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.

October 1991

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Preface

Purpose of This Guide

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

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

Who Should Use This Guide

This guide is for anyone responsible for installing, operating, or maintaining the InfoServer 150 system. The guide requires little or no previous experience with computers.

Structure of This Guide

This manual contains six chapters, four appendixes, and a glossary of technical terms.

- Chapter 1, ''InfoServer 100 System,'' provides an overview of the InfoServer 150 system and introduces you to the product's features.
- Chapter 2, ''Installing Your System,'' provides instructions for installing new InfoServer 150 systems.
- Chapter 3, ''Learning About Your System,'' discusses the storage devices that may be part of your InfoServer 150 system.
- Chapter 4, ''Expanding Your System,'' provides information on installing and using add-on storage devices and software-loading devices such as contact disc drives with your system.

- Chapter 5, ‘‘Connecting to a Network,’’ describes how to connect your system to a ThinWire Ethernet or standard Ethernet network. The chapter also describes how to serially connect systems into a simple ThinWire work group.
- Chapter 6, ‘‘Solving Problems,’’ provides basic troubleshooting information.

Appendixes provide information on the following topics:

- Setting SCSI IDs on drives, for custom configurations
- System specifications
- Related documents
- The use and care of removable media, such as compact discs

The glossary explains technical terms used in the guide.

For More Information

See Appendix C for a list of related documents to help you become acquainted with your new system.

Conventions

The following conventions are used in this guide:

Return	A key name is shown enclosed to indicate that you press a key on the keyboard.
| O	This is the on/off power switch on equipment. You press | to turn power on, or O to turn power off.
UPPERCASE	Uppercase letters indicate commands that you enter. For example: enter TEST 1.
`>>> TEST 50`	In examples, user input appears in `red`.
bootstrap	New terms are highlighted in text and appear in the glossary.

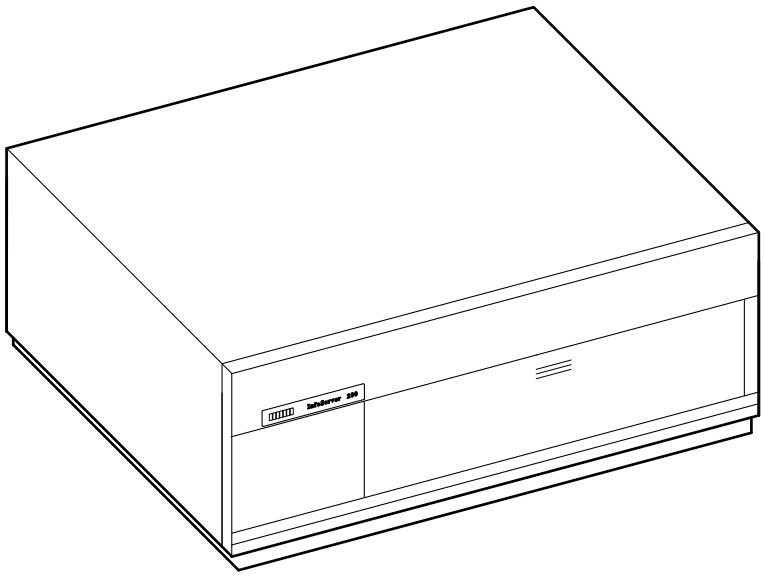
1

InfoServer 100 System

The InfoServer 100 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 system enclosure for InfoServer 100.

The InfoServer 100 can support many diverse applications. For example, VMS 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, then perform a VMS operating system installation from a compact disc in the server.

Figure 1–1 InfoServer 100 System Enclosure



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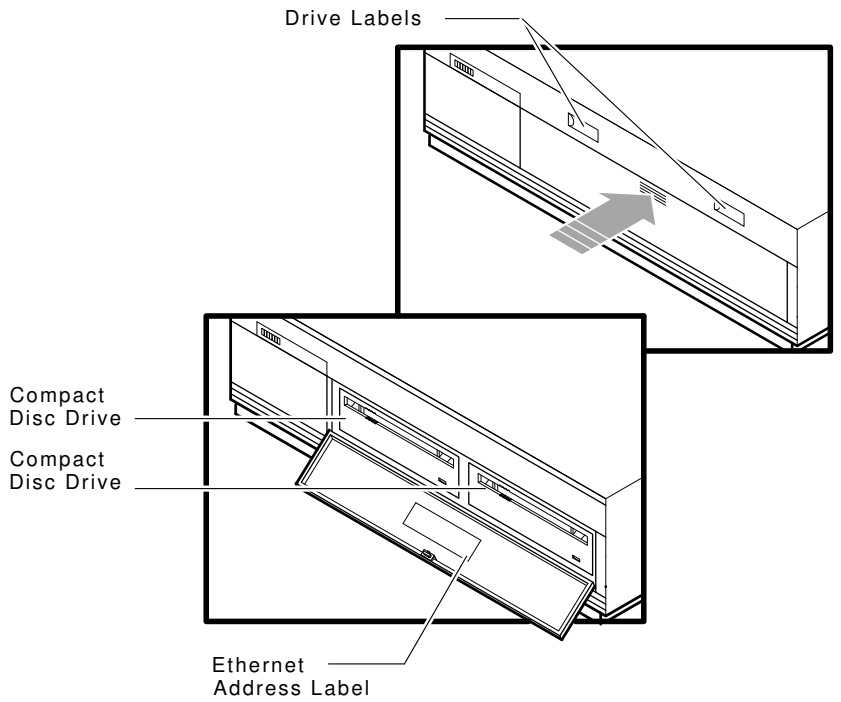
1.1 System Highlights

Your InfoServer 100 system has many special features:

- **Memory**
  The system comes with 4 megabytes (Mbytes) of internal random access memory (RAM).
- **ThinWire and standard Ethernet connectability**
  You can connect the InfoServer 100 to standard Ethernet or ThinWire Ethernet work groups and networks, but not to both types at the same time.
- **RRD40 compact disc drive**
  One or two compact disc drives are mounted behind the server's front panel, depending on your configuration. Figure 1–2 shows the the InfoServer 100's system enclosure with the compact disc drives exposed.

Figure 1–2 InfoServer 100 Front Panel



InfoServer 100 System
1.1 System Highlights

- **RZ23 hard disk drive**
  The system includes one 104 Mbyte hard disk drive. This drive:
  - Stores configuration information from the server.
  - Works as a secondary disk cache, to optimize the performance of all disks connected to the server.
  - May also be served to client nodes as writable storage.
- **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 the *InfoServer 100 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 six external drives to the server.

2

Installing Your System

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

- Prepare for installation.
- Unpack, inspect, and check the system's equipment
- Set up your system unit.
- Attach Ethernet terminators for networking or diagnostic tests.
- Connect a terminal.
- Load and unload compact discs.
- Start your system.

2.1 Choosing the Right Location

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 voltage requirement 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

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 contains the software compact discs with licenses and instructions.

Figure 2–1 shows the hardware 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 4.3’’, Chapter 4).

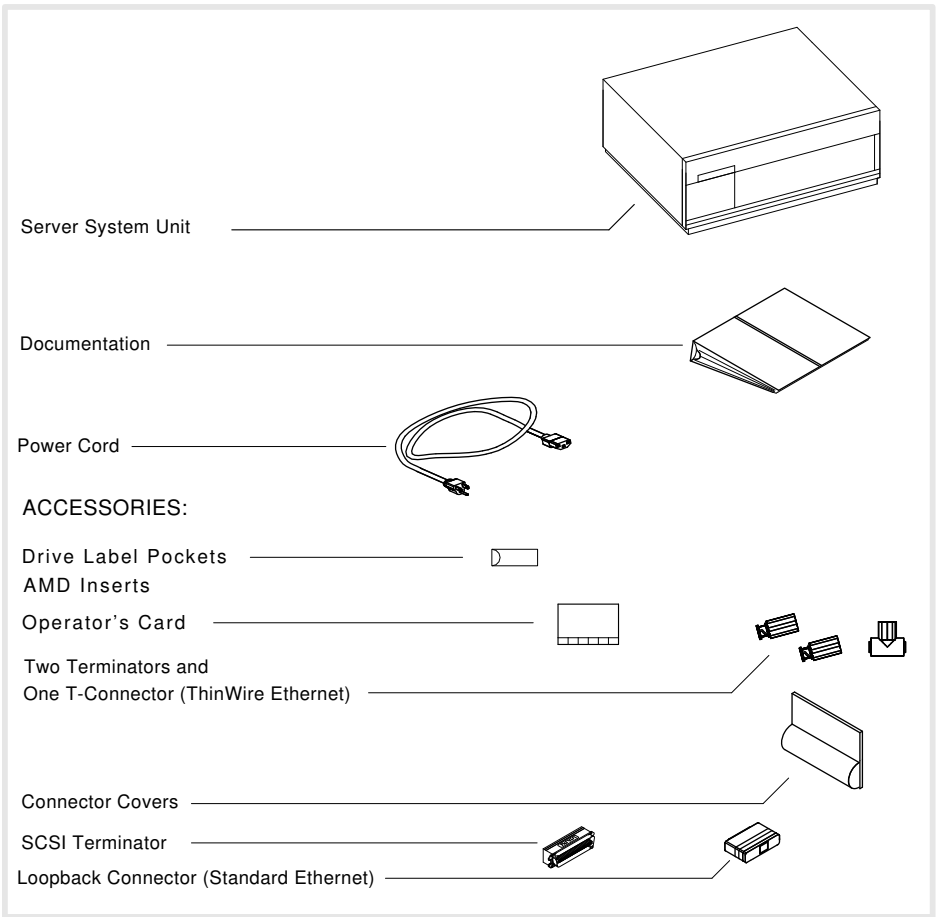
Note

Depending on how you set up your system, you may 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 Unpacking Your System



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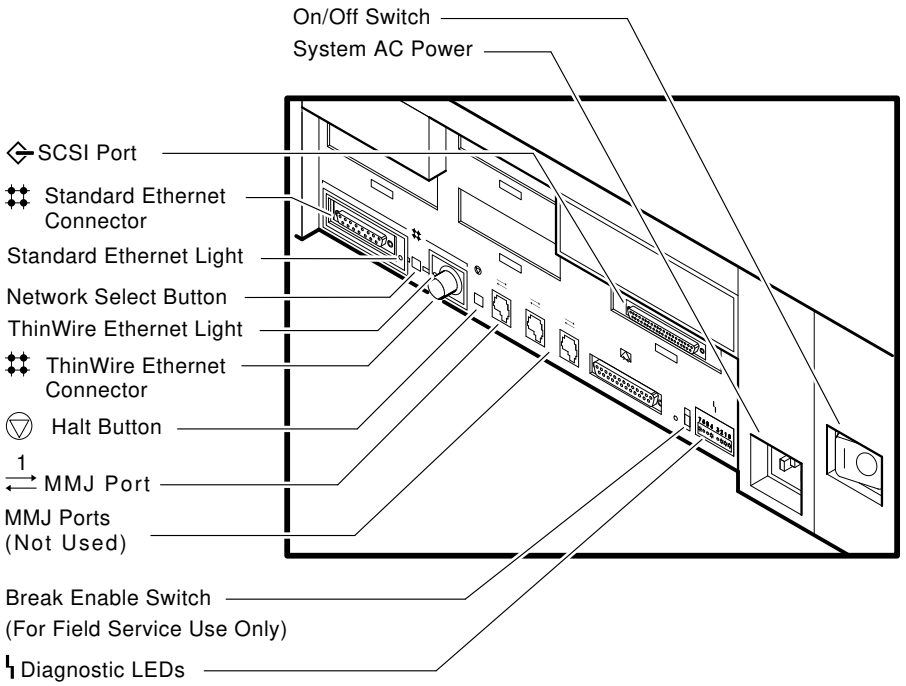
2.3 Setting Up Your System

After unpacking, you are ready to set up your server.

2.3.1 Identify the System Unit Ports and Connectors

The following figure 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.



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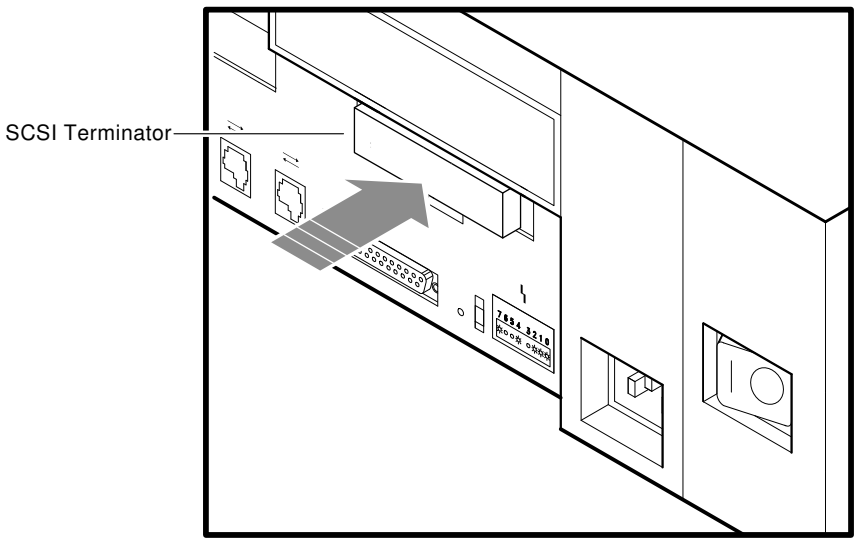
Note

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 Terminator

If you do not intend to connect additional drives to your system, install the SCSI terminator on the SCSI port at the rear of the system unit, as shown.



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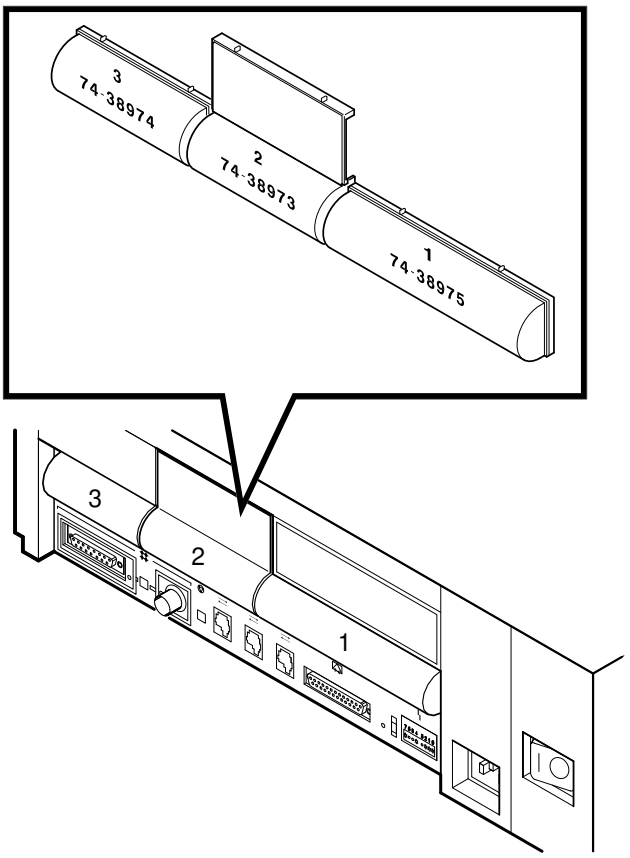
2.3.3 Install the Connector Covers

You system comes with three connector covers to protect the unused connectors on the rear panel of the system unit. If you do not use the external SCSI interface, install cover 1 over the SCSI terminator.



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2.3.4 Attach the Ethernet Terminators

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

Note

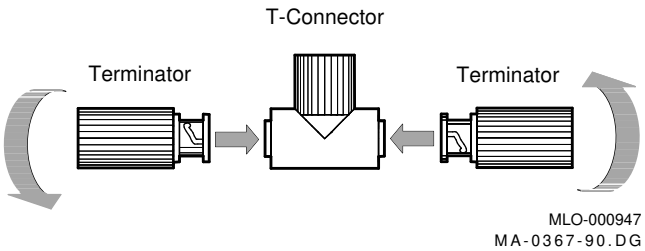
The system will not boot if the power-up self-test detects an Ethernet error.

For diagnostic purposes:

- 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.

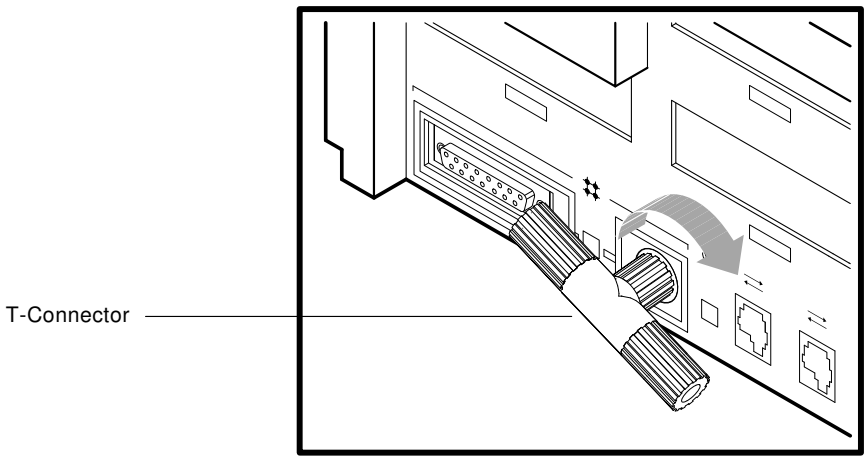
To connect the T-connector and loopback connector:

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.

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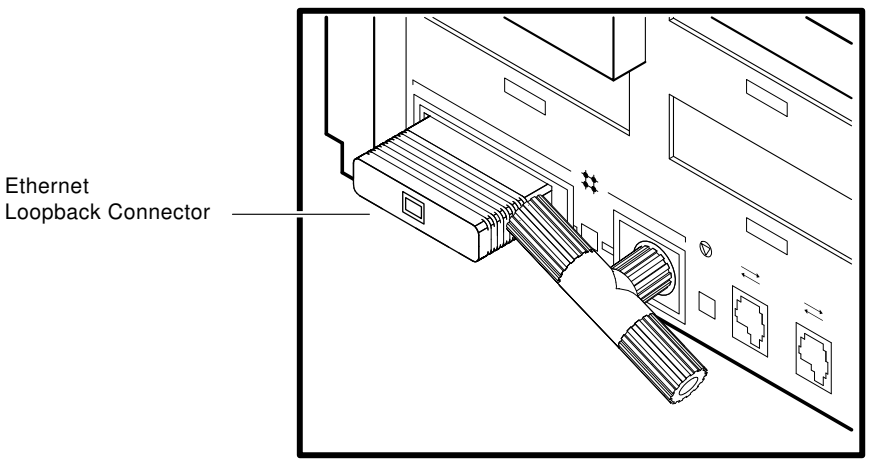
4 Connect the loopback connector to the standard Ethernet port on the back of the system unit. If needed, rotate the T-connector slightly to make room for the loopback connector.



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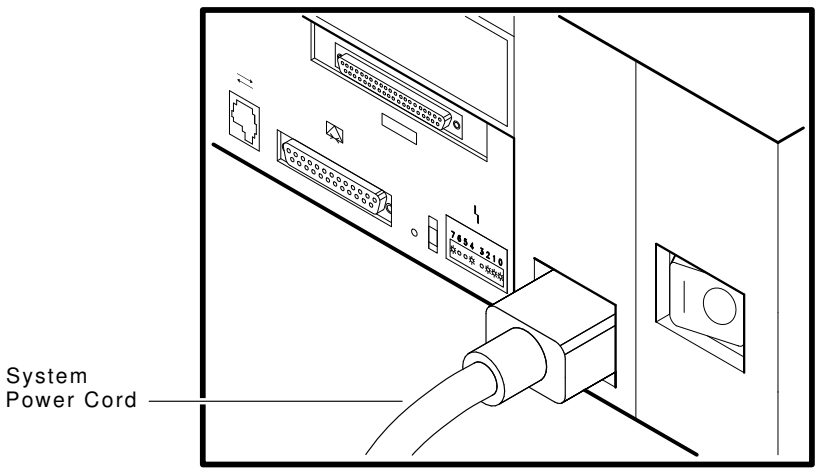
2.3.5 Connect the System Unit Power Cord

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. Connect the other end of the power cord to a grounded power outlet.



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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 is operating properly.

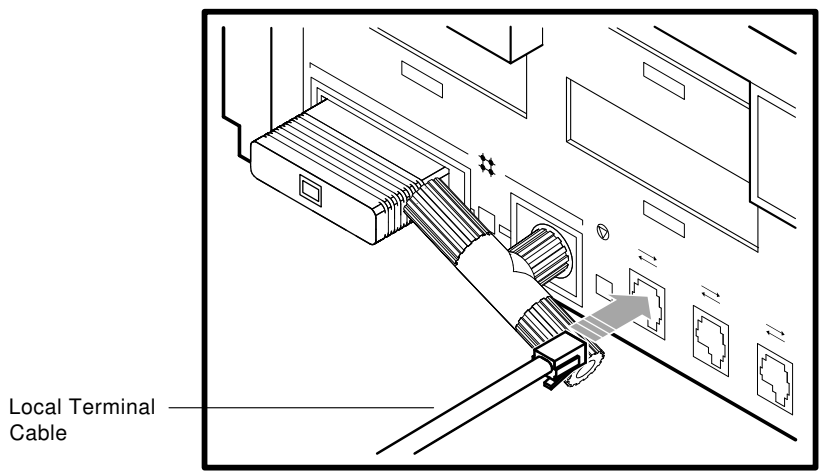
The recommended console terminal is a VT300 series terminal. When you connect the terminal cable to one of the MMJ ports on the rear of the VT300 series terminal, the port must be set for DEC-423 operation. See your terminal documentation for details.

To connect a terminal to the server:

Note

Make sure the | I O | power switch on the terminal is off (O).

1 Connect the terminal cable supplied with the system to MMJ port 1 on the rear panel of the system unit.



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2 Connect the other end of the console cable to the communications port on the terminal.

3 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 4 for information on connecting external expansion boxes.

2.4 Starting Your System

To start your system:

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

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 | 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-A  V1.3

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

?  E  0040  0000.0005
?  D  0050  0000.0005
?  C  0080  0000.4001
?  6  80A1  0000.4001
```

4 Load the InfoServer system's software compact disc as described in the next section, ''Section 2.4.1''.

The InfoServer system automatically copies software from the software disc to its RZ*nn* drive, in order to **bootstrap** the system.

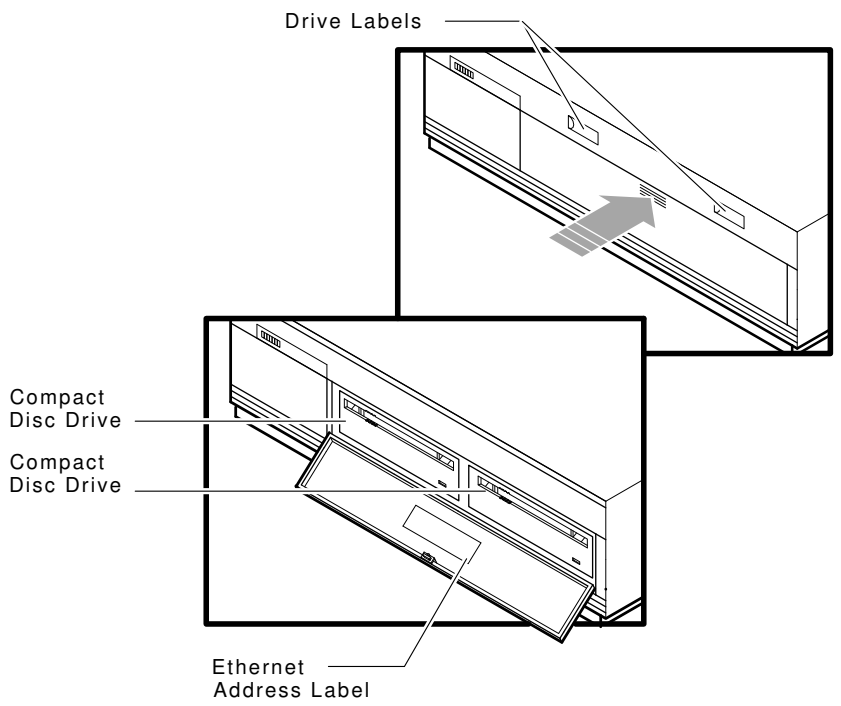
If the software installation is successful, the console screen displays the following message:

```
%ESS-I-CREATEDBOOT Boot partition created successfully.
```

After the first successful bootstrap, you do not need the software compact disc in the right drive. If you have problems or want to know more about bootstrapping the server, go to the ''Section 2.7'' section at the end of this chapter.

2.4.1 Loading A Compact Disc

The InfoServer system has two RRD42 compact disc drives behind the front panel of the system unit.



Use the following procedure to load the software compact disc when starting the system. Load the disc in the drive on the right. The disc is supplied with the system.

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 a disc:

1 Examine the disc caddy. Make sure it is not cracked or damaged. Never load a damaged caddy into a compact disc drive.

2 Align the disc caddy with the drive as shown ❶. Make sure the label on the disc is facing up when you insert the disc in the drive. Also make sure the notches on the left side of the disc caddy line up with the notches on the door of the drive.

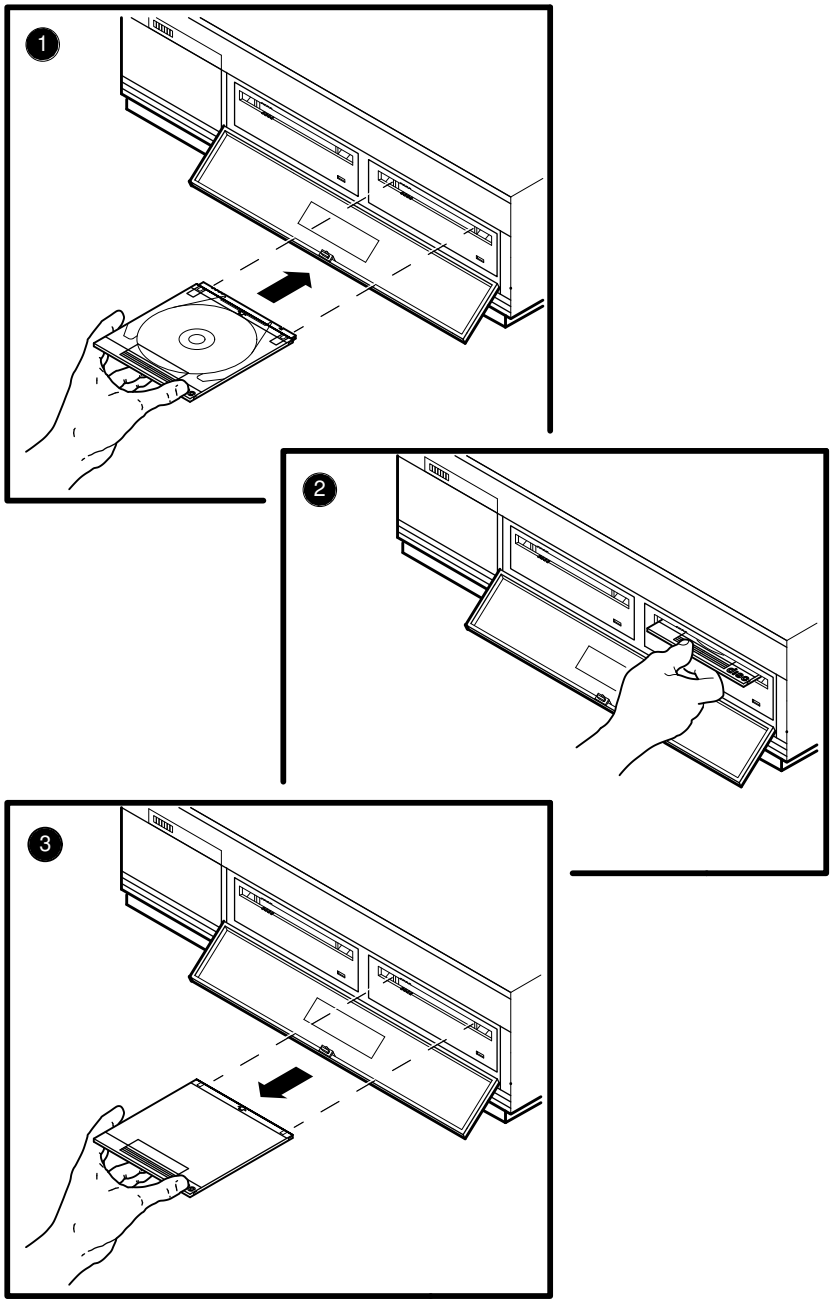
Note

If the disc label is facing up and the notches are on the right, then the disc is loaded improperly in the caddy. Stop loading the disc and refer to Appendix D.

3 Slide the caddy in the drive as far as it will go ❷, then remove it ❸. When you remove the caddy, notice that the disc and its **housing** remain in the drive. Only the **transparent sleeve** comes out.

The green activity light should turn on within 5 seconds.

If the activity light does not turn on: If the drive accepted the disc and caddy, then the disc may 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 may be a problem with the RRD42 drive. Contact your local Digital service representative.



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2.4.2 Unloading a Compact Disc

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

1. Align the transparent sleeve with the drive opening, as when loading a disc. Make sure the arrow on the sleeve is going into the drive opening first.
2. Insert the sleeve into the drive opening as far as it will go.
3. Remove the caddy. The disc and housing will be in the sleeve. The green activity light turns off.

2.5 Connecting to a Network

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

1. Turn the system unit's |I O| power switch off (O).
2. Read Chapter 5 to learn how to install your network hardware.
3. After making the network connection, turn the system unit's |I O| switch back on. The server should pass the power-up self-test and rebootstrap itself.
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.

2.6 How to Turn Off Your 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

2.7 If You Have Problems

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 server fails to bootstrap, go to ‘‘Section 2.8’’.

If the problem continues, see Chapter 6.

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.

2.8 Bootstrapping the Server

The following sections explain the standard and manual processes for booting the server. Use the manual process only if the automatic process fails.

2.8.1 Bootstrapping the Server Automatically

The InfoServer system’s bootstrap program is programmed onto the system’s internal RZ*nn* drive at the factory. After the power-up display, the server automatically tries to bootstrap from the software image on the software disc you placed in the right compact disc drive. The compact disc drive light starts blinking, indicating that the InfoServer system software is initializing.

If the RZ*nn* drive does not respond or a new RZ*nn* unit is installed, use the procedure in ‘‘Section 2.8.3’’.

Note

Do not halt the InfoServer while the software is initializing. If the system is halted accidentally, use the procedure described in ‘‘Section 2.8.3’’.

The InfoServer system software automatically transfers the server load image from the compact disc to the RZ*nn* drive. The image copy takes less than 60 seconds. The compact disc light stops blinking when the copy is complete. If the installation is successful, the console screen displays the following message:

```
%ESS-I-CREATEDBOOT Boot partition created successfully.
```

2.8.2 Subsequent Bootstraps

After the first successful bootstrap, the InfoServer system uses the RZ*nn* drive alone for subsequent bootstraps. You do not need the InfoServer system's software compact disc in the right drive. See the *InfoServer System Operations Guide* for information on how to update this RZ*nn* bootstrap image.

2.8.3 If the InfoServer Fails to Boot Automatically

If you do not see the power-up display or the InfoServer system fails to bootstrap, turn off the system unit. Use the following procedure to install the software from the InfoServer system's software compact disc to the RZ*nn* drive. This procedure erases the contents of the RZ*nn* disc and updates it with the software from the InfoServer system's software compact disc. This procedure should take less than 60 seconds.

1. Make sure the system unit's ⏻ power switch is off (O).
2. Connect the console terminal.
3. Turn the system unit's ⏻ switch on (|).
4. Install the InfoServer system's software compact disc into the disc drive on the right.
5. The InfoServer `PASSWORD:` prompt should appear.
6. At the prompt, enter the default password `ESS`, or the last saved password.

   ```
   PASSWORD: ESS
   ```

   If you forget the current password, see the troubleshooting chapter in the *InfoServer System Operations Guide*.
7. The InfoServer prompt `InfoServer>` should appear.
8. Enter the following command:

   ```
   InfoServer> UPDATE SYSTEM DK2:
   ```
9. The following message should appear:

   ```
   %ESS-I-UPDATE Update operation completed successfully.
   ```

If the RZ*nn* disk is corrupted or the default boot configuration is altered, you may have trouble booting the system. See the troubleshooting chapter in the *InfoServer System Operations Guide*.

3
Learning About Your System

This chapter provides information about the various devices mounted within the InfoServer 150 system enclosure.

3.1 Storage Devices

The InfoServer sytem uses the following internal storage devices:

- RZ*nn* hard disk
- RRD42 compact disc drive(s)

These devices are installed on the upper and lower drive mounting panels within the system enclosure. Depending on the configuration, your system may contain storage devices in the following combinations:

Mounting Panel	
Upper	**Left**

Lower	**Left**
RZ*nn*	RRD42

3.1.1 RZ*nn* Hard Disk

The RZ*nn* is a nonremovable hard disk that can store 104 Mbytes of information. The server has one internal RZ*nn* 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*nn* drive as a secondary storage cache for improved performance, as well as to save server characteristics and network configuration information for use when the server rebootstraps.

3.1.2 RRD42 Compact Disc Drive(s)

A compact disc is an optical, read-only storage media. The InfoServer system comes with one or two compact disc drives, depending on the unit you ordered. The drives are behind the server's front panel. The InfoServer system can bootstrap from compact disc, although the internal RZ*nn* 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 4 to learn about these add-on devices.

3.2 Console Terminal

The InfoServer 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 system from a terminal server. In the rare event that your server has problems communicating with client systems, you should connect a terminal to MMJ port 1 on the back of the system unit and use Chapter 6 to troubleshoot the problem. The recommended console terminal is a VT300 series terminal.

4

Expanding Your System

This chapter provides information on installing and using external add-on disk storage devices. An InfoServer 150 system can support up to twelve external expansion boxes.

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

The chapter provides general instructions on:

- Connecting one or two expansion boxes of the same type to your system unit
- Verifying the SCSI ID default (factory) switch setting.
- Setting the SCSI switches

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

4.1 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 six expansion boxes to the model with two internal compact disc drives, or seven expansion boxes to the model with one internal compact disc drive.
- 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 has a switch for selecting the power input voltage.

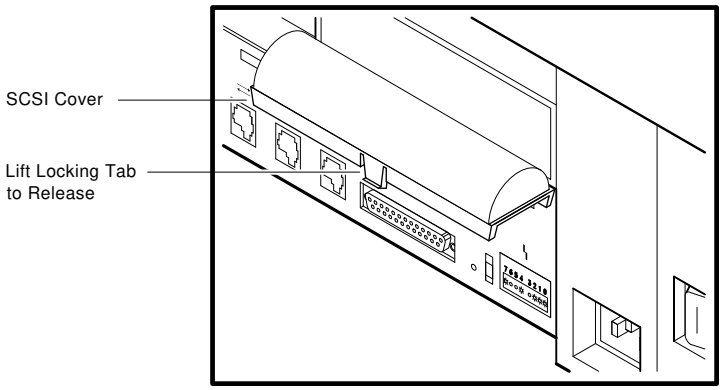
- Turn on all expansion boxes before you turn on your system unit.

  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.

4.2 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 To remove the SCSI cover, place your fingers under the locking tab and lift the cover to release.



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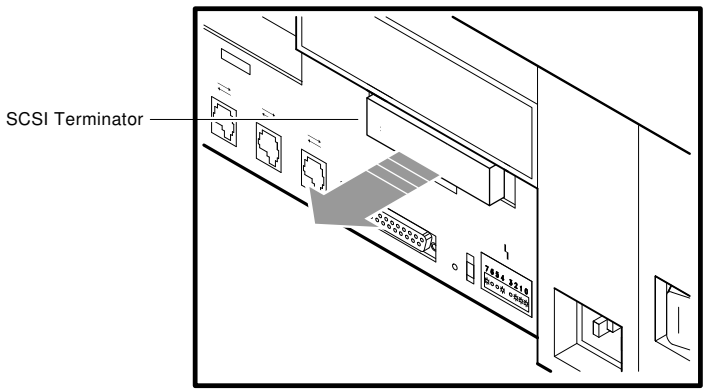
2 Remove the SCSI terminator.



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

4.3 Unpacking An Expansion Box

Each expansion box comes with the following accessories:

- One 50-pin to 50-pin cable (part number BC19J-1E). Use this cable to connect the expansion box to the system unit or to other expansion boxes.

Note

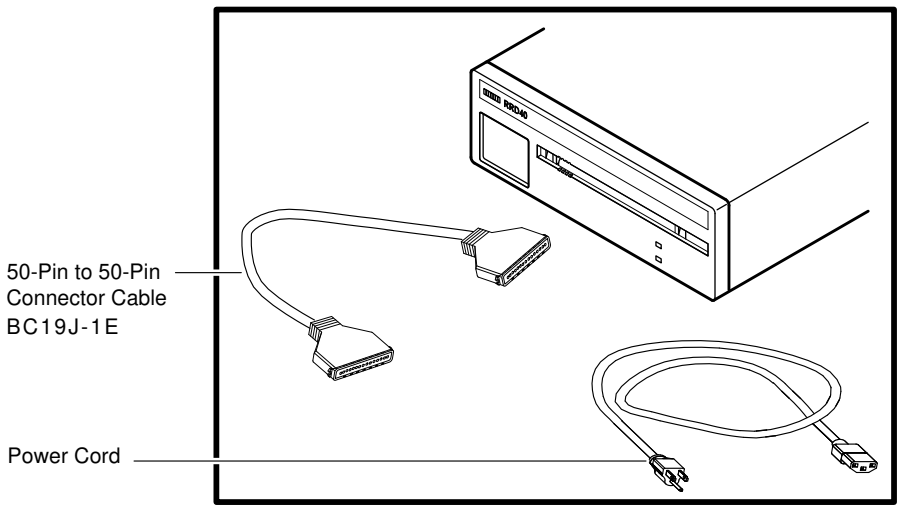
The expansion cable is 18 inches long. If a longer cable is used, the system expansion capability is reduced.

- One power cord.

Before you set up your expansion box, make sure you have all the parts shown in Figure 4–1. Check the contents of the box against the shipping list.

In addition, the RRD42 compact disc drive expansion box comes with a 50-pin terminator, an empty CD caddy, and a test disc.

Figure 4–1 Expansion Box and Accessories



4.4 Connecting One Expansion Box

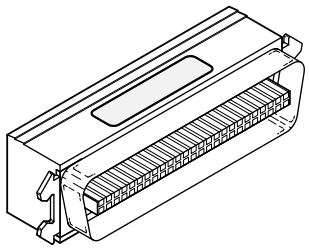
To connect a single expansion box to your system unit:

1. Set the | I 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. Verify the SCSI ID switch positions, as described in Appendix A.

   Each device is shipped with the SCSI ID switches in the default switch position. Set the switches to the desired SCSI ID number by reading the switch positions from left to right. Refer to the information provided with the expansion box to determine how the switches are set.
4. Connect the 50-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 bail lock loops 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.



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Caution

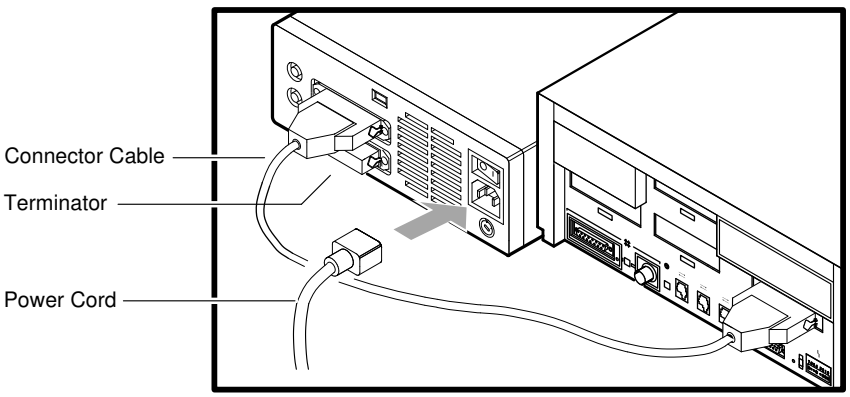
Check the voltage requirement of the expansion box before powering up.

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

Expanding Your System
4.4 Connecting One Expansion Box

Figure 4–2 shows how to connect one RRD42 expansion box to the system.

Figure 4–2 Connecting One RRD42 Expansion Box



4.5 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.

To link two expansion boxes:

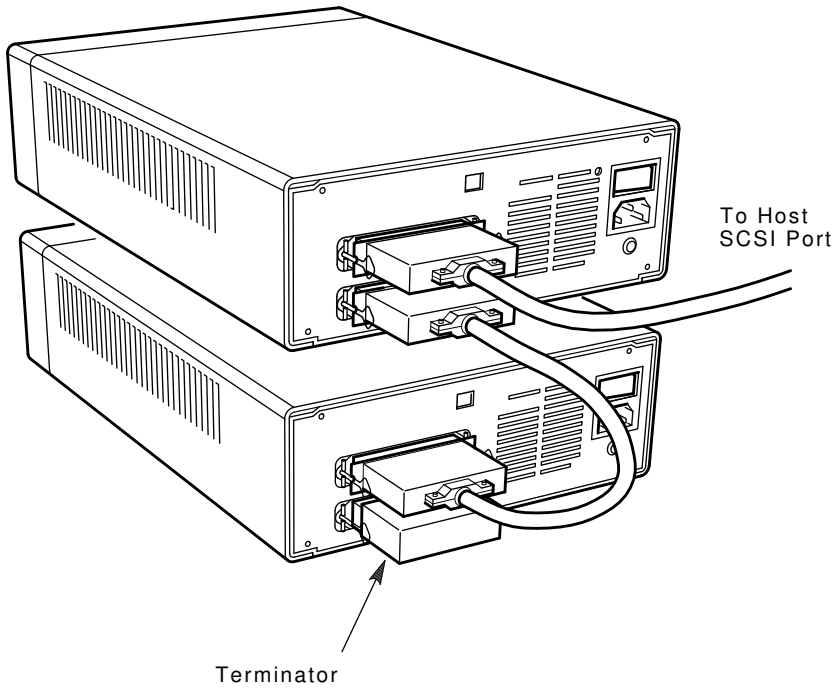
Note

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.

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 4–3 shows how to serially connect two RRD42 expansion boxes to the system.

Figure 4–3 Connecting Two RRD42 Expansion Boxes

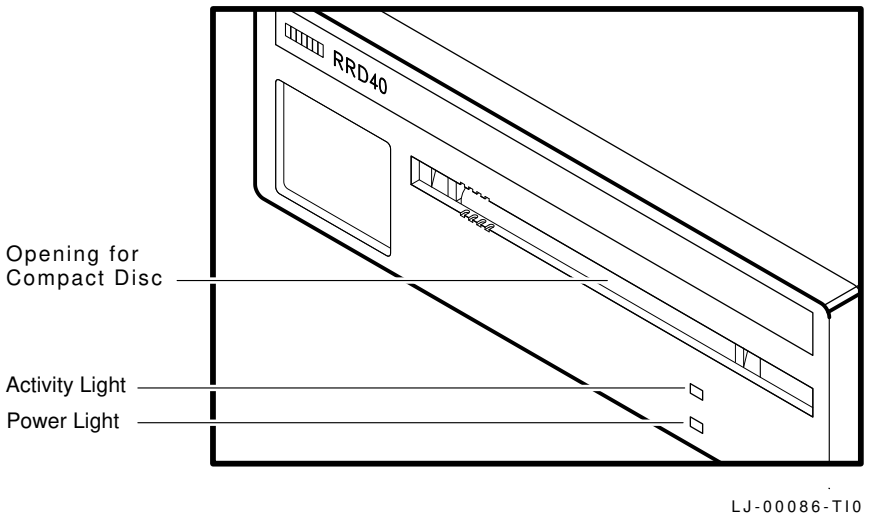


4.6 RRD42 Compact Disc Expansion Box

The RRD42 is a read-only storage device that reads data from removable compact discs. See Appendix D 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.

The front of the RRD42 expansion box has two lights and an opening for a compact disc.



Power light	Turns on when you turn on your system unit.
Activity light	Turns on when you load a compact disc in the drive. Flashes when the disc is transferring information.

4.6.1 Selecting the Voltage on the RRD42 Expansion Box

The RRD42 has a voltage selector switch on the rear of the box (Figure 4–4). The switch can be set to one of two voltages – 110 V or 220 V. Check that the voltage selector switch is set to the correct voltage for your power requirements.

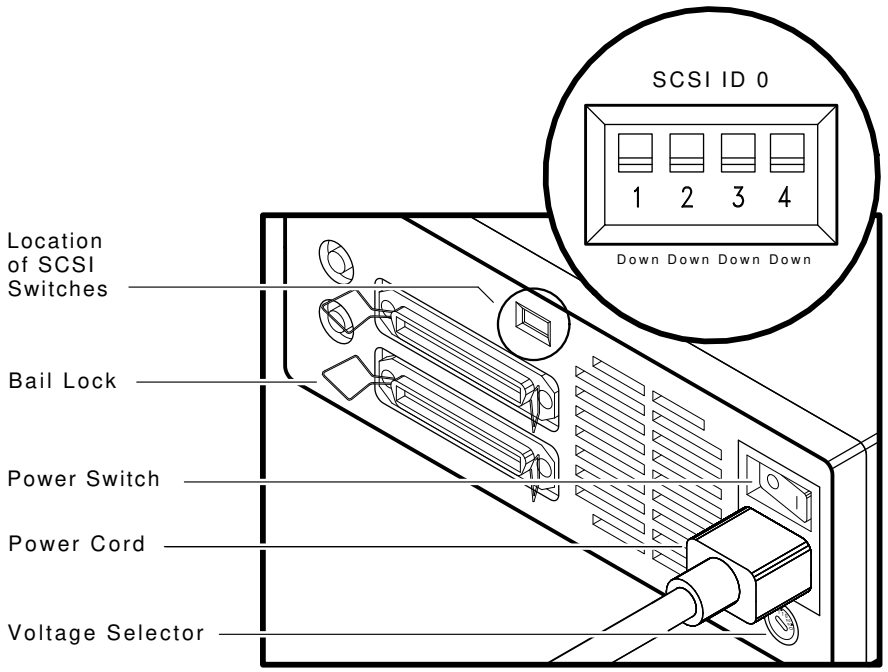
Caution

The voltage selector switch must be set to match your power source.

4.6.2 Verifying the SCSI ID on the RRD42 Expansion Box

The RRD42 expansion box is shipped with the SCSI switches set to number 0, as shown in Figure 4–4.

Figure 4–4 RRD42 Voltage Selector and SCSI ID Switch Positions



4.6.3 Resetting the SCSI ID on the Second RRD42 Expansion Box

If you add two RRD42 expansion boxes to your system, you must reset the switches on the second RRD42 to an open ID—one that is not currently being used. In the following example, ID 0 is an open ID. You could select ID 0 by setting switches 1, 2, and 3 down (Figure 4–4).

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

```
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 4–1 explains the codes used in the example:

Table 4–1 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 disk drive.
05000001	RRD42 compact disc drive.

5
Connecting to a Network

This chapter contains information on how to:

- Test your system with a T-connector and loopback connector.
- Connect to a ThinWire Ethernet or standard Ethernet network.
- 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, slightly longer for a new user.

5.1 A Brief Introduction to Networks

Networks allow people to work together on projects and share information. They can communicate and exchange information, share common databases, share files and disk storage, share printers, or use a mail system. Digital networks lets users perform all of these functions.

For network installation instructions, go to the next section, ‘‘Section 5.2’’. For users who want more background, here are a few networking definitions to help you get started:

Networking Terms

Network

A group of computers, connected by communications lines, that share information and resources. A network can span a small office, a department, a building, a country, or the world. Digital hardware and DECnet software enable computers to form a network.

Connecting to a Network
5.1 A Brief Introduction to Networks

Local Area Network (LAN)
A high-speed communications network that covers a limited geographical area, such as an office area, a department, a building, or a campus (group of buildings).

Ethernet
The local area network used for Digital systems. In 1980, Digital Equipment Corporation, Xerox Corporation, and Intel Corporation came up with a specification for the Ethernet local area network. The specification includes information on how to connect devices to a coaxial cable, how to configure nodes, the maximum number of nodes, and the distance between nodes.

ThinWire Ethernet
An Ethernet network that uses ThinWire cable. ThinWire is a flexible and inexpensive cable that offers 10 megabit/second communication. All Digital Ethernet products can connect to ThinWire cable. ThinWire cable can be used in any size system and is fully compatible with standard Ethernet communication. ThinWire is ideal for small standalone networks in which the users share resources, such as printers and storage devices.

Standard Ethernet
Coaxial cable used to connect wiring centers and computer facilities, floors of buildings, and standalone ThinWire segments. The cable is rugged, reliable, and immune to external factors that might otherwise limit high-speed, 10 megabit/second data communication.

LAT
Networking software that allows most Digital computer systems to run terminal emulation over an Ethernet network.

Work group
A set of computer systems connected by Ethernet cable. Work groups are formed using ULTRIX-32 software or VMS and DECnet software.

DECconnect
A family of networking products that includes network electronics, cabling, and connections.

5.2 Connecting to a ThinWire Ethernet Network

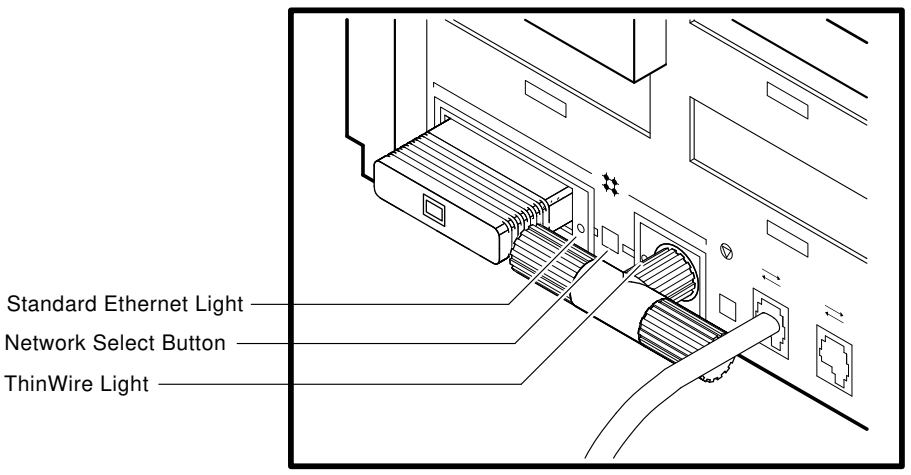
This section describes how to connect the InfoServer 100 system to a ThinWire Ethernet system. First, you must check the position of the network select button.

5.2.1 Check the Network Select Button

The InfoServer 100 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.

- 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 will come on when you turn on the system. The standard Ethernet light remains off. You are ready to connect to ThinWire Ethernet.



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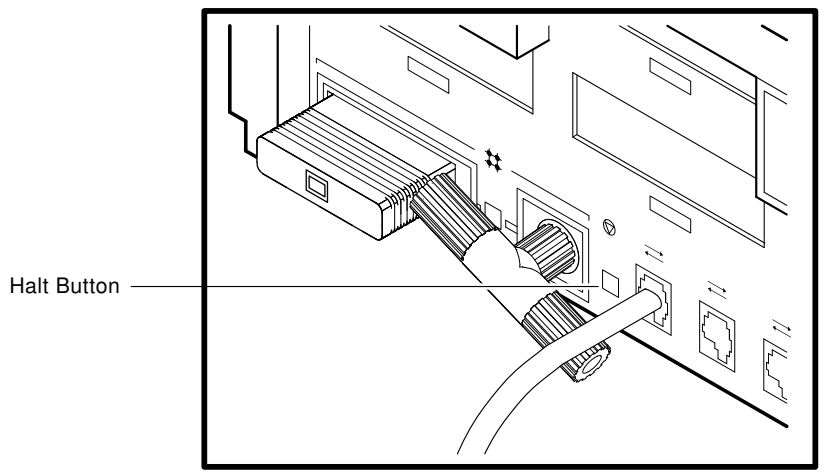
5.2.2 Verify Your ThinWire Ethernet Network Installation

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

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.



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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, then 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.

5.2.3 Connect Your System to ThinWire Ethernet Cable

To connect the server system to ThinWire Ethernet cable:

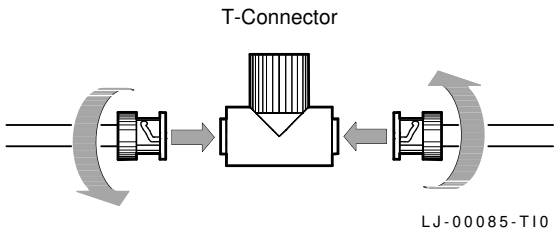
1 Set the | I O | on/off switch on the back of the system unit to the off (O) position.

2 Attach a ThinWire cable to one side of the T-connector for the system unit.

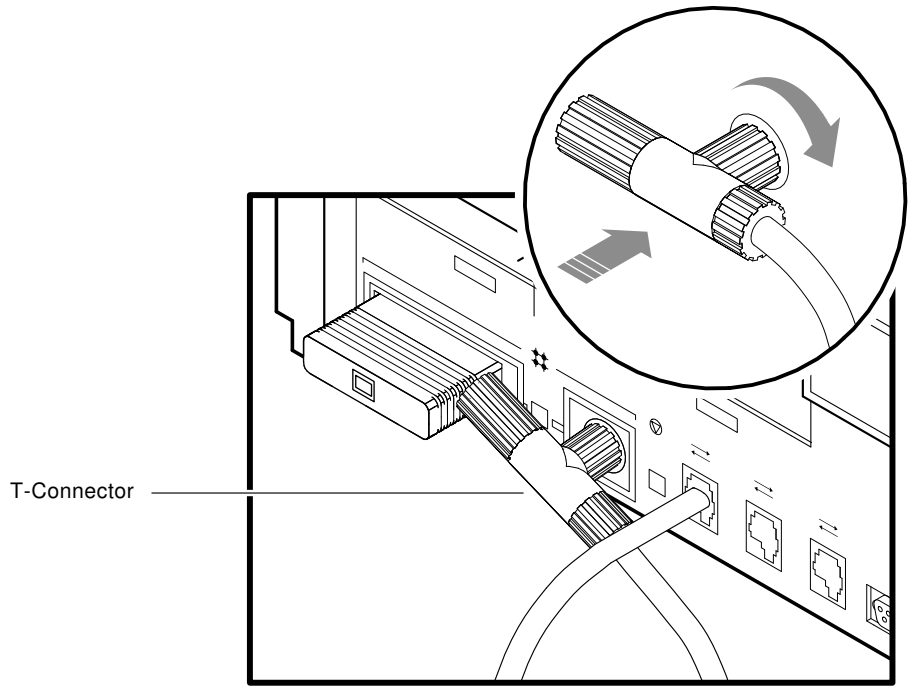
3 If your system is the first or last system in a single ThinWire **segment**, leave the terminator attached to one side of the T-connector.

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.



5 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 it clockwise until it locks in place.



5.3 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.

5.3.1 Connecting Your System to a DECconnect Faceplate

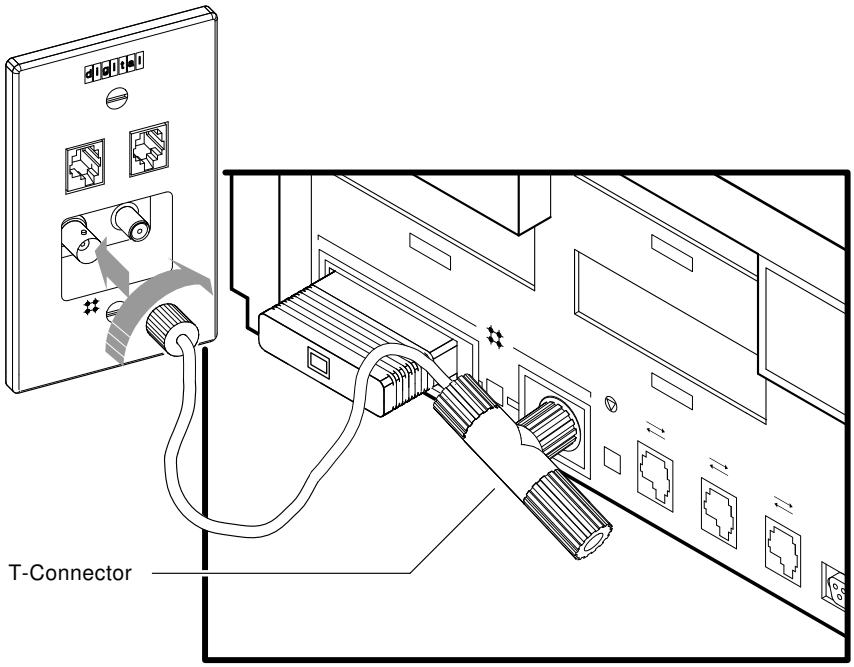
If your office has been wired with Digital's DECconnect products, then connect your system to the DECconnect faceplate in your office. A **faceplate** is a wall receptacle that provides a single network connection for your system.

DECconnect cabling components support network configurations ranging from simple standalone ThinWire networks to multimedia local area networks (LANs) that connect PCs, workstations, and other 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 100 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 will know 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.



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5.3.2 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.

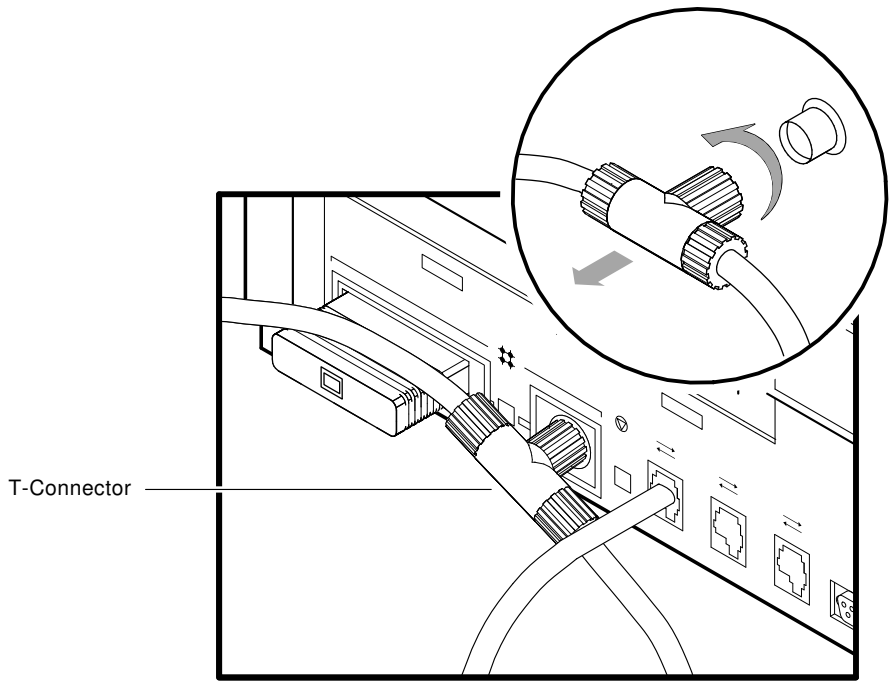
A DEMPR provides eight ThinWire Ethernet connections from a single standard Ethernet connection.

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.



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
```

5.4 Connecting to a Standard Ethernet Network

This section describes how to connect the InfoServer 100 system to a standard Ethernet system. First, you must check the position of the network select button.

5.4.1 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 5.2''). 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.

5.4.2 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, then 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.

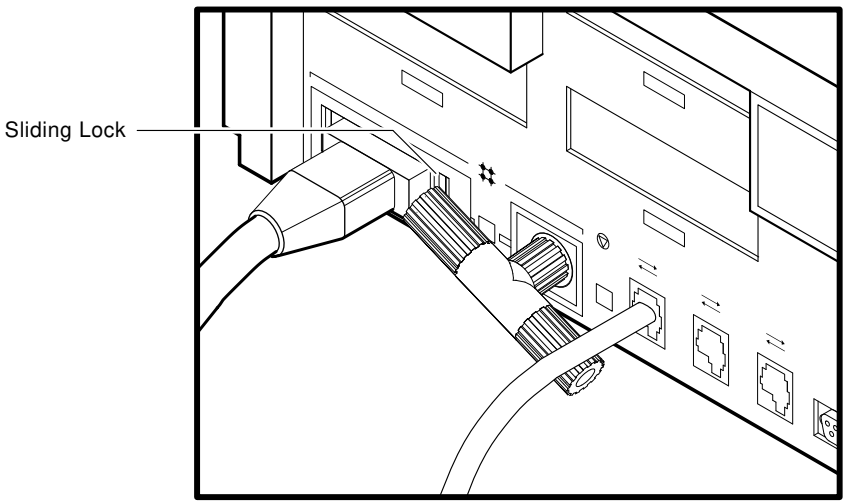
3 After verifying the network successfully, remove the loopback connector and store it for future diagnostic testing. Connect your system to a transceiver cable, as described in the next section.

If you had problems, see ''Section 5.4.4''.

5.4.3 Connect a Transceiver Cable to Your System

A transceiver cable is the physical connection between a standard Ethernet network interface and an InfoServer 100 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.



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5.4.4 Troubleshooting the Standard Ethernet Connection

If you found problems when verifying the standard Ethernet connection, perform the following 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
   >>>
   ```

6
Solving Problems

This chapter provides information on troubleshooting problems with the InfoServer 150system. The chapter covers the the following topics:

- Using a 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 tests
- Command summary
- Service information

6.1 If a Problem Occurs . . .

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 not, see ''Section 6.2''.

6.2 How to Use the Troubleshooting Table

Table 6–1 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 6–1 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 6.11''.

Table 6–1 Troubleshooting Basic System Problems

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
The system unit fan and power light are off.	The power cord is not connected. The power outlet may not be working.	Check the power cord connections at both ends. Try a lamp that you know works in the power outlet.

(continued on next page)

Table 6–1 (Cont.) Troubleshooting Basic System Problems

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
		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 may not be working.	Try a lamp that you know works in the outlet.
	The terminal fuse may have blown.	Check the brightness and contrast controls. Replace blown terminal fuse.
	Terminal settings may 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'' in Chapter 2. The switch should be in the down position for the console terminal connected to MMJ port 1.
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 6.4'' and ''Section 6.7'' in this chapter for further test instructions.

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

(continued on next page)

Table 6–1 (Cont.) Troubleshooting Basic System Problems

Symptom	Possible Cause	Suggested Solution
System Unit Problems		
The server system's software `Password:` prompt does not appear on the screen.	InfoServer 150 system software is not installed.	See ''Section 2.4'' in Chapter 2.
The system unit's power light is off.	The system unit's |O power switch is not turned on (|).	Check the setting of the |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 |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.

6.3 Power-Up Error Messages

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

Note

If your terminal does not display any information on the screen after the power-up test sequence (approximately 1 second), you may have a terminal or system board failure. Check Table 6–1, the basic troubleshooting table.

Status Information

A single question mark indicates status information. For example:

- `? E 0040 0000.0005` indicates the system clock is not set.

  You can set the clock when you enter **program mode** (while the operating system is running). See your operating system's software documentation for instructions.

- `? D 0050 0000.0005` indicates a low battery.

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

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. This is especially true 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 6.7'' 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 may exist in the system. Use Table 6–2 to identify the faulty device. An asterisk indicates that read-only memory (ROM) has been found for the option, but no test code exists.

A double question mark indicates a hard error. This indicates a serious problem that may affect normal operation and use of some component of the system. For example:

- `?? 1 00C0 0000.7004`

  This message indicates that the Ethernet subsystem is present in the system, but 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 6–2 Power-Up and Self-Test Display Identifiers

Test Identifier	Device
F	Reserved for later use.
E	System clock.
D	Nonvolatile RAM.
C	Serial line controller.
B	Memory.
A	Memory management unit.
9	Floating point unit.
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 for later use.
1	Ethernet network interconnect (NI).

6.4 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.

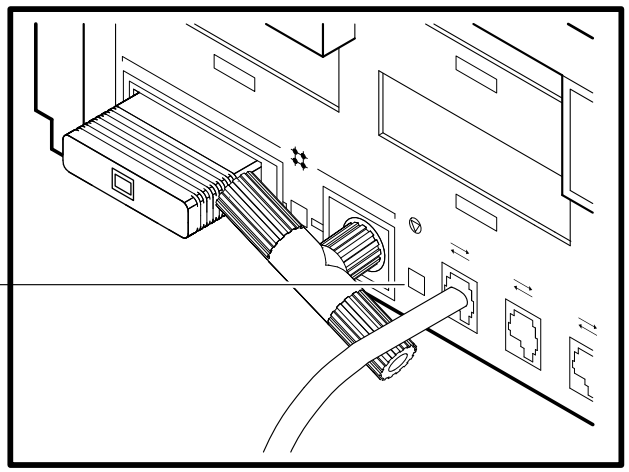
To test a device in your system:

1 Use Table 6–2 to find the number or letter that represents the device you want to test.

Note

The halt button halts the system.

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.



MA-0362-90.DG

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.

6.5 Configuration Display

This procedure displays the system configuration, Ethernet ID, ROM revision levels, and status information for your InfoServer system. Error information in this display is valuable to your service representative. Have this information ready if you must call for service. See Chapter 4 and Appendix A for additional information. Table 6–3 lists the mnemonic code used for each device. To display your system configuration, perform the following steps:

Note

The halt button halts the system.

1. Put the system in console mode by pressing the halt button on the rear of the system unit.
2. Enter the TEST 50 command at the console prompt. The following example shows a sample display. Table 6–3 lists the mnemonic code used for each device.

```
>>> TEST 50 Return

  KA41-A  V1.3
  ID 08-00-2B-03-79-1F

     CLK        0000.0001 ❶
     NVR        0000.0001
     DZ         0000.0001
         00000001 00000001 00000001 00000001 00000000 00000000
           ❷        ❸        ❹        ❺        ❻        ❼

     MEM        0004.0001 ❽
          00400000
     MM         0000.0001
     FP         0000.0001
     IT         0000.0001

     SCSI-A     7711.0001  V0.1
     004C437 0004C437 00000000 00000000
     SCSI-B     1C1C.0001  V1.0
     FFFFFF03 FFFFFF05 . . . 05000001 . . . FFFFFF03 FFFFFF05

     SYS        0000.0001
     NI         0000.0001
     >>>
```

❶ Normal processing code

❷ MMJ port 1 status

❸ Unused

❹ Unused

❺ Unused

❻ Unused

❼ Unused

❽ Represents 4 Mbytes of memory

Table 6–3 Definition of Mnemonics

Mnemonic	Device
CLK	System clock
DZ	Serial line controller
FP	Floating point unit
SCSIA	SCSI-A controller
SCSIB	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

6.6 Displaying Device Information

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

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

You will see a display similar to 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 disk

❻ Write-protected

❼ Device name

6.7 Using the System Exerciser

The system exerciser emulates an operating system by interacting with system devices. The system exerciser 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 will not write on any media.

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

To test your system:

1 Enter the TEST 50 command at the console prompt, to display your configuration. Check that all devices are present in the configuration display.

Note

The halt button halts the system.

2 Put the system in console mode by pressing the halt button on the rear of the system, then pressing Return.

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 get such an error message, contact your service representative.

```
>>> TEST 0 Return

  KA41-A  V1.3          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 6–3 to find the device indicated by the code.

3 Call your service representative. Have this information ready when you call.

6.8 Running Test Utilities

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

6.8.1 RRD42 Test Disc Utility

The RRD42 compact disc expansion box is shipped with a test disc to be used when you suspect RRD42 compact disc drive problems. To test your RRD42:

Note

The halt button halts the system.

1. Press the halt button on the rear of your system unit. The console prompt (>>>) appears on your screen.
2. Insert the test disc in the RRD42 drive, following the instructions in Chapter 2, ''Section 2.4.1''.
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.

6.9 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 RZ23 hard disk drive (''Section 2.4'' (Chapter 2), 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 the RZ23 drive for the server's load image.
- Turn the power to the system unit off, then on again. The server is configured to automatically bootstrap at power-up.

Either method lets the server boot the server system software on the RZ23 drive. If the server software was never copied to the RZ23 drive, then you must place the InfoServer system software compact disc in the right compact disc drive behind the server's front panel. If the bootstrap program fails to boot from the RZ23 drive, the program automatically tries to boot from this compact disc drive indefinitely.

If the system does not boot using the BOOT command:

See ‘‘Section 2.8.3’’ in Chapter 2.

6.10 Command Summary

Tables 6–4, 6–5, and 6–6 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 6–4 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 6–5 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.

(continued on next page)

Table 6–5 (Cont.) TEST Command Summary

Command	Test or Utility Program
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 6–6 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

6.11 Service Information

If you have followed the corrective actions listed in this chapter and you 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: SEABx-Ax, InfoServer 150 system.

   Your service representative may need this number when you call.

2. Make notes based on the troubleshooting table at the beginning of this chapter. This information may 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 may ask you to describe which lights are on.

A

SCSI IDs

The information in this appendix is for technical users who wish 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 only takes the data that has the proper device identification, called an SCSI ID.

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 may 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 IDs (0 through 5) are available for custom configuration.

Table A–1 lists the default SCSI settings for the InfoServer 100. 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 IDs can be set arbitrarily as long as no two devices share the same ID.

SCSI IDs
A.1 SCSI ID Default Settings

Table A–1 SCSI IDs for InfoServer 100 systems

SCSI-A Internal Bus	SCSI-B External Bus
7 Reserved.	7 RRD40 expansion box.
6 SCSI-A adapter.	6 SCSI-B adapter.
5 Reserved.	5 Internal RRD40 expansion box.
4 Reserved.	4 RRD40 expansion box.
3 Reserved.	3 RRD40 expansion box.
2 RRD40 drive.	2 RRD40 expansion box.
1 RZ23 drive.	1 RRD40 expansion box.
0 Reserved.	0 RRD40 expansion box.

Each device has a set of switches or jumpers that can be set for a specific ID. The optional hard disk drives and additional RRD40 compact disc drives are mounted in expansion boxes that have external switches.

The built-in RZ23 hard disk drive and the RRD40 compact disc drive(s) have internal switches or jumpers. If you need to change their default settings, the setting must be reset by your Digital service representative

A.2 Setting the SCSI ID

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 4–1 for a complete list of the device status codes and their meaning. In the following example, the system contains a controller, one RZ23 hard disk, two internal RRD40 compact disc drives, and two RRD40 compact disc drive expansion boxes on the external SCSI-B bus. There are five open IDs. Of these five, ID 7 is reserved for a device requiring the highest priority on the SCSI bus.

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

❶ SCSI ID 0 — Open.

❷ SCSI ID 1 — Open.

❸ SCSI ID 2 — Open.

❹ SCSI ID 3 — RRD40 drive.

❺ SCSI ID 4 — RRD40 drive.

❻ SCSI ID 5 — Open.

❼ SCSI ID 6 — SCSI-B controller.

❽ SCSI ID 7 — Reserved.

Rules for Setting SCSI IDs

- You can have up to seven devices on one bus.
- Each device must have its own unique identifier.
- Two devices may only have the same identifier 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 SCSI Switches

Table A–2 lists the possible SCSI IDs and corresponding switch positions for RRD40 compact disc drive expansion boxes.

SCSI IDs
A.3 Setting SCSI Switches

Table A–2 RRD40 Expansion Box SCSI IDs and Switch Positions

SCSI-B ID on SCSI-B Bus	Switch Positions - Switches 1, 2, 3, and 4			
	1	2	3	4*
0	Down	Down	Down	Not used
1	Down	Down	Up	Not used
2	Down	Up	Down	Not used
3	Down	Up	Up	Not used
4	Up	Down	Down	Not used
5	Up	Down	Up	Not used
6	Up	Up	Down	Not used
7	Up	Up	Up	Not used

*Switch 4 is not used but should be set to the down position.

B
System Specifications

This appendix lists system specifications for the InfoServer 100 system, including operating and storage conditions.

System Specifications

Processor	VAX KA41-A CPU with 1 Kbyte of first-level cache
DRAM memory	4 Mbytes
ROM memory	256 Kbytes
Hard disk	1 104 Mbyte internal hard disk
Optical disc drive	1 or 2 600 Mbyte RRD40 internal drives (depends on configuration)
Optional storage	RRD40 expansion boxes
Terminals	Supports the VT series
Interfaces	1 SCSI port 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)	1.7 A in a 110 Vac circuit 1.0 A in a 220 Vac circuit
Power (typical)	160 W
Frequency	47 Hz to 63 Hz

Dimensions

Weight*	Height	Width	Depth
17.8 kg	14.99 cm	46.38 cm	40.00 cm
39 lb	5.90 in	18.26 in	15.75 in

*Depends on configuration

System Specifications

System Operating Conditions

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 90% 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)

C
Related Documents

For option and system hardware part numbers, consult your Digital sales representative.

Not all the following documents (Table C–1) are available in every country. Check with your Digital sales representative for availability.

Table C–1 Related Documents

Titles	Order Number
InfoServer Documentation	
InfoServer System Operations Guide	AA–PJXJA–TE
InfoServer 150 Installation and Owners Guide	EK–INFSV–OM–001
Server Client Documentation	
VMS LAD Control Program (LADCP) Manual	AA–PKDAA–TE
Microcomputer Handbook Series	
VAX Architecture Handbook	EB-19580-20
VAX Software Handbook	EB-21812-20

(continued on next page)

Related Documents

Table C–1 (Cont.) Related Documents

Titles	Order Number
RRD40 Disc Drive	
RRD40 Disc Drive Owner's Manual	EK–RRD40–OM
RRD42 Disc Drive Owner's Manual	EK–?????–OM
TZ30 ??? Manual	EK–?????–OM
TLZ04 ??? Manual	EK–?????–OM
TK50Z ??? Manual	EK–?????–OM
DECconnect System	
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

D

Removable Storage Media

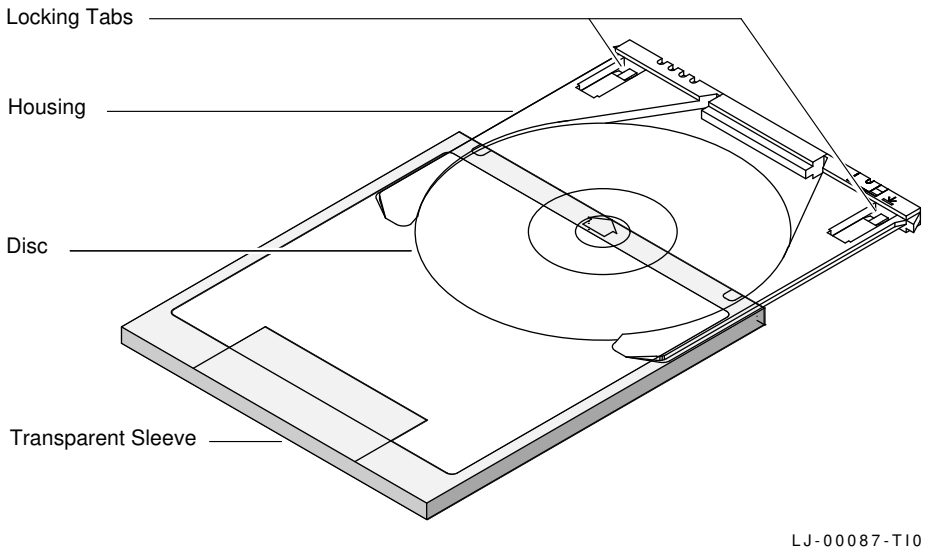
The InfoServer 100 supports RRD40 compact disc drives. The RRD40 reads information from removable compact discs. This appendix contains information on the use and storage of the compact discs.

D.1 Compact Discs

The RRD40 compact disc drive uses compact discs with a memory capacity of 600 Mbytes. The discs come in a protective caddy for insertion into the compact disc drive. The caddy consists of three parts: the disc, the housing, and the transparent sleeve (Figure D–1).

Removable Storage Media
D.1 Compact Discs

Figure D–1 Compact Disc Caddy

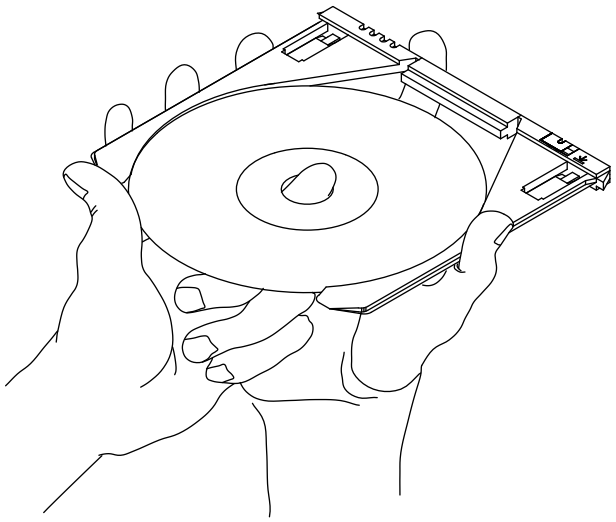


D.1.1 How to Remove the Disc from the Caddy

You can remove the disc from the caddy, for cleaning or caddy repair. To remove the disc from the caddy:

1. Hold the caddy so the label side is facing down. Locate the locking tabs on either side of the disc housing (Figure D–1).
2. Press down on each of the locking tabs while slightly separating the housing from the sleeve. Use your fingernail or a sharp, pointed instrument.
3. When both tabs have been unlocked, pull the disc housing out to about the midpoint of the disc.
4. Hold the disc housing on each side. Exert inward pressure on the housing so the disc does not fall out. Remove the sleeve from the housing. Place the sleeve aside.
5. Hold the disc with your free hand, as shown in Figure D–2. Position your thumb on the outer edge of the disc and your index finger in the center hole of the disc. Release pressure from the housing and remove the disc.

Figure D–2 Inserting or Removing a Disc from the Housing



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D.1.2 How to Insert a Compact Disc Into a Caddy

To place a compact disc into a caddy:

1. Hold the disc with your free hand. Position the housing and disc as shown in Figure D–2. Always work with the label facing down.
2. Position your thumb on the outer edge of the disc and your index finger in the center hole of the disc.
3. Slip the disc into the housing. The inside of the housing is grooved to accept the disc. Exert inward pressure to hold the disc in the housing.
4. Slide the housing into the transparent sleeve until the housing clicks into place.
5. Turn the assembled caddy over, so the label on the disc is facing up. Make sure that the notches on the housing are on the left. If the notches are not on the left when the label side is facing up, then the disc is mounted incorrectly in the caddy. Remove the disc from the caddy and reorient it.

   It is important that the disc is correctly mounted in the caddy. The compact disc drive cannot access data from a disc that is incorrectly mounted.

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.

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 inserting 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.

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