INSTALLATION GUIDE

UNIX® SVR4.2

**UNIX
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Edited by Matthew Wood

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UNIX SVR4.2

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Introduction to the Installation Guide

This guide explains how to install the UNIX® System V Release 4.2 (SVR4.2) software on your computer. It helps you prepare for the installation process, and leads you through the steps necessary to perform the type of installation most appropriate for your computer. If you are new to computing and the UNIX System, you may use this guide as a workbook, a place for making notes and checking off steps in the process as they are accomplished. More experienced computer users may treat this guide as a reference, referring to it only when questions arise.

We recommend that everyone read the "Preparing for Installation" section. Then, you only need refer to sections that apply to the type of installation you are doing.

How to Use this Guide

1. "Introduction to the Installation Guide"

   This section discusses the content of each section, lists other UNIX SVR4.2 documentation, and describes conventions used in this guide.

2. "Preparing for Installation"

   This section lists hardware and software requirements. It talks about planning for multiple operating systems on your computer. It also provides information so that you can effectively choose between automatic versus custom installation types, between automatic versus custom package installation options, and between destructive versus non-destructive installation modes. Additionally, you are told about information you should gather before starting so that you will be able to answer prompts correctly, without interrupting the installation process.

   This section is recommended reading for everyone.

3. "Using the Installation Software"

   This section presents general information about the computer screens displayed during the installation process, and how to use them. It also previews types of messages that the installation process may generate; and explains how to use the on-line Help facility, and how to cancel the installation.

If you are new to computing, you should find this information useful. If you are an experienced user you may find that you can navigate through the screens without reading this section.

4. "Information About Sets and Packages"

   This section lists UNIX SVR4.2 package sets and individual packages, previews information you will need to provide when installing them, and discusses their dependencies. Package sizes are given.

   The information in this section is especially useful when determining your disk space requirements, or when calculating how much space you need for file systems if you perform a custom installation.

5. "The Automatic Installation Process"

   This section provides a step-by-step procedural example of the automatic installation process.

   If you are new to computing, you may want to use this section as a checklist and follow each step of the installation process. More experienced users may find that the installation software is sufficiently straightforward that it is not necessary to read this section.

6. "The Custom Installation Process"

   This section provides a step-by-step procedural example of steps which are specific to the custom installation process.

   If you are performing a custom installation it is recommended that you read this section.

7. "Upgrade and Overlay Processing"

   This section describes Upgrade and Overlay (non-destructive installation) processing. It lists the steps which are required for the upgrade and overlay installation processes.

   If you want to perform an upgrade or overlay installation you should review this section before starting.

8. "Installing Additional Packages"

   This section provides information about non-Foundation package sets and individual packages. It reviews the questions you will need to answer when installing various packages, and describes package dependencies. A step-by-step example of the procedure for installing package sets or individual packages, is also provided.

If you are installing additional package sets or packages you should review this section before starting.

A. "Appendix A: Supported Hardware"

This Appendix provides a comprehensive list of hardware (from processors to printers) which has been successfully tested with, and is supported by UNIX SVR4.2.

Refer to this Appendix to verify that the hardware your computer uses is supported.

B. "Appendix B: Hardware Configuration Notes"

This Appendix provides information about configuring your hardware so that it will work properly with the UNIX System.

If you have any of the equipment listed in this Appendix, it is important that it be configured as noted.

C. "Appendix C: Troubleshooting"

This Appendix provides a description of installation-related problems you may encounter, and information about how to resolve them.

Refer to this Appendix if you are trying to resolve a specific installation-related problem.

Other UNIX SVR4.2 Documentation

We recommend that you have these companion documents available for reference.

- *The UNIX® Desktop Quick-Start*
- *The UNIX® Desktop Handbook*
- *Compatibility Notes*

Conventions Used in this Guide

This section describes conventions used in this guide. Examples of computer screens, certain kinds of text, notes, warnings, and instructions to press special keys are presented in a standardized way throughout the guide so that you can easily recognize them.

■ Information that appears on your computer screen is enclosed within a double box.

Literal computer input and output (such as commands you enter or messages displayed by the system), are shown in a `constant width` font. This font is also used when referring to specific UNIX System terms; for example: accounts like `root`, packages like `util`, or file systems like `/usr`.

Thus, a message on a computer screen might look like this:

```
Press 'TAB' to move the cursor between fields.
When finished, move the cursor to "Apply" and
then press 'ENTER' to continue.
```

■ As shown in the example above, references to special keys on your keyboard, such as "TAB" or "ENTER", are spelled out when they appear on an installation screen. But, in the explanatory text, references to special keys are enclosed in a box; for example: the TAB key is shown as ⬚TAB⬚, and the ENTER key is shown as ⬚ENTER⬚.

Please note that in this guide we refer only to the ⬚ENTER⬚ key, but this same key may be labeled ⬚RETURN⬚ or ⬚←⬚ on your keyboard.

Sometimes you will see a special key combination such as this ⬚CTRL-ALT-DEL⬚ keystroke sequence used in rebooting UNIX SVR4.2. (Hold down the ⬚CTRL⬚ and ⬚ALT⬚ keys, and press the ⬚DEL⬚ key at the same time.)

■ Items that you are expected to replace with specific values are shown in an *italic* font as in the following example:

`pkgadd -d` *diskette?* `-q -1`

The *italic* font is a signal that you are expected to replace the word *diskette?* with the name of one of your diskette drives (for example, `diskette1`, or `diskette2`).

■ The following symbols are used to alert you to special circumstances.
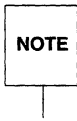
NOTE

Notes are written to help you avoid an error that might be inconvenient, or to emphasize points of interest.

CAUTION
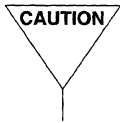
Warning messages alert you to a situation for which you must take corrective action. If the correct action is not taken, your computer may not be properly configured, or you may have to re-perform the installation process from the beginning.

Preparing for Installation

We recommend that you read this section before you start installing your system. Information about required hardware and software is provided, and pointers are given that will help you choose an appropriate installation type for your computer, and for software packages. The process of planning for multiple operating systems on your computer is discussed. Further, you are alerted to the kinds of information the installation process will ask you for in order to configure your computer correctly. You should gather your answers to these questions before installation so that you may have them ready, and avoid unnecessary delays during the actual installation process—checklists are provided to assist you with this task.

By having the right equipment, choosing an appropriate installation type, and preparing your answers in advance, you can be sure of having a trouble-free installation and a properly configured system.

Topics discussed in this section include:

- Hardware Requirements
- Software Requirements
- Planning for Multiple Operating Systems
- Choosing Between Automatic and Custom Installation
- Choosing Between Automatic and Custom Package Installation Options
- Information Required During Foundation Set Installation
- Choosing Between Destructive and Non-Destructive Installation

Hardware Requirements

To install and run the UNIX SVR4.2 System, you need to have the following hardware:

- A computer running one of the Intel386™ Family of microprocessors (including the Intel486™ microprocessor), or a 100% compatible Central Processing Unit (CPU). A minimum processor speed of 16 MHz is required. Check the documentation that came with your computer to determine the type and speed of the processor your computer has.

- A computer with an ISA bus (also called an AT bus), an EISA bus, or a Micro Channel bus. Check the documentation that came with your computer to determine the type of bus your computer has.

- No less than 4 Megabytes (MB) of Random Access Memory (RAM)— performance is enhanced as more RAM is added.

- A diskette drive for booting the UNIX System and installing files from diskettes (you must be able to boot your computer from this drive).

- A hard disk drive large enough to accommodate the Foundation Set software—at least 60 MB formatted (larger, if unformatted) is required. Additional space is required for each add-on package set or package you install on the computer.

- If you're going to use a second hard drive for the UNIX System, you must use one large enough to contain at least a 40 MB UNIX System partition.

- Optional: A quarter-inch (SCSI or non-SCSI) cartridge tape drive is recommended, but not required.

Hardware Configuration Checklist

Before beginning the installation, you should identify all of the hardware components on your system, and verify that they are configured correctly. Please complete the following information for each computer you plan to install the UNIX System on. Next to each item, specify the manufacturer and model or component (for example, Mouse - MicroSoft, serial, two buttons).

Figure 1: Hardware Configuration Checklist

Processor (80386, 80486, other):   _____

    MHz (16, 25, 33, 50, other):   _____

Bus (ISA, EISA, MCA):   _____

RAM Memory (4MB, 8MB, other):   _____

Mouse (serial, bus, PS/2; buttons):   _____

Serial Ports (tty00, tty01, other):   _____

Video Adaptor (EGA, VGA, other):   _____

Diskette Drive 1 (5.25", 3.5"):   _____

Diskette Drive 2 (5.25", 3.5"):   _____

Network Card(s):   _____

Printer(s):   _____

Non-SCSI Components:

Hard Disk Controller: _____

Hard Disk 1 (type, MB):   _____

Hard Disk 2 (type, MB):   _____

Cartridge Tape Controller: _____

Cartridge Tape Drive: _____

SCSI Components:

Host Adaptor: _____

Hard Disk 1 (type, MB):   _____

Hard Disk 2 (type, MB):   _____

Cartridge Tape Drive: _____

Other Hardware (please specify):   _____

Review Appendix A and B before beginning the installation process. Appendix A provides a list of supported hardware—verify that the hardware your computer uses is supported. Appendix B contains information about configuring various controllers, adapters and other hardware so that it will work properly during the UNIX SVR4.2 system installation.

> **NOTE** If your computer uses any of the hardware listed in Appendix B, you should check to see that it is configured properly before starting the installation.

Software Requirements

The following software is needed to install the UNIX SVR4.2 system.

- The software that boots the system (that loads the most essential part of the UNIX System and starts it running) is delivered on three diskettes, referred to as the "boot diskettes." These diskettes may be in either 3.5-inch or 5.25-inch format. The boot diskettes can only be run on diskette drive 1 (also known as drive A: on a DOS® system).

- The Foundation Set is delivered on 3.5-inch diskettes or cartridge tapes (5.25-inch format is not available).

- Optional: Seven other package sets are delivered on 3.5-inch diskettes or cartridge tapes (5.25-inch diskettes are not available).

- Optional: Eight individual packages and one package set (the Auditing Package) are delivered on 3.5-inch or 5.25-inch diskettes (tape is not available).

Foundation Set Installation Checklist

The Foundation Set Installation checklist summarizes the decisions you need to make, and the information you need to have, in order to install UNIX on your computer. We recommend that you fill out this checklist so that you will have your answers ready when prompted by the installation process. The information needed to complete this checklist is discussed in the sections that follow.

Figure 2: Foundation Set Installation Checklist

Do you want to save existing software? (yes/no) _____

    (if yes, have you backed up your system?) _____

HBA diskettes needed? (yes/no) _____

Your timezone? (for example, EST) _____

Planning to use multiple Operating Systems (OS)? (yes/no) _____

    (note OS type and size for each partition)

        Partition 1 OS: _____ Size (MB): _____

        Partition 2 OS: _____ Size (MB): _____

        Partition 3 OS: _____ Size (MB): _____

        Partition 4 OS: _____ Size (MB): _____

Destructive or Non-Destructive Installation? _____

    (if non-destructive, note type)

        Overlay: ___ (determine available space for each file system)

        Upgrade: ___ (determine available space for each file system)

        Interrupted: ___

Automatic or Custom Installation? _____

Install using diskettes or tape? _____

    (if diskette, note 3.5" drive)

        diskette drive 1 _____

        diskette drive 2 _____

Your computer's name? _____

Using a mouse? (yes/no) _____

    (if yes, note information for your mouse type)

        Serial Mouse: ___ # of buttons: _____ tty (00, 01): _____

        Bus Mouse: ___ # of buttons: _____ IRQ: _____

        PS/2 Mouse: ___ # of buttons: _____

Create Desktop Owner Account? (yes/no) _____

    (if yes, fill out the following)

        Owner's login ID: _____

        Owner's user number: _____ (system provides default)

        Owner's desktop environment: _____ (Motif, OPEN LOOK, none)

        Password: (select, but do not write down password)

`root Password:` (select, but do not write down password)

Back Up Existing Data Before Installation

If your computer already has data on it, you should save critical data (such as user files, password files, and other administrative files) in a backup archive before starting the installation process. For backup instructions, see the manuals for the system you currently have installed.

Host Bus Adapter Diskettes

A Host Bus Adapter (HBA) diskette provides software (a device driver) to the UNIX System for a particular device so that it can function properly with the system. HBA diskettes are provided primarily for disk controllers, tape controllers and SCSI Host Adapters, however, other devices may require one as well. The UNIX System provides device drivers for many popular controllers and adapters, so you may not need any HBA diskettes during the installation process. No HBA diskette is required for equipment listed in "Appendix A: Supported Hardware".

On the other hand, your computer may use one or more controllers or adapters that the system does not know about. In this case, you need a different HBA diskette for each unsupported controller or adapter. For example, if you are using an IBM MCA SCSI Host adapter, you need to load the "MCA SCSI IHV Host Bus Adapter" diskette. HBA diskettes are provided by the equipment manufacturer or system vendor, and should be included with the equipment you purchase, so if you do not have the necessary diskette, contact the manufacturer or vendor.

Normally, each HBA diskette is requested twice during the installation process; once immediately after the first boot diskette is removed from the computer, and again, after installation of the Foundation set is complete. If an HBA diskette is not requested the second time, do not worry. In this case, the system has determined that this particular device driver is not actually needed.

Planning for Multiple Operating Systems

Your computer may already run an operating system like DOS or OS/2, or it may use a UNIX operating system like Microsoft XENIX®, SCO® XENIX, SCO UNIX, ISC UNIX, or a previous version of UNIX System V. If you want to keep one or more of these operating systems on your computer and install UNIX SVR4.2 as well, you must use the **fdisk** screen to partition your hard disk(s). The **fdisk** screen is presented for your use during the SVR4.2 installation process (Step 9). It is important that you understand how to use the **fdisk** utility program before you partition your disk(s). Read the on-line help, and review the information which begins on page 56 before partitioning.

If you delete an existing partition using **fdisk**, all data in the deleted partition is destroyed. You should back up your data using the backup program that comes with your operating system before deleting any partitions.

An Important Note to DOS Users

If you currently use DOS on your computer, you must decide if you want to continue to use DOS applications after you install the UNIX System. If you do, and if you have enough hard disk space to accommodate both the UNIX System and DOS software, you have two choices:

1. You can use the **fdisk** utility to partition your hard disk(s) so that you have both UNIX System and DOS partitions. After you have set up both partitions and installed the appropriate software, you can use the **fdisk** utility program to change the active partition so that you can run either operating system on your computer (but not both at the same time).

2. You can install emulation software, such as VP/ix™ or Merge™, that allows you to run DOS applications from the UNIX System. If you choose to use one of these programs, you can keep a separate DOS partition on your computer, but it is not required—you can put your DOS programs into a UNIX System directory.

Perform the following procedure if you want to run DOS programs on your computer after installing UNIX SVR4.2.

1. Back up your DOS system using the standard DOS backup utility program. Please refer to your DOS manual for instructions about backing up your DOS system.

2. Perform steps 1 - 8 of the UNIX SVR4.2 Automatic Installation Process (starts on page 50).

3. When the **fdisk** screen is presented during Step 9 (see page 56) of the installation process, use **fdisk** option 3 to delete your existing partition.
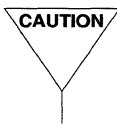
> ⚠ **CAUTION** When you delete a partition, all data in that partition is destroyed. Any data you want to save must be backed up before deleting the partition.

4. Use **fdisk** option 1 to create a new partition or partitions on your hard disk(s).

   - If you plan to use emulation software to run DOS programs, and you do not want a DOS partition, you can create a single UNIX System partition that uses 100% of your hard disk(s).

- If you plan to have both pre-4.0 DOS system and UNIX System partitions on your computer, create the DOS partition first (so that it is Partition 1, and starts at cylinder 0 on the hard disk), and then create the UNIX System partition. Pre-4.0 DOS partitions must be less than 32 MB, and must start at cylinder 0 to be bootable. (Post-4.0 DOS partitions do not need to follow these requirements.) When you are sizing your partitions, remember that the UNIX SVR4.2 Foundation Set requires at least 60 MB of formatted disk, and that more space is necessary if you want to install additional UNIX System software. (Information is provided about package sizes in the "Information about Sets and Packages" section beginning on page 30.)

5. Complete the UNIX SVR4.2 Foundation Set installation process.

6. If you are using emulation software, install that software on your system. Refer to the manuals that come with the software for instructions.

7. Restore the DOS data to your system:

    - If you are using emulation software and do not have a DOS partition, create a UNIX directory, and restore the DOS applications to that directory. See the instructions that come with the emulation software.

    - If you created a DOS partition, use `fdisk` option 2 to change the active (boot from) partition to DOS, format the DOS partition, and restore the data you previously backed-up to the DOS partition. See your DOS manual for information about formatting the DOS partition and restoring the data.

NOTE

After the UNIX SVR4.2 system is installed, you can access the `fdisk` utility program from the UNIX System by logging in as `root` and issuing the `fdisk` command. This is useful when you want to change the active (boot from) partition from one operating system to another. If your active partition is DOS, you can use the DOS version of `fdisk` to change the active partition back to the UNIX System.

Choosing Between Automatic and Custom Installation

You can install the Foundation Set with either an automatic or a custom installation process. During the installation process, an "Installation Type Selection" menu is presented from which you make this choice.

If you select the automatic type installation, the system is installed with a minimal amount of help from you. In automatic mode, you don't need in-depth knowledge of the system's structure to get the UNIX System up and running. When information is needed about various hardware and software settings, the automatic installation process assigns default values.

However, you may want to customize the installation for your computer. By choosing the custom installation process, you have a greater degree of control over how your system is configured.

We recommend you consider the following points before making your selection:

- Automatic Installation

    □ If you use two hard disks for installation, the UNIX System partition on the second hard disk is automatically configured for you with a /home file system—this is where user directories and files are stored. All other file systems are put on the first (primary) hard disk.

    The default file system type, VxFS™ (the VERITAS File System— it is referred to in this guide as vxfs), is installed. The vxfs file system is known for speed, reliability and recoverability.

    > **NOTE** Some applications written for older releases of the UNIX System are not compatible with the vxfs file system type (see the *Compatibility Notes* for detailed information). We recommend that you check the prerequisites for software you may want to install later. Otherwise, you may configure your computer in a way that prevents you from installing software you want later.

    □ A default set of file systems and slices is created, each with a default size determined by the installation process software.

    If you are performing a non-destructive (upgrade or overlay) installation, your existing system configuration files and file systems are automatically combined (merged) into the new, UNIX SVR4.2 system.

- Custom Installation

  The default file system type is **vxfs**. If you want to use another type of file system (such as **s5, s52k, ufs,** or **sfs**) you must perform a custom installation.

  - If you want to define your own file systems and slices, and the size and placement (primary or secondary hard disk) of each, you must choose the custom installation process.

  - If you plan to use your system for software development, particularly for large applications (for example, graphics development), the default swap space may not be large enough to link the applications. In this case, you should choose the custom installation process so that you can allocate a larger swap space (generally 3 - 4 times the amount of RAM on your computer).

  - The automatic installation process limits the number of inodes in large file systems to less than 64k in order to maintain compatibility with pre-System V Release 4.0 releases of the UNIX System. If you want to extend the number of inodes on your larger file systems above 64K you must do a custom installation.

  - If you do not want to automatically combine your system configuration files during a non-destructive (upgrade or overlay) installation, you must choose a custom installation.

Choosing Between Automatic and Custom Package Installation Options

The previous section discussed selection of an automatic or custom type for the overall installation process. This section talks about the difference between automatic and custom modes for individual package installation.

After filling out a "Package Selection" form to select which packages in a set are to be installed, you may be presented with a "Package Installation Options" form. The options form asks you to choose between automatic or custom installation for each package listed. Only packages for which this option exists are presented.

All of the listed packages are installed in the Automatic mode by default. You should accept the defaults unless you are knowledgeable about the packages and options involved.

If you understand the UNIX System packages well, and you want to have very fine control over the configuration of a package, you can select the Custom option. If you select the custom option for a package, you are prompted to provide additional information later in the installation process. Table 1 summarizes the information you are prompted to provide for each package.

Table 1: Custom Package Installation Option Questions

Set & Package	Information Requested
Foundation Set	
Network Support Utilities (**nsu**)	number of pseudo-terminals ? (16-256)
Enhanced Application Compatibility (**acp**)	number of pseudo-terminals ? (8-32)
Networking Set	
Internet Utilities (**inet**)	internet address ?
	configure TCP listener ? (yes or no)
	install OA&M menu interface ? (yes or no)
	install graphical interface ? (yes or no)
Network File System Utilities (**nfs**)	
	install graphical interface ? (yes or no)
	install OA&M menu interface ? (yes or no)
Remote File Sharing Utilities (**rfs**)	
	install OA&M menu interface ? (yes or no)
Basic Development Set	
Optimizing C Compilation System (**ccs**)	replace existing C system ?
	(only when performing upgrade or overlay)
Kernel Debugger (**kdb**)	turn on security checks ? (yes or no)
Enhanced Debugger (**edebug**)	install graphical interface ? (yes or no)

Choosing Between Destructive and Non-Destructive Installation

If the installation process determines that a UNIX System is already installed on your computer, you are presented with a "Files Detected Warning" menu which presents a choice between performing a non-destructive, or a destructive installation.

- Non-destructive Installation:

  If you choose non-destructive installation (this is the default), the installation process attempts to preserve your existing "volatile" files (important user files, application software and system configuration files). There are three types of non-destructive Installation—"upgrade", "overlay", or "interrupted." These are performed in the following circumstances:

  - Upgrade: an upgrade installation is appropriate when upgrading a UNIX System V Release 4 Version 4 (also referred to as "Version 4" in this guide) system to UNIX SVR4.2 The purpose of the upgrade feature is to allow the current installed base of Version 4 customers a smooth transition to UNIX SVR4.2.

  - Overlay: The purpose of an overlay is to help you recover from a corrupted system. This process allows you to overlay a new UNIX SVR4.2 system on an existing UNIX SVR4.2 system.

  - Interrupted: If you previously canceled your Foundation Set installation, or the installation was accidentally interrupted (for example, by a power outage), you may choose a non-destructive installation. In this case, the system preserves the installation up to the point where it was interrupted.

    | NOTE | Exception: If an upgrade installation is interrupted it cannot be resumed. A destructive installation must be performed. |

  The installation process senses whether an upgrade or an overlay is called for, determines if the process can be performed successfully, and starts the appropriate process.

- Destructive Installation:

  If you choose a destructive installation, all file systems and data currently existing in the active UNIX System partition on your computer's hard disk are destroyed and replaced with new data as the UNIX SVR4.2 System is installed. Don't worry about the term "destructive." Unless your computer meets the requirements mentioned for a non-destructive installation, this is the normal installation mode. It is the only type of installation possible for a computer that does not already have a UNIX System installed on it.

Information Required During Foundation Set Installation

During the installation process, you'll be asked to make choices or supply information that determines the configuration of your system. By reviewing these questions and gathering the information you need in advance, you can plan for an uninterrupted installation, and a properly configured system.

- What timezone are you located in?

  During the installation process you are asked to set the date and time on your computer. As part of this process, you are also asked to set the timezone (for example, US Eastern Time, EST). You may select one of the multiple choices presented, or you can choose the **Another Timezone** option so that you can define how many hours West of Universal Coordinated Time (UTC) you are.

- How many, and what kind of partitions will your system have?

  By default, a single UNIX System partition is created. Optionally, you may create up to four partitions of varying types on your system. This might, for example, include an additional UNIX System partition, a DOS partition, and some other operating system partition(s). See the section, "Planning for Multiple Operating Systems" (page 11), for information about this choice.

- Do you want to perform a Destructive or Non-Destructive Installation?

  If your computer does not already have a UNIX system on it, you should perform a destructive installation. But if you are upgrading from UNIX System V Release 4 Version 4 system, if you are performing an overlay on an existing UNIX SVR4.2 system, or if you are resuming an interrupted installation you may want to choose a non-destructive installation. See the section, "Choosing Between Destructive and Non-Destructive Installation" (page 16), for information about this choice.

- Do you want to perform an Automatic or a Custom Installation?

  The automatic installation process uses pre-assigned default values to configure your hardware and software. If you require the ability to choose the types, placement and sizes of file systems on your computer you may want to perform a custom installation. See the section, "Choosing Between Automatic and Custom Installation" (page 14), for information about this choice.

- Do you want to use diskette drive 1 or diskette drive 2 to install the Foundation Set?

  If you are going to use diskettes to install the Foundation Set, and if your

system has been configured with two diskette drives, the installation process detects them and asks you which drive (drive 1 or drive 2) to use. The Foundation Set diskettes only come in 3.5-inch format, so if you install using diskettes, you must choose your 3.5-inch diskette drive.

■ What is your computer's name?

If your computer will not be part of a network you can name it anything you like, but you should keep the name short, and use only letters and/or numbers (no special characters).

If your computer already has a name and it is part of a network, you should re-use the existing name. If your computer does not have a name yet and you know that it will be part of a network, call your Network or System Administrator to help you select a name that is unique on the network.

■ Have you installed a mouse with your computer? What type?

It can be a serial mouse, a bus mouse or a PS/2 mouse (sometimes referred to as a "keyboard" mouse). Please refer to the documentation supplied with your mouse to determine your mouse type.

   ❑ How many buttons does your mouse have?

   Check to see if your mouse has two buttons, or three buttons. The default is two buttons.

   ❑ If you are using a bus mouse, what interrupt vector will it use?

   An interrupt vector may also be referred to as an "IRQ". The default provided by the installation process will usually suffice, but you should refer to your mouse manual to check this value, and change it from the default if necessary.

   ❑ If you are using a serial mouse, what port is it plugged into?

   Many computers have two ports. These are typically labeled COM1 and COM2, or "Serial A" and "Serial B." On UNIX Systems these ports are referred to as `tty00` and `tty01`, respectively. Be careful not to confuse a printer port, which is also included on most computers, with COM2!

■ What is the login ID and password for the Owner's login ID? What is the password for the **root** login ID?

These login accounts have special privileges and abilities. You need to determine who the "Owner" of the system is, and provide a login ID for that person. You must also provide passwords to these login IDs so that only authorized individuals will be able to gain access to your system. Passwords should be kept secret to protect your system from unauthorized use. Guidelines for choosing a password include:

☐ Each password must have at least 6 characters, and may have a maximum of 8 characters.

☐ Each password must contain at least 2 alphabetic (upper and/or lower-case) characters, and at least one numeric or special character.

☐ Avoid using passwords that others might guess if they know something about you. Do not use your name, nickname or initials, or those of friends or family, in a password.

Using the Installation Software

This section provides general information about computer screens and messages, the on-line Help feature, and about canceling the installation if necessary. If you are new to computing, you should find this information useful. if you are an experienced user you may find that you can navigate through the screens without reading this section.

Topics discussed in this section include:

- Menus, Forms and Information screens
- Messages
- Using On-line Help
- Canceling and Resuming the Installation

Menus, Forms and Information Screens

Several types of screens are presented by the installation process software: menus, forms and information screens. All of these screens have certain things in common. Figure 3 shows the general installation screen layout, and explains how various parts of the screen are used.

Figure 3: Installation Screen Layout

This area identifies the overall process.

This area identifies the name of the current step in the process.

UNIX System Installation   Package Selection

> This area of the screen provides information about the current
> step in the installation process. On "form" screens, one or more
> fields may be presented for which information must be entered
> (by typing it in directly, or by selecting one of the available
> choices). On "menu" screens you may select from a list of
> numbered options.

Press 'TAB' to move the cursor between fields. When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.

| Right/Left Arrow Keys for New Choice (2 choices) | Del=Cancel F1=Help |

Information about navigation is given in this area (how to move from field to field, or how to move to the next screen.)

"Help Bar"

Keys listed here are "active" (from this screen, you can cancel the installation, or get on-line Help about the current step of the process.)

Information about choices you can make (how to select a choice, how many choices are available), or brief instructions, or error messages, may be displayed here.

■ Information screens: These screens display messages (for example, status messages), or information about a step in the process. Help screens may also be considered information screens.

As shown in the example below, some information screens ask you to press $\boxed{\text{ENTER}}$ to acknowledge having seen the information before continuing to the next step.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│   UNIX System Installation        Foundation Set Installation From Diskette │
│  ───────────────────────────────────────────────────────────  │
│                                                               │
│   Type 'ENTER' to begin installation from diskettes.  The computer │
│   will display messages on the screen telling you which diskette to │
│   insert next and when to remove it.                          │
│                                                               │
│   Press 'ENTER' to continue.                                  │
│  ───────────────────────────────────────────────────────────  │
│                                      | Del=Cancel  F1=Help     │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

Status messages like that shown in the following example usually display for a limited time period, after which the next screen is automatically shown.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│   UNIX System Installation                  Verifying Hard Disk(s) │
│  ───────────────────────────────────────────────────────────  │
│                                                               │
│       Checking the hard disk(s) for defects and creating file systems. │
│            This will take a few minutes.  Please wait.        │
│  ───────────────────────────────────────────────────────────  │
│                                      | Del=Cancel  F1=Help     │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

On-line Help screens are described in the "Using On-line Help" section on page 27.

■ Menus: Menu screens present a numbered set of options from which you can choose. The default option is displayed in the entry field. The following example shows these portions of a menu screen.

```
Your options are:                                .

  1. Attempt a non-destructive installation.
  2. Perform a destructive installation.  This will destroy all files.

Type '1' or '2' followed by 'ENTER': 1
```

If you want to choose the default option, just press (ENTER). Other options can be selected by typing the option number and pressing (ENTER). The next screen in the process is then shown.

■ Forms: Using one of these screens is like filling out a form. You may be asked to type an entry directly into a field, or to select from a set of values provided for a field. The field the cursor is on is the "current field." The help bar at the bottom of the screen will contain a description of the input requested in the current field.

■ If the current field is displayed in reverse video, the form expects something to be typed from the keyboard. The help bar at the bottom will describe what input is requested in this field. In most cases, no default values are provided for such a field.

This example shows a current field and help bar for this type of form.

```
Computer name:_____

_____
Enter the name for your computer              | Del=Cancel   F1=Help
```

■ If there is a highlighted choice in the current field, then this is a multiple choice field.

The help bar at the bottom of the screen may say **Right/Left arrow keys for new choice** (n choices), where n is the total number of possible choices offered for this field. The choices can be scrolled through by pressing the right arrow (→) key (next choice) or the left arrow (←) key (previous choice). If your terminal has no arrow keys,

use ⊕ instead of →, and ⊖ instead of ←. The value which is displayed in a field is the choice that will be selected when the choices are applied.

This example shows a screen with several multiple-choice fields.

```
 _____
/                                                                \
|                                                                |
|   Utilities Set Installation                  Package Selection|
|  ------------------------------------------------------------  |
|   The following packages are included in this set for this release.   Select  |
|   "Yes" in the install column for the packages you wish to install.    |
|                                                                |
|                          Package Name    Install?              |
|   --------------------------------------  --------             |
|                     Terminfo Utilities:   Yes                  |
|                      Advanced Commands:   Yes                  |
|                     BSD Compatibility:    No                   |
|                                                                |
|                                                                |
|                               +-----+   +-----+                |
|                               |Apply|   |Reset|                |
|                               +-----+   +-----+                |
|                                                                |
|                                                                |
|   Press 'TAB' to move the cursor between fields.  When finished, move the  |
|   cursor to "Apply" and then press 'ENTER' to continue.        |
|  ------------------------------------------------------------  |
|   Right/Left arrow keys for new choice (2 choices)      | Del=Cancel  F1=Help |
|                                                                |
_____/
```

- To move to the next field of a form, use the **TAB** key, or the down-arrow ⬇ key. If there is invalid data in a field, the form may not allow this field to be bypassed until you correct the entry.

- To move to a previous field on a multiple field form, use the back tab key, or the up-arrow ⬆ key. (A back tab character is produced by holding down the **SHIFT** key and pressing the **TAB** key.) If there is invalid data in a field, the form may not allow this field to be bypassed until you correct the entry.

- There are two fields (also known as "buttons") labeled **Apply** and **Reset**. After the form is filled out, use the **TAB** key to move the cursor to the **Apply** field, and press **ENTER** to register the selection(s) and continue to the next step. Alternately, after making one or more changes, you can restore fields to their original default values by using the **TAB** key to move to the "Reset" field and press **ENTER**. You may then continue to fill out the form if you desire.

Messages

Several types of messages may be displayed.

Help messages   are pages of detailed instructions or explanations about the current step in the installation process. To get a help message, press the [F1] or the [?] key. Help is available on screens that display the message **F1=Help** in the help bar.

Status messages

describe the current stage of the installation process. They may or may not require input from you. (Details about most status messages are available in Help messages.)

Warning messages

alert you to a situation for which you must take corrective action. (Details about most warning messages are available in Help messages.)

Error screens   contain important information about a problem encountered during installation. (Details about most error screens are available in Help messages.)

Error messages   report invalid input. Error messages appear near the bottom of a screen. If the error was the result of your not knowing what to enter in a given field, the help bar or Help message for that step can usually be consulted for the correct input format.

Using On-line Help

For most steps in the installation process, on-line Help screens are available to provide additional information. If the help bar at the bottom of the screen being displayed says "F1=Help", then help is available for this step.

To enter the Help facility, press the (F1) or the (?) key. The current screen will be replaced by the text of its Help screen.

At the upper right-hand corner of a Help screen is a message **Page x of n**, where x is the number of the current help page, and **n** is the total number of pages of Help available.

Within the Help Facility, certain keys have special meanings. The help bar at the bottom of the Help screen describes these keys briefly. More detailed descriptions are provided here.

DELETE or DEL	Press the (DELETE) or (DEL) key to interrupt the installation. The Interruption screen will be displayed, and you have a choice of canceling or continuing the installation.
F1 (or ?)	While on a Help screen, you can press the (F1) or (?) to access information about how to use the help facility, itself. This is a "help-within-help" feature.
Escape (ESC)	Press the (ESC) key to exit from the Help Facility and return to the screen from which Help was called. If the current **help** screen was entered from another *help* screen, the original **help** screen will be redisplayed.
1 (or Page Down)	Press (1) or the (Page Down) key to see the next page of information (if one exists).
2 (or Page Up)	Press (2) or the (Page Up) key to see the previous page of information (if one exists).

Canceling and Resuming the Installation

You may press the (DELETE) or (DEL) key to interrupt the installation (if this option is not active, an error message will be displayed). When one of these keys is pressed the "Interruption" menu is presented, giving you the option of shutting down the computer or continuing the installation.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│   UNIX System Installation                              Interruption  │
│   ─────────────────────────────────────────────────────────────────  │
│   WARNING:  You have interrupted the installation process by pressing the │
│   'Del' key.                                                          │
│                                                                       │
│   You may either cancel the installation (in which case your computer │
│   will be automatically shut down), or you may continue the installation │
│   process from the point at which you interrupted it.                 │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│   Your choices are:                                                   │
│                                                                       │
│     1. Cancel the installation (this will shut down the computer).    │
│     2. Do not cancel the installation.                                │
│                                                                       │
│   Press '1' or '2' followed by 'ENTER': 1                             │
│   ─────────────────────────────────────────────────────────────────  │
│                                                                       │
│                                                         | F1=Help      │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```
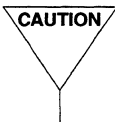
⚠ **CAUTION** Do not cancel the installation when the word Working is blinking in the center of the help bar. This may "hang" the system, and require you to restart the installation from the beginning.

If you select option 2 the installation should restart at the step where it was interrupted, but you may re-visit some screens you already saw. If you are installing the Foundation Set, you will be asked to insert the Foundation Set media. You can skip installing packages that you already installed successfully.

If you select option 1 and interrupt the installation when a package is being installed, you should re-select that package for installation when the installation process is resumed. The Installation Results screen for an installation which has been resumed will only list results for packages installed following the interrupt. You can determine the status of other packages by: reading mail messages sent to root, using the "package manager" from the UNIX Desktop, or by issuing the pkginfo -i command from the shell.

Experienced UNIX System users may want to invoke the command shell by pressing the [DELETE] or [DEL] key once more when the Interruption screen is presented. Once in the command shell, installation can be resumed by typing [CTRL-D] or typing exit 0. This will cause installation to resume at the point at

which it was interrupted (or at the beginning of the last incomplete step). Otherwise, if you type `exit 1` (or some other non-zero number), installation will resume from the beginning.

Information About Sets and Packages

The complete UNIX SVR4.2 system is made up of the Foundation Set, eight other package sets, and eight individual packages.

The following sections contain information about packages, advise you about questions you will need to answer when installing them, and tell you about package dependencies. For each set, there is a table that shows the packages that make up the set. Also given in each table is the short name of each package; whether the package is installed by default; how many diskettes it is on (if installing by diskette); and the size of each package in Megabytes or 512 byte blocks.

Note that, for each set, there is a Set Installation Package (SIP) that controls the installation of the packages in the set. For diskette installations, the SIP diskette must always be the first diskette of the set to be inserted into the diskette drive. The SIP diskette is easy to identify; it always has the set name, followed by a colon and the word "Installation" (for example, "Utilities Set: Installation").

A table summarizing this information for individual software packages (packages that are not members of sets) is provided at the end of the section.

The Foundation Set (fnd)

The Foundation set contains the packages that comprise the basic UNIX SVR4.2 system. The Foundation Set must be installed before any other package sets or packages are installed.

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Foundation Set	fnd	SIP	1		
Base System	base	yes	12	24.16	49484
Printer Support	lp	yes	1	.8	1618
Network Support Utilities	nsu	yes	1	.74	1560
Graphics Utilities	dtxt	yes	2	4.16	8524
Enhanced Application Compatibility	acp	yes	2	2.27	4650
Adobe Type Manager™	atm	yes	1	.96	1974
Desktop Manager	desktop	yes	5	8.86	8136

If you perform an automatic installation process, each package is installed in the root (/) file system. If you use the custom installation process and create optional file systems, the installation process distributes portions of each package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/sbin	/usr	/var	/tmp
Base System	base	11822	3296	34304	62	
Printer Support	lp	2		1616		
Network Support Utilities	nsu	4		1552	2	2
Graphics Utilities	dtxt			8524		
Enhanced Application Compatibility	acp	680	324	3646		
Adobe Type Manager™	atm			1974		
Desktop Manager	desktop	12		18136		

If a file system does not exist, the portion of the package intended for that file system is installed under the root file system.

Base System (base)

The Base System package provides the base set of commands needed for industry standard Application Binary Interface (ABI) compliance, basic electronic mail, and networking and printing capabilities.

If you perform a custom upgrade or overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing base package into the new UNIX SVR4.2 system. If you perform an automatic upgrade or overlay installation, the volatile files are automatically combined.

Printer Support (lp)

Although some printing capabilities are provided in the base package, more advanced printing capabilities, and a wider range of printers, are included in the Printer Support package.

If you perform a custom upgrade or overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing lp package into the new UNIX SVR4.2 system. If you perform an automatic upgrade or overlay installation, the volatile files are automatically combined.

Network Support Utilities (nsu)

The Network Support Utilities package provides the basis on which networking capabilities are built.

If you choose the custom package installation option for this package, you will be asked how many pseudo-terminals should be configured (16 - 256).

If you are performing an upgrade or overlay installation an additional question appears on the "Package Installation Options" screen which asks you if you want to automatically merge the volatile files from the old system into the new SVR4.2 system.

Graphics Utilities (dtxt)

The Graphics Utilities package provides an optimized version of the X Window System^{TM}, and forms the basis for graphics support.

If you perform a custom overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing dtxt package into the new UNIX SVR4.2 system. If you perform an automatic overlay installation, the volatile files are automatically combined.

Enhanced Application Compatibility (acp)

The Application Compatibility package supports the ability to run applications developed for Microsoft XENIX, SCO XENIX, SCO UNIX, ISC UNIX, previous versions of UNIX System V, and commands that allow access to DOS formatted diskettes.

If you choose the custom package installation option for this package, you will be asked how many pseudo-terminals should be configured (8 - 32).

Adobe Type Manager (atm)

The Adobe Type Manager package provides a scalable font renderer. This package allows you to display smooth-looking typefaces at arbitrary sizes, and is especially useful for WYSIWYG applications. Any X window application can take advantage of atm.

Desktop Manager (desktop)

The Desktop Manager package provides a graphical Desktop manager, a graphical administration facility to allow you to do basic administrative tasks, a variety of productivity tools including a simple editor, electronic mail tool, and a calculator. This package also includes the MoOLIT ™ run-time libraries to support the OPEN LOOK ® Graphical User Interface (GUI) and Motif™ GUI look and feel.

If you decide to install the desktop package after the Foundation Set has been installed, identify the Owner's Account to desktop by issuing the /usr/X/adm/dtadduser *login-id* and /usr/X/adm/make-owner *login-id* commands (where *login-id* should be replaced with the Owner's login ID).

If you perform a custom overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing desktop package into the new UNIX SVR4.2 system. If you perform an automatic overlay installation, the volatile files are automatically combined.

The Utilities Extension Set (util)

Many packages are dependent on the features provided by the util set. There-
fore, it is recommended that the Utilities Set should be installed after the Founda-
tion Set, but before any other sets or packages are installed.

The packages included in this set are:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Utilities Set	util	SIP	1		
Terminfo Utilities	terminf	yes	1	.014	30
Advanced Commands	cmds	yes	3	5.94	12174
BSD Compatibility	bsdcompat	no	2	3.09	6332

If you used the custom installation process and created optional file systems, the
installation process distributes portions of each package across existing file sys-
tems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/sbin	/usr	/var	/tmp
Terminfo Utilities	terminf			30		
Advanced Commands	cmds	338	92	11736	6	2
BSD Compatibility	bsdcompat			6332		

If a file system does not exist, the portion of the package intended for that file sys-
tem is installed under the root file system.

Terminfo Utilities (terminf)

The Terminfo Utilities Package provides support for a wide variety of terminals
beyond those provided in the Foundation Set Base System (base) Package.

You can install this package without answering any questions. All Terminfo Util-
ity entries are installed automatically.

Advanced Commands Package (cmds)

The Advanced Commands Package provides the remaining (beyond the Founda-
tion Set) user and administrative commands typically found on UNIX System V.

You can install this package without answering any questions. Several other
packages, including oam and nfs, are dependent on cmds being installed.

> **NOTE** The Printer Support (`lp`) package in the Foundation Set must be installed before installing the `cmds` package. If the `cmds` package is installed before the `lp` package, `troff` filter tables are not created. In this case, you may want to run the `lpfilter` command to create the filter tables. This is not usually a problem since the `lp` package is part of the Foundation Set, and is normally installed before the other sets and packages.

BSD Compatibility Package (bsdcompat)

The BSD Compatibility Package provides additional BSD commands and utilities that a more sophisticated BSD user or application might require.

You can install this package without answering any questions. It cannot be installed unless the Foundation Set Networking Support Utilities (`nsu`) package has already been installed.

> **NOTE** Before UNIX SVR4.2, the `bsdcompat` package was named `compat`. Applications which depend on the `compat` package can be satisfied by creating a symbolic link between `/var/sadm/pkg/compat` and `/var/sadm/pkg/bsdcompat`. This is done using a link command as follows: `ln -s /var/sadm/pkg/bsdcompat /var/sadm/pkg/compat`.

The Administration Set (admin)

This set contains the following packages:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Administration Set	admin	SIP	1		
OA&M	oam	yes	6	11.54	23630
Extended Backup and Restore	bkrs	yes	2	3.76	7707
FACE	face	yes	1	1.12	2298

If you used the custom installation process and created optional file systems, the installation process distributes portions of each package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/sbin	/usr	/var	/home
OA&M	oam	4		23602	24	
Extended Backup and Restore	bkrs	2458	1038	4202	8	
FACE	face			508	2	1788

If a file system does not exist, the portion of the package intended for that file system is installed under the **root** file system.

If you are performing an upgrade, and you have a Version 4 **oam** or **face** package installed on your computer, remove these packages before installing the SVR4.2 Administration Set.

OA&M (oam)

The Operations Administration and Maintenance Package provides a character-based, menu-oriented interface to a wide variety of advanced, server-oriented administrative tasks.

The **oam** package cannot be installed unless the Utilities Extension Set Advanced Commands (**cmds**) package has already been installed.

All OA&M components (the basic interface, the extended interface, and help) are installed automatically.

If you choose custom installation of this package, you will be prompted to assign a **sysadm** account password. The procedure for assigning this password is the same as for the Owner's account and **root** account during the Foundation Set installation (page 88). Anyone who knows this password will be able to use OA&M to perform administrative tasks.

Extended Backup and Restore (bkrs)

The Extended Backup and Restore Package includes a flexible set of backup and restore utilities to meet the needs of the UNIX System environment.

The OA&M (**oam**) package must be installed before you can install **bkrs** successfully. You can install it without answering any questions.
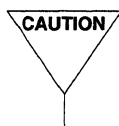
> **CAUTION** If you backed up a Version 4 OA&M package before starting the installation process, do not restore it on your new UNIX SVR4.2 system. Earlier versions of this package are not compatible with the **bkrs** package.

FACE (face)

The FACE Package provides a user-friendly, character-based interface to the system based on an "office" metaphor.

The Utilities Extension Set Advanced Commands (**cmds**) package must be installed before you can install the **face** package successfully. You can install **face** without answering any questions.

The Networking Set (network)

The packages that make up this set are:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Networking Set	network	SIP	1		
Distributed File System Utilities	dfs	yes	1	.03	64
Remote Procedure Calls Utilities	rpc	yes	1	.65	1334
Internet Utilities	inet	yes	2	1.63	3332
Ethernet™ Hardware Support	eth	yes	1	.03	54
Network File System Utilities	nfs	yes	1	1.07	930
Commands Networking Extension	netcmds	yes	1	1.13	2308
Remote File Sharing Utilities	rfs	no	2	.98	2002
Networked Graphics	dtnet	yes	1	.07	142

If you used the custom installation process and created optional file systems, the installation process distributes portions of each package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/usr	/var	/tmp
Distributed File System Utilities	dfs	4	60		
Remote Procedure Calls Utilities	rpc	168	1062	102	2
Internet Utilities	inet	132		3182	18
Ethernet™ Hardware Support	eth		52		2
Network File System Utilities	nfs	6	922		2
Commands Networking Extension	netcmds	4	2304		
Remote File Sharing Utilities	rfs	450	1550		2
Networked Graphics	dtnet		142		

If a file system does not exist, the portion of the package intended for that file system is installed under the root file system.

Distributed File System Utilities (dfs)

The dfs utilities package provides a simple user interface for performing networked operations such as advertising local resources and accessing remote resources.

You can install dfs without answering any questions. It cannot be installed unless the Foundation Set Networking Support Utilities package (nsu) has already been installed.

Remote Procedure Calls Utilities (rpc)

Support for a remote execution facility is included in the Remote Procedure Calls Utilities.

You can install this package without answering any questions. It cannot be installed unless the Foundation Set Networking Support Utilities package (**nsu**) has already been installed. **nfs** is dependent on **rpc** being installed first.

Internet Utilities (inet)

The **inet** package includes the software needed to run the TCP/IP network and popular tools such as **ftp, telnet**, and **rcp**. Administrative software for setting up the network is also included. Software is provided both for graphical administration from the UNIX Desktop, and forms-and-menus administration through OA&M.

The **inet** package cannot be installed unless the Foundation Set Networking Support Utilities package (**nsu**) has already been installed.

After installing the Network Set (**network**), and before you reboot, you need to set up the Internet Address. You can get an Internet Address from your Network or System Administrator. Use one of the following methods to set up your internet address:

A. If you installed the Desktop Manager (**desktop**) package during the Foundation Set installation, use the UNIX Desktop to select the graphical administration Internet Setup icon. You are then be prompted for the Internet Address.

B. If you did not install the Desktop Manager (**desktop**) package during the Foundation Set installation, select the custom package installation option for **inet** so you can specify an internet address.

C. If you are familiar with an editor and UNIX files, you can edit the /etc/hosts file to include the Internet Address and node name of your machine (separated by a TAB). Then run /etc/inet/listen.setup.

If you choose custom installation of this package, you are asked whether you want to configure the TCP Listener. You are also asked whether the OA&M administrative functionality should be installed — the default is **yes**. If you've installed the UNIX Desktop, you are asked whether the functionality to maintain the network via the UNIX Desktop should be installed. The default is **yes**.

If you are performing an upgrade or overlay installation an additional question appears on the "Package Installation Options" screen which asks you if you want to automatically merge files from the old system into the new SVR4.2 system. If you perform an upgrade of the Version 4 **inet** package, your volatile files will not

be merged into the UNIX SVR4.2 system even if you chose to merge your files automatically.

If you are overlaying your **inet** package and you chose an automatic installation, you need to run **/etc/inet/listen.setup** after the overlay is done.

Ethernet Hardware Support (eth)

This package supplies hardware drivers for most popular Ethernet boards. It cannot be installed unless the Foundation Set Network Support Utilities package (**nsu**) has already been installed.

Depending upon the type of board you have, you may be prompted for some or all of the following information during the **eth** package installation.

- Type of Ethernet board (you choose the type of board, and the number of boards for each board type, from a form which lists supported board types)

- Interrupt (choose from a provided list of IRQs)

- I/O Address (choose from a provided list of addresses)

- RAM Address (choose from a provided list of addresses)

- Cable Type (AUI or BNC)

- Zero Wait State (enable or disable)

It's important to know the brand and type of Ethernet board being installed, and the hardware settings at which it is jumpered (that is, the IRQ, I/O addresses and memory addresses). Please review "Appendix B: Hardware Configuration Notes" (page 129) for information about these settings. If you're unsure of this information, accept the default values. The defaults match the settings for supported boards as they are shipped from the factory (except for upgrade or overlay installations, where defaults will correspond to the existing system configuration). Using the defaults usually works well, but sometimes there may be a conflict with another controller or adapter on your computer. If there is a conflict, the Ethernet board will not work properly. In this case, you must determine which boards are in conflict, remove the **eth** package (using the **pkgrm** command) and reinstall the **eth** package with new values for the parameters that were in conflict.

Network File System Utilities (nfs)

The Network File System Utilities Package supports the ability to transparently share resources across a network with other computers running the Network File System.

This package cannot be installed unless the Network Support Utilities (**nsu**), Internet Utilities (**inet**), Remote Procedure Call Utilities (**rpc**), and Distributed File System Utilities (**dfs**) have been installed.

In addition to the system software allowing **nfs** to run on the computer, administrative software for the UNIX Desktop and OA&M is available in this package. You will be asked if you want to install this software. If OA&M is already installed then the default answer to the question about installing additional OA&M software is **yes**, otherwise **no**. If the Desktop Manager is already installed the default answer to the question about installing additional Desktop Manager software is **yes**, otherwise **no**.

If you perform a custom upgrade or overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing **desktop** package into the new UNIX SVR4.2 system. If you perform an automatic upgrade or overlay installation, the volatile files are automatically combined.

Commands Networking Extension (netcmds)

The Commands Networking Extension Package extends the functionality of several basic commands by supporting the ability to share printers across a network, and use additional transport mechanisms for the sending and receiving of e-mail.

netcmds cannot be installed unless the Foundation Set Advanced Printer Support package (**lp**) and Networking Set Internet Utilities (**inet**) are installed. You can install it without answering any questions.

If you plan to overlay the **netcmds** package, back up **/etc/lp/systems**, and restore it to the system after the overlay is done.

Remote File Sharing Utilities (rfs)

The Remote File Sharing Utilities package, like **nfs**, supports the ability to transparently share resources across a network with other computers running Remote File Sharing.

This package cannot be installed unless the Distributed File System Utilities (**dfs**) and Network Support Utilities (**nsu**) are installed.

In addition to the system software that supports **rfs** on the computer, administrative software for OA&M is available in this package. If you choose custom installation of this package, you will be asked if you want to install this software. If OA&M is already installed then the default answer to the question about installing additional OA&M software is **yes**, otherwise **no**.

If you perform a custom upgrade or overlay installation, you are presented with a "Combine System Setup Files" screen which gives you a choice of combining or not combining volatile files from the existing desktop package into the new UNIX SVR4.2 system. If you perform an automatic upgrade or overlay installation, the volatile files are automatically combined.

Networked Graphics Package (dtnet)

This package cannot be installed unless the Foundation Set Desktop Manager package (desktop) is already installed. You can install it without answering any questions.

The Basic Development Set (bdev)

This set includes the following packages:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Development Set	bdev	SIP	1		
Software Packaging Tools	softint	yes	1	1.1	2266
Optimizing C Compilation System	ccs	yes	4	8.26	16916
Kernel Debugger	kdb	no	1	.04	76
Enhanced Debugger	edebug	no	1	1.08	2238

If you used the custom installation process and created optional file systems, the installation process distributes portions of each package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/sbin	/usr
Software Packaging Tools	softint		2266
Optimizing C Compilation System	ccs		16916
Kernel Debugger	kdb	60	16
Enhanced Debugger	edebug		2230

If a file system does not exist, the portion of the package intended for that file system is installed under the root file system.

Software Packaging Tools (softint)

This package provides tools to support the development process and includes a variety of archive libraries as well as tools to create and modify packages.

You can install softint without answering any questions.

Optimizing C Compilation System (ccs)

The Optimizing C Compilation System (Release 2.0) forms the basic software environment. It provides the tools needed to create and maintain ABI-compliant binaries and executables.

By default, if another C Compilation system has been installed on your system, ccs will be co-resident on the system with the other compiler. If you choose the custom package installation option and another C Compilation system is installed on the system, you are asked whether you want ccs to replace it, or to be co-resident with it.

Kernel Debugger (kdb)

The Kernel Debugger package provides a tool to assist in the porting and debugging of kernel modules and drivers by allowing the developer to examine and control a running kernel. The kdb package is not installed by default. If you want to install this package you must change the Install? value to yes on the package selection screen.

Having decided to install the package, you are then presented with a choice of installing it in automatic or custom mode. If you select automatic installation of this package, the security feature will be turned on. If you select the custom installation option, you have a choice of enabling or disabling the KDB security feature. If the security feature is enabled, the kernel debugger can only be entered via the kdb command or when there is a system panic.

If you don't select the security option, you'll be able to enter the debugger by typing (CTRL-ALT-D), or the kdb command.

Enhanced Debugger (edebug)

The Enhanced Debugger is a symbolic, source level debugger with many capabilities. Capabilities include control over multiple processes and evaluation of complex expressions in C or C++.

You are given a choice of installing the package in automatic or custom mode. If you select the custom installation option for edebug, you are asked if you want to install a graphical user interface for use with this feature. The graphical interface is only available if the Foundation Set Graphics Utilities package (dtxt) and

Foundation Set Desktop Manager (**desktop**) package have been installed. The command-line interface is always installed.

The Graphical Applications Development Set (gdev)

This set includes the following packages:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Development Set	gdev	SIP	1		
XWIN GWS Development	dtxtdev	yes	2	3.57	7320
MoOLIT Development	dtoldev	yes	2	3.03	6206
Desktop Manager Development	desksup	yes	1	.15	290

If you used the custom installation process and created a /usr file system, the installation process places these packages in /usr.

XWIN GWS Development (dtxtdev)

dtxtdev cannot be installed unless the Foundation Set Basic Graphics Utilities (**dtxt**) have already been installed. You can install it without answering any questions.

MoOLIT Development (dtoldev)

This package cannot be installed unless the Foundation Set Desktop Manager (**desktop**) has already been installed. You can install it without answering any questions.

Desktop Manager Development (desksup)

The Desktop Manager Development package provides a variety of graphics libraries and tools to support the graphics capabilities in UNIX SVR4.2.

This package cannot be installed unless the Foundation Set Desktop Manager (**desktop**) has already been installed. You can install it without answering any questions.

The Graphics Set (graphics)

This set contains the following packages:

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Graphics Set	**graphics**	SIP	1		
Applications & Demos	**dtclients**	yes	1	1.8	3686
XWIN GWS Fonts	**dtxtfonts**	yes	10	11.6	23752

If you used the custom installation process and created a **/usr** file system, the installation process places these packages in **/usr**.

Applications and Demos (dtclients)

The Applications and Demos package provides a variety of graphical utilities beyond those provided in the Foundation Set. These utilities may be useful as is, or as sample applications for graphics application developers.

Two Foundation Set packages, the Desktop Manager package (**desktop**) and the Graphics Utilities package (**dtxt**), must be installed before you can install the **dtclients** package successfully. You can install **dtclients** without answering any questions.

XWIN GWS Fonts (dtxtfonts)

The XWIN GWS Fonts package provides an expanded set of bit-mapped fonts beyond those provided in the Foundation Set.

The Foundation Set Desktop Manager package (**desktop**) must be installed before you can install the **dtxtfonts** package successfully. You will be asked if you want to build the font binaries at this time. The default is **yes**. If you choose not to build them at this time, you can build them later by executing the shell script **/usr/X/adm/bldfonts**.

The Multi-User Set (multiusr)

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Multi-user Set	multiusr	SIP	1		
User Upgrade	license	yes	1	.04	82

This package contains the "User Upgrade" package, which allows multiple users to log in to the system simultaneously. You can install it without answering any questions.

The Auditing Set (audit)

Set & Packages	Short Name	Installed by Default?	# of Disks	MB	Blocks
Auditing Set	c2	SIP	1		
Auditing Package	audit	yes	1	.67	1370

The Auditing Set provides auditing facilities which allow a system administrator or security auditor to record and report all security-related events that occur on the system. These facilities are provided by the Auditing Package. It is only available in 3.5-inch or 5.25-inch diskette format (not tape).

You can install it without answering any questions.

If you used the custom installation process and created optional file systems, the installation process distributes portions of the audit package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/usr	/var	/tmp
Auditing Package	audit	8	1236	2	124

If a file system does not exist, the portion of the package intended for that file system is installed under the root file system.

Individual Packages

Individual packages can be provided on 3.5-inch or 5.25-inch diskettes. You should install package sets before installing any of the individual packages.

Package Names	Short Name	# of Disks	MB	Blocks
TypeScaler Font	dtf3	1	1.97	4034
Motif Development Package	mdev	6	12.74	26088
Motif Runtime Package	mrun	1	1.08	2210
Windowing Korn Shell™	wksh	1	.66	1356
CD-ROM	cdfs	1	.68	1400
Encryption Utilities	crypt	1	.22	454
Token Ring Hardware Support	tok	1	.03	64

If you used the custom installation process and created optional file systems, the installation process distributes portions of each package across existing file systems as follows (sizes are given in 512 byte blocks).

Package	Short Name	/etc	/usr	/tmp
TypeScaler Font	dtf3		4034	
Motif Development Package	mdev		26088	
Motif Runtime Package	mrun		2210	
Windowing Korn Shell™	wksh		1356	
CD-ROM	cdfs	232	1166	2
Encryption Utilities	crypt		454	
Token Ring Hardware Support	tok		64	

If a file system does not exist, the portion of the package intended for that file system is installed under the root file system.

TypeScaler Font (dtf3)

This package contains Sun compatible folio fonts.

Motif Development Package (mdev)

The Motif Development package provides the tools necessary to develop applications using Motif.

Motif Runtime Package (mrun)

The Motif Runtime Package provides the OSF/Motif versions of the Motif window manager, and the dynamically shared Motif libraries, along with a set of sample Motif applications.

Windowing Korn Shell (wksh)

The Windowing Korn Shell package is a powerful graphical application development tool.

CD-ROM (cdfs)

The CD-ROM package provides read-only access to file systems on SCSI CD-ROM devices. ISO-9660 and High Sierra formats are supported.

Encryption Utilities (crypt)

The Encryption Utilities package supports the encryption of files and other data. Install this package last.

Token Ring Hardware Support (tok)

The Token Ring Hardware Support package supports a variety of Token Ring network boards.

The Automatic Installation Process

This section provides a step-by-step procedural example of an automatic installation. It shows how to boot the UNIX System, install the Foundation Set, and set up a Owner's login ID on your new system. If you are new to computing, you may want to use this section as a checklist and follow each step of the installation process. More experienced users may find that the installation software is sufficiently straightforward that it is not necessary to read this section.

Topics discussed in this section include:

- Automatic Installation Instructions
- Shutting Down Your Computer
- Next Step

Automatic Installation Instructions

To help you navigate through the installation process, a table that summarizes the following information is provided at the beginning of each step:

- Step: Identifies the step number.

- Action: Some actions are "Required", while others are "Optional." If the Action is noted as "None", no action is necessary; the step is there to give you a status, or the information you need to make a forthcoming choice. Some steps require more than one action.

- Description: Provides a brief description of the action(s) to be taken during the step.

- Time: provides an estimate of how long it will take to complete the step. These times may vary depending upon the speed of your computer, and how quickly you answer prompts or provide requested media.

The computer screens that appear during each step are reproduced in these instructions so that you may easily identify where you are in the process. After you read the information on the screen, you may see additional explanatory text or instructions.

Perform the following steps to install the Foundation Set:

Step	Action	Description	Time
1	Required	insert boot diskette 1, reboot	1 min.

Insert the diskette labeled "Boot Floppy 1 of 3" into Drive 1 and turn on, or reboot your computer. You can reboot using one of the following methods:

A. If rebooting from an existing UNIX System, type the command **shutdown -i6, [ENTER]**.

B. On a UNIX SVR4.2 system, or on a DOS system, use the [**CTRL-ALT-DEL**] keystroke combination. (Hold down the [**CTRL**] and [**ALT**] keys, and press the [**DEL**] key at the same time.)

C. Press the Reset button (if your computer has one).

D. Turn the computer off, pause briefly, and turn it back on. (This method should be avoided if one of the other methods is available.)

Step	Action	Description	Time
2	None	message is displayed	3-4 min.

As the system comes up, copyright information for your computer appears at the top of the screen. This may be followed by the results of hardware tests, and possibly a display of your computer's hardware configuration. Then the following status message appears.

```
Booting the UNIX System...
```

Step	Action	Description	Time
3	Required	remove boot diskette 1	1 min.
	Required	insert HBA diskette (if applicable)	1-3 min.
	Required	insert boot diskette 2	1 min.

When this screen appears, several actions may be required.

```
Remove the diskette labeled "Boot Floppy 1 of 3".

If you have a diskette labeled "Host Bus Adapter Drivers", insert that
diskette now.

For more information on Host Bus Adapter diskettes, see the Installation
Guide.

Otherwise, if you do not have (or do not need to use) a Host Bus Adapter
diskette, insert the diskette labeled "Boot Floppy 2 of 3".

Press 'ENTER' to continue.
```

Follow the instructions as noted: after removing the first boot diskette, insert an HBA diskette if you have one, and press (ENTER). See the "Host Bus Adapter Diskettes" section (page 11) for information. After loading an HBA diskette, the following screen is displayed.

```
The Host Bus Adapter driver(s) on the Host Bus Adapter diskette have been
loaded and you can now remove the diskette.

If you have another Host Bus Adapter diskette (for different adapters),
insert that diskette now.

For more information, see the Installation Guide.

Otherwise, if you do not have (or do not need to use) another Host Bus Adapter
diskette, insert the diskette labeled "Boot Floppy 2 of 3" now.

Press 'ENTER' to continue.
```

If you have more than one HBA diskette, you should load them all, one after another, at this time. After the last HBA diskette has loaded, or if you have no HBA diskettes, insert "Boot Floppy 2 of 3" and press (ENTER).

Step	Action	Description	Time
4	None	message is displayed	2-3 min.

The screen clears, and the following status message appears:

```
Continuing the UNIX System installation...
```

Step	Action	Description	Time
5	Required	identify monitor type (if applicable)	1 min.

This menu is only displayed if the installation process has been unable to determine if you are using a color monitor. If a monitor is attached to your computer, but is not attached via a VGA or compatible video adapter, you're asked whether you're using a color monitor.

```
 UNIX System Installation                        Monitor Type Selection
───────────────────────────────────────────────────────────────────────
 On a color monitor this screen will show white text on a blue
 background.  It will appear differently on a non-color monitor.
 What type of monitor is attached to your computer?
 Your choices are:

 1. Color monitor.
 2. Non-color monitor.

 Press '1' or '2' followed by 'ENTER': 1

───────────────────────────────────────────────────────────────────────
                                            | Del=Cancel   F1=Help
```

Choice number 1, `Color monitor`, is the default choice as shown by the 1 in the entry field. You need only press `ENTER` to accept the default.

If you want to select **Non-color monitor** instead of the default, type `2` over the 1, and press `ENTER`.

As indicated by the `F1=Help` reminder displayed in the help bar, you may press `F1` or the `?` key to access on-line Help for more information.

Step	Action	Description	Time
6	Optional	cancel installation and backup	varies
	Optional	access on-line help	1-3 min.

A page of introductory text is displayed on this information screen.

```
UNIX System Installation                                    Introduction
_____

              Welcome to the Unix System installation process!

If you have never installed the UNIX System before, it is recommended that
you press the 'F1' (or '?') key now to learn more about the installation
process and the hardware requirements of the UNIX System.

   - Pressing the 'F1' (or '?') key at any time during installation will
     display more information or help.

   - Pressing the 'Del' key at any time cancels the installation.

Press the 'F1' (or '?') key for more information 'ENTER' to continue.
_____
                                          | Del=Cancel  F1=Help
```

As indicated by the **F1=Help** reminder displayed in the help bar, you may press
(F1) or the (?) key to access on-line Help for more information. We recommend
that you do. A **Del=Cancel** reminder is also displayed in the Help bar indicating
that you can cancel the installation by pressing the (DELETE) or (DEL) key.

Step	Action	Description	Time
7	Required	set current time & date	1 min.

You set the date, the time and the timezone on this form.

```
UNIX System Installation                          Configure Date and Time
─────────────────────────────────────────────────────────────────────────
On this screen, you will check the current date and time that is set on
your computer, and change them if necessary. You also select what
timezone you are in. If your timezone is not included in the choices,
select "Another timezone".

                   The current date:     06/03/92
                   The current time:     16:42:04
             Enter the current year:     92
   Enter the month of the year (1-12):   06
    Enter the day of the month (1-31):   03
      Enter the hour of the day (0-23):  16
 Enter the minute of the hour (0-59):    42
                     Enter Timezone:     US Eastern Time (EST)


                            +-----+   +-----+
                            |Apply|   |Reset|
                            +-----+   +-----+



Press 'TAB' to move the cursor between fields.  When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.
─────────────────────────────────────────────────────────────────────────
Enter the Year (i.e., 92)                        | Del=Cancel  F1=Help
```

Two fields on this screen, **The current date** and **The current time** are display only. They display the current settings on your computer for the date and time.

If you want to change the current date or time, press (**TAB**) to move to the field you want to change, and type over the displayed entry.

Unlike the entry fields, the **Enter Timezone** field is a multiple choice field. To change the Timezone, press the (**TAB**) key to move to the **Enter Timezone** field, and press the right arrow (→) or left arrow (←) key until the desired choice is displayed. If you choose **Another Timezone** a form is presented on which you can input the name of your timezone, and the number of hours West of Universal Coordinated Time (UTC).

When all displayed values are correct, press (**TAB**) to move the cursor to **Apply**, and press (**ENTER**) to register your selections and continue.

Step	Action	Description	Time
8	None	message is displayed	1 min.

You will see an information screen that tells you about partitioning your hard disk.

```
 UNIX System Installation                    Primary Hard Disk Partitioning
 ─────────────────────────────────────────────────────────────────────────
 In order to install the UNIX System, you must reserve a partition (a portion
 of your hard disk's space) on your primary hard disk for the UNIX System.
 After you press 'ENTER', you will be shown a screen that will allow you to
 create new partitions, delete existing partitions or change the active
 partition of your primary hard disk (the partition that your computer will
 boot from).

 WARNING:  All files in any partition(s) you delete will be destroyed.
 If you wish to attempt to preserve any files from an existing UNIX System, do
 not delete its partition(s).

 The UNIX System partition that you intend to use on the primary
 hard disk must be at least 60 MBs, and labeled "Active."




 Press 'ENTER' to continue.
 ─────────────────────────────────────────────────────────────────────────
                                                  | Del=Cancel   F1=Help
```

Again, additional information is available by pressing F1 or ? to access Help.

The UNIX System partition on the primary hard disk must be at least 60 MB formatted. This means that, if you started with an unformatted disk, you probably need at least 63 MB (or more) in order to end up with the required 60 MB after formatting.

At this point in the installation process you can still preserve any existing data on your computer by canceling the installation (see the "Canceling the Installation" section on page 27) and backing up your computer.

Step	Action	Description	Time
9	Required	partition primary hard disk	1-10 min.

fdisk is a utility program that is used for hard disk partitioning on the UNIX System. Versions of **fdisk** are also available on DOS, and some other systems. The **fdisk** utility screen is displayed first for the primary hard disk on your computer.

```
              Total disk size is 683 cylinders (202.8 MB)

                                    Cylinders             Approx
     Partition   Status      Type    Start  End  Length   %     MB
     =========   ======  ===========  =====  ===  ======  ===  ======
         1       Active  UNIX System     0   682    683   100   202.7




   SELECT ONE OF THE FOLLOWING:

       0.    Overwrite system master boot code
       1.    Create a partition
       2.    Change Active (Boot from) partition
       3.    Delete a partition
       4.    Update (Update disk configuration and exit)
       5.    Exit (Exit without updating disk configuration)
   Enter Selection:
```
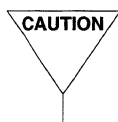
CAUTION If you intend to attempt a non-destructive (upgrade or overlay) installation type (5), and press (ENTER) to exit. Do not change existing partition information. If the size or placement of a partition is changed, a non-destructive installation cannot be performed.

When partitioning your hard disk, you should give careful consideration to both present and future needs. For example, you may want to keep or reserve space for a DOS partition in addition to your UNIX SVR4.2 partition. (See section "Planning for Multiple Operating Systems", page 11, if you plan to use more than one operating system on your computer.)

If the hard disk on your computer is already partitioned, information about the existing partitions is displayed in the top half of the screen. If your computer is not already partitioned, a default partitioning scheme is displayed. By default, an active UNIX System partition, which uses all of the space available on the hard disk, is created as partition 1. If you accept the partitioning scheme currently displayed on the screen, type (5) (Exit) and press (ENTER) to continue to the next step.

If the partitioning scheme displayed is not acceptable, you may use **fdisk** options to re-partition the hard disk(s). You may create up to four partitions. The **fdisk** options are as follows.

- 0. Overwrite system master boot code:

  You should only use **fdisk** option 0 if you have successfully installed the Foundation Set, but your computer will not boot the new UNIX System. See the "Troubleshooting" section, page 135, for a detailed description of this problem.

  If your computer already had an operating system before installing the UNIX System , it may have a "boot code" on the hard disk which is incompatible with UNIX SVR4.2. To overwrite the incompatible boot code, type ⓪ and press (**ENTER**). When you are finished using the **fdisk** utility, remember to select option 4 (Update) to update your changes before exiting.

- 1. Create a Partition:

  To create a partition, type ① and press (**ENTER**). Then the following message is displayed.

  ```
  Indicate the type of partition you want to create
     (1=UNIX System, 2=pre-5.0DOS, 3=DOS, 4=other, x=Exit)
  ```

  Type the number of the partition type you want to create and press (**ENTER**). For example, if you want to create a DOS Release 3.3 partition (or a partition for any DOS release before Release 5.0), type ③ and press (**ENTER**). If you want to create a Release 5.0 DOS partition, type ③ and press (**ENTER**). Then you are asked to specify the size of the partition you are creating.

  ```
  Indicate the percentage of the disk you want this partition
  to use (or enter "c" to specify in cylinders).
  ```

  Type the percentage (for example, **15** to indicate 15%) of the hard disk that you want this partition to use, or type the letter **c** to specify the size in cylinders, and press (**ENTER**). Remember that the system requires a minimum 60 MB formatted active partition (the partition that contains the operating system that the computer boots from) on the primary hard disk to install successfully. Additional space is required for each additional package and package set to be installed. If you try to update or exit without having a UNIX partition that's big enough, you'll be prompted to create another one of sufficient size—the installation process will not let you leave the **fdisk** screen until this requirement is satisfied.
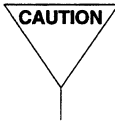
⚠ CAUTION If you are creating a pre-4.0 DOS partition, it will only be bootable if it starts at cylinder 0. Pre-4.0 DOS partitions cannot be larger then 32 MB.

After creating all of the partitions you desire you should verify that the percentages of space used by all partitions summed together equals 100% of the hard disk, and that the UNIX partition is active.

- 2. Change Active (Boot from) partition:

Only one partition can be active at a time. To change the active boot partition (the partition you boot your computer from), type ②2️⃣ and press [ENTER]. You are then prompted for the partition number (as shown in the Partition column on the **fdisk** screen), you want to make active.

```
Enter the number of the partition you want to boot from
(or enter 0 for none):
```

The installation process requires that UNIX be the active partition, but you might change the active partition to DOS if, for example, you wanted to cancel the installation, reboot from DOS, and backup your DOS partition before re-starting the installation process. After you select a partition number to be active, a message is displayed confirming your choice.

```
Partition <x> is now the active partition. It will be
activated when you reset your computer or turn it on again
```

Note that **x** in the example above will be replaced with the partition number you selected.

■ 3. Delete a partition:
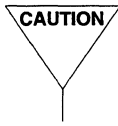
⚠ **CAUTION** When you delete a partition, all data in that partition is destroyed.

To delete a partition, type ③ and press ⌈**ENTER**⌋. You are then prompted for the partition number (as shown in the Partition column on the `fdisk` screen), you want to delete.

```
Enter the number of the partition you want to delete
  (or enter x to exit ):
```

Enter the number of the partition (as shown in the Partition column) to be deleted, and press ⌈**ENTER**⌋. You are then asked to confirm your choice.

```
Do you want to delete partition <x>? This will erase all
files and programs in this partition (Type "y" or "n").
```

When the partition is successfully deleted, you will receive the following message.

```
Partition <x> has been deleted.
```

Note that **x** in the example above will be replaced with the partition number you selected.

If you delete a partition, you may want to reallocate the freed disk space among remaining partitions. To do this it is necessary to first delete the partition for which information is to be changed (data in the deleted partition is destroyed!), then create it with the correct information as if it is a new partition.

■ 4. Update (Update disk configuration and exit):

If you change any information on the **fdisk** screen, update the information and exit the screen by typing a ④ (Update) and pressing (**ENTER**).

■ 5. Exit (Exit without updating disk configuration):

If you accept the partitioning scheme displayed on the **fdisk** screen, and you have not changed anything, you can continue to the next step, by typing a ⑤ (Exit) and pressing (**ENTER**).

| NOTE | After the UNIX SVR4.2 system is installed, you can access the **fdisk** utility program at any time by logging in as **root** and issuing the **fdisk** command. |

Step	Action	Description	Time
10	Optional	partition second hard disk (if applicable)	1-10 min.

If you have a second hard disk on your computer, this menu asks if you want to use it for the UNIX System as well. This menu is only presented if your secondary hard disk is at least 40 MB.

```
  UNIX System Installation              Secondary Hard Disk Partitioning
  _____

  You may use a partition of your secondary hard disk for the UNIX System.
  If you choose to use a partition of your secondary hard disk, you will be
  shown a screen that will allow you to partition your secondary hard disk.

  WARNING:  All files in any partition(s) you delete will be destroyed.




  Your options are:

   1. Do not use a partition of the secondary hard disk for the UNIX System.
   2. Use a partition of the secondary hard disk for the UNIX System.

  Press '1' or '2' followed by 'ENTER': 1

  _____
                                           | Del=Cancel   F1=Help x
```

If you choose to use the secondary disk, the **fdisk** screen will be presented so that you can partition it. A minimum 40 MB UNIX System partition is required. Follow the instructions given in the previous step for using **fdisk**.

> **NOTE** If you are performing a non-destructive installation, and you previously used the secondary disk, it will automatically be used again.

The Automatic Installation Process   **61**

Step	Action	Description	Time
11	Required	select destructive or non-destructive install	1 min.

This menu is only displayed if the installation process detects that a UNIX System is already installed on the active partition of the hard disk. It will not appear if your computer is new (or if a low-level format has been performed on your hard disk).

```
UNIX System Installation                          Files Detected Warning
─────────────────────────────────────────────────────────────────────────
WARNING:  Files have been detected in the active partition(s) of your
hard disk(s).

You have the option of selecting a destructive installation at this
point.  You should only choose a destructive installation if you don't
want to save any files in your active partition.

If you elect to attempt a non-destructive installation, your hard disk(s)
will be checked further to determine if a non-destructive installation
is possible.

If you are restarting an interrupted installation, you should choose
non-destructive installation.

Your options are:

  1. Attempt a non-destructive installation.
  2. Perform a destructive installation.  This will destroy all files.

Type '1' or '2' followed by 'ENTER': 1

─────────────────────────────────────────────────────────────────────────
                                              | Del=Cancel   F1=Help
```

See the "Choosing Between Destructive and Non-Destructive Installation" section (page 16) for information about this choice.

If you choose to perform a destructive installation, type (2), press (ENTER), and go to the next step. (If you want to back up existing data you must do it before choosing destructive installation—after this choice, any existing data in the UNIX partition is destroyed.)

If you choose to attempt a non-destructive (Upgrade or Overlay) installation, type (1), and press (ENTER). After completing this step go to the "Upgrade and Overlay Processing" section (page 101).

Step	Action	Description	Time
12	Required	select installation type	1 min.

You're asked to choose between automatic and custom installation on this menu.

```
UNIX System Installation                        Installation Type Selection
_____
You must choose an installation type.  If you choose automatic installation,
you will only be asked questions that the installation process cannot
answer on its own.  If you choose custom installation, you will be
asked additional questions that allow you to tailor your UNIX System
to meet your individual needs.  This requires knowledge of the UNIX
System.

Press the 'F1' or '?' key to see more information about these different
installation types.


Your choices are:

  1. Automatic installation.
  2. Custom installation.

Press '1' or '2' followed by 'ENTER': 1


_____
                                        | Del=Cancel   F1=Help
```

The default selection is **Automatic installation.** If you are not sure whether you should choose an automatic or a custom installation, please review the "Choosing Between Automatic and Custom Installation" section (page 14).

The next step is different depending upon whether you chose automatic or custom installation. If you chose automatic installation go to the step on the next page. If you chose custom installation, go to the "The Custom Installation Process" section (page 92) now.

Step	Action	Description	Time
13	None	message is displayed	4-10 min.

If you chose automatic installation in the previous step, the screen displays the following status message.
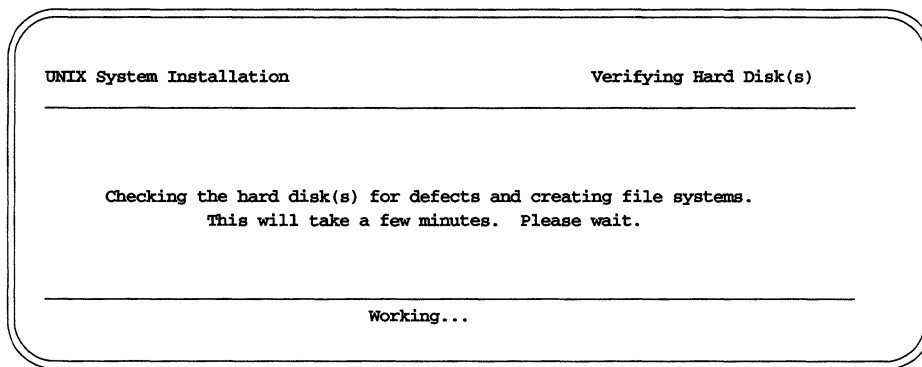
```
UNIX System Installation                        Verifying Hard Disk(s)
_____



         Checking the hard disk(s) for defects and creating file systems.
                  This will take a few minutes.  Please wait.



_____

                              Working...
```

Note the blinking word **Working...** in the center of the Help Bar. The process is running and should not be interrupted.

Step	Action	Description	Time
14	None	messages are displayed	1-3 min.

As the second boot diskette is being loaded the following status message is displayed.

```
UNIX System Installation                              Copying Files
_____



         Copying UNIX System files from the diskette onto your hard disk.
                  This will take a few minutes.  Please wait.



_____

                              Working...
```
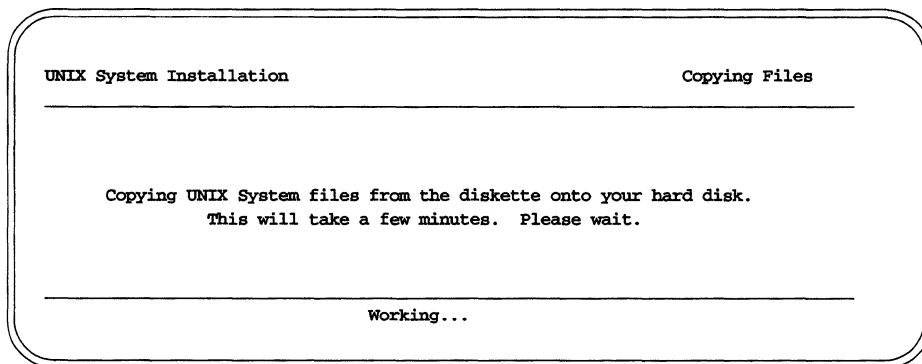
Step	Action	Description	Time
15	Required	remove boot diskette 2	1 min.
	Required	insert boot diskette 3	

A screen appears and requests that you remove the second boot diskette, and insert the third boot diskette.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│  UNIX System Installation                       Exchange Diskette │
│  ───────────────────────────────────────────────────────────────  │
│                                                                   │
│                                                                   │
│        Remove the diskette from the drive and insert the diskette labeled │
│                     "Boot Floppy 3 of 3".                         │
│                                                                   │
│                                                                   │
│  Press 'ENTER' to continue.                                       │
│  ───────────────────────────────────────────────────────────────  │
│                                    | Del=Cancel  F1=Help          │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Step	Action	Description	Time
16	None	messages are displayed	4-8 min.

The following status message is displayed as the third boot diskette is being loaded.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│  UNIX System Installation                          Copying Files  │
│  ───────────────────────────────────────────────────────────────  │
│                                                                   │
│                                                                   │
│        Copying UNIX System files from the diskette onto your hard disk. │
│               This will take a few minutes.  Please wait.         │
│                                                                   │
│  ───────────────────────────────────────────────────────────────  │
│                          Working...                               │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```
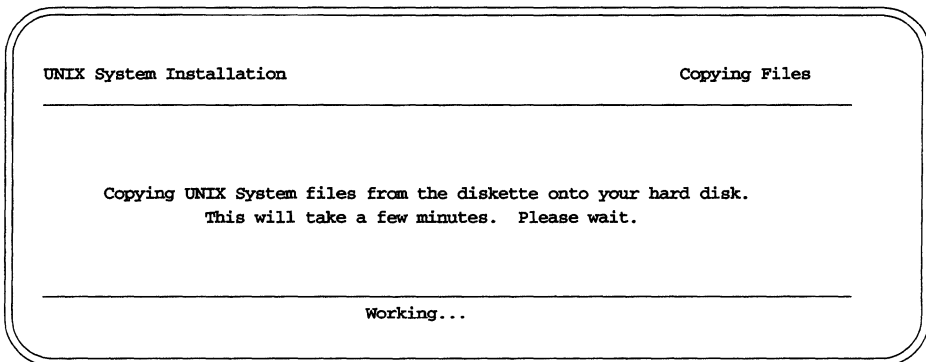
Step	Action	Description	Time
17	Required	remove boot diskette 3	1 min.

Now, you are prompted to remove the third boot diskette.

```
UNIX System Installation                          Remove Diskette 3
─────────────────────────────────────────────────────────────────────


                Remove Boot floppy 3 of 3 from the drive now.



Press 'ENTER' to continue.
─────────────────────────────────────────────────────────────────────
                                                        | F1=Help
```
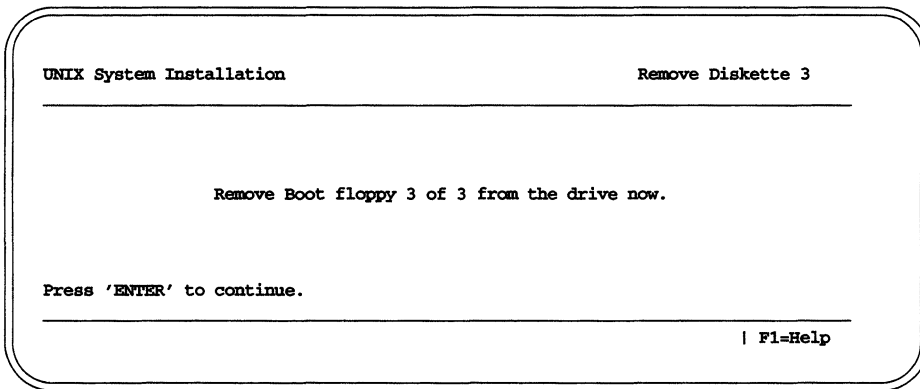
Step	Action	Description	Time
18	Required	select media type	1 min.

This menu is only displayed if the installation process detects more than one diskette drive on your computer, or a cartridge tape drive in addition to one or more diskette drives. You select a media type (diskette or tape) and the drive it will run on from this menu.

```
UNIX System Installation                        Foundation Set Media Type

Software for the UNIX system is packaged in sets. Installation of the
Foundation Set is required.  This software is shipped to you either on a
second group of diskettes (different from the boot diskettes) or on a
cartridge tape.

Select the drive you will be using to install the Foundation Set.


 Your choices are:

  1. Diskette Drive 1
  2. Diskette Drive 2
  3. Cartridge Tape Drive

 Press a number between 1 and 3 followed by 'ENTER'. 1


                                          | Del=Cancel  F1=Help
```

The installation process senses what kinds of equipment are installed on your computer, and will only present you with valid choices. That is, if there is no cartridge tape drive on your system, **Cartridge Tape Drive** will not be listed as an option on this menu. Likewise, if you only have one diskette drive, **Diskette Drive** 2 will not be listed.

Step	Action	Description	Time
19	Required	confirm media type (tape)	5 min.
	Required	confirm media type (diskette)	1 min.

A menu is presented which asks you to confirm the media type you selected in the last step. The appearance of this screen is slightly different depending upon whether you install using cartridge tape or diskette.

Tape:

```
 UNIX System Installation                    Insert Foundation Set Tape
 ───────────────────────────────────────────────────────────────────────
 You may proceed with the installation from cartridge tape, or go back to the
 previous menu and change your selection.

 To proceed, please insert the Foundation Set cartridge tape into the tape
 drive and type '1' followed by 'ENTER'. Make sure the tape is fully
 inserted into the tape drive.



  Your choices are:

   1. The Foundation Set tape has been inserted in the tape drive.
   2. Go back to previous menu.

  Press '1' or '2' followed by 'ENTER': 1

 ───────────────────────────────────────────────────────────────────────
                                              | Del=Cancel  F1=Help
```

If you change your mind about installing from cartridge tape, you can select option 2 to return to the previous screen and select a diskette installation.

After you insert the cartridge tape into the tape drive the tape is automatically re-wound and re-tensioned (you will hear it running). Wait until the tape stops moving, then press (**ENTER**) to choose option 1. If you choose option 1, the following status message appears on the screen.
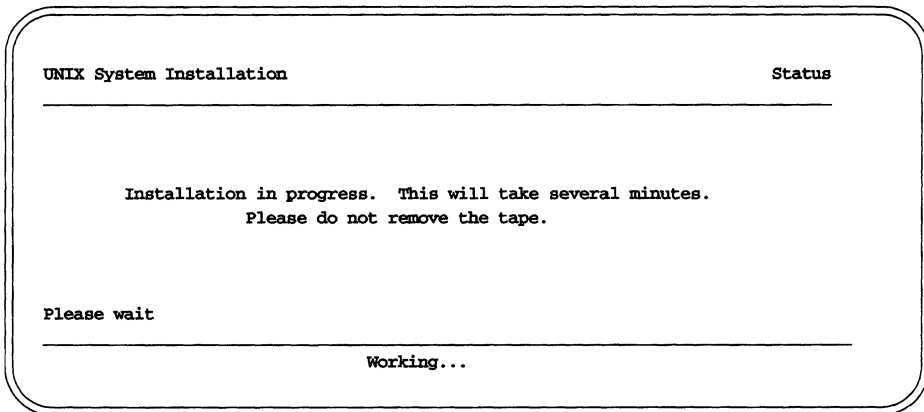
```
UNIX System Installation                                        Status
_____


        Installation in progress.  This will take several minutes.
                    Please do not remove the tape.



Please wait
_____
                              Working...
```

Note the blinking word **Working...** in the center of the Help Bar. The process is
running and should not be interrupted.

Diskette:
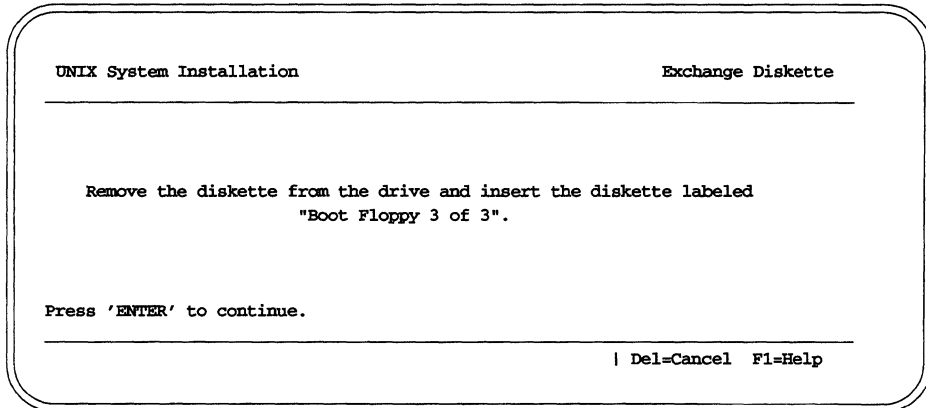
If you install using diskettes, the appearance of the "Foundation Set Installation
From Diskette" screen is different depending upon whether your computer has
one or two diskette drives. This screen appears if your computer has two disk
drives.

```
  UNIX System Installation          Foundation Set Installation From Diskette
_____
You may choose to proceed with installation from diskette, or you may
go back to the previous screen and change your selection.

To proceed, please place the Foundation Set diskette into your floppy
disk drive and type '1' followed by 'ENTER'. You will then see messages
telling you which diskette to insert next and when to remove it.


Your choices are:

 1. Floppy is inserted, continue with installation.
 2. Go back to previous screen.

Press '1' or '2' followed by 'ENTER'. 1

_____
                                            | Del=Cancel  F1=Help
```

Insert the diskette labeled "Foundation Set: Installation" into diskette drive 1 and press (**ENTER**) to continue. Otherwise, if you change your mind about installing from diskette, you can return to the previous screen to choose a cartridge tape installation.

The following screen appears if your computer has only one disk drive.
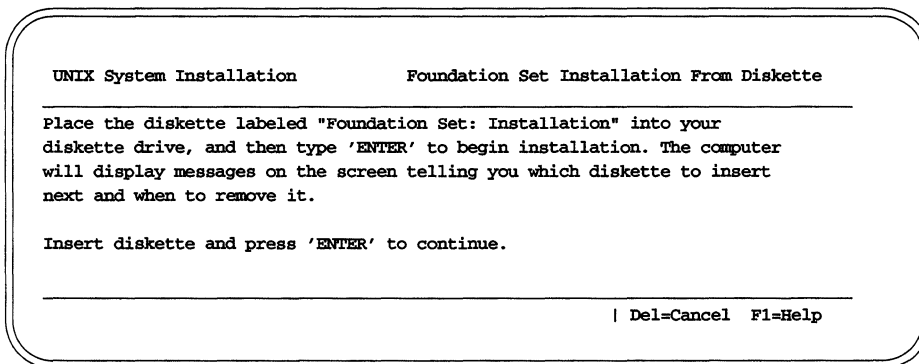
```
 UNIX System Installation          Foundation Set Installation From Diskette
 ─────────────────────────────────────────────────────────────────────────
 Place the diskette labeled "Foundation Set: Installation" into your
 diskette drive, and then type 'ENTER' to begin installation. The computer
 will display messages on the screen telling you which diskette to insert
 next and when to remove it.

 Insert diskette and press 'ENTER' to continue.

 ─────────────────────────────────────────────────────────────────────────
                                            | Del=Cancel  F1=Help
```

Insert the diskette labeled "Foundation Set: Installation" into diskette drive 1 and press (**ENTER**) to continue.

| NOTE | The installation process expects the Foundation Set packages to be loaded in a particular sequence. Further, if one package spans over multiple diskettes, the diskettes must be loaded in order (for example, "1 of 12", then "2 of 12", ...). In either case, if you insert the wrong diskette, you will be re-prompted until you provide the correct diskette.

Step	Action	Description	Time
20	Required	select packages	1-2 min.

You are presented with a form screen asking you to select which Foundation Set packages to install.

```
/                                                                    \
 Foundation Set Installation                        Package Selection

 The following packages are included in this set for this release.  Select
 "Yes" in the install column for the packages you wish to install.

                        Package Name   Install?
 ---------------------------------------------   --------
                        Base System:   Yes
                     Printer Support:   Yes
             Network Support Utilities:   Yes
      Enhanced Application Compatibility:   Yes
                   Graphics Utilities:   Yes
                   Adobe Type Manager:   Yes
                      Desktop Manager:   Yes


                           +-----+   +-----+
                           |Apply|   |Reset|
                           +-----+   +-----+


 Press 'TAB' to move the cursor between fields.  When finished, move the
 cursor to "Apply" and then press 'ENTER' to continue.
 ------------------------------------------------------------------------
  Right/Left arrow keys for new choice (2 choices)     | Del=Cancel  F1=Help
\                                                                    /
```

Note that the highlighted word **Yes** appears next to all of the package names, meaning that, by default, all of the packages in the Foundation set will be installed (for some packages in some sets, the default is to not install the package). This is the recommended choice.

But, if you have a good understanding of the features offered by each package, and you know that you do not need some of these capabilities on your system, you can choose to not install certain packages. To de-select a package (prevent its installation), press the (**TAB**) key to move to the package's **Install?** field, and select **No** by pressing the right arrow (→) or left arrow (←) key.

When the highlighted word **Yes** appears only next to packages you want to install, press (**TAB**) to move the cursor to **Apply**, and press (**ENTER**) to register your selections and continue.

Step	Action	Description	Time
21	Required	select automatic or custom package installation	1 min.

You are presented with a form asking you to choose between automatic or custom installation for the packages you have decided to install.

```
   Foundation Set Installation              Package Installation Options
   _____

   The following packages can be installed automatically using default values.
   If you select custom installation you will be given the opportunity to
   change these values.  However, this requires additional UNIX System
   knowledge.

                              Package Name   Options
   ---------------------------------------------   --------
              Network Support Utilities:   Automatic
      Enhanced Application Compatibility:   Automatic
                    Graphics Utilities:   Automatic


                                +-----+   +-----+
                                |Apply|   |Reset|
                                +-----+   +-----+


   Press 'TAB' to move the cursor between fields.  When finished, move the
   cursor to "Apply" and then press 'ENTER' to continue.
   _____

   Right/Left arrow keys for new choice (2 choices)       | Del=Cancel  F1=Help
```

If you are uncertain about whether you should choose automatic or custom installation for a package, please see the "Choosing Between Automatic and Custom Package Installation Options" section (page 15) for information about these options.

In this example, all of the listed packages will be installed in the **Automatic** mode by default. Generally, accepting default installation for packages is recommended.

To select package installation options, press the (**TAB**) key to move to that package's **Options** field, and select **Automatic** or **Custom** using the right arrow (→) or left arrow (←) key. When you are satisfied with the options selected for all listed packages, press (**TAB**) to move the cursor to **Apply**, and press (**ENTER**) to register your selections and continue.

Step	Action	Description	Time
22	Required	enter computer name	1 min.

You enter the name of your computer on this form.

```
  UNIX System Installation                                    Computer Name
  _____

  Select a name for the computer. This should be a short name that will be
  used to identify your computer. Please use only letters or numbers in the
  name you type.

  If you will be connecting your computer to a network of other UNIX Systems,
  then it is important that the name specified here be unique to your
  network.  See the Help facility or the Installation Guide for more
  information.

   Computer name:_____


                            +-----+   +-----+
                            |Apply|   |Reset|
                            +-----+   +-----+



  Press 'TAB' to move the cursor between fields.  When finished, move the
  cursor to "Apply" and then press 'ENTER' to continue.
  _____
   Enter the name for your computer               | Del=Cancel  F1=Help
```

See the "Information Required During Foundation Set Installation" section (page 19) for guidelines about selecting a computer name.

Type the name you want to give your computer. Press (TAB) to move the cursor to **Apply**, and press (ENTER) to register your computer name and continue.

Step	Action	Description	Time
23	Required	answer custom installation prompts (if applicable)	1 min.

This step is only required if you chose to install one or more of the Foundation Set packages in custom mode during Step 21. If so, you may be prompted for more information at this point.

For example, if you chose custom installation for the Network Support Utilities (nsu) package, the following form will appear so that you can configure "Pseudo-Terminals."

```
 Network Support Utilities                          NSU Configuration
 _____
 Enter the number of pseudo-terminal devices to configure on your system.

 Number of pseudo-terminals: 16


                          +-----+   +-----+
                          |Apply|   |Reset|
                          +-----+   +-----+



 Press 'TAB' to move the cursor between fields.  When finished, move the
 cursor to "Apply" and then press 'ENTER' to continue.
 _____
  Enter number of pseudo-terminals to configure (16-256)   | Del=Cancel  F1=Help
```

Pseudo-terminals are used whenever someone logs into your computer through a network, or when using certain UNIX Desktop applications. If you are uncertain of the appropriate number to enter, please apply the default value.

Step	Action	Description	Time
24	None	messages displayed (if using tape)	30-45 min.
	Required	insert diskettes as prompted (if using diskettes)	40-90 min.

This step differs depending upon whether you install using tape or diskette.

Tape:

The packages that make up the Foundation Set will now be installed. Take a break. No further action is required until after the Foundation Set is installed.

Diskette:

At this point the "Foundation Set: Installation" diskette has finished loading, and you are prompted for the next diskette in the set.

```
READY TO PROCESS:
  Set:      Foundation Set (fnd)
  Package: Base System (base)
           diskette 1 of 12

Insert diskette into 3.5 inch (High Density) Drive 1.
Type [go] when ready,
  or [q] to quit: (default: go)
```

You must insert the exact diskette requested in the **READY TO PROCESS** message. Follow the instructions in the successive screen messages to remove and insert diskettes until you've installed the entire Foundation Set.

If you install the wrong diskette you will receive an error message and another prompt similar to this.

```
pkgadd: WARNING: Could not find (dtxt) on </dev/dsk/f03ht>

REPROMPTING FOR:
  Set:      Foundation Set (fnd)
  Package: Base System (base)
           diskette 1 of 12
```

If you quit (**q**) during the Foundation Set installation for any reason (for example, because of a missing or bad diskette) after the Base System (**base**) package is successfully installed, you can reboot the computer, and restart the installation. In this case, you should not change any partitioning information when you get to the **fdisk** utility screen (choose option 5 to Exit). When you get to the "Package

Selection" screen, you should select only packages which have not already been installed, and for which you have all necessary diskettes. Alternately, you can type **q** to quit, and allow the installation to continue (the system will rebuild and the installation will complete). After the rest of the installation completes, you can login as **root**, and use the **pkgadd** command to install the remaining packages. (See the section, "Set Installation Instructions" on page 111 for instructions.)

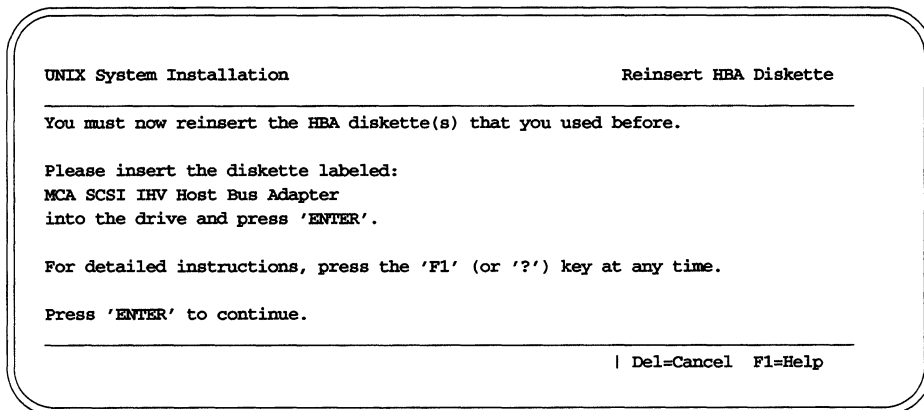| Step	Action	Description	Time
25	None	messages are displayed	see 24

As Foundation Set packages are installed from tape or diskette, status messages are displayed.

```
PROCESSING:
Set:  Foundation Set (fnd) from </dev/rmt/tape1>
Package: Base System (base) from </dev/rmt/tape1>
## Installing part 1 of 12.

                        .
                        .
                        .
                (more messages follow)
```

Step	Action	Description	Time
26	Required	reinsert HBA diskette (if applicable)	1-3 min.

If you previously loaded one or more HBA diskettes, this screen prompts you to reinsert the same diskette(s) into the diskette drive.

```
UNIX System Installation                          Reinsert HBA Diskette

You must now reinsert the HBA diskette(s) that you used before.

Please insert the diskette labeled:
MCA SCSI IHV Host Bus Adapter
into the drive and press 'ENTER'.

For detailed instructions, press the 'F1' (or '?') key at any time.

Press 'ENTER' to continue.

                                          | Del=Cancel   F1=Help
```

The screen prompts for a specific HBA diskette, by name. Compare the name given on the screen with the label on the diskette to be sure you are inserting the correct HBA diskette into the diskette drive.

If you loaded more than one HBA diskette in Step 3, then this screen will reappear once for each diskette. If an HBA diskette is not requested the second time, do not worry. In this case, the system has determined that this particular device driver is not actually needed. See the "Host Bus Adapter Diskettes" section (page 11) for further information about HBA diskettes.

Step	Action	Description	Time
27	None	message is displayed	3-5 min.

After you have loaded the entire Foundation Set a status screen is displayed
informing you that the UNIX System will now be rebuilt.

```
UNIX System Installation                              System Rebuilding
_____



    The UNIX System is now being rebuilt to reflect your software selections.

       This will take several minutes and will not require any user input.



    Please wait.
_____
                                Working...
```
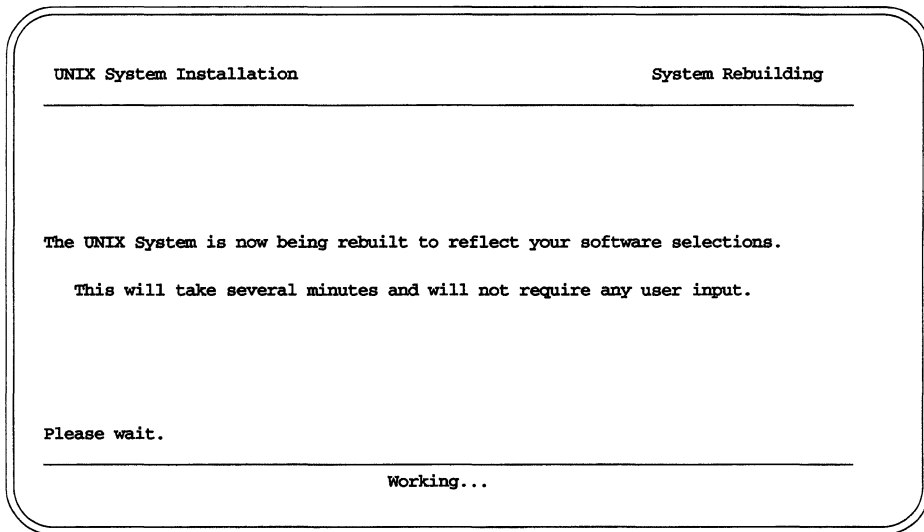
Step	Action	Description	Time
28	None	results message is displayed	1 min.

After the system is rebuilt, you will see a screen informing you of the results.

```
Set Installation                                       Installation Results
_____

You selected to install the following packages in this set. The status
of each of these packages' installation is to the left of its name.


        Status    Package Name
      -----------  -------------------------------
      Succeeded   Base System
      Succeeded   Printer Support
      Succeeded   Network Support Utilities
      Succeeded   Enhanced Application Compatibility
      Succeeded   Graphics Utilities
      Succeeded   Adobe Type Manager
      Succeeded   Desktop Manager


  Press 'ENTER' to continue:
_____
                                          | Del=Cancel  F1=Help
```

Packages that were successfully installed are listed with a status of **Succeeded**. Packages that failed to install, or that were installed with errors, are also be noted on this screen.

In addition to the information displayed on the Installation Results screen, an electronic mail message is sent to **root** indicating installation success or failure for each package. The mail messages can be quite detailed and informative.

You can also check a log file which will contain any error messages. The log file for each package is located in **/var/sadm/install/logs**.

Step	Action	Description	Time
29	None Required	message is displayed remove diskette (if any)	1 min.

An information screen is displayed informing you that the system will automatically be rebooted.

```
 UNIX System Installation                        Installation Complete
 ────────────────────────────────────────────────────────────────────
 The UNIX System Foundation Set installation is complete.  Applications
 and other software sets can be installed using the tools available with
 the Foundation Set after the computer is rebooted.

 After you press 'ENTER', the system will be shut down.  Make sure the
 boot floppy drive is empty.

 After the system is rebooted, you can set up and try out your mouse.
 You will then be asked to create a user account for your UNIX System.

 Refer to the Quick Start-Up manual for more information.




 Press 'ENTER' to continue.
 ────────────────────────────────────────────────────────────────────
                                           | Del=Cancel  F1=Help
```

Make sure there is no diskette inserted in diskette drive 1 (the boot diskette drive). After you press (**ENTER**) the screen clears, a status message is displayed, and the computer reboots automatically.

The system is coming down. Please wait.

Step	Action	Description	Time
30	None	messages are displayed	2-6 min.

As the system comes back up, several copyright messages are displayed, along with the following status messages.

```
The system is coming up. Please wait.

Please wait while the system is examined.  This may take a few minutes.

Setting up new kernel environment
The system is fine and is now coming up.
```

If there are any problems detected as the system comes up, the UNIX file system
checking utility program, fsck, is automatically run to check the integrity of the
file systems and repair them if necessary.

Step	Action	Description	Time
31	Required	select mouse type	1-3 min.

After the system has come up, you are prompted to specify the type of mouse
you'll be using.

```
UNIX System Installation                                    Mouse Selection
──────────────────────────────────────────────────────────────────────────
If you wish to use a mouse with the UNIX System you must select the type of
mouse attached to your computer from the list below (or select "No Mouse"
if you do not wish to use a mouse).

If you are unsure of what mouse type you have, refer to the help information
for this screen or the Installation Guide for more information.


Your choices are:

  1. Serial Mouse
  2. Bus Mouse
  3. PS/2-compatible Mouse
  4. No Mouse

Press '1', '2', '3', or '4' followed by ENTER. 1

──────────────────────────────────────────────────────────────────────────
  Please make a selection. Press F1 for help.              | F1=Help
```
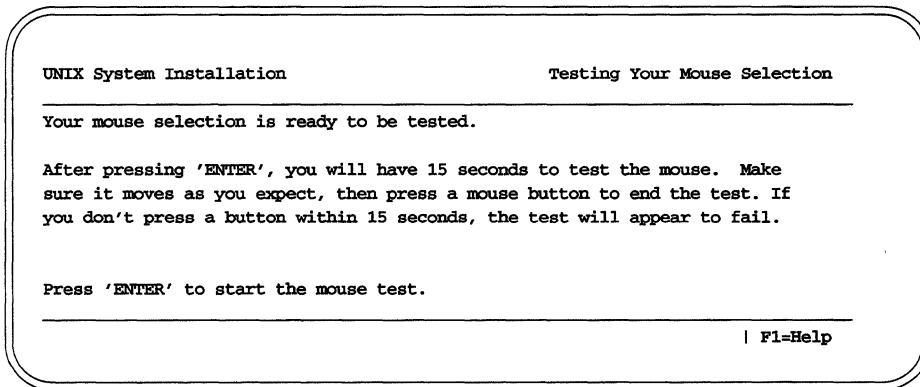
If you know your mouse type, enter the appropriate number and press
[ENTER].

The default is **Serial Mouse** for destructive installations, but the old mouse configuration is preserved in the case of non-destructive (upgrade or overlay) installations. The next screen to appear will be a form asking you questions about the type of mouse you selected: serial mouse (see page 83), bus mouse (page 84), or PS/2 mouse (page 85). After filling out one of these forms, a "mouse test" is run. Just before the mouse test is run the following information screen is displayed.

```
UNIX System Installation                        Testing Your Mouse Selection
_____

Your mouse selection is ready to be tested.

After pressing 'ENTER', you will have 15 seconds to test the mouse.  Make
sure it moves as you expect, then press a mouse button to end the test. If
you don't press a button within 15 seconds, the test will appear to fail.


Press 'ENTER' to start the mouse test.

_____
                                                          | F1=Help
```

The mouse test checks to see if your mouse can communicate with your computer. The screen clears and you are prompted to **Press a mouse button to stop the test**. Assuming the system senses the presence of the mouse properly, you receive a message stating: **Success! Your mouse is now ready for use by the system** and you can go on to the next step. If the test is not a success you are presented with a **ERROR: Mouse Not Detected** menu which offers you the option of going back to the "Mouse Selection" screen to choose a different mouse type (or select **No Mouse**), or you may choose to shut down the computer so that you can check your mouse hardware.

We recommend that you set up your mouse now if you have one, but you can set up or change the configuration of your mouse at any time. This can be accomplished by logging in as **root** and issuing the **mouseadmin** command. (The **mouseadmin** command is located in the **/usr/bin** directory.) After executing **mouseadmin** you will be presented with a menu, and you will be prompted for information about your mouse. This process is similar to the one presented in this *Installation Guide*.

1. Serial Mouse

If you select serial mouse this form is displayed:

```
UNIX System Installation                      Serial Mouse Port Selection
_____
In order to use a serial mouse, you must tell the installation program which
serial port your mouse is connected to.  You must also indicate the number
of buttons that are on the mouse you will be using.  See the help facility
or Installation Guide for more information.

Enter the following information about your serial mouse.


Serial Port your mouse is connected to:   tty00 (COM1)
              Number of mouse buttons:    2



                              +-----+   +-----+
                              |Apply|   |Reset|
                              +-----+   +-----+



Press 'TAB' to move the cursor between fields.  When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.
_____
  Right/Left arrow keys for new choice (2 choices)            | F1=Help
```

You are asked to select the port which the mouse is connected to. By default, the
tty00 port is used. (On a DOS system tty00 is known as COM1.)

You are also asked to specify the number of buttons on your mouse. Default is 2
buttons. Press (TAB) to move to this field, and select 2 or 3 buttons by pressing
the right arrow (→) or left arrow (←) key.

Press (TAB) to move the cursor to Apply, and press (ENTER) to register your
selections and start a mouse test (see page 82).

> **NOTE** If your serial mouse came with a "PS/2 adaptor" (a device that allows the
> mouse to be plugged in to a computer's PS/2 port), and your computer has a
> PS/2 mouse port, you should install it as a PS/2 mouse.

2. Bus Mouse

If you select bus mouse this form is displayed:

```
UNIX System Installation                          Bus Mouse Configuration
─────────────────────────────────────────────────────────────────────────
To use your Bus mouse, you must provide the interrupt vector that your Bus
mouse controller card is configured to use. The choices given are those
that are not being used by other devices attached to your computer that the
UNIX System knows about. You must also indicate the number of buttons on
your mouse. See the Installation Guide for more information.


Enter the following information about your bus mouse.


Interrupt Vector Number:   2
Number of mouse buttons:   2


                              +-----+    +-----+
                              |Apply|    |Reset|
                              +-----+    +-----+


Press 'TAB' to move the cursor between fields.  When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.
─────────────────────────────────────────────────────────────────────────
 This is the only selection available                       | F1=Help
```

You are asked to select the interrupt vector number (IRQ) number for which the mouse is configured.

You are also asked to specify the number of buttons on your mouse. Press ⌨TAB to move to this field, and select 2 or 3 buttons by pressing the right arrow →⃞ or left arrow ←⃞ key.

Press ⌨TAB to move the cursor to Apply, and press ⌨ENTER to register your selections and continue. The blinking words Loading Mouse Driver appear in the center of the Help Bar. The driver is loading and should not be interrupted. After the driver loads, a mouse test is run (see page 82).

3. PS/2 Mouse

If you select PS/2 mouse this form is displayed:

```
UNIX System Installation          Number of Buttons on PS/2-Compatible Mouse
_____

Please select the number that correctly describes the number of buttons on
your PS/2 compatible mouse.  See the Help facility or the Installation Guide
for more information.


Select number of mouse buttons:   2


                              +-----+   +-----+
                              |Apply|   |Reset|
                              +-----+   +-----+



Press 'TAB' to move the cursor between fields.  When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.
_____

 Right/Left arrow keys for new choice (2 choices)                  | F1=Help
```

You are asked to specify the number of buttons on your mouse. Select 2 or 3 buttons by pressing the right arrow ⟶ or left arrow ⟵ key.

Press **TAB** to move the cursor to **Apply**, and press **ENTER** to register your selections and continue. The blinking words **Loading Mouse Driver** appear in the center of the Help Bar. The driver is loading and should not be interrupted. After the driver loads, a mouse test is run (see page 82).

Step	Action	Description	Time
32	Required	set up owner's account	1-3 min.

The "Owner's Account" form appears.

```
/--------------------------------------------------------------------\
|                                                                    |
|   UNIX System Installation                        Owner's Account  |
|   _____ |
|                                                                    |
|   Create a login account for the Owner's use in accessing the computer. |
|   Read the Help screen for information about each field.           |
|                                                                    |
|                                                                    |
|               Owner's name:                                        |
|           Owner's login ID:                                        |
|        Owner's user number:   101                                  |
|   Owner's desktop environment:  Motif                              |
|                                                                    |
|                                                                    |
|                           +-----+   +-----+                        |
|                           |Apply|   |Reset|                        |
|                           +-----+   +-----+                        |
|                                                                    |
|                                                                    |
|                                                                    |
|   Press 'TAB' to move the cursor between fields.  When finished, move the |
|   cursor to "Apply" and then press 'ENTER' to continue.           |
|   _____ |
|   Type the owner's first and last name              | F1=Help     |
|                                                                    |
\--------------------------------------------------------------------/
```
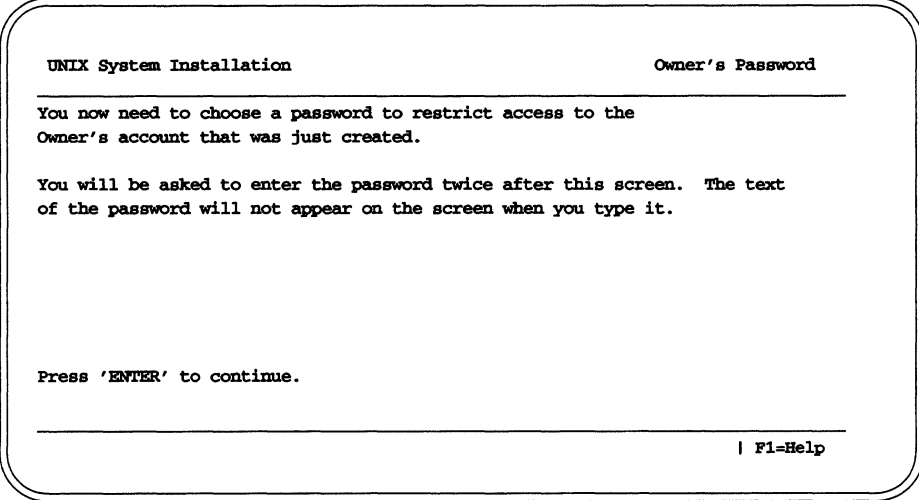
Use this screen to set up a login ID for the system owner. Fill out all the required information: the owner's name, login name, user number, and preferred desktop environment (Motif, OPEN LOOK, or none).

A. Owner's name: Enter your full (first and last) name. Press (**TAB**) to move to the next field...

B. Owner's login ID: Type your login ID. Often, people use their initials, their first name, or a nickname as a login name. (**TAB**) again.

C. Owner's user number: The default user number presented will be the first unassigned number over 100. If you are doing a new installation, then this number is 101. Each new user account you create should have a unique user number. (**TAB**).

D. Owner's desktop environment: Motif is the default desktop environment. For more information about Open Look and Motif, please refer to *The Complete UNIX Desktop Handbook*. If you do not want to specify a desktop environment select **none**.

When all values are entered as you desire, (TAB) to the Apply button, and press (ENTER) to continue.

Step	Action	Description	Time
33	None	message is displayed	1 min.

You are told about the owner's password on this information screen.

```
  UNIX System Installation                          Owner's Password
  ──────────────────────────────────────────────────────────────────
  You now need to choose a password to restrict access to the
  Owner's account that was just created.

  You will be asked to enter the password twice after this screen.  The text
  of the password will not appear on the screen when you type it.




  Press 'ENTER' to continue.
  ──────────────────────────────────────────────────────────────────
                                                        | F1=Help
```

Guidelines for selecting a password are discussed in the "Information Required During Foundation Set Installation" section (page 20).

Step	Action	Description	Time
34	Required	select and confirm owner password	1 min.

The screen clears and after a moment the system prompts you for a password for the owner's account you created. Be sure to assign (and remember) this password.

UX:passwd: INFO: Changing password for <login_name>
New Password:

Passwords should be kept secret—this is why your password is not displayed as you type it in. After typing your new password, press ⌷ENTER⌷.

Now enter your password a second time to confirm it.

Re-enter new password:

After typing your new password a second time, press ⌷ENTER⌷.

If you make a mistake while entering the password, you will have two more chances to type it properly. If the passwords still do not match after that, you will see an error message, and you will be prompted again for a password the first time you try to use the login ID.

Step	Action	Description	Time
35	None	message is displayed	1 min.

The installation process automatically creates a **root** login ID for your computer. You are asked to choose a password for the **root** account.

```
UNIX System Installation                              Root Password

In addition to user accounts, the UNIX System contains a special account
known as the "root" account.  This account is the most powerful account on
a UNIX System.  You should now choose a password for this account.
Remember and guard it carefully.

You will be asked to enter the root password twice after this screen.
The text of the password will not appear on the screen when you type it.



Press 'ENTER' to continue.

                                                        | F1=Help
```

The procedure for selecting and entering the **root** password is the same as that used for the owner's password. Be sure to assign (and remember) a password for the **root** login ID.

Step	Action	Description	Time
36	Required	select and confirm **root** password	1 min.

The screen clears and the system prompts you for a **root** password. Type the password and press **ENTER**.

> **New Password:**

Now enter the **root** password a second time to confirm it, and press **ENTER**.

> **Re-enter new password:**

Step	Action	Description	Time
37	Required	login as owner or **root**	1 min.

This information screen confirms that the Owner's Account was created successfully, and gives instructions for logging in to your new UNIX System.

```
 UNIX System Installation                       Owner Account Created
 ─────────────────────────────────────────────────────────────────────
 The owner's account has been created, and your UNIX System is now ready for
 use.  Applications and other software sets can be installed using the tools
 available with the Foundation Set.

 After you proceed from this screen you will be able to access your computer.
 Type a login ID at the "login:" prompt, followed by the password associated
 with that login ID at the "password:" prompt.  For your protection the
 password will not be visible on the screen as you type it.

 Refer to the Quick Start-Up manual for more information.


 Press 'ENTER' to continue.
 ─────────────────────────────────────────────────────────────────────
                                                        | F1=Help
```

After pressing **ENTER** you may see a message: **The system is coming up**. Then, a **Console Login:** or **Login ID:** prompt appears. You may now type in your the owner's login and password, or **root** and the **root** password, and begin using the system. The *SVR4.2 Quick Start-Up* book can help you start using your system easily and effectively.

Shutting Down Your Computer

If you want to shut down your system after UNIX SVR4.2 is installed, use the shut-down icon from the UNIX Desktop, or the **shutdown -i0** command on a com-mand line. If you want to reboot, use the **shutdown -i6** command on a command line, or the (**CTRL-ALT-DEL**) keystroke combination after using the shutdown icon.
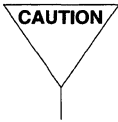
> ⚠ CAUTION Do not power off or reset your computer if UNIX SVR4.2 is running—file sys-tem damage may result. Powering off or resetting your computer is espe-cially dangerous if your computer uses a caching disk controller because the cache does not have time to write its data to the disk.

Next Step

If you would like to install additional UNIX packages or package sets at this time, proceed to the "Installing Additional Packages" section (page 110).

The Custom Installation Process

This section provides a step-by-step procedural example of the steps specific to the custom installation process. These steps are run to define file systems and slices, and specify their sizing and placement. If you are performing a custom installation it is recommended that you review this section before starting. Topics discussed in this section include:

- Custom Installation Instructions
- Next Step

Custom Installation Instructions

To perform a Custom installation, first perform Steps 1 - 12 in the Automatic process. The custom installation consists of a series of steps which begin with Step 12a, and are numbered "12a", "12b", "12c", and so on.

Step	Action	Description	Time
12a	Required	select file system types	1 min.

You are given the list of file system types and asked what type of file system (**ufs, sfs, s5, s52k** or **vxfs**) you want the root file system to be.

```
The following hard disk elements are required and
must reside on your primary (disk 0) hard disk:

Drive   Name                    File System/Slice
-----   ----------------        -----------------
0       Boot File System        /stand
0       Swap Slice              /dev/swap
0       Root File System        /

Please select the File System Type for Root File System      (/)
from the following list:

vxfs, sfs, s5, s52k, ufs              default(vxfs):
```

The Boot File System (**/stand**) and swap slice (**/dev/swap**) are set up for you automatically. **/stand** is set up using 5 MB if the UNIX System partition on the primary hard disk is less than 150 MB, but defaults to a 10 MB size if the partition is greater than 150 MB (or if the combination of primary and secondary hard disk UNIX System partitions exceeds 200 MB). **/dev/swap** is created using 13% of the UNIX System partition, or two times the amount of RAM on your computer, whichever is smaller. You may change these default values if you choose to create optional disk slices or file systems in the next step. (The swap size should never be smaller than the amount of RAM on your computer—if it is, re-size it during Step 12f.)

> **NOTE** If you choose the **sfs** file system type for any file system you will receive a series of Warning messages like: "WARNING: Changed MAC level from < 2 > to < 1 >", or "WARNING: /bin no longer a symbolic link" These warnings do not require any action from you. They can be ignored.

Step	Action	Description	Time
12b	Optional	create slices and file systems	3-5 min.

You are asked whether you want to create any optional slices or file systems.

```
Do you wish to create any optional
disk slices or filesystems (y or n)?
```

The allowable responses are **y** (yes) or **n** (no). If you respond **n**, a default set of file systems and slices are created for your computer. Unless you are knowledgeable about creating, sizing and placing files systems, we recommend you answer **n**.

If you select **y** (yes) and you are using a single hard disk with a UNIX partition smaller than 100 MB, you are asked whether to create a dump (**/dump**) slice on the disk.

If you select **y** (yes) and your UNIX partition is greater than 100 MB, or if you have specified that two hard disks (with combined storage greater than 100 MB) are to be used for the installation, you are asked whether a slice should be created for each of the following: **/usr**, **/home**, **/dev/dump**, **/var**, **/home2** and **/tmp**. For each one of these that you choose to create, you are also be prompted for the file system type (**ufs**, **sfs**, **s5**, **s52k**, or **vxfs**). Additionally, if you previously answered yes to using a second hard disk, you are asked to select which hard drive (primary=0, secondary=1) to assign the file system to. For disks whose combined storage is less than 200 MB, 60% of the available disk space will be assigned to **/usr**. If more than 200 MB is available, 45% of the space will be assigned to **/usr**. But, if **/usr** is put on the second hard disk by itself, it will use 100% of the space on the second disk.

Step	Action	Description	Time
12c	Required	verify layout is correct	3-5 min.

You are shown the list of file systems selected for installation, and you are asked whether the allocations shown are acceptable.

```
The hard disk layout you have selected is:

Drive   Name                  Type       File System/Slice
-----   ----------------      ----       -----------------
0       Boot File System      bfs        /stand
0       Swap Slice            -          /dev/swap
0       Root File System      vxfs1k     /
0       usr File System       vxfs1k     /usr
0       user File System      vxfs1k     /home
0       Dump Slice            -          /dev/dump
0       Add-ons File System   vxfs1k     /var
0       2nd User File System  vxfs1k     /home2
0       Temporary File System vxfs1k     /tmp

Is this correct (y or n)?
```

NOTE In the example above, the user has decided to create all optional file systems and slices, and chose **vxfs** for each file system. If the available disk space is not large enough to accommodate the file systems chosen, an error screen is presented.

If you respond **n** (no) to the prompt, this data is discarded and you restart at the beginning of Step 12a.

Step	Action	Description	Time
12d	None	message is displayed (if applicable)	1 min.

If your system has two hard disk drives, and you did not specify that any file systems or slices were to be placed on the second hard drive, you may see the following information message:

```
You have not allocated any slices/file systems on your second drive,
you may run ''diskadd'' after completing installation if you wish to
install your second drive.
```

This means you either did not choose to create additional disk slices, or did not assign any to the second hard disk. No action is necessary now. You can set up your second hard disk at any time using the **diskadd** command.

Step	Action	Description	Time
12e	None	message is displayed	8-14 min.

If you responded **y** (yes) to the prompt in Step 12c, the UNIX System partition is checked and verified, and any bad blocks on the disk are mapped. The system will calculate and inform you of approximately how long this step will take. (If you are using a disk, you will be offered the option of skipping this step.)

```
Checking for bad sectors in the UNIX System partition...

Verify (UNIX partition only) /dev/rdsk/c0t0d0s0:
Begin Verify (No more than 14 minutes)
```

Step	Action	Description	Time
12f	Required	verify configuration	1 min.

The list of file systems is shown with recommended minimum sizes shown for each file system you selected.

```
The following slice sizes are the recommended configuration for your disk.
a / filesystem of 81 cylinders (24.0 MB)
a /dev/swap slice of 54 cylinders (16.0 MB)
a /usr filesystem of 255 cylinders (75.7 MB)
a /home filesystem of 136 cylinders (40.4 MB)
a /dev/dump slice of 27 cylinders (8.0 MB)
a /stand filesystem of 34 cylinders (10.1 MB)
a /var filesystem of 28 cylinders (8.3 MB)
a /home2 filesystem of 45 cylinders (13.4 MB)
a /tmp filesystem of 22 cylinders (6.5 MB)

Is this configuration acceptable? (y/n)
```

The system asks if this configuration is acceptable to you. Unless you are knowledgeable about sizing UNIX System file systems, or have special requirements (such as the need for a larger swap space), we recommend you answer **y** (yes).

If you respond **n** (no) to this prompt, this data is discarded and you're asked to enter the size, in cylinders, of each file system or slice. The system will not allow you to specify a size smaller then the recommended minimum for a given file system or slice. When you've finished entering this data, you're shown the new configuration and asked whether it's acceptable. If it isn't, you get to respecify the sizes of the file systems and slices again. When the configuration is acceptable, type **y**, and press (**ENTER**).

The recommended minimum sizes are sufficient to install the Foundation Set, but if you intend to install additional sets and packages you should calculate the actual space needed for each file system. See the "Information About Sets and Packages" section which begins on page 30 for information to help you determine appropriate sizing.
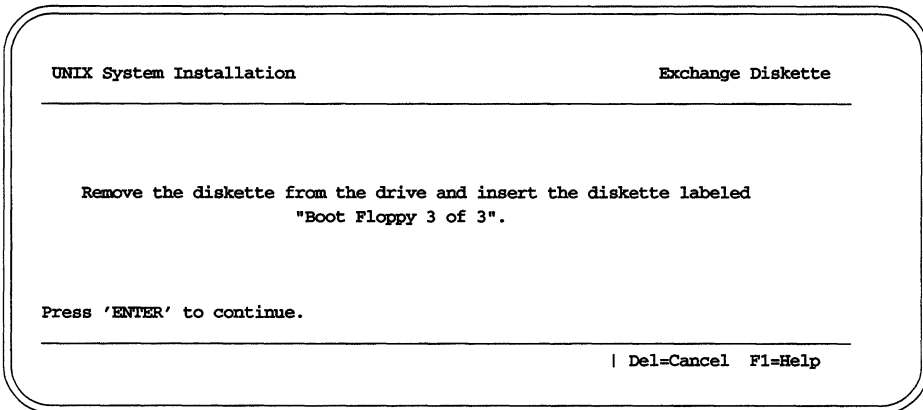
Step	Action	Description	Time
12g	None	messages are displayed	1-3 min.

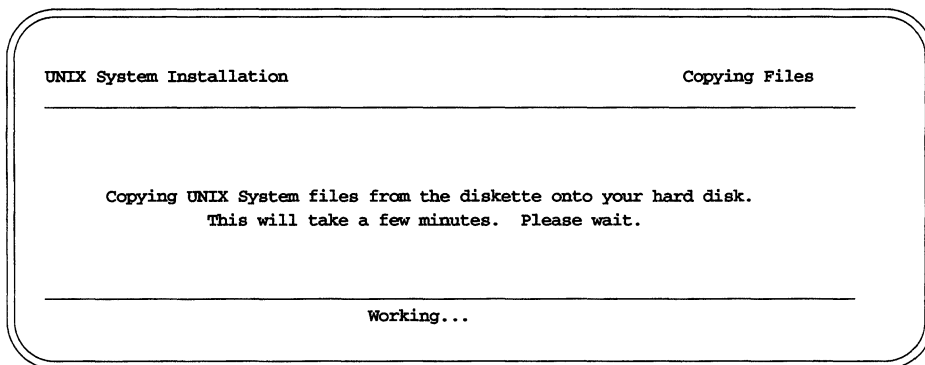The following status message is displayed as the second boot diskette is being loaded.

```
UNIX System Installation                              Copying Files
_____



         Copying UNIX System files from the diskette onto your hard disk.
                  This will take a few minutes.  Please wait.


_____
                            Working...
```
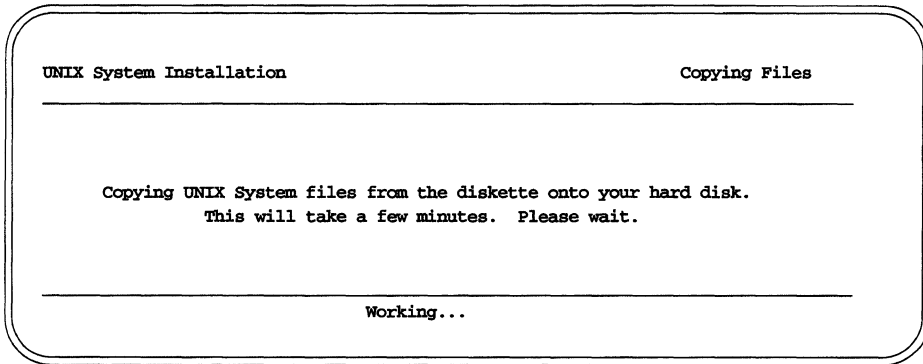
Step	Action	Description	Time
12h	Required	remove boot diskette 2	1 min.
	Required	insert boot diskette 3	

A screen appears with a request that you remove the second boot diskette and insert the third boot diskette.

```
  UNIX System Installation                            Exchange Diskette
_____



     Remove the diskette from the drive and insert the diskette labeled
                      "Boot Floppy 3 of 3".



  Press 'ENTER' to continue.
_____
                                      | Del=Cancel  F1=Help
```

Step	Action	Description	Time
12i	None	messages are displayed	1-3 min.

The following status message is displayed as the third boot diskette is being loaded.

```
UNIX System Installation                              Copying Files
_____


        Copying UNIX System files from the diskette onto your hard disk.
                 This will take a few minutes.  Please wait.


_____
                            Working...
```

Step	Action	Description	Time
12j	None	file systems are created	3-5 min.

Status messages appear on the screen as the file systems are created.

```
    Making file systems on your hard disk. This will take a few
    minutes. Please wait.

    File systems will now be created on the needed slices

    Creating the / filesystem on /dev/rdsk/c0t0d0s1
    Creating the /usr filesystem on /dev/rdsk/c0t0d0s3
    Creating the /home filesystem on /dev/rdsk/c0t0d0s4
    Creating the /stand filesystem on /dev/rdsk/c0t0d0sa
    Creating the /var filesystem on /dev/rdsk/c0t0d0sb
    Creating the /home2 filesystem on /dev/rdsk/c0t0d0sc
```

	NOTE	The device names (for example, c0t0d0s1) shown for disk and tape devices are temporary. The actual device names are determined by the system when the UNIX System kernel is built.

Step	Action	Description	Time
12k	Required	specify inode limit (if requested)	1 min.

This menu may appear once for each large file system that was created on your computer.

```
WARNING:  As currently set up, this file system will be able to support more
than XXXXX files.  Some older (pre-UNIX System V Release 4.0) applications
may not work correctly on such a file system, even if fewer than XXXXX files
are actually present.  If you wish to run such applications (without
recompiling them), you should restrict the maximum number of files that may
be created to less than XXXXX.

Your choices are:

        1.  Restrict this file system to less than XXXXX files.
        2.  Do not restrict this file system to less than XXXXX files.

Press '1' or '2' followed by ENTER: 1
```

where XXXXX would be 65536 for a **vxfs** or **ufs** file system, and 32768 for an **sfs** file system.

If you're not sure of what to do, type 1 and press (**ENTER**). This will set a limit on the number of inodes in this file system which is compatible with earlier (pre-System V Release 4.0) releases of the UNIX System.

Next Step

The custom portion of the installation process is now finished. To continue the Foundation Set installation you should now go to Step 17 (page 66) in the automatic installation process, and proceed from there.

Upgrade and Overlay Processing

If you want to attempt a non-destructive installation it is recommended that you review this section before starting.

If you choose non-destructive installation the installation process attempts to preserve your existing applications, "volatile" system files and system configuration. There are three types of non-destructive Installation—"upgrade", "overlay", or "interrupted." These are performed under the following circumstances:

- Upgrade: an upgrade installation is only appropriate when upgrading a UNIX System V Release 4 Version 4 system to UNIX SVR4.2. The purpose of the upgrade feature is to allow the current installed base of Version 4 customers a smooth transition to UNIX SVR4.2.

- Overlay: The purpose of an overlay is to help you recover from a corrupted system. This process allows you to overlay a new UNIX SVR4.2 system on an existing UNIX SVR4.2 system.

- Interrupted: If you previously canceled your Foundation Set installation, or the installation was accidentally interrupted (for example, by a power outage), you may choose a non-destructive installation. In this case, the system will preserve the installation up to the point where it was interrupted.

The installation process senses whether an upgrade or an overlay is called for, determines if the process can be performed successfully, and starts the appropriate process. Topics discussed in this section include:

- Before Starting
- Things to Know About Upgrade Installations
- Things to Know About Overlay Installations
- Upgrade and Overlay Installation Instructions
- Next Step

Before Starting

Before you start the upgrade or overlay process you should:

- Back up your existing system.

- Perform a clean shutdown of your system, preferably using the command:
  `shutdown -y -i0`.

Things to Know About Upgrade Installations

If you are upgrading from a UNIX System V Release 4 Version 4 system please do
the following before you start your upgrade.

- Be sure you have enough free disk space before you start an upgrade instal-
  lation. To perform a successful upgrade installation the following minimum
  requirements must be met:

  - If upgrading a single **root** file system — 27.0 MB

  - If upgrading multiple file systems — 5.0 MB for **root**, 6.0 MB for **/var**,
    16.0 MB for **/usr**.

  If you do not have adequate disk space, you will be warned and given the
  opportunity to either continue with a destructive installation, or power
  down your system.

  > **NOTE** Use the **dfspace** command to check your free space. if you have a
  > **ufs** filesystem, you need to add 10% of the total file system size to the
  > requirements. For example, if your **root** filesystem is **ufs** and dfspace
  > shows 20 MB of 80 MB free, you need to add 8 MB (10% of 80) to the
  > space requirements above.

- Issue the following command: `rm -f /usr/bin/cof2elf`

- If you have the Version 4 **face** and **oam** packages installed and you plan to
  upgrade these to SVR4.2, you should remove these packages before you
  start. If you chose not to upgrade these packages at this time, you do not
  need to remove them.

If you are upgrading from a UNIX System V Release 4 Version 4 system please
take note of the following before you start your upgrade.

- The upgrade installation process removes obsolete and incompatible Ver-
  sion 4 packages from your system. The **qt**, **ed** and **mouse** packages are
  removed because they are no longer separate packages in SVR4.2. The **lp**
  package is removed because it has been restructured, with most of the old

functionality moved into the SVR4.2 **base** package. The packages **kdb**, **kdb-util** and **rfs** are removed because they are not compatible with the SVR4.2 system.

- If you have the Version 4 **nsu** package installed, it will automatically be upgraded to SVR4.2. If you have the Version 4 **acp** package installed, it will automatically be upgraded to SVR4.2.

- If you have the old graphics packages, **oleus** and **olxt**, and you chose to install the UNIX SVR4.2 Desktop Manager, the old graphics packages are automatically removed. You may want to remove these packages yourself if you need more disk space to meet the free disk space requirements listed above.

- If you install the Desktop Manager (**desktop**) package, you are asked to choose an existing login ID, or to create a new login ID to be the "owner" of the system. You are also asked to specify a desktop environment (Motif or OPEN LOOK).

- When upgrading the **base** package from Version 4, the configuration files for the Service Access Controller (SAC) are preserved. For listener-type services, such at the TCP/IP listener, these configuration files need to be converted to the latest format. The file **/etc/saf/tcp/_pmtab** is converted automatically as part of the upgrade process, but if you have another listener service that you have configured on your computer, you must use the command **/usr/lib/saf/dbfconv** to convert the configuration file to the new format as follows:

    ```
    cd /etc/saf/{service}
    /usr/lib/saf/dbfconv _pmtab /tmp/_pmtab
    cp /tmp/_pmtab ./_pmtab
    ```

    If you have not configured any additional services on your computer or if you have configured a non-listener service such as **ttymon**, then you do not need to convert the configuration file.

Things to Know About Overlay Installations

The purpose of an overlay is to help you recover from a corrupted system. There are several ways your system can become corrupted. Some examples include disk corruption, or an inadvertent **rm -rf** * issued from the wrong directory. Overlay will usually restore your system properly, but some systems may be unrecoverable. If you cannot overly your system successfully, you will have to perform a destructive installation.

If you want to perform an overlay installation, please do the following:

- Be sure you have enough free disk space before you start an overlay installation. To perform a successful overlay installation the following minimum disk space requirements must be met:

    - If overlaying a single **root** file system — 9.0 MB

    - If overlaying multiple file systems — 4.0 MB for **root**, 4.0 MB for **/var**, 1.0 MB for **/usr**.

    If you do not have adequate disk space, you will be warned and given the opportunity to either continue with a destructive installation, or power down your system. Use the **dfspace** command to check your free space.

If you are performing an overlay installation please note the following:

- If you had the Commands Networking Extension (**netcmds**) package installed, and you overlay the Base System (**base**) package, you will have to overlay the **netcmds** package in order to reinstate a networked version of **lpsched**.

- If you have the Multi-User Set (**multiusr**) installed, and you overlay the Foundation Set, you must also overlay the **multiusr** set. Otherwise, you will not be able to accommodate more than two users on your system.

Upgrade and Overlay Installation Instructions

The upgrade and overlay installation processes perform many of the same steps, and display many of the same screens, as the automatic installation process. To avoid duplicating all of those screens in this section, Table 2 has been assembled to lead you through the sequence of upgrade and overlay installation steps. Perform the following steps in the order shown. The step number, step name and page number where each step is discussed is provided for easy reference.

Of all the steps listed, only one is unique to upgrade and overlay processing, and this step is only performed if custom installation has been chosen. The step listed as "Combine System Setup Files" (Step CSSF) is shown and explained in Table 2. Two other steps, "Reconfigure Version 4 Drivers" (Step RV4D) and "Owner's Account" (Step OA) only occur when performing upgrade processing. These steps are shown and explained following the information about the "Combine System Setup Files" screen.

Note that, while the steps for both upgrade and overlay processing appear to be almost the same, the internal processing for these two types of installation are different. It is recommended that you backup your system before attempting an upgrade or overlay installation.

Table 2: Upgrade/Overlay Steps

Step	Step Name	Page	Comment
1 - 11	varies	50 to 62	
14	Copying Files	64	copies files from boot diskette 2
15	Exchange Diskette	65	remove boot diskette 2 insert boot diskette 3
16	Copying Files	65	copies files from boot diskette 3
12	Installation Type Selection	63	choose automatic or custom (existing file types are preserved)
17	Remove Diskette 3	66	remove boot diskette 3
18	Foundation Set Media Type	67	choose tape or diskette
19	Insert Foundation Set Tape	68	insert media in drive
20	Package Selection	72	select packages to install
21	Package Installation Options	73	automatic or custom for each (you may choose either)
CSSF	Combine System Setup Files	106	combine old & new files (custom mode only)
RV4D	Reconfigure Version 4 Drivers	107	Incorporate Version 4 drivers (upgrade only)
25	(no step name)	76	status messages are displayed (except upgrade)
27	System Rebuilding	78	system is rebuilt
28	Installation Results	79	installation results are displayed
29	Installation Complete	80	information before reboot
30	(no step name)	80	messages displayed upon reboot
31	Mouse Selection	81	select a mouse type (existing mouse type is default)
31	Testing Your Mouse Selection	82	information about mouse test
OA	Owner's Account	108	specify an Owner account (upgrade processing only)

Table 2: Upgrade/Overlay Steps (continued)

Step	Step Name	Page	Comment
	Cleanup Unneeded Files	109	issue `rm -rf /etc/CONF.ORIG` (only if upgrade and kernel boots)
	Restore User Logins	108	restore and run `creatiadb` (only if files not combined)

Step	Action	Description	Time
CSSF	Required	automatically combine files?	1 min.

This screen only appears if you have chosen a custom installation. It may appear multiple times, once for each package which has volatile files.

```
 UNIX System Installation.              Combine System Setup Files
 _____
 Copies of your old UNIX system setup files have been saved.  Any of the
 changes you made to these files after they were installed can be
 automatically made to the newly installed versions.  If you choose not to
 combine the files, your versions of the files will be left in
 /var/sadm/upgrade.  You may need to combine these files yourself to get
 some of your applications working.  The UNIX System will use only the new
 versions of the files when installation is complete.



 Your choices are:

  1. Automatically combine the files.
  2. Do not automatically combine the files.

 Press '1' or '2' followed by 'ENTER': 1

 _____
                                                       | Del=Cancel
```
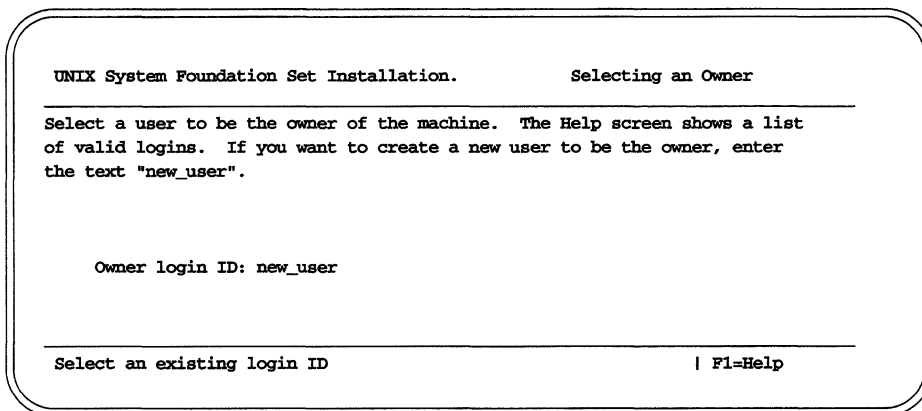
The main difference between a normal installation and an upgrade or overlay installation is the option to combine your "volatile" files (for example, `/etc/passwd`). An upgrade or overlay installation always saves these files in `/var/sadm/upgrade`, but if you choose a custom installation, you have the option of not merging the files back into the new UNIX SVR4.2 system. If you selected automatic installation, your volatile files are automatically merged.

When you upgrade your Version 4 system, the volatile files are saved regardless of your decision to restore or not restore them. If you chose to restore the volatile files, the SVR4.2 file being replaced is saved as **/var/sadm/upgrade/SVR4.2**.

If you chose to restore these files when you overlay your SVR4.2 system, the old files are removed from **/var/sadm/upgrade** after being restored.

If an automatic combination of files fails for a package, mail is sent to **root** about the files that failed.

Step	Action	Description	Time
RV4D	Required	Reconfigure Version 4 Drivers?	2 min.

This screen only appears if you have chosen an upgrade installation.

```
    UNIX System Foundation Set Installation.          Component Configuration
   _____

   You have one or more applications on your computer that have operating
   system components.  You may choose to have all these components
   automatically built into the new UNIX System.  If you do not choose to
   configure them, you may need to do additional work on your own before all of
   your applications will work properly.

   If you select to automatically include these operating system components
   then your computer will shut itself down so that they can be added into
   your UNIX System as it reboots.



   Your choices are:

    1. Automatically include the components.
    2. Do not automatically include the components.

   Press '1' or '2' followed by 'ENTER': 1

   _____
                                                              | Del=Cancel
```

The types of operating system components included here are drivers from third party vendors and/or drivers from other Version 4 packages (for example, the Ethernet drivers). If you chose to not reconfigure these components in your SVR4.2 system, they are saved in **/var/sadm/upgrade/etc/conf**.

If you chose to automatically include these components in your system, they are installed and the system is rebuilt. If the rebuild succeeds, you are notified of the success and the system reboots. If the rebuild fails, these components are unconfigured from your system and saved in **/var/sadm/upgrade/etc/conf**.

Step	Action	Description	Time
OA	Required	set up owner ID (upgrade only)	1 min.

This screen only appears if you have chosen an upgrade installation, and chose to automatically merge your volatile files.

```
UNIX System Foundation Set Installation.        Selecting an Owner
─────────────────────────────────────────────────────────────────────
Select a user to be the owner of the machine.  The Help screen shows a list
of valid logins.  If you want to create a new user to be the owner, enter
the text "new_user".



        Owner login ID: new_user


─────────────────────────────────────────────────────────────────────
 Select an existing login ID                          | F1=Help
```

If you chose to restore your volatile files, you are asked to select an existing login to be the Owner of the system. If you want to create a new login to be the Owner of the system, enter **new_user** (this is the default) in the field, and press ⌈ **Enter** ⌋.

Restore User Logins

If a successful non-destructive installation is performed, and if you chose to automatically combine the files in Step CSSF, then login and password files are preserved and do not need to be recreated or restored. If you did not choose to merge the files, you need to recreate or restore the files. Perform the following steps to restore and re-establish user login and password files.

1. restore the **/etc/password** and **/etc/shadow** files from **/var/sadm/upgrade**.

2. run the following command to re-establish the files:

```
creatiadb
```

Cleanup

If you chose to reconfigure the Version 4 drivers into your SVR4.2 kernel and the resulting UNIX kernel booted correctly, you can cleanup unwanted files by issuing the following commands:

```
rm -rf /etc/CONF.ORIG
```

If the resulting kernel failed to boot, push the reset button, and when you see the message: **Booting the UNIX System...**, press the space bar. You are then prompted for the name of a kernel to boot. Type **unix.old**, and press Enter. After this UNIX kernel boots, login and issue the following commands:

```
rm -rf /etc/conf
mv /etc/CONF.ORIG /etc/conf
/etc/conf/bin/idbuild
shutdown -y -i6
```

Next Step

After the system has rebooted you may upgrade or overlay remaining packages, if necessary.

Installing Additional Packages

Add-on packages may be installed through the UNIX Desktop, or by using the **pkgadd** command. If you have installed the Foundation Set and are using a graphical interface (Motif or OPEN LOOK), installation using the UNIX Desktop is the preferred method. For information about installing packages using the UNIX Desktop, please refer to *The Complete UNIX Desktop Handbook*

This section provides a step-by-step procedure for installing package sets or individual packages using the **pkgadd** command. If you are installing additional package sets and packages using **pkgadd** you should review this section before starting.

Topics discussed in this section include:

- Set Installation Instructions
- Package Installation Instructions

Set Installation Instructions

This section provides a step-by-step procedure for installing package sets or individual packages using the **pkgadd** command. This process is shown here as beginning with Step 38 since it can be viewed as a continuation of the automatic installation process.

Step	Action	Description	Time
38	Required	login as **root**	1 min.

If you want to install more UNIX package sets, log in as **root**.

Step	Action	Description	Time
39	Required	issue **pkgadd** command	1 min.

To install package sets from tape or diskette, use of the **pkgadd** command, with the **-q** option, is recommended. You may also want to use the **-l** option. The **-l** and **-q** options work as follows:

- **-l**: The **-l** option causes any error messages to be written to a log file which you can review later.

- **-q**: This option suppresses non-essential messages (like the list of files being installed), from being displayed on the computer screen, but allows prompts or error messages to be shown.
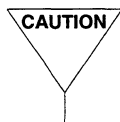
> **CAUTION** This works properly for all UNIX SVR4.2 add-on packages, but for some vendor packages, the -q option will also suppress necessary prompts for input. Use this option with caution when installing other vendor packages.

The format of the **pkgadd** command is slightly different depending upon whether you are installing with cartridge tape or diskettes.

Tape:

After inserting the tape in the tape drive, type the **pkgadd** command as follows, and press (**ENTER**).

```
pkgadd -d ctape? -q -l
```

where *ctape?* is **ctape1** (tape drive 1) or **ctape2** (tape drive 2).

Diskette:

Because some packages are dependent on others, the order in which you install package sets is important You should install the `util` set first because many packages are dependent on it. The first `util` set diskette you should install is the "Utilities Extension Set: Installation." (The first diskette to install in each set is always labeled with the set name, followed by a colon and the word "Installation.")

After inserting the first diskette in the diskette drive, type the `pkgadd` command as follows, and press `ENTER`.

> `pkgadd -d` *diskette?* `-q -1`

where *diskette?* is `diskette1` (diskette drive 1) or `diskette2` (diskette drive 2).

Step	Action	Description	Time
40	Required	insert media, type **go**	1 min.

The screen will display a slightly different message depending upon whether you are using cartridge tape or diskettes.

Tape:

```
Insert a cartridge into Tape Drive 1.
Type [go] when ready,
or [q] to quit: (default: go)
```

You can type the word **go**, or since the default is **go**, you can simply press `ENTER` to begin processing the tape. The tape may take several minutes to re-tension before the next screen is shown.

Diskette:

```
Insert diskette into Floppy Drive 1.
Type [go] when ready,
or [q] to quit: (default: go)
```

You can type the word **go**, or since the default is **go**, you can simply press `ENTER` to begin processing the diskette.

Step	Action	Description	Time
41	Required	select set(s) to install	1 min.

Tape:

You are shown a menu listing the sets on the tape:

```
The following sets are available:
   1  admin     Administration Set
                (386) 1
   2  bdev      Basic Development Set
                (386) 1
   3  fnd       Foundation Set
                (386) 1
   4  gdev      Graphical Applications Development Set
                (386) 1
   5  graphics  Graphical Applications Set
                (386) 1
   6  multiusr  Multi-usr Set
                (386) 1
   7  network   Networking Set
                (386) 1
   8  util      Utilities Set
                (386) 1

Select packages you wish to process (or ''all'' to process all packages.)
   (default: all) [?,??,q]
```

NOTE   Do not type `all`, and do not press `ENTER` to accept the default (which is `all`). You have already installed the Foundation Set, you do not need to reinstall it!

Type the option numbers of the sets you want to install. For example, to install all sets (except for the Foundation Set), you may type: **1 2 4 5 6 7 8** `ENTER`. If you choose to install more than one set, the installation process automatically determines package dependencies, and installs the sets in the proper order. That is, even though **8** (for the `util` set) is typed last in this example, it will be installed first because many other packages are dependent on it.

If you choose to install only one set at a time, you should always install the `util` set first because packages you choose to install later may be dependent on it.

Diskette:

```
The following sets are available:
  1  util      Utilities Set
                (386) 4.1


Select packages you wish to process (or "all" to process all packages.)
  (default: all) [?,??,q]
```

Press 〔**ENTER**〕 to load the first diskette. follow the instructions in the successive
screen messages to remove and insert diskettes until you've completed installation
of the set.

NOTE	Some packages are dependent on others being installed first. Moreover, if one package spans over multiple diskettes, the diskettes must be loaded in order (for example, "1 of 12", "2 of 12", "3 of 12"...). In either case, if you insert the wrong diskette, you will be re-prompted until you provide the correct diskette.

After the first set diskette has finished loading, you are prompted for the next
diskette in the set.

```
READY TO PROCESS:
  Set:      Utilities Set (util)
  Package: Terminfo Utilities (terminf)
           diskette 1 of 1

Type [go] when ready,
  or [q] to quit: (default: go)
```

You must insert the specific diskette requested in the READY TO PROCESS message.

Step	Action	Description	Time
42	Required	select packages	1-2 min.

For each set you choose to install you will be presented with a form asking you to select which packages to install.

```
 Utilities Set Installation                            Package Selection
 ──────────────────────────────────────────────────────────────────────
 The following packages are included in this set for this release.  Select
 "Yes" in the install column for the packages you wish to install.

                            Package Name   Install?
 -------------------------------------------   --------
               Terminfo Utilities:   Yes
               Advanced Commands:   Yes
               BSD Compatibility:   No


                                +-----+   +-----+
                                |Apply|   |Reset|
                                +-----+   +-----+



 Press 'TAB' to move the cursor between fields.  When finished, move the
 cursor to "Apply" and then press 'ENTER' to continue.
 ──────────────────────────────────────────────────────────────────────
 Right/Left arrow keys for new choice (2 choices)            | F1=Help
```

Note that the highlighted word **yes** appears next to some of the package names, meaning that, by default, these packages will be installed. If the highlighted word **No** appears next to a package then, by default, that package will not be installed.

If you have a good understanding of the features offered by each package you may choose to change the provided defaults. To change a default, press the **TAB** key to move to the package's **Install?** field, and press the right arrow ($\rightarrow$) or left arrow ($\leftarrow$) key until the desired choice is displayed.

When the highlighted word **Yes** appears only next to packages you want to install, press **TAB** to move the cursor to **Apply**, and press **ENTER** to register your selections and continue.

Step	Action	Description	Time
43	Required	select automatic or custom package installation	1 min.

You are presented with a form asking you to choose between automatic or custom installation for the packages you have decided to install.

> **NOTE** Only packages for which this option exists are presented. The util set has no packages which can be installed in custom mode, so this screen is not displayed for the util set. In order to show how this screen looks when encountered, an example has been taken from the Administration set, for this step only.

```
Administration Set Installation                Package Installation Options
------------------------------------------------------------------------------
The following packages can be installed automatically using default values.
If you select custom installation you will be given the opportunity to
change these values.  However, this requires additional UNIX System
knowledge.

                        Package Name   Options
----------------------------------------------  --------
                            OA&M:   Automatic


                        +-----+    +-----+
                        |Apply|    |Reset|
                        +-----+    +-----+


Press 'TAB' to move the cursor between fields.  When finished, move the
cursor to "Apply" and then press 'ENTER' to continue.
------------------------------------------------------------------------------
Right/Left arrow keys for new choice (2 choices)              | F1=Help
```

You may choose an automatic installation, or a custom installation, for each package listed. Only packages for which this option exists are presented—those not listed are always installed in automatic mode.

Note that all of the listed packages will be installed in the **Automatic** mode by default. Generally, accepting default installation for packages works well.

However, if you understand these UNIX System packages very well, and you want to have very fine control over what is installed, you can select **Custom.** If you select the custom option for any of these packages, you will be required to provide the installation program with additional information later in the installation process.

To select package installation options, press the (TAB) key to move to that package's **Options** field, and select **Automatic** or **Custom** using the right arrow (→) or left arrow (←) key. When you are satisfied with the options selected for all listed packages, press (TAB) to move the cursor to **Apply**, and press (ENTER) to register your selections and continue.

Step	Action	Description	Time
44	None	message is displayed	10-15 min.

As packages are copied to your hard disk, status messages appear on the screen. These messages are similar regardless of whether cartridge tape or diskette is being used.

```
PROCESSING:
Set: Utilities Set (util) from <ctape1>.
Package: Terminfo Utilities (terminf) from <ctape1>
## Installing part 1 of 1

PROCESSING:
Set: Utilities Set (util) from <ctape1>.
Package: Advanced Commands (cmds) from <ctape1>
## Installing part 1 of 3
## Installing part 2 of 3
## Installing part 3 of 3
```

Step	Action	Description	Time
45	None	results message is displayed	1 min.

After the set has been installed, you see a screen informing you of the results.

```
  Set Installation                              Installation Results
  ─────────────────────────────────────────────────────────────────
  You selected to install the following packages in this set. The status
  of each of these packages' installation is to the left of its name.


       Status    Package Name
  -----------    -------------------------------
    Succeeded    Terminfo Utilities
    Succeeded    Advance Commands


  Press 'ENTER' to continue:
  ─────────────────────────────────────────────────────────────────
                                                 | F1=Help
```

Packages that were successfully installed are listed with a status of **Succeeded**. Any packages that failed to install, or that were installed with errors will also be noted on this screen.

In addition to the information displayed on the Installation Results screen, an electronic mail message is sent to **root** indicating installation success or failure for each package. The mail messages can be quite detailed and informative.

You can also check a log file which will contain any error messages. The log files for these packages are located in **/var/sadm/install/logs**.

Step	Action	Description	Time
46	Optional	install other package sets	varies

Repeat Steps 38 through 44 to install additional package sets.

Package Installation Instructions

Step	Action	Description	Time
47	Optional	install individual packages	varies

Some packages are delivered individually—they are not part of any package set. These packages are delivered only in 3.5-inch or 5.25-inch diskette format. You should install all of the package sets you intend to install before installing individual packages.

To install an individual package, insert the diskette in the drive and issue the following **pkgadd** command.

       pkgadd –d *diskette? pkgname* **–l –q**

where *diskette?*, is **diskette1** (diskette drive 1) or **diskette2** (diskette drive 2); and where *pkgname* can be **cdfs, crypt, wksh, dtf3, mdev, mrun, tok**, or **atm13**.

Knowing the package name is not strictly necessary. If you insert a package diskette and run the **pkgadd** command without the pkgname, the package name will be read off the diskette and displayed on the computer screen. Then you receive a prompt asking if you want to install the displayed package.

Appendix A: Supported Hardware

The following hardware is supported by the UNIX SVR4.2 system. While individual components have been tested with the UNIX SVR4.2 system, not every combination of components has been tested. Some combinations of hardware may conflict with each other and cause system problems.

Processor

Intel386™ processor
Intel386SX processor
Intel386SL processor
Intel486™ processor
Intel486/SX processor

Math Co-processor

Intel 80387™ math coprocessor
Intel 80487™ math coprocessor
Weitek 3167 math coprocessor

Mouse Support

PS2
Logitech bus, serial, MouseMan™
Microsoft bus, serial

Network Cards

Ethernet:

Intel IMX586/PC586, Ether Express 16
WD 8003-EP, 8003-E/A, 8003-EBT
3COM 3C503, 3C507, 3C523

Token Ring:

IBM™ 16/4 Token Ring Adapter
AT & MCA

Serial Ports

NS 16450 Asynch Communication
Element
NS 16550 Asynch Communication
Element
Intel 82510 Asynch Communication
Element

Floppy Disk Drives

5.25" (360 KB, 1.2 MB)
3.5" (720 KB, 1.44 MB)

**AT Hard Disk Controllers
(ESDI/ST506/MFM/IDE)**

Western Digital 1003, 1005, 1006, 1007
Adaptec 2320, 2322, 2372,
ACB 2370/72C
DTC 5280, 5287, 7280, 6280
DPT PM3011a/50 (ESDI)
SMS/OMTI 8640
IDE (Connor, Quantum, Seagate,
Western Digital, Maxtor)
IBM Micro Channel 1, Micro Channel 2,
Micro Channel ESDI

Hard Disks (ESDI/ST506/MFM)

CDC, Maxtor, Micropolis, Miniscribe,
NEC, Ope, Rodime, Seagate,
Tandon, Toshiba

Cartridge Tape Controllers (QIC)

Wangtek PC-36, EV-811, PC02
Archive SC499-R, SC402, VP409

Cartridge Tape Drives (QIC)

Archive VP150 (Viper 2150L),
Archive VP60 (Viper 2060L),
Archive FT60i (Scorpion 5945C)
Wangtek 5099EN24 (60MB), 5125EQ (125MB),
5150EQ (150MB),

SCSI Host Adapters

Adaptec AHA-1540/42, 1640,
    1740/42 standard mode
Future Domain
    TMC-7000FASST2
Western Digital WD-7000
IBM SCSI Host Adapter
DPT 2011, 2012A, 2012B

SCSI Disks

Maxtor, Quantum, AT&T, HP®, CDC,
NCR, MICROP, IBM, Seagate
(all 512 byte-per-sector
SCSI disks are supported)

SCSI Tapes

Archive Viper 2060S,
Archive ST250 (Viper 2150S),
Archive ST525 (Viper 2525S),
Archive ST1350 (Anaconda 2750S),
Archive ST2000 (Python DAT),
Archive ST4000 (Python DAT-DC)
AT&T 5099ES (60MB), 5125ES
    (125MB), 5525ES (525MB)
Sony DAT SDT-1000
Exabyte 8mm EXB-8200
HP 9-track tape HP 88780A
Wangtek 5125ES, SCSI ES41,
    5150ES, 5525ES

SCSI Optical Disks

Maxtor Tahiti-I, Tahiti-II
Sony SMO-E501

SCSI WORM Drives

Toshiba
Maxtor RXT-800HS

SCSI CD-ROM Drives

Toshiba XM-3201B.
NEC CDR-82
Pioneer DRM-600
Sony CDU-8012

Video Adapters

ATI Wonder XL 800x600/16 800x600/256
  Wonder PLUS 800x600/16 800x600/256
  VGA Wonder 800x600/16 800x600/256
  v3, v4, v5 800x600/16
AT&T VDC 400 (CGA), 600 (VGA),
    750 (EGA)
Dell VGA^{TM} 720x540 & 800x600
Diamond SpeedStar 800x600/16
  1024x768/256
ET3000 Boards 1024x768/16
Genoa Super EGA HiRes 1024x768
  Super VGA 5200 1024x768
  Super VGA 5300, Super VGA 5400
Microfield T8 (TI340-based Card)
Orchid Designer VGA 800x600, 1024x768
  ProDesigner II, IIs 800x600/16,
  1024x768/256
Paradise VGA Plus 800x600
  VGA Plus 16, VGA Professional
  VGA 1024 800x600 & 1024x768
Perfect View 800x600/16 1024x768/256
Sigma Legend VGA/H 800x560, 800x600
  VGA Extra/EM
  VGA Extra/EM 16 800x560, 800x600,
    960x720, 1024x768
  VGA Extra/EM 16+ 800x600
Standard VGA and EGA
STB PowerGraph 800x600/16
  1024x768/256
Tecmar VGA 800x560 800x600
  VGA AD 800x560 800x600 1024x768
Trident 8900C 1024x768/16 1024x768/256
  8800 1024x768/16
Video 7 VRAM VGA 720x540, 800x600,
    1024x768
Fastwrite VGA 720x540 800x600
Vega VGA 720x540 800x600
Western Digital WD90C10 800x600/16
  1024x768/16, WD90C11 800x600/16
  1024x768/256

Printers

HP LaserJet® II, IIP, III, IIIP, IIISI
HP DeskJet 500, HP PaintJet
Panasonic 1180, 1695, 1124, 1624
Epson FX850, FX1050, DFX5000, DFX8000,
     LQ570, LQ870, LQ1170, IPL7500
IBM ProPrinter, ProPrinter XL, Color Printer,
     Graphics Printer, Parallel Printer
OKI 320, 390, OL400, OL800
C.Itoh 8510, 1550, 8510EP, 1550EP,
     467-414 Graphics
Diablo® 1620
Fujitsu DPL24C
DEC Decwriter I, II, III, IV, LA100, LN03
Qume Sprint II
AT&T 40, 442, 444, 446, 455, 457, 458,
     470, 471, 473, 474, 475, 477, 478,
     479, 495, 5310, 5320, 570, 571, 572,
     573, 580, 581, 583, 593
All Apple LaserWriter compatible PostScript®
     Type 1™ Printers

Appendix B: Hardware Configuration Notes

Controller and Adapter Boards

Please review the following tables to determine whether your computer uses any of the following equipment. If so, it may be necessary to configure the jumper pins on your computer's controller or adapter cards to match DMA channel, interrupt, I/O and memory addresses as shown. You should also verify that no other controllers (for example, a network controller, or a bus mouse controller) are jumpered to conflict with these settings.

The values shown may be the manufacturers' defaults; if they are, and if they do not conflict with other controllers, you won't need to make any changes.

If you don't know how to configure device controllers, please see your computer hardware manual or controller card manual for instructions.

Non-SCSI Tape Drive Controllers

The following (non-SCSI) tape drive controllers should be configured as shown in Table 3.

Table 3: Non-SCSI Tape Drive Controllers

Cartridge Tape Controller	DMA Channel	Interrupt	Start I/O Address
Archive	1	5	300
Wangtek	1	5	300

NOTE	Some Ethernet boards are factory-configured to use I/O address 300. If you are using both a non- SCSI tape drive controller, and one or more Ethernet cards, re-configure the Ethernet cards to avoid conflict with the tape drive controller.

Archive For Archive SC499-R (and other integral Archive) tape controllers: The documentation supplied with these tape controllers might not discuss how to set the I/O address to 300. It does show how to set the address to 100 and to 200, so to set the address to 300, just combine the jumper settings for addresses 100 and 200.

Wangtek The documentation supplied by AT&T for the Wangtek 30850 (also called PC-36) tape controller might not discuss how to set the I/O address to 300. To do so, find a row of ten DIP switches on the tape controller board and set them as follows:

1	2	3	4	5	6	7	8	9	10
ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF

Sample Non-SCSI Tape Drive Configuration

The following MCA computer configuration has been successfully tested using an Archive VP409 Streaming Tape Controller.

Table 4: Archive VP409 Streaming Tape Controller MCA Configuration

Port Addresses	0300h-0301h
Interrupt Request Line	IRQ 5
Direct Memory Access channel	DMA 1

Non-SCSI Hard Disk Controllers

The following non-SCSI hard disk controllers should be configured as shown in Table 5. (Most ESDI, IDE, and ST506 controllers for the AT bus are hard-wired to the correct settings.)

Table 5: Non-SCSI Hard Disk Controllers

Hard Disk Controller	DMA Channel	Interrupt	Start I/O Address
AT or EISA or ESDI or IDE or ST506	N/A	14	1f0
MCA ESDI	5	14	3510
MCA ST506	3	14	320

SCSI Host Adapters

If you have a SCSI based system, we recommend the Target Controller (TC: also known as SCSI address , SCSI ID or Device ID) and Logical Unit Number (LUN) values shown in Table 6.

Table 6: SCSI Target and Logical Unit Values

device	TC	LUN
host adapter	7	0
primary disk	0	0
secondary disk	1	0

Notes:

1. The SCSI controller, also known as a SCSI Host Adapter or SCSI disk controller, must be configured as TC 7.

2. On computers that use the IBM PS/2 SCSI host adapter, the primary disk must be at TC 6, LUN 0.

3. It does not matter what the TC of the tape drive is. As long as you have a tape drive whose TC is different from all other SCSI devices, the installation software will find it.

The following SCSI host adapters should be configured as shown in Table 7.

Table 7: SCSI Host Adapters

Host Adapter	DMA Channel	Interrupt	Start I/O Address	Start Memory Address
Adaptec	5	11	330	DC000
DPT	N/A	15	170	C8000
Western Digital 7000	6	15	350	CE000
IBM® MCA	N/A	14	3540	N/A

Adaptec For Adaptec 1540-series SCSI host adaptors the DMA transfer rate must be set to 5.0 MB per second. See the documentation supplied with the host adaptor for instructions.

The following MCA computer configuration has been successfully tested using a Adaptec AHA-1640 Host adapter.

Table 8: Adaptec AHA-1640 SCSI Host Adapter MCA Configuration

Adapter BIOS	DC000h
I/O Port Address	330h
Arbitration Level	Level_5
Interrupt level	Int_11
SCSI Address	Addr_7
Sync Xfer Started by AHA-1640	Yes
SCSI Parity Checking	On
Fairness	On

NOTE This is a recommended configuration, but if your adapter vendor recommends a different configuration, and supplies an HBA diskette, use the vendor's recommendations.

The following EISA computer configuration has been successfully tested using a Adaptec AHA-1740 Host adapter.

Table 9: Adaptec 1740 32-bit SCSI Host Adapter EISA Configuration

|	
Host Adapter Interface Mode	IRQ 11, Standard Mode
Standard Mode Resource Selection	
I/O Port Definition	I/O Port 330H (Standard Mode)
DMA Channel Definition	DMA 5 (Standard Mode)
Host Adapter BIOS	BIOS Base Address DC000H
Diskette Controller	enable only if diskette drive cable is attached to this adapter
Host Adapter SCSI ID	Device Id 7
SCSI Bus Reset at Power-on	Enable SCSI bus reset
SCSI Device Configuration	
Enable Parity Checking	yes
Initiate Synch Negotiation	yes
Enable Disconnection	no (read 1740 manual to decide)

> **NOTE** This is a recommended configuration, but if your adapter vendor recommends a different configuration, and supplies an HBA diskette, use the vendor's recommendations.

DPT For the DPT 2011 Host Adapter, run the **dptfmt** utility program to write reserved disk sector information before installing the UNIX System. If **dptfmt** is not run you may experience delays (approximately 30 seconds) before disks attached to the controller come ready. You should also run **dptfmt** if you upgrade from a 2011 to a 2012A or 2012B. Please see the DPT documentation for information about **dptfmt**.

The following EISA computer configuration has been successfully tested using a DPT Host Adapter.

Table 10: DPT PM 2012 EISA Configuration

Hard Drive & SCSI Device	
SCSI and EISA Bus	Enabled
I/O Ports	Secondary/Disabled
Interrupt Number	15 - Edge
Floppy Drive	
I/O Ports	Enable only if your floppy disk drive cable is attached to this DPT Host Adaptor
Option ROM	
Address	Enabled @ C8000h
Host Bus Adaptor	
SCSI ID	7
WD1003 Emulation Mappings	
Drive 0	
SCSI ID	Disabled
SCSI LUN	0
Drive 1	
SCSI ID	Disabled
SCSI LUN	0
Synchronous Transfer	
Negotiation	Enabled for all SCSI ID Numbers

Western Digital For AT&T WGS SCSI host adaptors (manufactured for AT&T by Western Digital): the documentation supplied with the host adaptor does not discuss how to enable or disable the floppy controller on the host adaptor. To enable the floppy controller, remove the jumpers at locations W6 and W9 on the host adaptor. To disable the floppy controller, install the jumpers at locations W6 and W9.

IBM The following MCA computer configuration has been successfully tested using an IBM PS/2 Host adapter.

Table 11: IBM PS/2 SCSI Adapter (with or without Cache) MCA Configuration

I/O Address	3540-3547
DMA Arbitration Level	Level C
Fairness	On
ROM Wait State Disable	Enable Wait State
SCSI Adapter Address (ID)	7

SCSI Terminators

Always keep the terminating resistor packs (terminators) that come with a SCSI device so that they can be restored to the device if need be. Terminators from different devices may not be interchangeable.

Terminators are polarized. Before removing a terminator from a device, note its orientation (the polarity is usually marked with a dot on the terminator). If you restore a terminator to a device, make sure that the polarity is correct.

Physical devices on both ends of the SCSI cable should be terminated. Improper termination may affect the signal quality, which may result in soft errors. If the last physical device on the cable is not terminated, similar problems may occur.
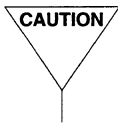
> ⚠ CAUTION   Terminate only the physical devices at the ends of the cable. Excess termination can cause the terminators, devices, or the Host Bus Adapter to fail permanently. Excess termination can burn out the bus drivers on the Host Bus Adapter.

Adding SCSI Adapter After Installation

If you want to add a SCSI adapter to your computer after the UNIX system is installed, configure and install the adapter, then use the `pdiadd(1M)` command.

Disk Drives

If your computer uses an ESDI controller and your hard disk drive is larger than 512 MB, you must specify disk parameters with a maximum head value of 16. The number of cylinders can exceed 1024, but the UNIX System does not support disks with more than 1024 cylinders.

Optical Disks

Optical media is commonly available in two formats: 512 bytes-per-sector, or 1024 bytes-per-sector. If an optical device is configured on a SCSI bus so that it reports itself as a disk, it must use 512 byte-per-sector media. UNIX SVR4.2 does not support 1024 byte-per-sector media.

Ethernet Boards

Supported Ethernet Boards

Ethernet boards listed in Table 12 are supported. If you are using one of these boards, you will need to supply the information listed when installing the Ethernet Hardware Support (`eth`) package.

Table 12: Ethernet Boards Supported

Board Name	Information Needed
Intel IMX-LAN/586 (AT bus)	Interrupt (IRQ), memory address range
Intel Ether Express 16 (AT bus)	IRQ, I/O address range, cable
3Com EtherLink II (3C503) (AT bus)	IRQ, I/O address range, cable
3Com EtherLink 16 (3C507) (AT bus)	IRQ, I/O address range, memory address range, cable, wait state, System Address Decode
3Com EtherLink/MC (3C523) (Micro Channel bus)	IRQ, cable
Western Digital 8003 Ether Card Plus (AT bus)	memory address range, I/O address range, IRQ
Western Digital 8003 Ether Card Plus/A (Micro Channel bus)	IRQ

Notes:

1. If a machine has more than 16 MB memory and you want to use a Intel IMX-LAN/586 or 3Com EtherLink 16 3C507 board, RAM addresses greater than or equal to F00000 should be avoided.

2. 33 Mhz (or faster) computers using an IMX-LAN/586 board should have the speed jumper set to high speed mode (jumper E5 to E6). PC586 boards also need to be set to high speed mode (jumper E27 to E32).

3. A "wait state" register is found on the 3Com EtherLink 16 3C507 (AT bus interface), and some other controllers. On AT and EISA computers, zero wait state should be enabled for enhanced performance. On some computers the zero wait state should be disabled. If you are not sure, disable the zero wait state.

4. Specific to the 3Com EtherLink 16 3C507 is information about the "System Address Decode" line. The System Address Decode line is enabled by default, but on computers with VTI chip sets, and on most EISA computers, it should be disabled. To disable it, change the line #define SAAD 0 to #define SAAD 1 in the file /etc/conf/pack.d/el16/space.c. Then execute /etc/conf/bin/idbuild -M el16, and reboot.

Ethernet Cables

There are two types of Ethernet cable: AUI and BNC.

AUI   A thick cable with a flat, multi-pin connector that presses on.

BNC   In most cases, a thin cable with a round twist-on connector. It may also come in the form of twisted pair wiring with a telephone-style RJ11 connector.
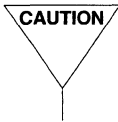
> ⚠️ CAUTION If BNC cables are not connected before a computer is booted, some Ethernet boards shut down (this disables the networking) until the next reboot. Likewise, if a cable is removed while networking is running the Ethernet board may shut down unless networking is brought down properly first.

You may need to change the cable type after installation. Some boards require a change in the jumper configuration. Others can be set by software. If it is a software configurable board, you can remove the Ethernet Hardware Support (`eth`) package, and then re-install it with the correct values. Alternately, you can change the value of "CABLETYPE" in `/etc/conf/pack.d/<driver.module>/space.c` (there are comments showing valid values within the file). Then run `/etc/conf/bin/idbuild -M <driver.module>` and reboot.

Installing Multiple Ethernet Boards

Installing Multiple Jumper-Configurable Boards

If you are installing jumper configurable boards, set the jumpers to the desired I/O, memory and interrupt vector values. Then follow the installation steps set by the Ethernet Hardware Support (`eth`) package.

Installing Multiple EtherLink 16 3C507 Boards

If you are installing multiple 3Com EtherLink 16 3C507 boards, they have to be configured with the configuration diskette that came with the board. You must first boot DOS to use this configuration diskette.

The boards have to be configured one at a time. If there are two boards, you might configure the first board using interrupt 10, I/O address 210-21F, RAM address C8000-CFFFF; and the second board using interrupt 12, I/O address 220-22F, RAM address D0000-D7FFF.

After booting the UNIX System, two files need to be modified. The file `/etc/conf/sdevice.d/el16` should be modified as follows:

```
#ident   "ident string"
#ident   "$Header: $"
$version 1
$loadable el16
el16    Y    4    6    1    10    210    21F    C8000    CFFFF    -1
el16    Y    4    6    1    12    220    22F    D0000    D7FFF    -1
```

And the file `/etc/conf/node.d/el16` should be modified to:

```
#ident   "ident string"
#ident   "$Header: $"
clone    el16_0              c:0      el16
clone    el16_1              c:1      el16
```

After these two files are modified, execute `/etc/conf/bin/idbuild -M el16` and reboot the system.

If you plan to run Internet Utilities (`inet`), modify the file `/etc/confnet.d/netdrivers` to include the following two lines:

```
el16_0
el16_1
```

Then execute `/etc/confnet.d/configure -i` to set up the `inet` configuration.

Installing Multiple Ether Express 16 Boards

If you are installing multiple Intel Ether Express 16 boards each one needs to be configured separately, but they can be configured in the UNIX System partition (no need to boot DOS). The first board should be installed using interrupt 11, and I/O address 230-23F. The file `/etc/conf/sdevice.d/ee16` should contain the line:

```
ee16    Y    4    6    1    11    230    23F    0    0    -1
```

And the file `/etc/conf/node.d/ee16` should include a line:

```
clone    ee16_0              c:0      ee16
```

Then execute **/etc/conf/bin/idbuild -M ee16**, and reboot the system to configure the first board.

To configure the second board, shut down the system, take the first board out and insert the second one. If the selected values are interrupt 10, I/O address 240-24F, comment the ee16 line in **/etc/conf/sdevice.d/ee16** with a "#" sign, and add the following line:

```
ee16    Y    4    6    1    10    240    24F    0    0    -1
```

Then you should rebuild the system by executing **/etc/conf/bin/idbuild -M ee16**. After the second board is configured, uncomment the previously commented line, and add one more line to **/etc/conf/node.d/ee16**.

```
clone    ee16_1            c:1      ee16
```

Then rebuild the system a final time by executing **/etc/conf/bin/idbuild -M ee16**.

If you plan to run Internet Utilities (**inet**), modify the file **/etc/confnet.d/netdrivers** to include the following two lines:

```
ee16_0
ee16_1
```

Then execute **/etc/confnet.d/configure -i** to set up the **inet** configuration.

Shutdown the system once more, insert the first board back into the computer, and power up. Both boards should now be working.

Appendix C: Troubleshooting

Internal Errors

Internal error in UNIX System Installation. Cannot continue.

Problem: You receive the error message "Internal error in UNIX System Installation. Cannot continue." This message indicates a fatal and probably unrecoverable error.

Solution: Perform a destructive installation from the beginning to clear the problem.

Kernel Build Problems

Kernel Build Fails

Problem: kernel build fails during installation.

Solution: If a kernel build fails during installation, review the error messages in the error file `/tmp/idbuild.out` for details.

- If a failure occurs while rebuilding the UNIX System, this may be the result of a corrupted kernel file or `idbuild` tool caused by bad media or a malfunctioning device. The installation will halt at this point—you will not get to the Installation Results screen. Press the (**DELETE**) or (**DEL**) key until you get a # prompt, and review the error messages in the error file `/tmp/idbuild.out` for details.

- Determine if your drive (tape or diskette) is working properly. If necessary, replace the installation media. Re-start the installation.

- If the build fails during an upgrade installation, an attempt may have been made to build with an outdated package. Identify the package, and install the most recent version. Then rebuild the kernel.

- If the build fails for an application, it may be that the application failed to install properly. See the *Compatibility Notes* for information about installing the application. Install the package properly and rebuild the kernel.

Rebuild the kernel by running `/etc/conf/bin/idbuild -B`. The -B option allows the kernel to be built immediately, without having to reboot.

Boot Problems, Hangs and Panics

CTRL-ALT-DEL Does Not Reboot UNIX

Problem: (CTRL-ALT-DEL) does not reboot UNIX SVR4.2.

Solution: Some computers, including Toshiba laptops, require that the
(NumLock) key be on for (CTRL-ALT-DEL) to reboot the system. This is because
the (DEL) key is shared with the period.

System Hangs During Reboot

Problem: nothing appears on the computer screen for several minutes after you
reboot your computer. The system may be hung.

Solution: To correct the problem, try one of the following solutions:

- If there is a diskette in diskette drive 1, remove it. Press any key on the key-
  board and the system should come up properly. If it doesn't, use
  (CTRL-ALT-DEL) or press reset to reboot the system.

- If you recently installed an add-on board, and if your computer worked
  properly before installing the board, remove the new board and see if the
  system will reboot. If this resolves the problem, there is probably an IRQ or
  address conflict. Reconfigure the board with a non-conflicting IRQ or
  address, and re-install it.

- If your computer uses system shadow RAM or video shadow RAM, access
  your CMOS configuration, and turn off the shadow function(s). While use of
  shadow memory improves performance for DOS systems, it has no effect on
  the performance of a UNIX System.

- Computers that use a 287 co-processor may hang on reboot. In this case, the
  last line displayed on your monitor will probably be **The system is com-
  ing up. Please wait**.

  To clear the problem perform a hard reboot (turn the computer power off,
  then on). The system should then boot up properly. Alternately, remove
  the 287 co-processor from your computer.

- If your computer already had an operating system (for example, OS/2)
  before installing the UNIX System, it may have a "boot code" on the hard
  disk which is incompatible with UNIX SVR4.2. If this is the case, the UNIX
  System will not boot, and you may receive a message such as **Cannot Load
  User Driver** or **No Active Partition Found**.

To resolve this problem you must use **fdisk** option 0 to overwrite the incompatible boot code. Perform the following procedure to accomplish this:

1. Re-perform steps 1 - 8 of the Automatic Installation Process.

2. Re-perform Step 9 and select **fdisk** option 0 as discussed on page 57. Update this selection using **fdisk** option 4.

3. Press the (**DELETE**) or (**DEL**) key to interrupt the installation.

4. On the "Interruption" screen, select option 1 to cancel the installation and shut down the computer.

The system should come up successfully after performing this procedure.

System Hangs or Panics During Reboots

Problem: The kernel builds successfully, but the system will not boot, or the system panics.

Solution: A "system panic" may occur when there is a fatal error that the system cannot correct—this is most often caused by an improperly-configured device or device driver. In a panic situation, the system prints a panic message and attempts to shut down in as orderly a fashion as possible. It then either reboots or transfers control to a debbuger program (**kdb**).

If you have just installed new hardware, there may be an address or interrupt conflict with other hardware on the system. Power down the computer and verify that all boards are properly seated and jumpered. Use vendor-supplied software to diagnose hardware conflicts and change address or interrupt values as needed.

If the problem is not hardware-based and you previously had a UNIX System installed on your system, you can restore the old UNIX System as follows:

1. Press reset (or power the computer off, then on again if you have no reset button).

2. Press any key (may have to press a key several times) at the **Booting the UNIX System** prompt.

3. Type "unix.old" at the prompt that asks which kernel to boot.

If this procedure fails, you may have to perform an overlay installation on your system. See the "Upgrade and Overlay Processing" section (page 101).

System Hangs Repeatedly

Problem: Some computers that have cache memory hang repeatedly, and at seemingly random points. You may also see erratic performance in the form of "segmentation faults" or core dumps. This is apparently due to the cache controller not properly detecting that Direct Memory Access (DMA) has occurred to the system memory in a location that is currently cached.

Solution: Disable the cache memory. Refer to you computer manufacturer's documentation for information about how to disable the cache. If disabling the cache solves the problem, you may want to contact your hardware vendor to see whether there is an upgrade or a fix for the problem.

Monitor or Display Problems

Improper Display on Large Display Monitors and in Enhanced VGA Modes

Problem: You may observe the following kinds of problems with the resolution of your monitor: windows seem the wrong size, fonts appear to be the wrong point size, the smoothness of Adobe Type Manager fonts is not adequate, and so on. These problems may be caused by improper settings for your video board or monitor.

Solution: The UNIX Desktop assumes you use the standard VGA mode (widely supported by a variety of video board manufacturers), with a resolution of 640x480. It also assumes that you have a standard 9.75" x 7.32" size monitor.

If you have a different size monitor or want to take advantage of enhanced modes supported by your video board, you need to adjust the system settings. This is done by logging in as **root** and running the command **/usr/X/adm/setvgamode**. This command updates the file **/usr/X/defaults/Xwinconfig**. It will present you with a menu of board manufacturers, followed by a menu of supported modes for each manufacturer. By selecting the correct mode for your particular system, you can ensure that you get the best display.

This command takes two options:

```
/usr/X/adm/setvgamode -default
```

will restore your settings to the default VGA modes.

```
/usr/X/adm/setvgamode -msize monitor-width monitor-height
```

is used to tell the system your monitor is a different size than the default of
9.75" x 7.32". For example, if you have a NEC MultiSync 5D monitor and a Trident
video board, you could enter

```
/usr/X/adm/setvgamode -msize 14.22 10.66
```

followed by answers of **2**, **4**, and **y** at the prompts to tell the system to support a
frame buffer size of 1024x768, interlaced, with 16 colors.

Blank Display

Problem: The monitor screen is blank—no display.

Solution: Some video cards and monitors are not 100% compatible with each
other. This is a hardware problem and will occur regardless of the operating sys-
tem you are using. Try waiting to power up the monitor until after powering up
the computer.

Memory Problems

Incorrect Amount of RAM Memory Detected

Problem: On computers using more than 16 MB RAM, the system might not
correctly detect the RAM above 16 MB.

Solution: Perform the following procedure.

1. Run **memsize** from the **root** ID to determine the amount of RAM your com-
   puter detects. If less memory is detected than is actually present:

2. Create a **/stand/boot** file with the following entry:

   MEMRANGE=0-640K:256,1M-16M:512,16M-*nn*M:8704

   where *nn* equals the actual amount of RAM memory, in megabytes, on your
   computer.
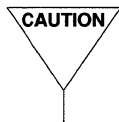
CAUTION Type this carefully. An error in the **/stand/boot** file can prevent your sys-
tem from booting

| NOTE | Most computers reserve as much as 512 KB of memory that cannot be accessed by an operating system. The /stand/boot file cannot reclaim such memory. |

Add-on Card(s) Do Not Work on Computer with Greater than 16 MB RAM

Problem: Many add-on cards will not work at memory addresses F00000 and above if the computer has more than 16 MB of memory. Solution: Set the add-on card to use memory addresses lower than F00000.

Controller Problems

I/O Address, Memory Address or Interrupt Conflicts

Problem: If you have multiple controllers or adapters on your computer, it is possible that two or more boards may be configured with conflicting I/O or RAM addresses, or with conflicting interrupt vectors. This may cause a controller or adapter failure, unpredictable results, or a boot failure.

Solution: Review the "Controller and Adapter Boards" section (page 123), and verify that all boards are jumpered correctly. You should also verify that no other controllers (for example, a network controller, or a bus mouse controller) are jumpered to conflict with the settings shown.

Hardware vendors often supply diagnostic software to determine which I/O addresses, RAM addresses, and interrupt vectors, are in use. Run the vendor diagnostics to make this determination, and reconfigure conflicting hardware as necessary.

pkgadd Fails on EISA Computer Using Adaptec 1740-Series

Problem: pkgadd fails on an EISA computer using an Adaptec 1740-Series SCSI host adapter.

Solution: This is a known problem. A firmware update is available from Adaptec which corrects this problem for the AHA 1740A and 1742A controllers.

There is no firmware update available yet for the Adaptec AHA 1740 controller. To work around problems with this controller, run the EISA Configuration Utility (that comes with your machine) to disable disconnects in the SCSI setup. Additionally, changing the cartridge tape bufsize in /etc/device.tab from 65536 to 512 prevents the system from hanging during pkgadd.

Installation Fails on Computer Using Ultrastor Controller

Problem: This problem can occur when the parameters for the Ultrastor disk controller are set to 63 sectors/track mapping and track mapping is on. Installation will fail with this combination.

Solution: Set values to **no** for spare/trk, sect map, track map, and 1024 trunc. The Ultrastor manual provides tables of parameter values. You should use the parameters for UNIX GROUP (1).

Disk Drive Problems

Mapping Bad Block 0xXXXX (0x10) Messages

Problem: If you receive multiple **Mapping Bad Block 0xXXXX (0x10)** messages when the system checks for bad sectors during a custom installation (see Step 12e, page 96) the hard disk parameters of your system setup information may not be properly accounting for protected data (bad sector data, diagnostic cylinders) on your disk(s).

Solution: If there are fewer than 50 bad sectors on a disk, no action is necessary—this is an acceptable error level. If you have more bad sectors than this, use the **fdisk** utility program to partition your hard disk(s), and set up your partitions so that they use only 99% (not 100%) of each disk (try to avoid using the last 3 cylinders of each disk). Cancel and restart the installation in order to re-size the partition(s) on your disk(s).

Optical Media Problems

Problem: Cannot read 1024 byte-per-sector optical media.

Solution: Optical read/write disks are commonly available in two formats: 512 bytes per sector, or 1024 bytes per sector. If an optical device is configured on a SCSI bus so that it reports itself as a direct-access device (code 00h) instead of an optical storage device (code 07h), it must use 512 byte-per-sector disks. UNIX SVR4.2 does not support 1024 byte-per-sector disks.

Tape or Tape Drive Problems

Not Offered Tape as Media Choice for the Foundation Set

Problem: This may occur because the UNIX System is unable to detect the presence of the tape controller.

Solution: Press the (**DELETE**) or (**DEL**) key to interrupt the installation, and cancel the installation. Turn off the computer and remove the tape controller. For integral (non-SCSI) cartridge tape controllers, verify that the controller is jumpered as specified in the "Controller and Adapter Jumpers" section (page 123). Also, verify that no other controllers are jumpered to the same interrupt, I/O address range, or controller memory address range. For example, a bus mouse controller card must not use IRQ 5 if you are also using an integral cartridge tape drive, because the tape controller must use IRQ 5. Ethernet boards, some of which come factory-configured to use I/O address 300, must be reconfigured to use a different address since the tape drive controller requires this address.

If your tape drive is attached to a SCSI controller, make sure that no other controller cards are jumpered so that they conflict with the SCSI host adapter. Also make sure that the SCSI bus is properly terminated.

After making whatever hardware changes are necessary, restart installation from the boot diskettes, but select Non-destructive Installation to resume the interrupted installation.

Error Occurred While Trying to Install Foundation Set

Problem: After you insert the cartridge tape into the tape drive, the tape is automatically re-wound and re-tensioned (you will hear it running). If you press (**ENTER**) to indicate that the tape has been inserted in the tape drive before the tape stops running, an error screen will be presented.

Solution: Wait until the tape stops and re-perform the step.

"ctape1 is not functional" message when using pkgadd

Problem: `ctape1 is not functional` message when using pkgadd.

Solution: If you issue a `pkgadd -d ctape1` command and it fails with an indication that ctape1 is not functional, try `pkgadd -d ctape2` (even if you have only one tape drive). If it still fails, check the hardware (Is the tape drive on? Is the controller card seated and jumpered properly?).

Tape Ejects When Current Operation is Finished

Problem: The tape ejects when the current tape operation is finished, but you want to continue to read or write data.

Solution: If you use an auto-rewind tape device (**/dev/rmt/ctape1** or **ctape2**) some tape drives automatically eject the tape when the operation is finished. Use a no-rewind tape device such as **/dev/rmt/ntape1** or **ntape2**. When desired, rewind the tape using **/usr/bin/tapecntl -w /dev/rmt/ntape1**.

Serial Port Problems

Cannot Login on tty00 or tty01

Problem: Cannot login on tty00 (COM1) or tty01 (COM2).

Solution: Some serial cards (such as those on some Gateway computers) require that jumpers be set so that DCD, DSR and CTS are forced to be true (on). Please see your vendor's manual to determine how to configure your serial card.

Ethernet Board Problems

board not found

Problem: The Ethernet board is not found. This may indicate an invalid I/O or RAM address is selected.

Solution: Use the configuration floppy or the documentation that came with the board to select an address which does not conflict with any other hardware configurations. Remove the Ethernet Hardware Support package using the **pkgrm** command, and re-install it using the **pkgadd** command.

Intel IMX-LAN/586: board 0 timed out - Board or Ethernet cable may be off line

Problem: The Intel IMX-LAN/586 board 0 timed out. The Board or Ethernet cable may be off line.

Solution: The cable may be loose (verify that it is well connected), or the RAM address may be wrong. Check the RAM address in **/etc/conf/sdevice.d/imx586**, correct it if necessary, rebuild the driver by executing **/etc/conf/bin/idbuild -M imx586**, and reboot to fix the problem. If the connection is tight and the RAM address is correct, but the message still appears repeatedly, the board is probably broken and a replacement may be needed.

The 3Com IE6 (3C503) driver times out and the board becomes disabled

Problem: If a 3Com EtherLink II board experiences heavy network traffic for an extended time (a few days), the board might become disabled.

Solution: This is a known hardware bug. Reboot the system.

3Com EtherLink 16 (3C507) board 0 at base address xxx was not found

Problem: Either the given I/O address is not valid or it is conflicting with other hardware. For example, Gateway 2000/486 computers cannot use I/O address 200. Also note that this board may come factory-configured to use I/O address 300, which conflicts with tape drive controllers that require this address.

Solution: Change the I/O address in `/etc/conf/sdevice.d/el16`, rebuild the driver by executing `/etc/conf/bin/idbuild -M el16`, and reload this driver to fix the problem.

3Com EtherLink 16 (3C507) board address conflict

Problem: 3Com EtherLink 16 (3C507) board address conflict.

Solution: The 3Com EtherLink 16 (3C507) board supports four different RAM sizes, 16KB, 32KB, 48KB, and 64KB.

You should run the diagnostics diskette that comes with the board to test address selections. If the diagnostic fails, the address may be in use by some other device.

3Com EtherLink 16 (3C507) is unreliable or not functioning

Problem: 3Com EtherLink 16 (3C507) is unreliable or not functioning.

Solution: The System Address Decode line is enabled by default, but on computers with VTI chip sets, and on most EISA computers, it should be disabled. To disable it, change the line `#define SAAD 0` to `#define SAAD 1` in the file `/etc/conf/pack.d/el16/space.c`. Then execute `/etc/conf/bin/idbuild -M el16`, and reboot.

Package Problems

Package Will Not Install

Problem: A package will not install. On systems that are very low on space (particularly in the /var file system), attempts to install a package via the pkgadd command or the UNIX Desktop may fail without an intuitive error message.

Solution: Space must be freed up (clean up unnecessary user files, or remove unneeded software) for installation to succeed.

Package Cannot Be Removed

Problem: A package cannot be removed. On systems that are very low on space (particularly in the /var file system), attempts to remove a package via the pkgrm command or the UNIX Desktop may fail without an intuitive error message.

Solution: Manually free up space. If you free up enough space, the package removal should succeed. Typically, 1 MB of free space in the root file system and/or var file system is needed.

Package Will Not Install Following Interrupted Custom Installation

Problem: If a custom installation is interrupted during installation of a package, a /etc/perms/*pkgname* file is left. The package cannot be re-installed until this file is removed.

Solution: Remove the /etc/perms/*pkgname* file before resuming the installation.

Non-Destructive Installation Problems

Not Offered Opportunity to Perform Non-Destructive Installation

Problem: You do not see a "Files Detected Warning" screen (Step 11), and you are not given an opportunity to attempt a non-destructive installation.

Solution: The "Files Detected Warning" screen is only displayed if you have some kind of UNIX System already installed on your computer. Also, the screen is only presented if you have sufficient swap space. The amount of swap space you have is based on the amount of memory in your computer when the UNIX system is originally installed. If you have added memory since the original setup, the swap space is probably inadequate to run UNIX SVR4.2. This situation cannot be corrected at this point. You have to perform a destructive installation.

Message States that Non-Destructive Installation Cannot be Performed

Problem: You selected a non-destructive installation in Step 11, but you get a message telling you that you cannot do a non-destructive installation.

There are several reasons you may get this message. You will get this message if the version of UNIX on the system is not Version 4 or SVR4.2. This message will also be displayed if the file systems cannot be mounted, or if the system is corrupted beyond repair.

Solution: This is a fatal condition, a destructive installation is required.

Upgrade Installation Problems

Tape Device No Longer Works After Upgrade

Problem: Tape device no longer works after upgrading Version 4 system to UNIX SVR4.2.

Solution: The driver for the tape device installed in the **base** package assumes an IRQ of 5, and an I/O address of 0x300-0x301. If your tape device is not set to these values you need to run the command **pdiadd** with the correct values.

Problems Removing Old FACE and OA&M

Problem: After upgrading your Version 4 system and trying to upgrade the **admin** set, you get a warning message telling you to first remove the old **oam** and **face** packages. When you removed **face**, you got a failure message, and then you could not remove the old **oam** package.

Solution: Execute the following commands:

```
cd /var/sadm/pkg
rm -rf face
```

Then remove the **oam** package and try installing the **admin** set again.

Not Found Messages After Overlay and Reboot

Problem: After upgrading from Version 4 to UNIX SVR4.2 you get the following messages after rebooting:

```
UX:sh (idrebuild): error /usr/bin/defadm - Not found.
UX:sh (idrebuild): error /usr/bin/sed - Not found.
```

Solution: When the system comes back up, login in as **root** and issue the command: **shutdown -y -i6**.

Overlay Installation Problems

Space Check Fails, Cannot Continue

Problem: You try to overlay the system because it won't boot, but it fails the space checking and it won't let you continue.

Solution: First you should try to boot an old kernel. Push the reset button and when you see the message **Booting the UNIX System ...** press the space bar. At the prompt enter **unix.old** and press (**ENTER**). If the system will still not boot, try to overlay your system again starting with boot floppy #1. When you get the screen telling you do not have enough disk space, press (**DEL**) to cancel the installation, and when you get the interruption screen, press (**DEL**) again. This will give you a shell prompt. Free up some disk space by removing unnecessary files, and type **exit 1** to continue.

Networking Does Not Work Following Overlay of nsu

Problem: When overlaying the **nsu** package you chose not to automatically merge the volatile **nsu** files. After the overlay completes, networking does not work.

Solution: Either copy **/var/sadm/upgrade/etc/netconfig** to **/etc/netconfig**, or overlay the **inet** package.

Networking Does Not Work following Overlay of eth

Problem: After overlaying the Ethernet Hardware Support (**eth**) in order to remove one of the boards from my system, networking does not work.

Solution: Issue the following commands:

```
/usr/sbin/netinfo -r -d device
/etc/confnet.d/inet/configure -i
```

Where *device* is the node in **/dev** that was just removed. (for example, if you removed the IMX586 driver, *device* is **imx586_0**)

Can Only Access One of Several SCSI Cards After Overlay

Problem: You have multiple SCSI adapter cards in your system of the same type, and after you overlaid your system, you can only access one of them.

Solution: Run **pdiadd** to add the other cards to the system.

Cannot Use Old Logins After Overlay

Problem: You overlaid your system because you lost your **/etc/passwd** or **/etc/shadow** file. Now you cannot add the old logins you had before, and you cannot log in using the old logins.

Solution: Login as **root** and delete the problem logins from both **/etc/shadow** and **/etc/passwd**. Then add the logins again using **useradd** and run **creatiadb**.

Will Not Accept User Number During Overlay

Problem: During an overlay, the system will not accept the user number you input.

Solution: Make sure the number you are using is not already used. Try the next user id (for example, try 102 rather than 101).

UNIX Desktop Problems

Owner ID Cannot Access UNIX Desktop

Problem: Owner ID cannot access UNIX Desktop.

Solution: If you installed the Desktop Manager (**desktop**) package after the Foundation Set was installed (instead of during the Foundation Set installation), you need to identify the Owner's Account to **desktop** by logging in as **root** and issuing the **/usr/X/adm/dtadduser** *login-id* **and /usr/X/adm/make-owner** *login-id* **commands (where** *login-id* should be replaced with the Owner's login ID).

UNIX Desktop Graphical Login Window Not Displayed

Problem: The UNIX Desktop graphical login window is not displayed after you reboot your computer. Only a **Console Login** prompt is displayed.

Solution: Use the `ALT` `SysRq` `F1` key sequence to start the graphical login (hold down the `ALT` key while you press the `SysRq` key, release both keys, and then press the `F1` key).

If this does not work, take the following steps:

1. Log in at the "Console Login:" prompt as **root** and type
   `sh /etc/rc2.d/S69xdm start`

2. After the UNIX Desktop graphical login window is on the screen, hold down the `ALT` key while you press the `SysRq` key, release both keys, and then press the `h` key.

3. Type **exit** to exit your login session as root.

4. Hold down the `ALT` key while you press the `SysRq` key, release both keys, and then press the `F1` key.

The UNIX® System V Release 4.2 (SVR4.2) *Installation Guide* provides easy-to-follow directions for installing the UNIX System. The *Guide's* modular design provides step-by-step instructions for new users and a valuable reference for experienced users to locate specific technical information. Topics covered include:
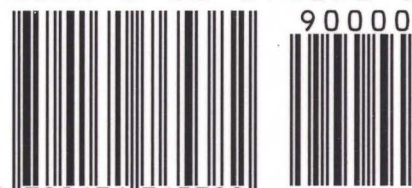
██████ Basic hardware requirements, software requirements, and advanced options, such as supporting multiple operating systems and upgrading from a previous release to SVR4.2.

██████ How to use the installation software, obtain on-line help, and cancel the installation.

██████ Information about SVR4.2 capabilities, such as networking and auditing.

██████ How to install add-on packages.

██████ Information on hardware equipment, from processors to printers, successfully tested with and supported by SVR4.2.

██████ Information about configuring your hardware to work properly with SVR4.2.

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