test a device in your system, follow these steps:

1. Use Table 5–2 to find the number or letter that represents the device you want to test.
2. Put the system in **console mode** by pressing the halt button on the rear of the system unit. Use a pen or a small pointed object to press the button.



MKV-X3120-91

3. Enter TEST (or the letter T) and the number or letter of the test:

```
>>> TEST 7 Return
>>>
```

If you want to test a consecutive series of devices, enter TEST followed by the first and last numbers of the series:

```
>>> TEST F 7 Return
>>>
```

The system displays the number of each device as it is tested, followed by a series of periods.

If the self-test is successful, no question mark or error message is displayed, and the console prompt appears:

```
7...
>>>
```

If a device fails the self-test, a failure message is displayed before the console prompt appears.

```
7?..
84 FAIL
>>>
```

If a self-test results in a failure, run the configuration display to show any error codes.

5.5 Displaying System Configuration Information

The InfoServer 150 system can display configuration, Ethernet ID, ROM revision levels, and status information. Error information displayed is valuable to your service representative. Have this information ready if you must call for service. See Chapter 3 and Appendix A for additional information. Table 5–3 lists the mnemonic code used for each device. To display your system configuration, perform the following steps:

1. Put the system in console mode by pressing the halt button on the rear of the system unit and then pressing Return.
2. Enter the TEST 50 command at the console prompt. The following example shows a typical display. Table 5–3 lists the mnemonic code used for each device.

```
>>> TEST 50 Return

  KA41-2  V1.0
  ID 08-00-2B-03-79-1F

     CLK        0000.0001
     NVR        0000.0001
     DZ         0000.0001
         00000001 00000001 00000001 00000001 00000000 00000000

     MEM        0004.0001
          00400000
     MM         0000.0001
     FP         0000.0001
     IT         0000.0001

SCSI-A     1C1C.0001   V1.3
FFFFFF05 00000001 05000001 FFFFFF05 FFFFFF05 FFFFFF05 FFFFFF03 FFFFFF05
```

```
SCSI-B     1C1C.0001   V1.3
FFFFFF05 05000001 05000001 05000001 05000001 05000001 FFFFFF03 FFFFFF05
```

Table 5–3 Definition of Mnemonics

Mnemonic	Device
CLK	System clock
DZ	Serial line controller
FP	Floating point unit
SCSI-A	SCSI-A controller
SCSI-B	SCSI-B controller
IT	Interval timer
MEM	Memory
MM	Memory management unit
NI	Network interconnect
NVR	Nonvolatile RAM
SYS	Interrupt controller and Ethernet ID ROM

5.6 Displaying Device Information

To determine which devices are installed in your system and their SCSI bus ID assignments, enter the SHOW DEVICE command at the console prompt:

```
>>> SHOW DEVICE Return
>>>
```

The system displays information like the following:

```
VMS/VMB   ADDR     DEVTYP   NUMBYTES   RM/FX   WP   DEVNAM
-------   ----     ------   --------   -----   --   ------
ESA0      08-00-2B-07-E3-83

DKA100    A/1/0/00  DISK      104 MB     FX          RZ23
DKA200    A/2/0/00  RODISK    593 MB     RM     WP   RRD42
HostID    A/6       INITR

DKB500    B/5/0/00  RODISK    593 MB     RM     WP   RRD42
HostID    B/6       INITR

>>>
  ❶        ❷        ❸         ❹         ❺    ❻      ❼
```

❶ Console program device name

❷ Address

❸ Device type

❹ Number of megabytes

❺ Removable or fixed disc

❻ Write-protected

❼ Device name

5.7 Using the System Exerciser

The system exerciser emulates an operating system by interacting with system devices and tests all internal and external devices. Use the system exerciser if your system has intermittent problems. The system exerciser takes up to 11 minutes to complete and does not write on any media.

If you suspect problems, use the system exerciser to check the quality of your software media. Insert a disc into the RRD42 compact disc drive before running the system exerciser.

To test your system, follow these steps:

1. Put the system in console mode by pressing the halt button on the rear of the system and then pressing Return.
2. Enter the TEST 50 command at the console prompt to display your configuration. Check that all devices are present in the configuration display.
3. Enter the TEST 0 command:

   ```
   >>> TEST 0 Return
   ```

The following example shows the display that appears after the system exerciser has run all tests. There is an error message for the RRD42 compact disc drive. If you an error message appears, contact your service representative.

```
>>> TEST 0 Return

  KA41-2  V1.0          01     CU

     F  00B0   MONO     0000.0001  11 1005     0 00:00:35
     C  0080   DZ       0000.0001  14          0 00:01:12
     B  0010   MEM      0137.0001   5 00A7     0 00:02:02
     7  0090   SCSI-A   6000.0001  22 0002     0 00:02:23
                       3200.0001
     6  00A0   SCSI-B   6000.0001  15 0002     0 00:02:56
                       2200.0001
                       3200.0001
                       4101.0471 ❶
                       7200.0001
     1  00C0   NI       0000.0001  9           0 00:04:01
     ❷  ❸      ❹        ❺      ❻  ❼             ❽

   00   0.00:08:14
  ?06   HLT INST
        PC - 00005A0F
```

❶ Example of RRD42 error code

❷ Device identifier

❸ Status indicators (if any)

❹ Mnemonic for the device

❺ Error or status information for each device

❻ Number of times device was tested

❼ Progress count (indicates progress within some tests)

❽ The time (days hours:minutes:seconds) of the last test pass.

Single question marks provide status information and do not interfere with the operation of the system. Double question marks (??) indicate errors that affect system operation.

If the test displays any double question marks:

1. Note the mnemonic code next to the question marks.
2. Check Table 5–3 to find the device indicated by the code.
3. Call your service representative. Have this information ready when you call.

5.8 Running Test Utilities for Expansion Boxes

If an expansion box fails check that all cable connections are in place.

To test an RRD42 expansion box, follow these steps:

1. Press the halt button on the rear of your system unit. The console prompt (>>>) appears on your screen.
2. Insert a disc in the RRD42 drive, following the instructions in Section 2.5.
3. Enter the TEST 0 command at the console prompt.
4. The test should display the normal response code of 4100.0001. If the test displays another code, there is a problem with the RRD42 compact disc drive. Do not use the drive. Call your service representative for assistance.

5.9 Restarting the System after Running Tests

While running any of the tests or procedures in this chapter, your system is in console mode. If the InfoServer system software is already loaded on the internal RZ hard disc drive (Section 2.4), resuming normal operation is easy. You simply reenter **program mode** in one of two ways:

- Enter the BOOT command at the console prompt and press Return. The system then searches its internal RZ drive for the server's load image.
- Turn the system unit off, then it on again. The server is configured to boot automatically at power-up.

Either method lets the server boot the system software on the internal RZ drive. If the software has not been copied to the drive, place the InfoServer software compact disc in the compact disc drive. If the system fails to boot initially from the internal RZ drive, the system automatically tries to boot from the compact disc drive indefinitely.

If the system does not boot when you enter the BOOT command, see Section 2.9.3.

5.10 Reestablishing Console Parameters

It might be necessary to reestablish key console parameters after replacing a CPU module or battery pack. Enter the following commands at the console prompt:

```
>>> SET BOOT DKA200, DKA100
>>> SET HALT 2
>>> SET BFLG D0000000
```

5.11 Service Information

If you have followed the corrective actions listed in this chapter and continue to have problems with your system, call your Digital service representative.

Before you call:

1. Write down the serial and model numbers of your system. Your system is identified by a label on the rear of the system unit. For example:

   Model: SEAC*x*-A*x*, InfoServer 150 system.

   Your service representative might need this number when you call.

2. Make notes based on the troubleshooting table at the beginning of this chapter. This information might tell your service representative the state of your system when the problem occurred.

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

4. Eight recessed lights on the back of the system unit light up when you turn on the system. Write down the status of these lights. Your service representative might ask you to describe which lights are on.

5.12 Command Summary

Tables 5–4, 5–5, and 5–6 list the SET, TEST, and SHOW commands used in troubleshooting procedures. To display a list of these commands, enter HELP at the console prompt and press Return.

Table 5–4 SET Command Summary

Command	Default Set
SET HALT	Default halt action.
SET SCSIA	Sets the SCSI device ID number—bus A.
SET SCSIB	Sets the SCSI device ID number—bus B.
SET BOOT	Sets the bootstrap device.
SET BFLG	Sets the bootstrap address.

Table 5–5 TEST Command Summary

Command	Test or Utility Program
TEST F	Reserved.
TEST E	System clock.
TEST D	Nonvolatile RAM.
TEST C	Serial line controller.
TEST B	System Memory.
TEST A	Memory management unit.
TEST 9	Floating point unit.
TEST 8	Interval timer.
TEST 7	SCSI-A bus devices.
TEST 6	SCSI-B bus devices.
TEST 5	Interrupt controller and Ethernet ID ROM.
TEST 4	Reserved.
TEST 3	Reserved.
TEST 2	Reserved.
TEST 1	Ethernet network interconnect.
TEST 0	System exerciser.
TEST 50	Configuration display.
TEST 51	NVR default **boot device**.
TEST 52	NVR default boot flags.
TEST 53	Sets NVR default recovery action flags.
TEST 76	SCSI diskette formatter.

Table 5–6 SHOW Command Summary

Command	Information Displayed
SHOW DEVICE	Devices available and SCSI ID
SHOW ESTAT	Results of last system exerciser test
SHOW ETHER	Hardware Ethernet address
SHOW HALT	Default action after your system halts
SHOW MEMORY	Memory for your system unit
SHOW SCSIA	SCSI device ID number—bus A
SHOW SCSIB	SCSI device ID number—bus B
SHOW VER	Version of ROM
SHOW BOOT	The bootstrap device
SHOW BFLG	The bootstrap address

A

SCSI ID Numbers

The information in this appendix is for technical users who want to create custom configurations.

The small computer systems interface (SCSI) is an interface designed for connecting disks and other peripheral devices to computer systems. SCSI is defined by an American National Standards Institute (ANSI) standard and used by many computer and peripheral vendors throughout the industry.

Up to eight SCSI devices can share an SCSI bus, which is a cable. All data is sent back and forth on the cable. Each SCSI device attached to the cable looks at all the data, but an SCSI device recognizes only the data that has the proper device identification, called an SCSI ID numbrer.

A.1 SCSI ID Default Settings

You are responsible for the SCSI ID settings on your equipment. Digital sets each SCSI device to a default setting before the equipment leaves the factory. You might never need to change a default setting. Default settings should only be changed when a system is configured with more than one of a particular device.

The SCSI ID numbers are 0 through 7. The number 7 is reserved for a device requiring the highest priority on the SCSI bus. The number 6 is reserved for the controller. The remaining six ID numbers (0 through 5) are available for custom configuration.

Table A–1 lists the default SCSI settings for the InfoServer 150 system. The ID numbers listed give optimal performance on most systems. However, if you have special performance needs, you can set the ID number on each SCSI device manually. For most applications, SCSI ID numbers can be set arbitrarily as long as no two devices share the same ID.

Table A–1 SCSI ID numbers for InfoServer 150 System

SCSI-A Bus	SCSI-B Bus
7 Available for expansion	7 Available for expansion
6 SCSI-A adapter	6 SCSI-B adapter
5 Available for expansion	5 Available for expansion
4 Available for expansion	4 vailable for expansion
3 Available for expansion	3 Available for expansion
2 RRD42 drive	2 Available for expansion
1 RZ23L drive	1 Available for expansion
0 Available for expansion	0 Available for expansion

Each device has a set of switches or jumpers that can be set for a specific ID. The optional hard disk drives and additional RRD42 compact disc drives are mounted in expansion boxes that have external switches.

The built-in RZ hard disk drive and the RRD42 compact disc drive have internal switches or jumpers. You cannot change settings on these devices.

A.2 Determining SCSI ID Numbers

To determine SCSI ID numbers, enter the TEST 50 command at the console prompt (>>>), then press Return. The test displays your system configuration on the screen. FFFFFF05 identifies an open ID. See Table 3–1 for a complete list of the device status codes and their meaning.

In the following example, the system contains a controller, one RZ23L internal hard disk, 1 internal RRD 42 compact disc drive, and 2 RRD42 compact disc drive expansion boxes. There are two open ID numbers.

```
SCSI-A     1C1C.0001   V1.3
FFFFFF05 00000001 05000001 05000001 05000001 05000001 FFFFFF03 FFFFFF05
  ❶        ❷        ❸        ❹        ❺        ❻        ❼        ❽
```

❶ SCSI ID 0 — Open

❷ SCSI ID 1 — RZ23L internal drive

❸ SCSI ID 2 — RRD42 drive

❹ SCSI ID 3 — RRD42 drive

❺ SCSI ID 4 — RRD42 drive

❻ SCSI ID 5 — RRD42 drive

❼ SCSI ID 6 — SCSI-A controller

❽ SCSI ID 7 — Open

Rules for Setting SCSI ID Numbers

- You can have up to seven devices on one bus.
- Each device must have its own unique identifier.
- Two devices can have the same identifier only if they are on different buses.
- Each SCSI bus must be terminated.

Proper operation of the SCSI bus requires that you use high-quality, properly configured cables and connectors to connect all devices. Digital recommends that you use only Digital-supplied cable assemblies intended for interconnecting SCSI devices. This ensures that the impedance characteristics, signal propagation velocity, inductance, capacitance, cross-talk, grounding, conductor pairing, and shielding meet the requirements for proper operation of the bus.

Digital also recommends that all units on the SCSI bus be powered from a common ac power source. Digital does not guarantee the proper operation of any SCSI bus that uses cable assemblies not supplied by Digital, or that is not configured in accordance with Digital's recommendations.

A.3 Setting RRD42 ID Numbers

The RRD42 tabletop drive has a rear-panel pushbutton (see Figure 3–4) that spins a wheel and advances a number. To set the device ID number, press the button until the desired number appears.

B

System Specifications

This appendix lists InfoServer 150 system specifications, including operating and storage conditions.

System Components and Power Requirements

Processor	VAX KA41-FA CPU with 1 KB of first-level cache
DRAM memory	4 MB
ROM memory	256 KB
Hard disk	RZ23L (121 MB), RZ24 (204 MB) (depends on configuration)
Optical disc drive	1 RRD42 internal drive (600MB)
Optional storage	RRD42 expansion boxes and other standard SCSI disk and tape devices
Terminals	Supports the VT series
Interfaces	2 SCSI ports 1 ThinWire Ethernet port 1 standard Ethernet port 1 asynchronous 9600 baud terminal port (You cannot use both Ethernet ports at the same time.)
Input voltage	Automatically adjusting ac input. Range: 100 Vac to 120 Vac, 220 Vac to 240 Vac
Input current (typical)	1.2 A in a 110 Vac circuit .65 A in a 220 Vac circuit
Power (typical)	132 W
Frequency	47 Hz to 63 Hz

System Specifications

Weight and Dimensions

Weight†	Height	Width	Depth
11.4 kg	10.03 cm	46.38 cm	39.42 cm
25 lb	4.07 in	18.26 in	15.52 in

†Depends on configuration

System Operating Conditions

Temperature range	10° to 40° C (50° to 104° F)
Temperature change rate	11° C /hour (20° F /hour) maximum
Relative humidity	10% to 80% noncondensing
Maximum wet bulb temperature	28° C (82° F)
Minimum dew point	2° C (36° F)
Altitude	2400 m at 36° C (8000 ft at 96° F)

Storage Conditions

Temperature range	5° to 50° C (41° to 122° F)
Relative humidity	10% to 95% at 66° C (noncondensing)
Altitude	0 to 2400 m (0 to 8000 ft)
Maximum wet bulb temperature	32° C (90° F)
Minimum dew point	2° C (36° F)

Glossary

32-bit

The length of the internal data path of the CPU.

802.3

An Institute of Electrical and Electronics Engineers (IEEE) standard describing the physical and data link layers of a local area network based on bus topology and carrier sense multiple access/collision detect (CSMA/CD).

application program

A program, such as a financial spreadsheet program, that performs an end-user task.

ASCII

American Standard Code for Information Interchange. A set of 7- or 8-bit binary numbers representing the alphabet, punctuation, numerals, and other special symbols used in text representation and communications protocol.

barrel connector

A female connector for connecting two sections of ThinWire cable.

baud rate

The speed at which signals are serially transmitted along a communications line. One baud equals one bit/second.

binary

A number system that uses two digits—0 and 1. They are represented in system circuitry by two voltage levels, and programs are executed in binary form.

bit

A binary digit; the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

BMA

The name assigned to Digital's suite of special-purpose, high-performance protocols, including LAT, LASTport/Disk, LASTport/Tape, and LASTport/PDQ.

boot

See *bootstrap*.

boot device

The device that is booted at system startup. See *bootstrap* and *device*.

bootable medium

A fixed disk or magnetic tape cartridge containing software (such as an operating system) that a bootstrap program can load into the system memory and execute.

bootstrap (or boot)

To attempt to load the operating system software from a mass storage device. An internal program makes the attempt.

bus

A channel (a set of wires) along which communication signals in a computer system travel.

byte

A group of eight binary digits (bits). A byte is one-quarter of a VAX system longword.

caddy

A compact disc holder, used to insert a compact disc into a compact disc drive.

central processing unit (CPU)

The part of the system that controls the interpretation and execution of instructions.

client system

A computer system, connected to the same local area network as a server system, that connects to and uses services provided by the server.

coaxial cable

A 2-conductor, concentric, constant-impedance transmission cable.

communications line

A cable along which electrical signals are transmitted. Devices or systems that are connected by a communications line can share information and resources.

computer system

A combination of system hardware, software, and external devices that performs operations and tasks.

console mode

The state in which the computer is controlled from the console terminal. Your system can be put in console mode by pressing the halt button on the rear panel of the system unit. Console mode is indicated by the console prompt >>> on the monitor screen. (Compare to *program mode*.)

console prompt

A prompt used for communication between the system manager and the computer.

controller

A system component, usually a printed circuit board, that regulates the operation of one or more peripheral devices.

CPU

Abbreviation for central processing unit. See *central processing unit*.

daisy-chain

A group of systems linked together sequentially.

data

A formal representation of information suitable for communication, interpretation, and processing by humans or computers.

data transmission

The movement of data in the form of electrical signals along a communications line.

debug

To detect, locate, and correct errors (bugs) in hardware or software.

DECconnect

Digital's simple, cost-effective cabling system for extending Ethernet and terminal interconnections into offices and work areas.

DECconnect faceplate

See *faceplate*.

DECnet

Digital's networking software that runs on nodes in both local and wide-area networks.

default

A value or setting used by the system if you do not enter your own. Default settings are often set at the factory and reflect the most commonly used values.

DELNI

Digital's local network interconnect product that provides eight separate network interfaces from a single transceiver trap.

DEMPR

Digital's multiport repeater that provides eight ThinWire Ethernet drops from a single standard Ethernet connection.

device

The general name for any unit that is connected to the system and is capable of receiving, storing, or transmitting data. See *input/output (I/O) device* and *controller.*

device icon

An *icon* on the rear of the system unit that represents the device that can be plugged into the connector.

device name

The name by which a device or controller is identified in the system.

diagnostics

Programs, located in read-only memory, that detect and identify abnormal system hardware operation. See *read-only memory*.

disk

A flat circular plate with a coating that stores data magnetically in concentric circles (tracks). A disk resides permanently inside a disk drive, while a diskette is removable.

disk drive

A device that holds a *disk*. The drive contains mechanical components to spin the disk and move the read/write heads that store and read information on the surface of the disk.

disk server

A hardware system designed to provide operating system and data storage for other users.

error message

A message displayed by a system to indicate a mistake or malfunction.

Ethernet

A type of local area network based on carrier sense multiple access with collision detection (CSMA/CD).

faceplate

A wall receptacle that provides a single network connection for your system.

file

A collection of related information treated by the system as a single unit.

format

To prepare a diskette to accept data.

formatted data

Data that is structured in a particular pattern to be understood by the system software.

ground

A voltage reference point in a system that has a zero voltage potential.

hard disk

A *disk* that resides permanently inside a disk drive.

hardware

The physical components—mechanical and electrical—that make up a system. Compare to *software*.

head

The part of a fixed disk drive, diskette drive, or tape drive that reads, records, and erases data. Also called read/write head.

icon

A graphic symbol that visually represents a device or a procedure's function.

IEEE

Institute of Electrical and Electronics Engineers.

input/output (I/O) device

A piece of equipment that accepts data for transmission to (input) and from (output) the system. For example, a terminal.

I/O

Input/output. See *input/output (I/O) device*.

LAT

Local area transport. The LAT is a communications protocol that implements terminal emulation over an Ethernet local area network. Terminals are normally connected to terminal servers, which send messages containing terminal data to host systems. The host systems view the remote terminal as if it was locally connected to the host.

LED

Light-emitting diode. LEDs are used as indicators on the system enclosure.

link

A communications path between two nodes. A physical link is the electrical connection between two nodes. A logical link implies that two nodes are able to communicate whether or not they have a direct physical link.

load

To copy software (usually from a peripheral device) to memory. To physically place a disk in a disk drive or a tape in a tape drive.

load device

The drive that holds the distribution media during software installation.

local area network (LAN)

A high-speed communications network that covers a limited geographical area, such as a section of a building, an entire building, or a cluster of buildings. It is a privately owned communication network whose speed is upward of 1 megabit/second.

logical link

Two nodes are able to communicate by means of software whether or not they have a direct physical link.

megabyte

1,048,576 (2^{20}) bytes.

memory

The area of the system that electrically stores instructions and data, often temporarily.

memory module

A printed circuit board that contains additional memory for the system.

module

A printed circuit board that contains electrical components and electrically conductive pathways between components. A module stores data or memory or controls the functions of a device.

multiport repeater

A repeater used to connect two or more cable segments. The repeater lets you extend Ethernet networks beyond the limits imposed by a single segment. Repeaters perform the basic actions of restoring signal amplitude, waveform, and timing amplitude to normal data and collision signals.

multisegment LAN

A LAN composed of more than one cable segment.

network

A group of individual computer systems that are connected by communications lines to share information and resources.

network coordinator

The network coordinator manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

network manager

See *network coordinator*.

node

An individual information-processing unit, such as a computer, workstation, or peripheral device, that is connected to a network. A node is an end point to any branch of a network or a junction common to two or more branches.

operating system

A collection of system programs that controls the operation of the system and allows the user access to data files, input/output devices, and applications programs. The operating system software performs such tasks as assigning memory to programs and data, processing requests, and scheduling jobs. VMS and ULTRIX are the two examples of operating systems.

output device

A device that accepts data from the system. A printer is an example of an output device.

peripheral device

A device that provides the CPU with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, and printers.

port

Another term for a connector on a device (such as a computer or server), used to make a connection to another device (such as a terminal, printer, or communications device). Connectors are usually on the rear of equipment.

power-up sequence (power up)

A series of ordered events that occur when you supply power by turning on the system.

program

The sequence of instructions the system uses to perform a task. See *software*.

program mode

The state in which the computer is controlled by the operating system. After the operating system is installed, the system always operates in program mode, unless you put it into console mode. See *console mode*.

prompt

Words or characters that the system displays to indicate it is waiting for you to enter a command.

RAM

Random-access memory.

random-access memory (RAM)

Memory that can be both read and written into, and 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)

A memory whose contents cannot be modified. The system can use the data contained in a ROM, but cannot change the data.

ROM

Read-only memory.

run

(noun) A single continuous execution of a program. (verb) To execute a program.

SCSI

See *Small Computer System Interface*.

section

A single length of ThinWire Ethernet cable terminated at each end with a connector.

segment

A length of cable made up of one or more cable sections connected with barrel connectors or T-connectors.

server

Hardware or software that provides a specific set of services to a satellite.

single-segment LAN

A LAN that is composed of only one coaxial cable segment. See also *section* and *segment*.

Small Computer System Interface (SCSI)

An interface designed for connecting disks and other peripheral devices to computer systems. SCSI is defined by an American National Standards Institute (ANSI) standard and is used by many computer and peripheral vendors throughout the industry.

software

Programs executed by the system to perform a chosen or required function. Compare to *hardware*.

standard Ethernet

IEEE standard 802.3 compliant Ethernet network composed of standard Ethernet cable. Compare to *ThinWire Ethernet* cable.

storage medium

Any device capable of recording information, such as a hard disk.

store

To enter data into a storage device, such as a disk, or into memory.

system

A combination of system hardware, software, and peripheral devices that performs specific processing operations.

system management tasks

Tasks performed by an assigned person (usually the system manager) to operate and maintain the system.

T-connector

Connector used to join ThinWire Ethernet cable sections. The connector also has a connector that is attached directly to a system.

terminal

An input/output device that lets you communicate with the system. Terminals are divided into two categories—video and hard copy.

terminator

A connector used on one or both ends of an Ethernet segment that provides the 50-ohm termination resistance needed for the cable.

ThinWire

A Digital trademark used to describe its 10 base 2 (IEEE standard 802.3 compliant) Ethernet products used for local distribution of data.

ThinWire connector

The connector on the rear of the system unit to which the ThinWire Ethernet cable is attached.

ThinWire Ethernet

An *Ethernet* network that uses *ThinWire* cable. ThinWire is ideal for small standalone networks in which the users share resources, such as printers and storage devices.

transceiver

A device that provides a single physical connection between standard Ethernet and Ethernet communication equipment.

unload switch

A switch on the front of the TZ30 tape drive that rewinds and unloads the tape.

unshielded twisted-pair cable

Multiple-conductor cable whose component cables are paired, twisted, and enclosed in a single jacket.

user input device

A piece of equipment that is used to transfer data to the system. For example, keyboard, disk, tape, and system are input devices.

Index

A

ANSI standard
  SCSI, A–1
Asterisks
  in power-up display, 5–5

B

Barrel connector, 4–3
Baud rate
  communication ports, 1–3
  terminal, 2–10
BOOT command, 5–12
Bootstrapping the server, 2–18
  automatically without a console, 2–18

C

Cables
  expansion box, 3–3
  SCSI, 3–3
  transceiver, 4–10
  troubleshooting, 5–1
Caddy, 2–12 to 2–17
  ejecting manually, 2–16
Commands
  summary, 5–13
Communications ports, 1–3
  baud rate, 1–3
Compact disc
  loading, 2–12
  preventive maintenance, 3–8
  RRD42, 1–3
Compact disc (cont'd)
  testing, 5–12
  unloading, 2–16
Compact disc caddy, 2–12
Compact disc drive, 1–2, 2–12
  turning on, 2–11
Configuration display, 3–7, 5–8
  code example, 5–8
  device mnemonics, 5–9
Configurations
  customizing, A–1
  for expansion boxes, 3–1
Connecting
  console terminal, 2–10
  Ethernet connectors, 2–6
  expansion boxes, 3–1, 3–3
    two, 3–5
  power cord, 2–9
  standard Ethernet networks, 4–8 to 4–11
  ThinWire Ethernet networks, 4–1 to 4–4
  to networks, 2–17
  transceiver cable, 4–10
Connectors, 2–4
  covers, 2–4, 2–5
Console mode, 5–12
Console prompt (>>>), 3–7
Console terminal, 1–4
Conventions
  used in this document, ix
Customizing
  SCSI ID numbers, A–1

D

DECconnect cabling components, 4–5
DECconnect faceplate
  connecting, 4–5
DEMPR
  troubleshooting, 4–6
Device information
  displaying, 5–9
  SHOW DEVICE command, 5–9
Device testing, 5–7
Diagnostic lights, 2–4, 5–13
Diagnostics
  configuration display, 5–8
  device, 5–7
  Ethernet, 2–7
  mnemonics for system exerciser, 5–10
  power-up display, 5–5
  self-tests, 5–5, 5–7
  standard Ethernet, 4–9
  system exerciser, 5–10
  ThinWire Ethernet, 4–2
Diagnostic terminal, 1–4
Dimensions
  system unit, B–2
Disc drives
  RRD42, 1–3
  turning off, 2–18
  turning on, 2–11
Disk drives
  RZ, 1–3

E

Environmental requirements, 2–1
Error messages
  configuration, 5–8
  double question marks, 5–11
  Ethernet cable, 5–6
  in the power-up display, 5–5
  power-up display, 5–5
  RRD42, 5–10
  single question marks, 5–11
  system, 5–8
Ethernet connectors
  attaching to system unit, 2–6
Ethernet diagnostics, 2–7
Expansion boxes, 1–3, 3–1
  See also RRD42 compact disc drive
  cables, 3–3
  connecting one, 3–3
  connecting two, 3–5
  guidelines, 3–1
  possible configurations, 3–1
  power cord, 3–3
  RRD42 compact disc drive, 1–4
  signal cables, 3–3
  terminator, 3–3
  testing RRD42, 5–12
  troubleshooting, 5–4
  turning off, 2–18
  turning on, 2–11
  unpacking, 3–3

F

Faceplate, DECconnect
  connecting, 4–5
Features
  InfoServer 150 system, 1–2
Field service, 5–13

G

Grounding power strip, 2–2

H

H4000 transceiver, 4–10
Halt button, 2–4, 5–7
Handling problems
  with power-up display, 2–12
Hard disc drives
  turning on, 2–11
Hard disk drive, 1–2
Hardware specifications
  system unit, B–1
Humidity requirements, 2–1

I

Icons
  port and connector, 2–4
ID number
  setting for RRD42 tabletop drive, A–3
InfoServer 150 system
  features, 1–2 to 1–3
  hardware components, 2–3
  overview, 1–1 to 1–3
  possible applications, 1–1
Inserting
  compact disc, 2–12
Installation, 2–1 to 2–20
  connector covers, 2–5
  console terminal, 2–10
  Ethernet T-connector and terminators, 2–6
  location, 2–1
  loopback connector, 2–6
  power cord, 2–9
  SCSI terminator, 2–5
  unpacking, 2–2
Internal devices
  RRD42 compact disc drive, 1–3
  RZ disk drive, 1–3

L

Lights
  diagnostic, 5–13
  diagnostic LEDs, 2–4
  standard Ethernet, 4–9
  ThinWire Ethernet, 4–1
  troubleshooting, 5–13
Loading
  compact disc, 2–12
Loopback connector
  attaching to system unit, 2–6
  diagnostics, 2–7
  in network diagnostics, 4–9

M

Memory, 1–2
MMJ console port, 2–4
Modem port, 2–4
Moving the system, 2–2

N

Networks, 4–1 to 4–11
  connecting, 2–17
Network select button, 2–4
  setting for standard Ethernet, 4–9
  setting for ThinWire Ethernet, 4–1

O

On/off switch
  off (O) position, 2–18
  on (|) position, 2–11
Operating conditions
  system specifications, B–2
Operating system software
  restarting, 5–12
Outlets, grounded, 2–2

P

Peripheral devices, 3–1
  See also the specific device, 3–1
  supported number of, 3–1
Ports, 2–4
  baud rate, 1–3
Power cord
  connecting, 2–9
  expansion box, 3–3, 3–5
Power receptacle
  system unit, 2–4
Power strip, 2–2
Power supply, 1–2
1/0 power switch
  on (|) position, 2–11
Power-up display, 2–11
  description of identifiers in, 5–6
  error messages, 5–5

Power-up display (cont'd)
examples of common status messages in, 5–5
low battery, 5–5
setting the clock, 5–5
system exerciser, 5–10
troubleshooting, 2–12, 5–3
Program mode, 5–12

Q

Question marks
in power-up display, 5–5
in system exerciser, 5–11

R

Removing
compact disc, 2–16
Restarting your system, 5–12
RRD42 compact disc drive, 1–2, 1–4, 2–12
activity light, 2–16
connecting one expansion box, 3–3
connecting two, 3–5
error message, 5–10
expansion box, 3–6
loading a disc, 2–12
resetting SCSI ID, 3–7
SCSI ID numberss, 3–7
setting ID number, A–3
test disc utility, 5–12
troubleshooting, 5–4
unloading a disc, 2–16
using, 3–6
verifying SCSI ID, 3–7
Rules
for setting SCSI ID numbers, A–3

S

SCSI, 1–3, A–1
bus, A–1
in system exerciser, 5–11
device, A–1
terminator, 2–5
terminators, 3–1, 3–3, A–3
SCSI
terminators (cont'd)
removing, 3–2
SCSI ID numbers
creating custom configurations, A–1
default settings, A–1
definition of, A–1
RRD42, 3–7
rules for setting, A–3
setting, A–1
using TEST 50 command to display, 3–7
SCSI port, 2–4
connecting expansion box, 3–2
removing SCSI terminator, 3–2
SCSI terminator
removing, 3–2
Self-tests, 5–7
description of identifiers in, 5–6
restarting after, 5–12
system exerciser, 5–10
Server system software
troubleshooting, 5–3
Service information, 5–13
SET commands
summary of, 5–13
Settings
SCSI ID numbers, 3–7
terminal, 2–10
Shipping cartons
unpacking, 2–2
SHOW commands
SHOW DEVICE, 5–9
sample display, 5–9
summary of, 5–13
Shutting down, 2–18
Signal cables
expansion box, 3–3
Site preparation, 2–1
Software
troubleshooting, 5–4
Standard Ethernet, 1–2
attaching loopback connector, 2–6
transceiver cable, 4–10
troubleshooting, 4–10

Standard Ethernet connector, 2–4
Standard Ethernet light, 2–4
Standard Ethernet networks
  connecting to, 4–8 to 4–11
  setting network select button for, 4–9
  verifying, 4–9
Starting the system with a console, 2–18
Starting up, 2–11
Storage conditions
  system unit, B–2
Storage devices, 1–3
Summary
  of SET commands, 5–13
  of SHOW commands, 5–13
  of TEST commands, 5–13
Surge protector, 2–2
System
  configuration display, 5–8
  connecting console terminal, 2–10
  connecting power cord, 2–9
  connecting to networks, 2–17
System ac power inlet, 2–4
System configuration
  displaying with TEST 50 command, 3–7
System exerciser, 5–10
  display example, 5–10
  restarting after running, 5–12
  testing media, 5–10
  when to use, 5–10
System SCSI ID numbers, A–2
System specifications
  operating conditions, B–2
System unit
  attaching Ethernet connectors, 2–6
  choosing a location, 2–1
  connecting transceiver cable, 4–10
  diagnostic lights, 5–13
  dimensions, B–2
  hardware specifications, B–1
  ports and connectors, 2–4
  storage conditions, B–2
  troubleshooting, 5–3
  turning off, 2–18
  turning on, 2–11
  unpacking, 2–2

T

T-connector
  attaching terminators, 2–7
  attaching to system unit, 2–6
  connecting ThinWire Ethernet cable, 4–3
  connecting to system unit, 4–4
  diagnostics, 2–7
  removing from system unit, 4–7
  troubleshooting, 4–6
Temperature requirements, 2–1
Terminal
  baud rate, 2–10
  connecting, 2–10
  optional console, 1–4
  settings, 2–10
  troubleshooting, 5–3
  turning on, 2–11
Terminators
  attaching to T-connector, 2–7
  expansion box, 3–3
  SCSI, A–3
  ThinWire Ethernet, 4–3
  troubleshooting, 4–7
TEST 0 command, 5–10
TEST 1 command, 4–8, 4–11
TEST 50 command, 4–3, 4–9, 5–8
  to display system configuration, 3–7
TEST commands, 5–7
  summary of, 5–13
Test disc utility, 5–12
Testing discs
  system exerciser, 5–10
ThinWire Ethernet, 1–2
  attaching T-connector, 2–6
ThinWire Ethernet cable
  connecting, 4–3
  to create a work group, 4–4
ThinWire Ethernet connector, 2–4
ThinWire Ethernet light, 2–4
ThinWire Ethernet network
  connecting to, 4–1 to 4–4
  removing systems from, 4–7
  setting network select button for, 4–1

ThinWire Ethernet network (cont'd)
troubleshooting, 4–6
verifying, 4–2
ThinWire Ethernet segment, 4–3
Transceiver cable, 4–10
Troubleshooting, 5–1 to 5–15
configuration display, 5–8
expansion box, 5–4
lights (LEDs), 5–13
mnemonics for system exerciser, 5–10
power-up display, 2–12
RRD42, 5–4
self-tests, 5–7
software, 5–4
standard Ethernet, 4–10
system exerciser, 5–10
system unit, 5–3
table, 5–2
terminal, 5–3
ThinWire Ethernet, 4–6
Turning off the system, 2–18
Turning on the system, 2–11

U

Unloading
compact disc, 2–16
Unpacking
expansion box, 3–3
system, 2–2

V

Ventilation, 2–1

W

Work group
creating, 4–4