Installation Handbook

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UnixWare®

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About This Handbook

This handbook explains how to install the UnixWare Personal Edition™ and UnixWare Application Server™.

The following sections describe the UnixWare documentation library, the conventions used in the user handbooks, the hardware requirements for installing UnixWare, and how to use the UnixWare installation software.

Important 

Please read at least Chapter 1, "Before You Begin," before starting to install UnixWare.

UnixWare User Documentation and Online Help

UnixWare provides four ways to search for information:

- **Paper versions of user documentation**. Paper copies of the *Installation Handbook*, *Desktop User Handbook*, and *System Owner Handbook* are provided with the UnixWare installation media.

- **Online help**. Online help provides you with information you can readily access electronically on your UnixWare system. Most screens on the UnixWare Desktop contain a *Help* button. You can click on this button to access online help. For more information on using online help, see the chapter "Using Online Help and Documentation" in the *Desktop User Handbook*.

- **The *Dyna*Text® online documentation browser**. The UnixWare documentation set for your system is available online and is accessible through the *Dyna*Text online documentation browser (also known as the browser).

  To install the browser and UnixWare books, install the *Dyna*Text Document Browser package and either the Personal Edition Documentation or Application Server Documentation package. For details, see the section "Changing Package Selection" in Chapter 1, "Before You Begin."

To set up the browser, see the *System Owner Handbook*. To use the browser, refer to the *Desktop User Handbook*.

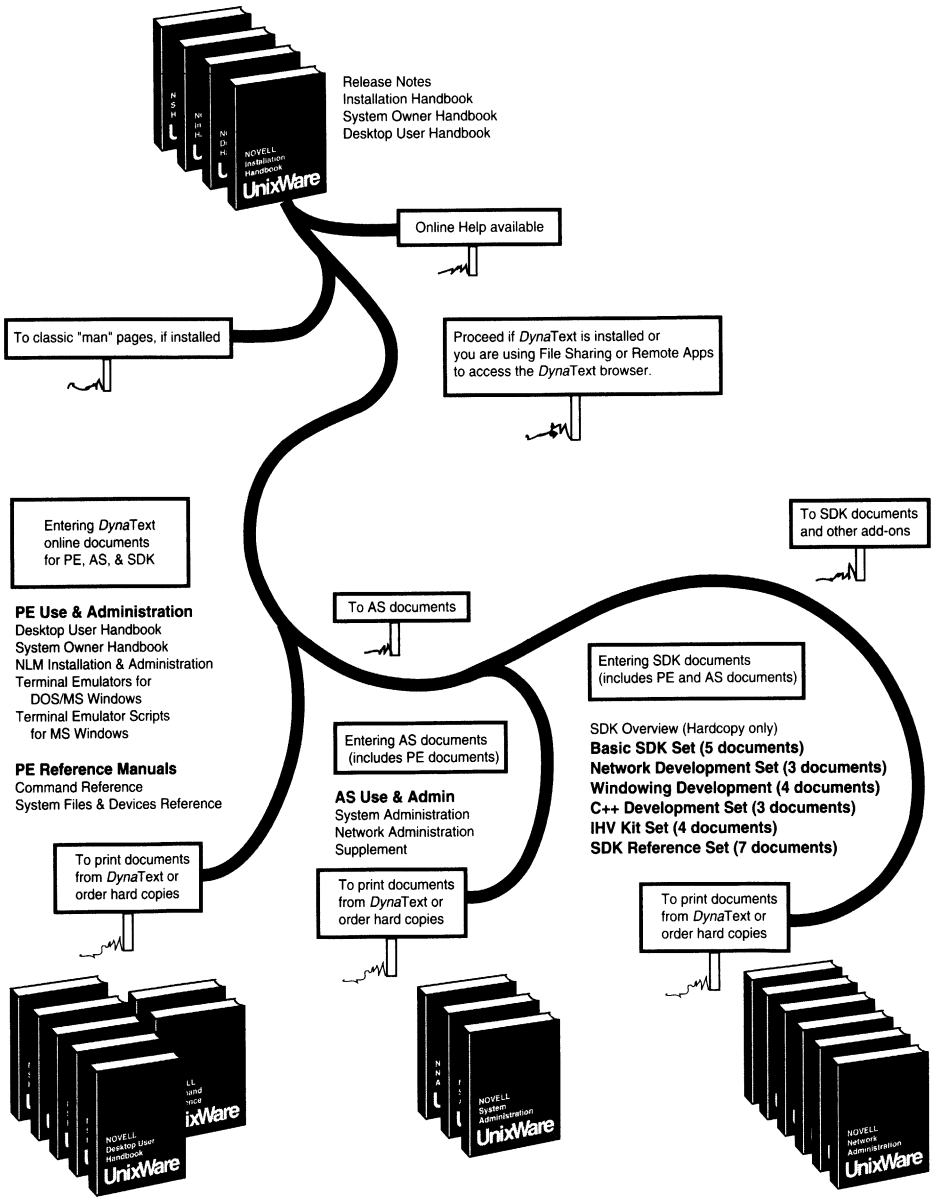
- **Traditional Manual Pages**. The command-line **man** command provides UnixWare manual pages (complete and concise summaries of the UnixWare command-line utilities, files, and devices). This option is designed for users who do not access the graphical desktop (for example, a user who logs in from a remote character-based terminal). Desktop users can use the browser to read the UnixWare manual pages.

  To view manual pages using the **man** command, install the Traditional Manual Pages package.

See the Documentation Roadmap on the next page for a graphical view of how these all work together in UnixWare.

UnixWare Documentation Roadmap

The following roadmap illustrates hardcopy and online documents for the Personal Edition (PE), Application Server (AS), and Software Development Kit (SDK).



Conventions Used in Handbooks

The following conventions are used in the paper versions of the handbooks supplied with UnixWare:

- Key combinations use the following format in text and in user input:

  <Alt>+<F4>

  In this example, you press the <Alt> and the <F4> keys simultaneously and then release them. If a third key is required, press and hold the first two keys simultaneously and then press the third key.

- You may be required to type information such as a command or a user name, also referred to as *user input*.

  User input appears in bold.

  User input variables (such as *filename*) appear in italics.

- Command names and steps in procedures appear in bold.

- New or unfamiliar terms as well as file names, directory names, path names, menu options, diskette names, and the short names for UnixWare packages appear in italics.

- Screen output such as error messages appears in monospace.

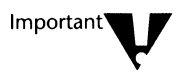
- References to the word *folder* in text apply to desktop tasks. References to the word *directory* in text apply to the command-line tasks. Folders and directories, however, are the same; the only difference is the context. For example, your home folder on the desktop is the same as the */home/username* directory at the command line.

- Special notes appear in text to help you avoid an error or to emphasize points of interest, such as the following:

Procedure icons appear before the first step in a procedure.

Note messages give you additional information about a procedure or process.

Warning messages alert you to situations where you must take specific action. If the action is not taken, your system may not work as expected.



Important messages highlight major decisions and provide critical information about the contents of the section.

Suggestion messages give you hints to make your work easier or faster.

Hardware Requirements

This handbook assumes that you already purchased and set up your computer hardware, including attaching hardware peripherals such as a tape drive or CD-ROM drive (if applicable). If any configuration programs were provided with your hardware, run those programs using the documentation supplied by the hardware vendor before beginning to install UnixWare.

Your computer needs the following hardware to install and run UnixWare:

- An Intel386™ (or higher) or 100% compatible microprocessor with a minimum processor speed of 16 MHz. The Industry Standard Architecture (ISA) (also called an AT® bus), Extended Industry Standard Architecture (EISA), Micro Channel® Architecture (MCA), and Peripheral Component Interface (PCI) buses are supported. Check the documentation that came with your computer to determine its processor type, speed, and bus type.

- 8 megabytes (MB) of Random Access Memory (RAM) for the Personal Edition and 12 MB for the Application Server, including at least 512 KB of base memory (memory reserved for booting the system). Performance is enhanced as more RAM is added.

- A 3.5-inch or 5.25-inch diskette drive for booting UnixWare and a 3.5-inch diskette drive for installing files from diskettes.

- If you are going to use a second hard drive for the UnixWare system, you must use one large enough to contain at least a 40 MB UNIX® partition.

- An 80 MB formatted hard disk is required to install UnixWare; 150 MB is recommended to install UnixWare with its default set of packages (each UnixWare package provides a collection of software programs with related functionality). These recommendations include space for users' files and applications.

- Additional hard disk space is required for each add-on product you install. The *Overview and Installation* instructions for each add-on product lists the amount of disk space required.

- A quarter-inch cartridge tape drive (120 MB QIC); a CD-ROM drive; or (if you are performing a network installation) a supported network interface card, 12 MB of RAM, and a preconfigured *Install Server.*

- (Recommended) A serial, bus, or PS/2®-compatible mouse.

For additional hardware information, see Appendix B, "Hardware Configuration Notes."

How to Use the Installation Software

This section describes the menu interface provided when installing the Personal Edition or the Application Server.

The topics discussed in this section are

- Using installation screens
- Using menu navigation keys
- Using online help
- Canceling the installation

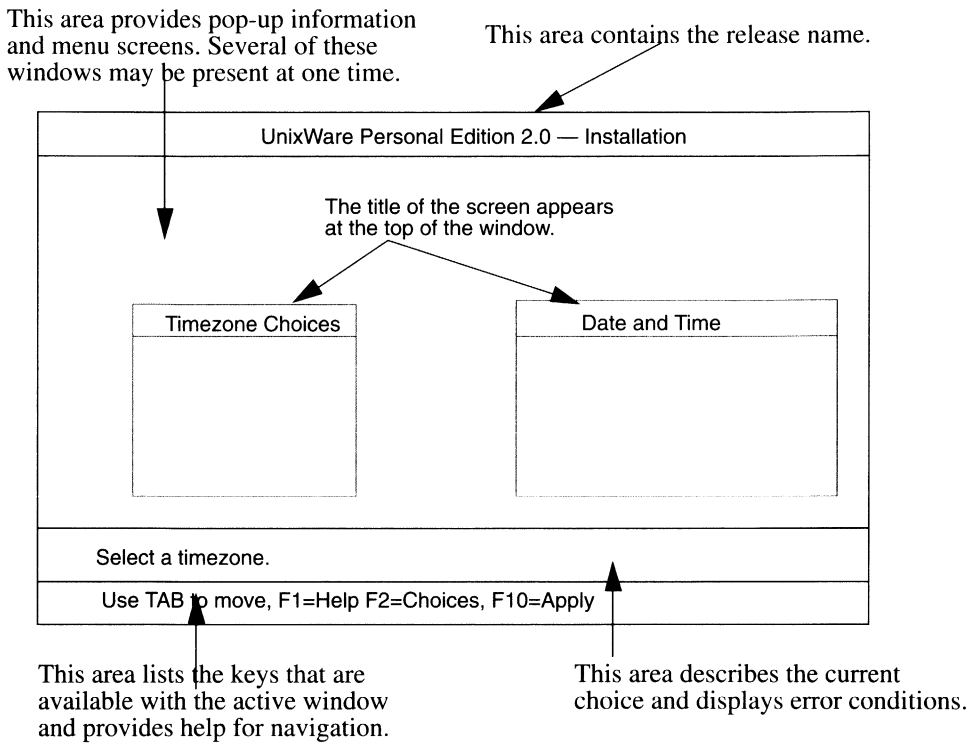
Using the Installation Screens

This installation software displays a series of screens prompting for essential information (keyboard type, system node name, and so on). These screens also allow you to review and change the system configuration options (disk partition, packages to install, and so on).

The screens appear as windows on your console. Depending on the options you choose, multiple windows may be displayed at the same time.

The bottom line of the console screen describes how to make selections. For menus with choices, the second to last line describes the currently highlighted choice. This message changes when you select different menu choices. The second to last line is also used to display error messages.

The following figure shows the general installation screen layout.



Using Menu Navigation Keys

The following table lists the function keys available when installing the Personal Edition or the Application Server. All the keys do not apply to every screen.

Key	Description
Enter (Return)	Press <Enter> to make a selection and continue. On screens where you must type data in multiple fields, <Enter> moves the cursor to the next field.
Function Key 10	On screens where you must type data in multiple fields, press <F10> to apply and continue. On other screens, <F10> is the same as <Enter>.

Key	Description
Tab	Press <Tab> to move to the next field on a screen.
Back Tab	Press the back tab to move to the previous field. (A back tab character is produced by holding down the <Shift> key and pressing the <Tab> key.)
Arrow Keys	Press the left/right/up/down keys to move the cursor to the left of/right of/above/below the current location.
PgDn	Press <PgDn> to move to the next page of a screen with more than one page of data. The screen footer informs you when a screen contains more than one page.
PgUp	Press <PgUp> to move to the previous page of a screen with more than one page of data.
Function Key 1	Press <F1> to display help for the current screen or menu option. Online help is further explained below in the section "Using Online Help."
Function Key 2	Press <F2> to display choices (if available) provided for the current field.
other function keys	Some screens use additional function keys for screen-specific options. The message footer line indicates when these keys are active and the available option(s).

Using Online Help

For most steps in the installation process, online help screens are available to provide additional information. The message at the bottom of the screen says `F1=Help` when help is available for the current screen or field.

The following special keys are used for online help:

Key	Description
Function Key 1	Press <F1> to obtain help for the displayed screen. If you press <F1> when a help screen is displayed, you receive a menu of related help screens.
Escape (Esc)	Press <Esc> to exit from the current help screen and return to the previous help or menu screen.
Page Down	When there is more than one page for a help screen, a message at the bottom of the screen informs you to press <PgDn> to view the next page of a help.
Page Up	When there is more than one page for a help screen, press <PgUp> to read the previous page.
Up/Down Arrow Keys	You can also press the up/down arrow key to go to the next/previous page of a help screen.

Canceling the Installation

The installation software allows you to view and change the installation configuration options as often as you like and to install the software only after you are satisfied with your choices. If you decide not to install the software for any reason, you can cancel the installation without damaging your existing system.

Until you select *Accept All Settings and Install Now* from the "Install Menu," you can cancel the installation and return to the previous system and configuration (including the partition and file system set-up) that existed before inserting the UnixWare *Install Diskette*.

The preferred way to cancel the installation is to do the following:

1. **Follow the installation instructions until you reach the "Install Menu" window (or, if viewing installation options, return to the "Install Menu" window).**

2. **If you do not want to repeat the installation process, remove the UnixWare *Install Diskette*.**

3. **Select *Cancel Installation and Shut Down System*.**

4. **Reboot your system.**

chapter 1

Before You Begin

Before you can install UnixWare, you must make a few decisions and set up your system hardware. Answer the questions in Table 1-1 to ensure that you gathered the correct information and performed the required system setup steps. Contact your system or network administrator for help in gathering information.

Table 1-1
Before You Begin Decisions and Required Actions

Question	For details, see...
Do you need to back up existing data files and directories?	"Backing up Existing Data" on page 2
If your system is already running another version of UnixWare, do you want to perform a destructive or nondestructive installation?	"Choosing Between Destructive and Nondestructive Installation" on page 3
Do you want to have multiple operating systems on your computer?	"Installing Multiple Operating Systems" on page 5
Do you want to run DOS?	"Using DOS" on page 7
If so, do you want to use UnixWare's built-in Advanced Merge™ and DR DOS® 6.0 to run DOS on your system, or do you want to run DOS from a separate DOS partition?	
Have you installed and configured all your system hardware (including running setup utilities such as the EISA Configuration Utility and configuring peripherals such as an external CD-ROM drive)?	"Configuring Your Hardware" on page 7
Do you need to install any software device drivers from Host Bus Adapter (HBA) diskettes?	"Using Host Bus Adapter Diskettes" on page 9
If your system will be part of a network, do you know your networking parameters?	"Preparing to be Part of a Network" on page 10

Table 1-1
Before You Begin Decisions and Required Actions

Question	For details, see...
Do you want to perform a network installation? If so, is your network configured for network installation?	"Preparing For a Network Installation" on page 11
Do you know which software packages you want to install?	"Changing Package Selection" on page 12
Do you want to customize your file system configuration?	"Changing File System Set Up" on page 13
Do you want to use a second hard disk (if one exists)?	"Using a Second Hard Disk" on page 13
Do you know what type of mouse is configured on your system and what its parameters are?	"Gathering Mouse Information" on page 13

Appendix A, "Installation Checklists," provides checklists for recording the answers to the questions you are prompted for during installation. These checklists can save you time when installing UnixWare and help if you later have to troubleshoot problems or do another installation.

Backing up Existing Data

If your computer already contains directories and files, you should create a backup of everything that is critical (such as user files, password files, other administrative files, and applications that you have installed) before starting the installation. After installing UnixWare you can restore backed up files from a System V Release 4.0 (SVR4.0) or later UNIX operating system (including UnixWare) or from a DOS operating system. For backup instructions, see the administration manual for your current operating system.

As a precaution, you should create a backup even if you intend to perform a nondestructive installation (an installation where the operating system is replaced but user files remain unchanged).

If you are backing up a UnixWare 1.1 system, you should also use the **emergency_disk** command to create an emergency recovery diskette. This diskette may allow you to access your hard disk in the unlikely event that a nondestructive installation (see the section "Choosing Between Destructive and Nondestructive Installation" later in this chapter) is unsuccessful and your system will not boot.

Restoring Data From a UnixWare 1.1 System

If you are restoring data from a backup tape created on a UnixWare 1.0 or UnixWare 1.1 system, only restore user and application data files. Otherwise you may overwrite important UnixWare 2.0 Desktop or system files. See the section "Destructive Installation Problems" on page 123 in Appendix E, "Troubleshooting," for further information.

Unless you are following the instructions given in the section "Destructive Installation Problems" on page 123, be sure to only restore selective files from a UnixWare 1.1 system. If you restore UnixWare 1.1 Desktop files, your UnixWare 2.0 Desktop may become dysfunctional.

Choosing Between Destructive and Nondestructive Installation

If your system currently runs UnixWare 1.1, UnixWare Update 1.1.2, or UnixWare 2.0, you can perform a nondestructive or a destructive installation.

If your computer has one of these operating systems installed but you are not prompted for a nondestructive installation, then either

1. Your computer may have a UnixWare 1.1 update release that is not UnixWare Update 1.1.2. In this case:

   - If you have any update release prior to UnixWare Update 1.1.2, either remove the update releases or upgrade to UnixWare 1.1.2. Then you can perform an upgrade installation to UnixWare 2.0.
   - If you have any update releases later than UnixWare Update 1.1.2, remove the update releases (for example, remove *update113*). The you can perform an upgrade installation to install UnixWare 2.0.

   To remove any upgrade release, either use the UnixWare 1.1 Desktop Application Setup icon (in the System Setup folder) or the **pkgrm** command.

2. Your active partition may not contain the UnixWare operating system. See "Changing Your Active Partition" on page 5.

Nondestructive Installation

Nondestructive installations preserve your existing partitions, file systems, user data files, and system files such as */etc/passwd* and */etc/shadow*. To perform a nondestructive installation:

- The active partition must contain the version of UnixWare that you are replacing.
- The partition containing UnixWare must be at least 80 MB.
- Your system must have at least 20 MB free of space in the / file system, 45 MB in the */usr* file system, and 5 MB in the */var* file system. (Otherwise, the installation software will not allow you to install UnixWare 2.0.)

Two types of nondestructive installations are supported:

Upgrade. An upgrade installation updates your system from a prior UnixWare release to UnixWare 2.0.

If your current system includes the Online Data Manager (ODM) product, either remove this product before upgrading your system or make sure you have the media for the UnixWare 2.0 ODM available when installing the Personal Edition or Application Server.

Overlay. An overlay installation recovers an existing, corrupted UnixWare 2.0 system by reinstalling UnixWare 2.0.

If you are performing a nondestructive installation, do not change the product (Personal Edition or Application Server) that you are installing. If you want to replace a Personal Edition with an Application Server, or an Application Server with a Personal Edition, you must perform a destructive installation.

Destructive Installation

A destructive installation destroys all the file systems and data that existed in the active partition on your computer's hard disk. New file systems and data are installed.

A destructive installation is the only type of installation possible for a computer that does not currently run UnixWare.

Installing Multiple Operating Systems

Your computer can contain multiple operating systems, with each operating system installed in a separate partition (a portion of the hard disk reserved for the particular operating system). Only one partition can be designated as the active partition at any time. When you turn on your computer, the operating system used is the one contained in the active partition.

The UnixWare installation process tries to install UnixWare in the active UNIX system partition, if one exists. So if you plan to install multiple operating systems on your computer, make sure the active partition is the UNIX partition where you want to install UnixWare.

For further information on partitions, see Appendix C, "Information About Partitions and File Systems."

Changing Your Active Partition

There are several ways to change your active partition:

- Before beginning to install UnixWare, check the documentation for your current operating system and change the active partition. For UnixWare and DOS systems, use the **fdisk** utility for setting the active partition. (A DR DOS 6.0 diskette, which includes **fdisk**, is provided with your original UnixWare media.) This is the preferred method.

- If you are performing a destructive installation, select *View or Change Disk Configuration* from the "Install Menu." A menu listing the partitions on your system is displayed and you can change the active partition.

If you want to perform a nondestructive installation, do not use this method. The installation software collects user choices and implements them only after you select *Accept All Settings and Install Now.* Therefore, if you use the disk partitioning screens to try to change the active partition, and then select *Cancel the Installation*, the active partition is not changed

- If you want to perform a nondestructive installation, but the partition you want to overlay/upgrade is not the active partition when you began the installation process, you can change the active partition and begin the installation process again by doing the following:

1. **Follow the installation instructions in Chapter 2, "Installing the Personal Edition or Application Server," until you reach the "Install Menu." (Answer the questions as if you are performing a destructive installation.)**

2. **Press** <F9>.

3. **If prompted, enter the serial number for the installed version of UnixWare.**

   If a version of UnixWare is installed in the active partition, then you are prompted for the serial number for that version of UnixWare. This serial number is provided on your original installation media and is required to protect your system from unauthorized access.

4. **Type**

   ```
   /usr/sbin/fdisk
   ```

   If the `ERROR: Default device (/dev/rdsk/c0b0t0d0s0) cannot be opened` message is displayed, then you need to enter:

   ```
   /usr/sbin/fdisk /dev/rdsk/device-name
   ```

   To determine the *device-name*, type:

   ```
   ls /dev/rdsk/c0*s0
   ```

   The *device-name* is first file name listed.

5. **Select option 2 and, when prompted, select the partition that should be active.**

6. **Select option 4 to exit the fdisk utility. The UnixWare command-line prompt is displayed.**

7. **Return to the "Install Menu." Type:**

   ```
   exit
   ```

8. **Select *Cancel Installation and Shutdown System*.**

9. **When prompted, reboot your system.**

Using DOS

Two methods enable you to use DOS on your UnixWare system. Before you install UnixWare, decide whether you want to use either or both of these methods:

- Use Advanced Merge and DR DOS 6.0, which are integrated into UnixWare and installed by default, to run DOS applications from your UnixWare Desktop (as described in the *Desktop User Handbook*). In this case, you can store your DOS programs in a UnixWare folder and/or you can keep a separate DOS partition on your computer.

- Partition your hard disk so that you have both a UnixWare partition and a DOS partition. You can then boot either UnixWare or DOS, and run your DOS programs in the DOS partition. (This is particularly useful if you want to store DOS hardware configuration utilities on your system.) For details, see Appendix C, "Information About Partitions and File Systems."

If your system already contains a DOS partition and you are changing the size or location of this partition, be sure to back up its data. Please refer to your DOS manual for instructions.

If you are using a backup tool that was not provided with your original DOS system, such as Central Point Backup® or Central Point® PC Tools™, choose the low-speed non-direct memory access (non-DMA) option for backing up DOS files.

Configuring Your Hardware

Before installing UnixWare you must

1. **Install all the hardware devices for your system, such as the keyboard, tape drive, and so on.**

2. **Run any machine setup programs provided by your computer manufacturer.**

Choices made when setting up your hardware can impact installation of any operating system. See Appendix B, "Hardware Configuration Notes," and Appendix E, "Troubleshooting," for hardware configuration information and problem solving.

For EISA, MCA, and PCI systems, the setup program is often called a configuration utility such as an EISA Configuration Utility (ECU).

3. **Configure your hardware controllers.**

Some setup programs automatically prompt for configuration data for your controllers. In such cases, this step is not needed.

A controller is any hardware device that is directly attached to your system I/O bus. For example, you may have a Small Computer System Interface (SCSI) HBA that is connected to your system I/O bus and a SCSI CD-ROM that is connected to the SCSI HBA. The SCSI HBA is a controller and the SCSI CD-ROM is a peripheral.

Some controllers (for examples, networking and video cards) are provided with software, typically on diskettes, that is needed to configure the hardware. Before installing UnixWare, run these hardware configuration programs.

ISA hardware may require setting jumper pins or dip switches.

Running Hardware Configuration Programs

Many hardware configuration programs require a DOS operating system. Your UnixWare 2.0 media includes a DR DOS 6.0 diskette. To use this diskette, do the following:

1. **Insert the DR DOS 6.0 diskette into your system boot drive and reboot.**

2. **When the DOS prompt is displayed, replace the DR DOS 6.0 diskette with the hardware configuration diskette. Then press** <Enter>**.**

3. **Configure your hardware by following the instructions provided in the hardware documentation.**

   You may need to identify various hardware parameters such as the

   - Interrupt vector (IRQ)
   - Memory address range (in hexadecimal format)
   - I/O address range (in hexadecimal format)
   - DMA channel

   Typically, distinct hardware devices must have different IRQ and DMA channel values and their memory and I/O address ranges must not overlap. (Multiple devices can have the same IRQ values, provided that each of these devices supports shared IRQ values.) For example, if you have a tape

drive controller and a network interface card, ensure that the addresses do not conflict. If they do, the UnixWare installation may fail.

If your hardware manufacturer provides default hardware parameter values, you should use those values. Otherwise, consult Appendix B, "Hardware Configuration Notes," for tables and examples describing typical hardware settings. The key criteria is to select values that do not conflict.

For further details, refer to the hardware manual for your hardware devices.

4. **After configuring the hardware, remove the diskette from the boot drive.**

Using Host Bus Adapter Diskettes

Depending on the hardware installed on your system, one or more HBA diskettes may be needed during installation. HBA diskettes provide software device drivers (software that enables UnixWare to communicate with hardware such as a CD-ROM, cartridge tape, or SCSI controller).

UnixWare provides some device drivers for the most common hardware on the *Install Diskette* and additional device drivers on the UnixWare *Host Bus Adapter Drivers Diskette*. (For details, see Appendix B, "Hardware Configuration Notes.") Your equipment manufacturer or hardware vendor may also provide HBA diskettes when you purchase hardware. You are prompted for HBA diskettes during the installation process.

Device drivers must be properly configured to successfully install UnixWare. This involves assigning the hardware parameters (such as IRQ, memory address range, I/O address range, and DMA channel) to a device driver. Otherwise, the installation process may identify the wrong hardware and ask the wrong questions.

For many hardware devices, such as EISA devices, once their hardware setup programs are run, UnixWare automatically detects the hardware settings and configures the device driver without any user intervention. Other devices, such as some ISA devices, cannot be detected automatically.

UnixWare provides a utility, called the Device Configuration Utility (DCU), for viewing or modifying the device driver settings. This allows you to verify that you are not installing hardware devices with conflicting device driver

settings and, if you install a hardware device that UnixWare cannot detect, to assign the hardware parameter values to its device driver. For further details, see Chapter 2, "Installing the Personal Edition or Application Server."

Preparing to be Part of a Network

There are several parameters that you need to set if your system is part of a network. Although some of these values can be set or changed after installation (see the *System Owner Handbook* for details), it is easiest to set these values during installation.

Depending on the installation options you choose, you may need to answer the following networking questions:

1. What are the hardware parameters for your networking card (IRQ, I/O address range, memory address range, slot number, and so on)?

For some EISA, MCA, and PCI systems, these values may be detected automatically and you may not have to know them in advance.

2. If your system will be part of a Transmission Control Protocol/Internet Protocol (TCP/IP) network, what are your

   - System Internet Protocol (IP) address
   - System Broadcast address
   - System netmask
   - Router IP address
   - Domain Name Service (DNS) domain name
   - DNS server(s) IP addresses

   For further details, see "Internet Utilities (inet)" on page 98 in Appendix D, "Information About UnixWare Packages."

If your network has a configured "BOOTP" server (a system configured to maintain and advertise network configuration data) or if you are performing a nondestructive installation, these values may automatically be provided for you. For details about BOOTP, see the *System Owner Handbook*.

3. If your system is going to be part of a network that is configured to support Network Information Service® (NIS®), what are the NIS parameter settings for this system?

   For further details, see "Network Information Service (nis)" on page 103.

4. What is the user ID for the system owner? It is important that users with logins on multiple systems in the network have the same user ID on each system. This simplifies accessing accounts on other systems in the network.

If you do not know the answers to these questions, contact your network administrator.

Preparing For a Network Installation

You can either install UnixWare from cartridge tape, CD-ROM, or over an Internetwork Packet eXchange™/Sequenced Packet eXchange™ (IPX/SPX™) or a Transmission Control Protocol/Internet Protocol (TCP/IP) network.

To perform a network installation

1. A UnixWare 2.0 Application Server must already be installed on your IPX/SPX and/or TCP/IP network.

2. The Application Server must be configured as an Install Server. For details, see the section "Setting Up and Administering an Install Server" in the chapter "Installing Add-on Software" of the part "System Setup and Configuration" of the book *System Administration.*

To perform a network installation you must provide

- Your system node name
- The hardware parameters for your networking card (IRQ, I/O address range, memory address range, and so on)
- If you are performing a network installation over IPX/SPX, the name of the Install Server (if your network has multiple frame types, you are also prompted for the network frame type)

- If you are performing a network installation over TCP/IP, these networking parameters are needed: your system IP address and netmask, your router IP address, and your server IP address (If your network has a configured BOOTP server, these values may automatically be provided for you.)

Contact your network administrator for the proper values.

Changing Package Selection

UnixWare software is provided in modular units called packages. Each package is a collection of programs with related functionality.

You should install only those packages that are going to be used on your system in order to save space. A default value ("yes," install or "no," do not install) is provided for each package. You can change this value by using the *View or Change Package Selection* option on the "Install Menu."

Some packages depend on the installation of other packages. Before you change a default setting, review Table D-1, "Personal Edition and Application Server Packages," on page 82 in Appendix D, "Information About UnixWare Packages."

After installing UnixWare, you can install additional products and packages using the desktop or the **pkgadd** command. For instructions, see the *System Owner Handbook.*

If you decide after installing the Personal Edition or Application Server that you want to install additional packages from these products, use the desktop or **pkgadd**. Do not repeat the steps in Chapter 2, "Installing the Personal Edition or Application Server."

Package-Specific Options

You may prefer to install some Personal Edition or Application Server packages from the desktop or **pkgadd** after installing UnixWare. This is because the desktop and **pkgadd** provide advanced customization options.

For example, if you install the Personal Edition Documentation package (containing books for the online browser) during UnixWare installation, all of the books in this package are installed. However, you may prefer to only install a subset of the books to save space. This choice is not provided when installing

UnixWare but is available when installing the Personal Edition Documentation package through the desktop or using **pkgadd**.

See Appendix D, "Information About UnixWare Packages," for a description of the package-specific options.

Changing File System Set Up

UnixWare provides a default file system configuration. However, if you are an experienced user, you can change this default. File systems reserve portions of your operating system for specific purposes (for example, user files are typically placed in the */home* file system). For details, see Appendix C, "Information About Partitions and File Systems."

Using a Second Hard Disk

If you have a second hard disk, you can select to install UnixWare on both the primary and secondary hard disk. This provides additional disk space for your user files and application software. To use both disks, you *must* explicitly assign file systems to the second hard disk. For details, see Appendix C, "Information About Partitions and File Systems."

Gathering Mouse Information

If installing a mouse, you will need to know what type of mouse (bus, serial, or PS/2) you are installing.

If you are installing a bus mouse, you need to know its interrupt vector.

If you are installing a serial mouse, you need to know whether it is a Microsoft® compatible or Mouse System Corporation (MSC) compatible mouse (also known as a "PC Mouse"). If a three-button serial mouse is MSC-compatible mouse, then you can be configure it to operate as either a two-button or three-button mouse. This is normally accomplished using a switch on the bottom of the mouse; however, you should check the documentation provided with your mouse.

chapter 2

Installing the Personal Edition or Application Server

This chapter provides a step-by-step procedure for installing the Personal Edition or Application Server. If you are new to installation, you may want to use this chapter as a checklist for following the UnixWare installation process. More experienced users may find the installation software straightforward and may not need to read this section.

The steps are numbered in the order in which they appear; however, you are not prompted for all steps. For example, you are prompted whether to perform a nondestructive installation only if the software determines that such an installation is possible.

For information on keyboard conventions used by the installation software or instructions on canceling the installation, see the section "How to Use the Installation Software" on page xvi in the "About This Handbook" preface.

Do This First

Procedure

1. **Before installing UnixWare, do the pre-installation steps and decisions (attaching, configuring, and powering up hardware peripherals; backing up your system data; gathering networking configuration information; and so on) listed in Table 1-1 in Chapter 1, "Before You Begin."**

   Unless you are installing UnixWare on a new system, you should back up any existing data (including the operating system) to tapes or diskettes before starting the installation. This precautionary action should be done even if you plan on performing a nondestructive installation.

Inserting the Install Diskette and Booting Your Computer

2. **Insert the *Install Diskette* into disk drive 1.**

The initial installation software is provided on the *Install Diskette*; you will be prompted later for (depending on the type of installation you select) the CD, cartridge tape, or *Network Installation Utilities* diskette.

3. **Reboot your computer.**

   - If your computer is running another operating system, reboot the computer by following the instructions for the other operating system. For example, if you are currently running an earlier version of UnixWare, use the Shutdown icon or type:

     shutdown -i6

     When prompted to reboot your system, either press the reset button or turn off the computer, pause briefly, and turn it back on.

   - If your computer is currently turned off, turn on your computer.

   Depending on your hardware, you may see messages asking whether you want to modify your system BIOS or SCSI settings. These prompts are not part of the UnixWare installation software. Wait for the first UnixWare 2.0 installation screen and prompt before pressing any keys.

Identifying Monitor Type

4. **Identify your monitor type (if prompted) and then press** <Enter>**.**

   If a monitor is attached to your computer but is not attached via a VGA or compatible video adapter, you are asked whether you are using a color monitor.

Viewing Welcome Message

5. **After reading the welcome message, press** <Enter>**.**

Inserting Second Install Diskette

6. **If prompted, insert the *Install Diskette: Diskette 2 of 2* and press** <Enter>.

   If prompted to insert the second install diskette, insert the *Install Diskette: 2 of 2*. Typically, this prompt only appears if you are using a 5.25-inch diskette drive; however, in some locales you may need to insert a second 3.5-inch diskette.

Selecting Keyboard Type

7. **Select your keyboard type and then press** <Enter>.

   Typically, the keyboard type is the same as the language you speak and/or country where you reside. However, a few regions support two keyboard types:

   - If you are selecting an Italian keyboard type, select *Italian (IBM 142)* for an IBM® 142 keyboard; otherwise, select *Italian*.
   - If you are selecting a Japanese keyboard type, select *Japanese (AX)* or *Japanese (A01)*, depending on whether you have an AX or A01 keyboard.
   - If you are selecting a United States keyboard type, select *US (Latin 1)* if you want to generate ASCII and non-ASCII keyboard characters (for example, if you want to use special characters such as accent characters); select *US (ASCII)* if you want to generate only ASCII keyboard characters.

     In Japanese locales, the *US (ASCII)* choice provides the same capabilities as the *US (Latin 1)* keyboard choice.

Removing Install Diskette

8. **When prompted to either *Install Host Bus Adapter Drivers* or *Continue Installation*, first remove the *Install Diskette*. Then go to the next step.**

Inserting Host Bus Adapter (HBA) Diskettes

9. **Insert HBA diskette (if needed) or select** *Continue Installation*; **then press** <Enter>.

If the installation later fails because the hard disk could not be found, repeat the installation using HBA diskette(s).

The *Host Bus Adapter Drivers* diskette is provided with UnixWare 2.0. See Table B-2, "Device Drivers on the Install Diskette," on page 54 in Appendix B, "Hardware Configuration Notes," for a listing of the device drivers provided on this diskette. Depending on your system configuration, you may have additional HBA diskettes from Novell® or a third-party vendor.

If you are not sure whether HBA diskettes are needed, insert the diskettes. (If you are inserting multiple HBA diskettes, check the documentation provided with the diskettes to determine if they need to be inserted in a particular order.) The installation process determines which device drivers on the diskettes are needed.

After inserting the first diskette, press <Enter>.

Messages are displayed asking you to wait while hardware and software device drivers are loaded. Do not press any keys until the next screen is displayed.

When prompted to install another diskette or remove the HBA diskette

- If you have another HBA diskette, insert the next HBA diskette, select *Install Another HBA Diskette*, and press <Enter>.
- If all of your HBA diskettes have been installed, remove the last HBA diskette, select *Continue Installation*, and press <Enter>.

Entering the DCU to View /Change Device Driver Configuration

10. **Select whether to enter the DCU and then press** <Enter>.

For details on using the DCU interface, see the chapter "Setting Up and Configuring Hardware" in the *System Owner Handbook*.

The Device Configuration Utility (DCU) is an advanced system administration tool for viewing and changing UnixWare device driver configuration data.

Invoking the DCU is typically not needed because UnixWare detects most hardware and properly configures the software device drivers to access the hardware. However, you may want to invoke the DCU to do the following:

- If your system contains hardware, such as ISA hardware, that is not EISA, MCA, or PCI, and if this hardware is not configured at its default values, then use the DCU to assign the hardware parameters to the software device drivers.

  Table B-2, "Device Drivers on the Install Diskette," on page 54 and Table B-3, "Device Drivers on UnixWare 2.0 Host Bus Adapter Drivers Diskette," on page 55 in Appendix B, "Hardware Configuration Notes," lists the device drivers provided with UnixWare and the hardware controllers that they support. For controllers whose hardware settings cannot be detected automatically, the default values that UnixWare expects are listed. If your hardware controllers are configured at different values, then use the DCU to configure the device drivers.

  For example, the *ictha* device driver supports many tape drive controllers. Suppose you are using one of these controllers and it is configured at IRQ 11 (the default IRQ is 5). In this case, enter the DCU, select *Software Device Drivers* followed by *All Software Device Drivers*, and move the cursor to the *ictha* device driver. Then press <F5> to define the hardware controller and its hardware parameter settings to the device driver.

- Instruct the installation software not to load unneeded device drivers. (If you inserted an HBA diskette to load a particular device driver and you know that the HBA diskette contains other device drivers that are not needed on your system, instruct the UnixWare installation software not to load these device drivers by deactivating them on the DCU "Software Device Drivers" screen).

- Verify that the hardware parameters stored in non-volatile random access memory (NVRAM) for various hardware controllers (for examples EISA, MCA, and PCI) is correct. To do so, enter the DCU and select *Hardware Device Configuration*. If any of the values are incorrect, you need to shut down your system and reconfigure your hardware. For more information on configuring hardware, see the section "Configuring Your Hardware" on page 7 in Chapter 1, "Before You Begin."

Checking Hardware Configuration

11. **Wait while the system checks your hardware configuration. The messages** `Please wait while the system hardware drivers are loaded` **and** `Checking Hardware Configuration` **are displayed. If the "Select Installation Method" screen then appears, go to the next step. If an error message is displayed, follow the online instructions to correct the problem.**

    If an error is detected, then either your hardware is installed incorrectly or your system device drivers are configured incorrectly. After reading the first screen, press <Enter>.

    The next and subsequent screens list the software device drivers that have conflicting settings. Record all the information displayed on these screens and, when prompted, reboot or shut down your system. Then

    - If the displayed device driver settings are the same as the settings for your hardware, then your hardware is configured incorrectly. You must reconfigure your hardware to use nonconflicting parameters (IRQ, memory address range, and so). Read the section "Configuring Your Hardware" in Chapter 1, "Before You Begin," and then refer to your hardware documentation to reconfigure your hardware.
    - If the displayed device driver settings differ from the settings for your hardware, then follow the online prompts to reenter the DCU (Step 10) to configure your device drivers.

Selecting Installation Method

12. **If you want to install from media (CD-ROM or cartridge tape), select the media type. If you want to perform a network installation, go to Step 13.**

    - If the media type (CD-ROM or cartridge tape) that you want to install from is displayed

    12a. Insert the medium.

    12b. Select *Install from CD-ROM* or *Install from Tape*.

    12c. Press <Enter>**.**

    12d. When prompted to confirm your media selection, select *Yes, continue the installation*.

- If the media type (CD-ROM or cartridge tape) that you want to install from is not displayed, then one of the following may have occurred:

  Problem. The CD-ROM or cartridge tape drive is not properly connected to your system.

  Solution. Connect and turn on the power for the external CD-ROM or cartridge tape drive. Then reboot the system and repeat the installation.

  Problem. The power to the CD-ROM or cartridge tape drive is turned off.

  Solution. Turn on the power to the CD-ROM or external cartridge tape drive. Then reboot the system and repeat the installation.

  Problem. UnixWare did not detect the CD-ROM or cartridge tape drive.

  Solution. Reboot the system and insert HBA diskette(s) when prompted. If this does not solve the problem, repeat the installation and invoke the DCU to assign the device driver parameters for the CD-ROM or cartridge tape drive.

13. **If you want to perform a network installation, select whether to install from an IPX/SPX or a TCP/IP Install Server. Then press** <Enter> **and follow the prompts for network installation:**

    13a. When prompted to confirm your media selection, select *Yes, continue the installation*.

    13b. When prompted, insert the *Network Installation Utilities* diskette into Drive 1 and press <Enter>**.**

    13c. When prompted, type the system node name.

    If your computer already has a name, you should re-use the existing name. (If you choose to perform a nondestructive installation in Step 14, then your system node name is not changed. In that case, the name provided here is only used to configure networking for the UnixWare 2.0 installation.)

    If your computer does not have a name yet, call your network or system administrator to help you select a name that is unique on the network. After typing in your choice, press <Enter>.

13d. When prompted, select the networking hardware.

You are prompted with a menu listing the supported networking cards. An asterisk * indicates the currently selected networking card. Select the networking card on your system and then press <Enter>.

If your networking card is not listed, then you must reboot your system and install from media.

13e. If prompted, configure the networking hardware parameters.

Depending on the networking card you selected, you may be prompted for card-specific hardware parameters (for example, the IRQ, I/O address range, memory address range, cable type, EISA slot number, and so on).

Once you are satisfied with all displayed values, press <F10> to register your selections.

Only hardware parameter values that are not already in use are listed. If the value for a hardware parameter is not listed (for example, the IRQ), see "Cannot Configure Network Interface Card" on page 135 in Appendix E, "Troubleshooting," for possible solutions.

13f. When prompted, enter the appropriate networking data

- For IPX/SPX network installations, and if your network has only one frame type, you are prompted for the name of an Install Server. (If multiple frame types are in use on your network, you are first prompted for the frame type and then for an Install Server configured using the selected frame type.)

  By default, the name of the "closest" Install Server on your network is displayed. A number in square brackets indicates how close (the number of network "hops") the Install Server is to the system you are installing.

  To select another Install Server, press <F2>. If other Install Servers are configured on your network, a menu listing the available Install Servers is displayed and an asterisk indicates the currently selected Install Server. Use <Tab> to select an Install Server and then press <Enter> to return to the "Select Install Server" screen.

  Once you are satisfied with your selection, press <Enter>.

- For TCP/IP network installations, you are prompted for the following parameters: system IP address, netmask, Router IP address, and Server IP address. Default values for these

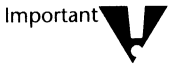
parameters may be displayed; a blank is shown for any parameter the installation software cannot detect.

Press <Tab> to move the cursor to the field you want to change. (If the current field does not contain a valid value, the installation software will not allow you to move the cursor to the next field.)

Type the correct value.

Once you are satisfied with all displayed values, press <F10>. (If any field contains an invalid value, the installation software will not allow you to exit this menu.)

Upgrading From a Previous UnixWare Release



If you are not prompted to perform a nondestructive installation, but your system contains a version of UnixWare that you are replacing, then:

a. Verify that the correct version of UnixWare is installed on your system. See "Choosing Between Destructive and Nondestructive Installation" on page 3.

b. Follow the instructions in the section "Changing Your Active Partition" on page 5 to set your active partition.

c. Repeat the installation.

If you are still not prompted to perform a nondestructive installation, then you must perform a destructive installation or you must cancel the installation.

14. If prompted, select whether to attempt a nondestructive installation, a destructive installation, or to cancel the installation.

- If the installation software determines that the active partition contains UnixWare 2.0 or a version of UnixWare that can be upgraded to UnixWare 2.0, you are prompted whether to perform a nondestructive installation (where existing user and configuration files are preserved), a destructive installation (where existing user and configuration files are destroyed), or to cancel the installation.
- If the installation software detects a version of UNIX that can not be upgraded to UnixWare 2.0 in the active partition, you are prompted whether to continue the installation or to cancel the installation.
- If the installation software does not detect a UNIX operating system in the active partition, then you must perform a destructive installation. In

this case you are prompted to perform a destructive installation or to cancel the installation.

If you select nondestructive installation, go to Step 15. If you choose to perform a destructive installation, go to Step 19.

For more information on this choice, see the section "Choosing Between Destructive and Nondestructive Installation" in Chapter 1, "Before You Begin."

Merging Files

15. **When the "Choose merge options" menu is displayed, decide whether to combine system configuration files and then press** <Enter>**.**

    Some system configuration files (called volatile files), such as */etc/passwd*, are overwritten during the installation process unless you decide to combine them. For more information, see the section "Combining System Files" on page 80 in Appendix D, "Information About UnixWare Packages."

Removing Unneeded Packages Option

16. **If your system contains any obsolete packages, the** `Obsolete Packages` **menu prompts whether to continue the installation (in which case these packages are removed) or to cancel the installation. After entering your selection, press** <Enter>**.**

    The capabilities provided by some UnixWare 1.1 packages are now included in other UnixWare 2.0 packages or are replaced by new UnixWare 2.0 packages. If you decide to install UnixWare 2.0, these "obsolete" UnixWare 1.1 packages are removed. For additional information, see the section "Obsolete Packages" in Appendix D, "Information About UnixWare Packages."

Providing Online Data Manager Media

17. **If your previous system included the Online Data Manager product and if you did not remove that product before starting the installation, insert the UnixWare 2.0 Online Data Manager media and press** <Enter> **or cancel the installation.**

If prompted, inserting the Online Data Manager media is required for the UnixWare 2.0 installation to continue.

For further details see the *Overview and Installation* document that accompanies the UnixWare 2.0 Online Data Manager product.

18. **Go to Step 21 on page 26.**

    When performing a nondestructive installation, you can not change the disk partitioning or system node name.

Configuring Disk Partitions (Destructive Installation)

If the "Destructive Installation" menu is displayed, and if you want to perform a nondestructive installation, select *Cancel Installation and Shut Down System*, verify that you can perform a nondestructive installation (see "Choosing Between Destructive and Nondestructive Installation" on page 3), set your active partition by following the instructions in the section "Changing Your Active Partition" on page 5, and then repeat the installation.

19. **Select whether to use the entire primary hard disk for UnixWare; whether to view or change your current disk configuration; or whether to cancel the installation.**

    If UnixWare 2.0 is the only operating system you plan to install on your system, choose to use the entire primary hard disk for UnixWare. However, if you want to install additional operating systems, or if other operating systems that you want to keep are already installed on your computer, choose the default option to display a screen to view or change your disk partitioning.

    If you choose to view or change your disk partition, the "Disk 1 Partitions" screen is displayed so that you can view and/or change your disk partitions. For details on changing disk partitions, see "Viewing/Changing Disk Partition" on page 72 in Appendix C, "Information About Partitions and File Systems." After viewing and/or changing your disk partition, press <F10>.

    If you have a second hard disk, you can view or change its disk partitions by selecting *View or Change Disk Configuration* from the "Install Menu" (see Step 23 on page 27). You can also perform advanced disk configuration activities (such as viewing/changing file systems, deciding whether to overwrite your system boot code, and/or selecting whether to perform a surface analysis) from that menu.

Entering System Node Name (Destructive Installation)

If you are performing a nondestructive installation, this choice does not appear. You cannot change the system node name during a nondestructive installation.

20. Type the system node name and press <Enter>.

The system node name must contain between three and thirty-five of the following characters: A through Z, a through z, 0 through 9, an underscore (_) character, or a dash (-) character.

If your computer will not be part of a network, you can name it anything you like (subject to the naming conventions described above).

If your computer already has a name, you should re-use the existing name.

If your computer does not have a name yet but is going to be part of a network, contact your network or system administrator to help you select a name that is unique on the network. After typing in your choice, press <Enter>.

Entering Date and Time

21. Enter the date, time, and timezone.

Use the <Tab> key or the arrow keys to move to the field you want to set. Then

- For all fields except the Timezone field, enter the new value.
- For the Timezone field, do the following:

21a. Press <F2>. The Continent menu is displayed.

21b. Use the arrow keys or <Tab> to select your continent. Then press <Enter>. A list of timezones is displayed.

21c. Use the arrow keys or <Tab> to select your timezone. Then press <Enter>.

When all the fields contain the correct value, press <F10>.

Viewing Packaging Message

22. Read the message about the "Install Menu" and then press <Enter>**.**

From the next screen you can view or change the installation options, including advanced options such as package selection and file system configuration, and begin installing UnixWare on your hard disk. You can also select to cancel the installation if you are not satisfied with your installation setup.

Typically, most users want to change the set of packages that are installed and, if they have a second hard disk, the partitioning of the second disk.

For example, to view UnixWare books online, the *Dyna*Text document browser and the Personal Edition Documentation or Application Server Documentation packages must be installed. These packages are not installed by default because of the amount of space they require on your hard disk. To install these packages, you must select *View or Change Package Selection* from the "Install Menu" and then choose these packages.

In an enterprise computing environment, you can install these packages on one system and configure other systems in the network to access the books. For details, see the *System Owner Handbook*.

Choosing Install Menu Options

23. Use this screen to view or change installation setup (optional); then install the software or cancel the installation (as described below).

If you do not change any installation options and you select *Accept All Settings and Install Now*, default values are used for any option that was not previously set. For example, a default set of packages is installed.

On the other hand, menu items that begin with "View or Change..." may be selected as many times as you like. However, you must return to the "Install Menu" and select *Accept All Settings and Install Now* to begin installing software.

View or Change Package Selection

Choosing this option displays a list of Personal Edition or Application Server packages. Asterisks mark the packages that will be installed.

For information about each specific package, either move the cursor to the particular package name and press <F1> or see Appendix D, "Information About UnixWare Packages."

From the "Package Selection" screen you can choose which packages to install

- To choose to install all the packages except the OS Multiprocessor Support package, press <F5>. (This option is typically not selected if your UnixWare partition is less than 300 MB. In some locales, slightly more space is needed because of the translated UnixWare books for the *Dyna*Text browser.)

- To choose whether to install a particular package, use the arrow keys to move the cursor to the package of interest. Then press the space bar to select or deselect the package. You can press the space bar multiple times per package; each time you press the space bar, the yes/no option (asterisk) for installing the package changes.

  If you are performing a nondestructive installation, by default an overlay or upgrade of the Personal Edition/Application Server packages currently installed on your system is performed. You can select to install additional packages; however, you can not deselect a package that is installed on your system.

Note 

On multiprocessor systems, select the OS Multiprocessor Support package. Otherwise, the default uniprocessor support is provided.

- To restore the default package selection settings, press <F6>.

After completing your selections, press <Enter> to return to the "Install Menu."

Dependent Packages

Some packages are dependent on other packages. If you modify the default list of packages and do not select a prerequisite package, an error message is displayed showing which packages must be selected.

Note 

The Base package must be installed; the installation software will not allow you choose otherwise.

For additional details on package dependency, see Appendix D, "Information about UnixWare Packages."

Additional Platform Utilities

If you select to install the Additional Platform Utilities package, an additional menu is displayed prompting for the platform type. See the section "Additional Platform Utilities (*platform*)" in Appendix D, "Information About UnixWare Packages," for details.

View or Change Disk Configuration

If you are performing a nondestructive installation, this choice does not appear. You cannot change partition/file system information during a nondestructive installation.

Choosing this option displays the "Disk Configuration" menu. From this menu you can view and/or change your primary and secondary disk partitions, file system configuration, and advanced disk operations (choosing whether to perform a surface analysis and whether to overwrite your system boot code). For details, see the section "How to Change Partition and File System Configuration" on page 72 in Appendix C, "Information About Partitions and File Systems."

View or Change System Node Name

If you are performing a nondestructive installation, this choice does not appear. You cannot change the system node name during a nondestructive installation.

Choosing this option displays the "System Node Name" screen. See Step 20 on page 26 for details. After viewing or changing the system node name, press <Enter> to return to the "Install Menu."

View or Change Time and Date

Choosing this option displays the "Date and Time" screen. See Step 21 on page 26 for details. After viewing or changing the date and time, press <Enter> to return to the "Install Menu."

View or Change Keyboard Type

Choosing this option displays the "Select Keyboard Type" screen. See Step 7 on page 17 for details. After viewing or changing the date and time, press <Enter> to return to the "Install Menu."

Accept All Settings and Install Now

Selecting this option begins installation of UnixWare on your hard disk.

Unless you first change settings by selecting the other options on this menu, the system uses default options to create file systems and to determine which packages to install.

The installation time depends on your hardware and on the packages you are installing. For example, for a 33 MHz 486 with 16 MB of RAM, software installation typically takes about forty minutes with the default package selection. The following major activities take place during this phase of the installation process:

- The installation software checks the requested partition and file system configuration to ensure that it is accurate. If it is, additional information is not prompted for until the end of the installation process.

  Otherwise, an error message is displayed and you are returned to the "Install Menu" to update your installation selections. For additional information on the possible error messages that are displayed, see the section "Troubleshooting Setup Inconsistencies" below.

- If you are performing a destructive installation, a surface analysis is typically performed next. (A surface analysis is not performed if you selected *View or Change Disk Configuration* from the Install Menu and then chose not to perform a surface analysis.) An information gauge shows the percentage of the hard disk that has been examined.

- UnixWare software is copied to your system. An information gauge shows the percentage of files installed.

- The UnixWare operating system kernel (the program that enables communication between your system hardware and UnixWare applications) is created.

Wait for the next prompt and then go to Step 24 on page 33.

Troubleshooting Setup Inconsistencies

If the installation software detects an error in the configuration options you selected, an error message is displayed and you are returned to the "Install Menu" to update your configuration selections. This section describes the type of messages that may appear and the corrective actions you should perform.

Partition Error Message

A partition error message is displayed if a single active UNIX partition for UnixWare of at least 80 MB is not defined. To correct this problem, update the disk partition configuration by doing the following:

a. From the "Install Menu," select *View or Change Disk Configuration.*

b. From the "Disk Configuration" menu, select *Disk 1 Partitions.*

c. On the "Disk 1 Partitions" screen, update the partition information so that the active partition is a UNIX partition of at least 80 MB. For details about partitions, see Appendix C, "Information about Partitions and File Systems."

File System Error Message

A file system error message is displayed if the total size of the file systems exceeds the size of the active partition. To correct this problem, update the file system sizes so that their total size is less than or equal to the size of the active partition.

Typically, the total size for all file systems equals the size of the partition. However, if you want to add additional file systems after installation, you should leave enough space for these file systems. In this case, the total file system size is less than the size of the partition. (For details on adding file systems after installation, see the chapter "Managing File System Types" in *System Administration.*)

To update the file system configuration

a. From the "Install Menu," select *View or Change Disk Configuration.*

b. From the "Disk Configuration" menu, select *File Systems.*

c. On the "File Systems" screen, change the file system sizes so that their total is less than or equal to the partition size. For details about file systems, see Appendix C, "Information about Partitions and File Systems."

Insufficient Space Error Message

An insufficient space message is displayed if there is not enough space on your system to install UnixWare. In this case you have three options:

- Install fewer packages.

  To do so, select *View or Change Package Selection* from the "Install Menu" and then follow the instructions in the "View or Change Package Selection" section earlier in this chapter.

- Assign a larger UNIX partition and/or increase file system sizes.

  To do so, select *View or Change Disk Configuration* from the "Install Menu." Then follow the instructions in the "Viewing/Changing Disk Configuration" section in Appendix C, "Information About Partitions and File Systems."

- Cancel the UnixWare installation.

  To do so, select *Cancel Installation* from the "Install Menu."

Cancel Installation and Shut Down System

Choosing this option cancels all the choices you made up to this point in the installation process without changing your current system.

To cancel the installation:

23a. If you do not want to restart the installation process, remove any diskette from the boot drive.

23b. Select *Cancel Installation*.

23c. Reboot the system.

Reinserting HBA Diskettes (if needed)

24. **If prompted to reinsert the HBA diskettes, insert the specified HBA diskettes and press <Enter>. If you have multiple HBA diskettes, you are prompted to insert the HBA diskettes in the reverse order from which they were inserted in Step 9 on page 18. After inserting each diskette, press <Enter> and wait for the next prompt.**

    Do not worry if you are not prompted to reinsert the HBA diskettes. In this case, the installation software has determined that the device drivers on these diskettes are not needed.

Identifying Multiprocessor Platform

25. **If prompted, identify your multiprocessor platform.**

    If you are installing the OS Multiprocessor Support package, the installation software attempts to determine the platform type for your system. If the installation software is unable to determine the platform type, a message is displayed.

    After reading the message, press <F5> and choose from among the following:

    - Do not install platform-specific multiprocessor support at this time.

      If you select this option, some multiprocessor software is installed. However, multiprocessor support is not enabled until you use the desktop App Installer or the command-line **pkgadd** command to install a platform support module (PSM).

    - Choose a platform type from the displayed list of supported multiprocessor platforms.

If you select multiprocessor support, it is critical that you enter the correct platform type. Otherwise you may not be able to boot your system and you may have to install UnixWare again. See Appendix D, "Information about UnixWare Packages."

- If you have a platform support module (PSM) diskette for a multiprocessor platform that is not listed on the "Choose Platform Support Module" menu, select *Add-on Platform Support Module Diskette* and, when prompted, insert the PSM diskette.

Rebooting the System

26. **When prompted, remove any diskette in the boot drive; then press** <Enter> **to reboot your system.**

Merging Device Driver Files

27. **When prompted, decide whether to merge the *letc/conf* files. Then highlight Apply and press** <Enter>**.**

This prompt is only displayed if you are performing a nondestructive installation,

The UnixWare 2.0 installation software attempts to determine which device drivers on your system are needed for your hardware. During a nondestructive installation, if additional device drivers are present on your previous system, you are prompted whether to merge these device drivers into the */etc/conf* directory.

We recommend not merging the device drivers. If you later need a particular device driver, you can copy it from the */etc/inst/save.user* directory. (For details, see "Nondestructive Installation Problems" on page 139 in Appendix E, "Troubleshooting.")

If you merge the */etc/conf* files and your system will not boot, reboot UnixWare using the *unix.old* file, move *unix.old* to *unix*, and perform another nondestructive installation.

Configuring Your Network Interface Card(s)

28. **Select and configure the network interface card(s) for your system. Then press <F10>.**

These screens are only displayed if you installed the Network Interface Card Support (*nics*) package. (The *nics* package is installed by default unless you chose otherwise on the "Package Selection" screen.)

When the "Network Interface Card Selection Screen" is displayed, select the network interface card type(s) that are installed on your system. To do so, find the networking interface card that is installed on your system and then type in the number of cards (you can have at most four networking interface cards). If your system has two different networking interface card types, enter the number of cards for each type.

Note

Some network interface cards are grouped under a single category. The word "family" indicates that the particular entry represents multiple networking cards. To view a list of all the networking cards for a particular family, move the cursor to the category name and press <F6>.

Depending on the type of cards(s) you select, the "Network Interface Card Configuration Screen" is displayed and you are prompted for the hardware parameter settings for each card. These parameters typically include the interrupt vector (IRQ), memory address range, I/O address range, cable type, and so on. Refer to Appendix B, "Hardware Configuration Notes," for more information.

Selecting TCP/IP Network Parameters

29. **Enter the TCP/IP networking software parameters and then press <F10>.**

Note

These screens are only displayed if you installed the Internet Utilities (*inet*) package. (The *inet* package is installed by default unless you chose otherwise on the "Package Selection" screen.)

If you have multiple networking cards, you are prompted whether your system should be configured as a gateway and for the node name and device handle for the networking card.

For each networking card, you are prompted for

- Your system Internet Protocol (IP) address, netmask, and Broadcast address
- Your local router IP address
- The DNS domain name and the IP address for up to three DNS servers
- Your network frame type

Note

Default values may be listed for some or all of the fields if a BOOTP server is configured on your network, you are performing a nondestructive installation, or you are performing a network installation.

Although recommended, you do not have to enter these values now. After installation you can use the Internet Setup icon in the Networking folder under Admin Tools (or the **/etc/inet/menu** utility) to configure networking, and then reboot your system to enable networking.

Also, depending on your network configuration, not all of these values are required. Contact your network administrator for the values to use for your

system. For more information, see the section "Internet Utilities (*inet*)" in Appendix D, "Information About UnixWare Packages."

Configuring NIS

30. **Use the left/right arrow keys to select whether to configure Network Information Service (NIS) now. Then highlight Apply and press** <Enter>**.**

These screens are only displayed if you selected the Network Information Service (*nis*) package from the "Package Selection" screen.

If you decide to configure NIS now, you are prompted to choose the type of NIS system (master, slave, or client) that you are installing and the NIS domain name for your system. Also, for master and client systems, you are prompted for the system node name for one or more NIS servers (master or slave) in your network. If you are installing a slave server, you are prompted for the name of its master server.

Contact your network administrator for the values to use for your system. For more information, see the section "Network Interface Service (*nis*)" in Appendix D, "Information About UnixWare Packages."

Selecting Your Locale

31. **Select your country and language preference. Then highlight Apply and press** <Enter>**.**

These prompts are only displayed if you installed the Language Supplement (*ls*) package. (The *ls* package is installed by default unless you chose otherwise on the "Package Selection" screen.)

You are prompted for the country where your system users reside. This determines locale-specific characteristics such as collation sequence and the characters that signify yes and no for "yes/no" prompts. Use the left/right arrows to cycle through the choices of countries.

You are also prompted whether to support only related locales (for example, if you select the United States, then related locales include the United Kingdom, Australia, and Canada English) or to support all locales. Selecting all locales is recommended if your system supports users who speak different languages. Use the left/right arrow keys to choose.

Selecting Your Mouse Type

32. Select your mouse type.

You are prompted to specify the type of mouse you are using: Serial Mouse, Bus Mouse, PS/2-compatible mouse, or No Mouse.

If you know your mouse type, enter the appropriate number listed for the mouse type and press <Enter>. The default mouse type is the Serial Mouse.

If your serial mouse came with a PS/2 adapter (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 the mouse as a PS/2 mouse.

We recommend that you set up your mouse now (if you have one), but you can set up or change the mouse configuration at any time. This can be accomplished by logging in as *root* and issuing the **/usr/bin/mouseadmin** command. This command prompts for information about your mouse.

33. Configure your mouse.

If you select *No Mouse* in the previous step, then go to Step 35. Otherwise, you are prompted for information based on the type of mouse you selected.

- If you select Serial Mouse, you are prompted for the serial port your mouse is connected to, whether the serial mouse is a Microsoft compatible or Mouse System Corporation compatible mouse (see "Gathering Mouse Information" on page 13) and the number of buttons on your mouse. By default, the port used is *tty00* (on a DOS system, *tty00* is known as *COM1*), the mouse type is Microsoft, and the number of buttons is 2.
- If you select Bus Mouse, you are prompted for the interrupt vector for which your mouse is configured and the number of buttons on your mouse.
- If you select a PS/2 mouse, you are prompted for the number of buttons on your mouse.

After answering these questions, the blinking words `Loading mouse driver` may appear in the center of the help bar at the bottom of the screen. The mouse driver is loading and should not be interrupted.

34. Test your mouse.

After you select a mouse, UnixWare checks whether your mouse can communicate with your computer. When prompted, press <Enter> to

begin the test. Then move the mouse and check whether the cursor on the screen moves. Press any mouse button to end the test. (You may have to press the mouse button twice.)

If the test is not successful, you are presented with the message `ERROR: Mouse Not Detected.` To continue, return to the "Mouse Selection" screen (Step 32) and do one of the following: select a different mouse type, select *No Mouse*, or select to shut down the computer so you can check your hardware.

Setting Up Accounts

35. Set up the owner, *root*, and *sysadm* accounts.

UnixWare supports multiple users. A user login ID and password are required to gain access to a UnixWare system.

You are prompted for the login and passwords for three important UnixWare accounts:

- **owner**: The system owner, or owner, is a user with permissions to do administrative tasks from the UnixWare Desktop such as adding new user accounts and managing the network. There may be more than one system owner.
- **root**: The *root* account is used to perform administrative tasks from the UnixWare command line. This account can access any file on the system.
- **sysadm**: The *sysadm* account is used to perform administrative tasks using the Operations, Administration, and Maintenance (OA&M) character-based menu interface.

Enter the system owner login and password, the *root* password, and the *sysadm* password.

If you performed a nondestructive installation, you are not prompted for the owner login, owner password, or *root* passwords.

If you did not install the OA&M package, or if you performed a nondestructive installation of the OA&M package, you are not prompted for the *sysadm* password.

Assigning Your Owner Name and Password

35a. Set up owner's account.

Enter the following login identification information for the system owner:

Owner's name: Enter the owner's full (first and last) name.

Owner's login ID: Enter the owner's login ID. Suggested entries are initials, first name, or a nickname.

Owner's user number: The default user number is the first unassigned number over 100. If you are performing a new installation, this number is 101. Each new user account you create should have a unique user number. If a user has accounts on multiple machines on your network, the same user number should be used on each machine. This ensures that permissions to files and directories are correctly set. So before setting this number, find out if the owner already has a user number.

The user number that you assign should not be changed. If you change this number after using the system, you may encounter permission problems because the old number is still tied to your desktop files and directories.

35b. Type a password for the owner's account.

You are prompted for the password for the owner's account. Be sure to assign and remember this password. Also, follow these guidelines when selecting a password:

- Each password must have at least six characters. (Only the first eight characters are significant.)
- Each password must contain at least two 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, initials, or those of friends or family.

Since passwords should be kept secret, the password you enter is not displayed on your terminal screen.

After typing your new password, press <Enter>. You are then prompted to confirm the password. Type your password a second time and press <Enter>.

If you make a mistake and the two passwords you enter do not match, you have two more chances to enter the password. If the passwords still do not

match, an error message is displayed. The owner is then prompted for a password the first time this login ID is used.

Assigning the root Password

35c. Type the *root* password.

You are prompted for the password for the *root* account. This account is used to perform advanced system administration activities and has the most privileges of all accounts on the system.

The procedure for setting up the *root* password is the same as the procedure in Step 35b.

Assigning the sysadm Password

35d. Type the *sysadm* password.

You are prompted for the password for the *sysadm* account. This account is created if you installed the OA&M package and is used to perform system administration tasks through the *sysadm* user interface.

The procedure for setting up the *sysadm* password is the same as the procedure in Step 35b.

Preparing to Use Your System

After answering the prompts described in this chapter, the system boots and the login prompt is displayed. Your system is now ready for use.

You may want to customize your system to best utilize the benefits UnixWare 2.0 provides. This includes adding additional software, configuring your system software, and creating back ups. See Chapter 3, "Configuring Your System." For further details, see the *System Owner Handbook*.

chapter 3

Configuring Your System

After installing UnixWare, you may want to customize your system environment. For example, you may want to set desktop preferences, install add-on products and applications, access programs and data that other systems on your network advertise, and so on.

You should also back up your system on a regular basis in case of a hardware failure, data corruption, or accidental deletion of important user data.

These tasks and many more are discussed in the *System Owner Handbook*, which explains how to administer your system, and the *Desktop User Handbook*, which describes many of the user-level tasks you can perform from your UnixWare Desktop.

The following procedure lists the tasks typically performed shortly after installing UnixWare.

Logging in to UnixWare

Note

If you performed a nondestructive installation, some of the tasks described in this chapter may be automatically updated for you (depending on your previous system configuration). However, you should still perform Steps 3, 5, 6, 8, and 10.

Procedure

1. **Log in as the system owner.**

   The first time the system owner logs in to their UnixWare 2.0 system, a welcome message is displayed.

2. **Read the online welcome message and decide whether you want to configure your system now. Select from the following options:**

   Show Instructions: This option provides help for performing first-time setup tasks. If you select this option, follow the online prompts to configure your system.

   Delete Welcome: The welcome message is displayed each time a system owner logs in until this menu option is selected. If you select *Delete Welcome* and then decide that you want to follow the help instructions to

configure your system, click on the 1st Time Setup icon in the Help Desk folder.

Close: If you do not want to follow the help prompts to configure your system now, but you want to be prompted with this question the next time you log in, click on *Close*.

3. **If you performed a nondestructive installation, determine where your UnixWare 1.1 applications now reside.**

   UnixWare 2.0 provides an enhanced graphical desktop. Some icons are now in a different location from UnixWare 1.1. Spend a few minutes familiarizing yourself with the new desktop layout.

   To determine which desktop folders/icons have been moved or renamed, see the following files:

   - The */usr/X/adm/README.UW2.0* file lists all system files that have moved.
   - A *README.UW2.0* file in each user's home directory lists which folders and icons on that user's desktop have moved.

   If other users have logins on your system, you should inform them that UnixWare has been upgraded to Release 2.0 and that they should read the *README.UW.2.0* file in their home directory.

   For more information on the UnixWare 2.0 Desktop, see the *Desktop User Handbook*.

4. **If you decided not to follow the online help prompts to configure your system, go to Step 5.**

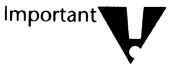
   The remaining steps in this chapter describe the same configuration activities that are available by following the online help prompts. You do not have to perform the entire procedure at one time, or in the order shown

   If you are performing all the steps recommended by the online help prompts, then you do not need to read the remainder of this chapter.

   For more details on any of the following steps, see the *System Owner Handbook*.

First-Time Setup Tasks

5. **Create emergency recovery diskettes. This protects your system by allowing you to invoke a limited UnixWare operating system shell to repair a damaged hard disk or restore data from emergency recovery tapes (which will be created in Step 10 below).**



Store the emergency recovery diskettes in a safe location.

The emergency recovery diskettes are customized diskettes for your system. Creating these diskettes is strongly recommended. For details, see the chapter "Recovering Your System," in the *System Owner Handbook*.

6. **Click on Display Setup in the Admin Tools folder to configure the system console video display.**

   Using Display Setup is recommended since this allows you to identify the best video resolution for your monitor.

7. **Set up and configure TCP/IP networking (including Internet access), dialup connections, mail, and printing.**

   TCP/IP: When installing UnixWare, the Internet Utilities (*inet*) package is installed by default unless you deselected this package from the "Package Selection" screen. If you did not provide TCP/IP configuration data (such as your system IP address) during installation, then use the Internet Setup icon in the Networking folder under Admin Tools to configure TCP/IP. (IPX/SPX networking does not require additional configuration.)

   Dialup: If you want to set up communications over modems and direct-line connections, use the Dialup Setup icon in the Networking folder under Admin Tools to configure dialup connections.

   Mail: If you want to send mail to other systems on your network, use the MHS Setup icon (for IPX/SPX networks) and/or Mail Setup icon (for TCP/IP networks) under Admin Tools to enable mail.

   Printing: If you want to use a local or remote printer in your network, use the Printer Setup icon under Admin Tools to access the printer.

8. **(Optional) Install add-on products, packages, and/or applications.**

   You can install UNIX System, Microsoft Windows, and DOS applications on your UnixWare system.

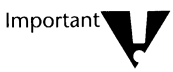
8a. Install additional Personal Edition or Application Server packages.

You can use the App Installer icon to install Personal Edition or Application Server packages that were not installed during UnixWare installation. (Only a default set of packages were installed unless you selected *View or Change Package Selection* from the "Install Menu.")

For example, after installation you may want to install the *Dyna*Text online documentation browser and UnixWare books on your system. To do so, you must install the *dynatext* package and a documentation package: *PEdocs* or *ASdocs*. (For details on setting up the online browser, including configuring the browser to access books stored on other systems in your network, see the *System Owner Handbook*.)

For details on Personal Edition and Application Server packages, see Appendix D, "Information About UnixWare Packages."

8b. Install UnixWare add-on products.



If you performed an upgrade installation of the Personal Edition or Application Server, upgrade the add-on products that are installed on your system.

You can also purchase the following UnixWare 2.0 add-on products

- **Processor Upgrade** (Application Server add-on): This product enhances the Application Server multiprocessor support by allowing the UnixWare operating system to optimize use of additional processors. Each copy of the Processor Upgrade product that you purchase increases by one the number of supported processors.

- **Software Development Kit**: This product provides a core group of development tools for programming in the UnixWare environment plus an extended group of commands and utilities. This product supports the development of standard multi-user applications with full-screen and line-oriented character interfaces, and includes basic tools such as a Motif® 1.2 development kit, Motif Application Programming Interface (API) reference, driver development tools, a C++ compiler, and a kernel debugger. Various libraries for developing applications are also included.

- **Encryption Utilities** (in the United States only): This product provides kernel-level support for Network File System® (NFS®), library support for Data Encryption Standard (DES) encryption routines, and command-level support for DES

encryption and decryption. The Encryption Utilities product provides a higher level of security for your files by encoding files using a key you select.

- **Online Data Manager**: This product provides:

  The VERITAS® Advanced File System, an industry-standard file system designed to maximize system and data availability while providing high I/O performance. Key features include online backup and administration, enhanced application interfaces, extended attributes, and improved I/O clustering.

  The Veritas Volume Manager, which provides online storage management, movement of file systems between physical devices, disk mirroring, logical disk resizing, and storage reorganization for increased performance.

  The Veritas Visual Administrator, which provides a Motif-based graphical user interface for volume, disk, and file system management.

- **Server Merge™** (Application Server only): The Server Merge product allows multiple users to access Microsoft Windows and to run DOS and Windows simultaneously.

For additional information on these products, see the respective *Overview and Installation* instructions that accompany their installation media.

8c. Install other UNIX applications.

For procedures on installing additional UNIX System software, see Chapter 5, "Installing and Sharing Applications," of the *System Owner Handbook*.

8d. Install Windows on your system.

See the *System Owner Handbook* for details.

8e. Install DOS and Windows applications on your system.

See the *Desktop User Handbook* for details.

9. (Optional.) If your system is part of an IPX/SPX network, use the NetWare® Setup icon in the Networking folder under Admin Tools to customize NetWare access.

When installing UnixWare, the NetWare Networking (*nwnet*) package is installed by default unless you deselected this package from the "Package

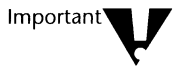
Selection" screen. This package enables networking over an IPX/SPX network. Advanced customization options, such as enabling monitoring of NetWare IPX/SPX stacks from a remote system, are available using the NetWare Setup icon.

10. After all your applications and products are installed, protect your system by creating emergency recovery and backup tapes.

10a. Create emergency recovery tapes.

If you later install additional system software, create new emergency recovery tapes.

Store the emergency recovery tapes with the emergency recovery diskettes that you created in Step 5.

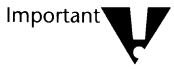


You must have the emergency recovery diskettes in order to restore data from the emergency recovery tapes.

For details, see the chapter "Recovering Your System," in the *System Owner Handbook*.

10b. Perform periodic backups of your system.

After creating your emergency recovery tapes, you should perform periodic backups of your system. This ensures that you can quickly restore your system with minimal loss of data in the event of a hardware or software failure.



If you performed an upgrade installation, then you should create a new full backup of your system. This is because incorrectly restoring data from a UnixWare 1.1 backup tape may damage your desktop.

Appendix A Installation Checklists

This appendix provides checklists summarizing the options you can set when installing the Personal Edition or Application Server. The information is grouped into three checklists

- The "Hardware Checklist" lists general hardware components that may be on your system. You typically do not need to know all the items on this list. However, if you manually configure any hardware components, you may want to record your changes here. This information is also very useful when debugging hardware or software problems.

- The "Install Diskette Checklist" lists the options that the installation software allows you to view or change before selecting *Accept All Changes and Install Now.*

Note

Until you select *Accept All Changes and Install Now*, you can cancel the installation without changing your current system configuration.

- The "Post-Reboot Checklist" lists the information you may be prompted for after the UnixWare software is placed on your hard disk.

Depending on the type of installation (destructive or nondestructive) and the software packages you install, you may not be prompted for all the items shown in these checklists. Also, if you perform a network installation, then some of the questions shown on the "Post-Install Checklist" are prompted for earlier in the process.

Figure A-1

Hardware Checklist

General hardware

Processor (Intel 386, 486, Pentium™, other): _____
Clock Speed (25 MHz, 33 MHz, 66 MHz, other): _____
Bus (ISA, EISA, MCA, PCI): _____
RAM memory (12 MB, 16 MB, other): _____
Video Adapter (VGA, EGA, other): _____
Diskette drive 1 (3.5", 5,25"): _____
Diskette drive 2 (3.5", 5,25"): _____
Printers: _____

Non-SCSI components

Hard disk controller: (type, IRQ, I/O and memory addresses, DMA channel):

_____

Hard disk 1 (type, MB): _____
Hard disk 2 (type, MB): _____
Cartridge tape controller (IRQ, addresses, DMA): _____
CD-ROM controller: _____

SCSI components (each SCSI ID must be unique for each HBA)

Host adapter: (type, IRQ, I/O port, memory address, arbitration level):

_____

Hard disk 1 (MB, drive ID - cannot be the same as the cartridge tape drive ID):

_____

Hard disk 2 (MB, drive ID):

_____

Cartridge tape drive (ID#): _____
CD-ROM drive (ID #) _____

Other hardware (specify):

_____

Figure A-2

Install Diskette Checklist

Did you back up your existing system to media? (yes/no) _____
Are you planning to use multiple operating systems? (yes/no) _____
If yes, have you set the active UNIX partition? _____

Are you using a color monitor? _____
What is your keyboard type? _____
Are HBA diskettes needed? _____
Are you installing from CD-ROM, tape, or network*? _____
Are you performing a nondestructive or destructive installation? _____
If nondestructive, and if the Online Data Manager (ODM) is installed on your previous system, you must remove the ODM or the UnixWare 2.0 ODM media must be available during installation.

(Note OS type and size for each partition)

Partition 1 OS: _____ Size (MB) _____ Disk #: _____
Partition 2 OS: _____ Size (MB) _____ Disk #: _____
Partition 3 OS: _____ Size (MB) _____ Disk #: _____
Partition 4 OS: _____ Size (MB) _____ Disk #: _____

File System	Type	Size	File System	Type	Size

(If you want to install UnixWare on both the primary and secondary hard disks, you must set the active partition on both disks and you must assign file systems to both disks.)

What is your system node name? _____
What is your time zone? _____

List any non-default package selections:
Select: _____
_____

Deselect: _____
_____

If you are installing multiprocessor support, what is your hardware platform type? _____

* If network install, you need to know the Install Server name (for IPX/SPX) or IP address (for TCP/IP) plus the networking data in Figure A-3.

Figure A-3

Post-Reboot Checklist

Network Cards #	1	2	3	4
IRQ				
I/O Address				
Memory Address				
DMA Channel				
Connection Type				
Node Name (for multiple cards)				

System IP Address: _____ System Netmask: _____

System Broadcast Address: _____ Router IP Address: _____

Domain Name: _____ Domain Name Server #1: _____

Domain Name Server #2: _____ Domain Name Server #3: _____

Network Frame Type: _____

Configure NIS now? _____

If yes, as a master, slave, or client? _____

NIS domain name? _____

If slave, identify master: _____

What is your country? _____

Support related locales (yes/no)? _____

Are you using a mouse? _____

If yes, what make and model? _____

Serial mouse: _____ # of buttons: _____ type (Microsoft or MSC): _____ tty (00 or 01) _____

Bus mouse: _____ # of buttons: _____ IRQ: _____

PS/2 mouse: _____ # of buttons: _____

UnixWare Accounts:

Owner's login ID: _____

Owner's user number: _____ (Provided by system)

Owner's password: (Do not write down)

Root password: (Do not write down)

sysadm password: (Do not write down)

appendix **B**

Hardware Configuration Notes

UnixWare supports most common hardware controllers and devices. If you follow the hardware manufacturer's instructions when installing and configuring your hardware, UnixWare will typically detect the hardware and configure the software device drivers (if installed) to access the hardware. This is particularly true for supported EISA, MCA, and PCI systems. For other hardware, such as some ISA hardware, you may need to use the DCU to configure the software device drivers.

Note

For details on using the DCU and adding hardware after installing UnixWare, see the chapter "Setting Up and Configuring Your Hardware" in the *System Owner Handbook*.

This appendix provides general information about hardware IRQ settings and software device drivers. This appendix also provides recommendations for configuring specific hardware in the following categories:

- Disk Drives
- HBA Controllers
- CD-ROM Controllers
- Cartridge Tape Controllers
- Network Interface Cards
- Video Configuration

The recommendations in this appendix indicate the type of hardware considerations you may need to consider. Since UnixWare currently supports a wide variety of platforms and hardware, with new hardware support constantly being added, not every configuration is covered.

To obtain the most recent listing of supported hardware, and hardware-specific technical bulletins for UnixWare, contact the Novell FaxBack® system at 1-801-429-2776 or (in the United States or Canada) 1-800-414-LABS.

Standard Hardware IRQ Settings

Specific IRQs are typically used for certain hardware devices. Although it is possible to configure hardware using nonstandard values, doing so is not recommended. The following table lists standard hardware configuration data.

Table B-1
Standard Hardware IRQs

IRQ	Description (driver)	Notes
0		Reserved
1	Keyboard driver (kd)	Reserved
2		Available (IRQ 2 is internally mapped to IRQ 9. When choosing IRQ values, you should consider IRQ 2 and IRQ 9 to be the same interrupt.)
3	Serial COM2 Port (asyc)	Reserved (can change after installation)
4	Serial COM1 Port (asyc)	Reserved (can change after installation but doing so is not recommended)
5	Cartridge tape (*ictha*) or Parallel Port #2 (*lp*)	Recommended cartridge tape setting if installing from non-SCSI cartridge tape drive and a printer is not assigned to this IRQ
6	Floppy disk (fd)	Reserved
7	Parallel port #1 (lp)	Required (can change after installation but doing so is not recommended)
8	Real-time clock (rtc)	Reserved
9		Available
10		Available
11		Available
12	PS/2 Mouse	Reserved if PS/2 Mouse is installed
13	Math Coprocessor and Programmable Interrupt Controller (*atup*)	Reserved

IRQ	Description (driver)	Notes
14	Integral hard disk (*dcd/athd*)	Only required if an IDE, ESDI, or ST506 hard disk is installed
15		Available

Typically, distinct hardware controllers must have distinct hardware parameter settings. However, you can configure multiple hardware controllers with the same IRQ value provided that each such controller supports a sharable IRQ. In this case, the controllers that share the same IRQ must be configured to share the same Interrupt Priority Level (IPL) value.

Software Device Drivers

Some device drivers (for EISA, MCA, and PCI hardware) can automatically detect your hardware configuration and do not require any UnixWare software configuration. Other hardware cannot be automatically detected. In this case you must either set the IRQ, I/O address range, memory address range, and DMA channel to the values UnixWare expects, or you must use the DCU when installing UnixWare to assign the hardware parameter values to the appropriate device driver (see Step 10 in Chapter 2, "Installing the Personal Edition or Application Server").

Tables B-2 and B-3 list the device drivers provided with UnixWare 2.0. In these tables, a "—" indicates that UnixWare will automatically detect the hardware setting and configure the device driver. A value indicates the hardware configuration setting that UnixWare expects. If your hardware is configured at a different value, you must use the DCU to assign the correct value to the device driver.

The following device drivers are provided with your UnixWare system on the *Install Diskette*.

Table B-2
Device Drivers on the Install Diskette

Device Driver	Vendor	Model	IRQ	I/O Range	Memory Address Range	DMA
adsc	Adaptec	AHA-1540B, AHA-1540CF, AHA-1542B, AHA-1542CF, AHA-1540C, AHA-1542C AHA-1640, AHA-1740, AHA-1740A, AHA-1742	11	330-333	dc000-ddfff	5
athd	multiple	ESDI/IDE Hard disk	14	1f0-1ff	0-0	—
cpqsc	Compaq®	Compaq Integrated Fast SCSI-2, Compaq Fast SCSI-2	—	—	—	—
dpt	DPT	DPT-2012A, DPT-2012B, DPT-2012B2, DPT-2022, DPT-2122, DPT-2322, DPT-2011, DPT-2021	15	170-177	c8000-c9fff	—
ictha	multiple	MCA Archive®, Wangtek 31040-XXX, Wangtek 30428-XXX, Wangtek 30475-XXX, Wangtek 30631-XXX	5	300-301	0-0	1
mcesdi	MCA	ESDI Disk Controller	14	3510-351f	0-0	5
mcst	MCA	ST-506 Disk Controller	14	320-32f	0-0	3

The *adsc*, *dpt*, and *ictha* device drivers support both EISA and ISA controllers. The values listed above are only required for ISA controllers.

If all of the hardware in your system is listed in Table B-2, then you do not need to use any HBA diskettes during installation.

The following device drivers are included on the UnixWare 2.0 *Host Bus Adapter Drivers* diskette.

Table B-3
Device Drivers on UnixWare 2.0 Host Bus Adapter Drivers Diskette

Device Driver	Vendor	Model	IRQ	I/O Range	Memory Address Range	DMA
adsa	Adaptec	AIC-7770, AHA-2740, AHA-2742, AHA-2740-T, AHA-2742-T	—	—	—	—
adse	Adaptec	AHA-1740, AHA-1740A, AHA-1742A	—	—	—	—
adss	Adaptec	AHA-1505, AHA-1510, AHA-1512, AHA-1520, AHA-1522, AHA-1520A, AHA-1522A	—	—	—	—
blc	BusLogic	BT-542B, BT-545S, BT-542D, BT-742-A, BT-747S, BT-747D, BT-757S, BT-757D, BT-640A, BT-646S, BT-646D, BT-445S, BT-946C	11	330-333	dc000-ddfff	—
dak	Mylex	Dac960 (2-channel, 3-channel, and 5-channel)	—	—	—	—
efp2	Olivetti	EFP2 SCSI	—	—	—	—
fdeb	Future Domain	IC-9C50, TMC 850IBM, TMC 850/M/MEX/MER	5	0-0	ca00-cbfff	—

Table B-3

Device Drivers on UnixWare 2.0 Host Bus Adapter Drivers Diskette

Device Driver	Vendor	Model	IRQ	I/O Range	Memory Address Range	DMA
fdsb	Future Domain	IBM 16-Bit AT Fast SCSI Adapter, IC-18C30, IC-18C50, IC-36C70, MCS® 600/700, TMC 3260, 1660/1680, 1650/1670, 1610MER/MEX/M	11	140-14f	0-0	—
ida	Compaq	IDA, IDA-2, IDAE, SMART	—	—	—	—
iiop	Tricord™	PowerFrame™	—	—	—	—
lmsi	Phillips	LMSI non-SCSI CD-ROM	5	340-347	0-0	—
mcis	IBM	MCIS-1015, MCIS-1018 SCSI Host Adapter	—	—	—	—
mitsumi	Mitsumi	CRMC-LU005S CD-ROM	10	360-363	0-0	—
sony	Sony®	SONY non-SCSI CD-ROM (cd31a, cd33a, cd535)	5	320-323	0-0	1
wd7000	Western DIgital	wd7000-ASC	—	—	—	—

Note The *blc* and *fdsb* device drivers support both EISA and ISA controllers. The values listed above are only required for ISA controllers.

Additional device drivers may also be provided on this diskette. Software device drivers are included after the hardware controllers they support are successfully tested with UnixWare.

If none of the device drivers on the UnixWare *Host Bus Adapter Drivers* diskette are needed to support the hardware on your system, then you do not need to insert the *Host Bus Adapter Drivers* diskette during installation.

Disk Drives

UnixWare supports disk drives that are larger than 512 MB and defined using more than 16 heads. However, the system BIOS for some hardware platforms do not support more than 16 heads. If your system BIOS does not support disks larger than 512 MB, redefine your disk parameters using 16 or less heads. See your hardware documentation for details.

Rewritable Optical Disks

Rewritable optical disks are 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, either the VERITAS file system type must be used for all the file systems on the disk or the rewritable optical disk must use 512 byte-per-sector media.

HBA Controllers

A SCSI hardware board tells your computer that you have SCSI device attached. This type of board allows you to attach more devices to your computer.

If you have a SCSI-based system, you should set the Target Controller (TC, also known as SCSI address, SCSI ID, or Device ID) and Logical Unit Number (LUN) values as follows:

- In most cases, the Target Controller should be set to 0 for the primary disk, 1 for a secondary disk, and 7 for an HBA. However, on computers that use the IBM PS/2 SCSI host adapter (*mcis* device driver), the primary disk has the highest Target Controller value. For example, it a system has disks with Target Controller values 0, 3, and 6, then the disk with Target Controller value 6 is the primary disk.

  For a cartridge tape drive, you can use any TC value that is different from all the other SCSI devices on your system.

- The Logical Unit Number (LUN) should be set to 0.

Installing Multiple HBA Controllers

When installing multiple HBA controllers, the boot HBA must be defined to both the system BIOS and to UnixWare. Typically, the boot device is the HBA device with the lowest BIOS address among all HBA devices that have a disk attached. You can set the BIOS address for an ISA or EISA HBA; however, the BIOS address for a PCI device is determined by the PCI bus slot where the controller is installed.

UnixWare detects the BIOS address for EISA and PCI devices but there is no reliable way to determine the BIOS address for ISA devices. Therefore, if your system contains an ISA HBA, you must ensure that the correct memory address is used for the boot controller. Otherwise, UnixWare will be installed on the wrong hard disk.

To specify the BIOS address, also known as the memory address, enter the DCU as described in see "Entering the DCU to View /Change Device Driver Configuration" on page 18.

SCSI Terminators

Always consult the manufacturers' documentation for the proper termination procedure for the HBA and SCSI devices you are using. Excess or improper SCSI termination can cause permanent damage to both the SCSI HBA and the devices attached to the HBA, or affect signal quality (possibly resulting in SCSI errors).

Always keep the terminating resistor packs (terminators) that came with a SCSI device so they can be restored to the device if needed. 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 the polarity is correct.

Both ends of the SCSI bus must be terminated

- If you have only one cable attached to your SCSI HBA, the HBA itself should be terminated and the last physical device on the SCSI cable should be terminated.

- If you have two cables (one internal and one external) attached to your HBA, there should be no termination on the HBA itself and the last

physical last devices (that is, those on the ends of the cable farthest away from the HBA) must be terminated.

Adaptec HBA Controllers

Note the following when using an Adaptec HBA controller:

- The DMA transfer rate for Adaptec 1540-series SCSI host adapters must be set to 5 MB per second. See the documentation supplied with the HBA for considerations.
- When used in *enhanced* mode, the configuration of the Adaptec 1740-series is determined automatically. There is no need to install the card at a given set of parameters.
- If you are using an Adaptec 1542 SCSI controller with a hard disk that is larger than one gigabyte, do not enable extended translation. If extended translation is enabled, your system may not boot.
- UnixWare will not install on Unisys PW2 computers that use an integrated Adaptec SCSI controller with the 6260 chip set. The controller must be disabled and another SCSI controller must be used in its place.

DPT HBA Controllers

For all DPT controllers:

- The I/O ports must be set secondary/disabled.
- The hard drive, SCSI device, and EISA bus must be enabled.

Run the **dptfmt** utility program for a DPT 2011 HBA to write reserved disk sector information before installing UnixWare. If **dptfmt** is not run, you may experience delays (up to 30 seconds) before you can access disks that are attached to the controller. You should also run **dptfmt** if you upgrade from a 2011 to a 2012A or 2012B adapter. Please refer to the DPT documentation for information about **dptfmt**.

Western Digital HBA Controllers

For the AT&T® WGS SCSI host adapters (manufactured for AT&T by Western Digital), the documentation supplied with the host adapter does not

discuss how to enable or disable the floppy controller on the host adapter. To enable the floppy controller, remove the jumpers at locations W6 and W9 on the host adapter. To disable the floppy controller, install the jumpers at locations W6 and W9.

CD-ROM Controllers

Note the following when configuring CD-ROM controllers:

- The manufacturer's documentation for the cd33a SONY non-SCSI CD-ROM may not explain how to set the interrupt. To set the interrupt, set the JP4 jumper to 1.

Cartridge Tape Controllers

Note the following when configuring tape controllers:

- The manufacturer's documentation for Archive SC499-R (and other integral Archive) tape drive controllers does not discuss how to set the I/O address to 300. To set to 300, combine the jumper settings for addresses 100 and 200.

- The manufacturer's documentation for Wangtek 30850 (also PC-36) tape drive controllers does not discuss how to set the I/O address to 300. To set the I/O address, find the row of ten DIP switches on your tape controller board and set switches 1 through 7 to ON and switches 8 through 10 to OFF.

- The Wangtek cartridge tape (5099EK/512EK) does not work with controllers which support both high and low density I/O.

Network Interface Cards

UnixWare 2.0 supports auto-detection and auto-configuration of EISA and MCA network interface cards that are compliant with the EISA and MCA architectures, respectively. Once these cards are configured using the EISA Configuration Utility or the MCA Configuration Utility, UnixWare obtains the device driver configuration parameters (IRQ, I/O address range, and so on) from the computer's non-volatile memory. As a result, you are not prompted

for any of these parameters when installing the Network Interface Card Support (*nics*) package.

For networking cards that are compliant with the ISA architecture, you must enter device driver parameters when installing the *nics* package. To obtain the correct values, boot using the DR DOS diskette provided with UnixWare and then use the configuration diskette provided with the networking card. For details, see the section "Configuring Your Hardware" in Chapter 1, "Before You Begin."

Please note the following when installing network interface cards:

- Some networking cards support a "wait state" register which should be enabled for enhanced networking performance. However, this may cause timing problems on the networking card and result in a loss of network connectivity. If you are not sure whether your computer hardware supports this register, disable the wait state when configuring the networking card.

- Some networking cards support a "Turbo" mode which should be enabled for enhanced networking performance. However, this may cause timing problems on the networking card and result in a loss of network connectivity. If you are not sure whether your computer hardware supports Turbo mode, disable this mode when configuring the networking card.

- Most network interface cards that are compliant with the ISA architecture have their I/O start address preset to 300h. However, this address may be used by another hardware device already configured on your system. In this case, change the I/O address range on the networking card so that it does not conflict with other hardware I/O address ranges.

- For network interface cards that support shared RAM, do not use memory addresses greater than 0xF00000.

- Most network interface cards that support shared RAM do not work if the processor cache for shared memory is enabled. In this case, you should use the machine set-up programs provided by your computer manufacturer to disable the processor cache for shared memory.

- No more than one of the following eight network interface cards can be installed on your system:

IBM_AutoLANStreamer_MC_32	Olivetti_NCU_9180
IBM_EtherStreamer_MC_32	Olivetti_NCU_9181/S
IBM_LANStreamer_MC_16	Olivetti_NCU_9195
IBM_LANStreamer_MC_32	IBM_Token_Ring_16/4_Adapter_II

  If one of these cards is installed on your system, you can not install a second networking card from this group, even if the second card is the same brand (for example, you can not install two Olivetti_NCU_9181/S).

- The IBM EtherStreamer MC 32 Network Interface Card does not work with the Thinnet (10base2) cable type.

- The SMC® EtherCard™ Elite32 Ultra and the SMC TokenCard™ Elite 32 network interface cards (device driver *smc8232*) are only supported in the non-bus mastering mode. Use the ECU for these cards to disable the Bus-Mastering switch for these cards.

Changing Network Interface Cards Configuration and Installing Multiple Network Interface Cards

When installing the Network Interface Card Support (*nics*) package, you can select to install up to four networking cards. After installing the *nics* package, if you want to add a new network interface card, configure the new networking card and then use the desktop App Installer or **pkgadd** command to reinstall the *nics* package.

If you want to remove a networking card after installing the *nics* package, remove the *nics* package using the App Installer or **pkgrm** command, shut down your system and remove the networking card, and then reboot your system and reinstall the *nics* package using the App Installer or **pkgadd** command.

Network Cable Types

The cable type setting for a network interface card is typically detected by its UnixWare device driver. Make sure that the cable type setting for your

networking card is the cable type you plan on using. The following describes the various cable types.

Ethernet

There are three basic types of Ethernet cables:

AUI: A thick cable with a flat multi-pin connector.

BNC: A thin cable with a round twist-on connector.

TP: A flat cable with a telephone-style jack for a connector.

Token-Ring

There are two basic types of Token-Ring cables:

Shielded: A thick cable with a flat multi-pin connector.

Unshielded/TP: A flat cable with a telephone-style jack for a connector.

Video Configuration

The following are some video-related configuration considerations:

- If you have a color monitor that only displays in black and white after UnixWare is installed, you may need to turn on the monitor before you turn on the computer to have the colors work properly.
- If you are using the Compaq QVision video card, you must disable interrupts on the board. (Disable the interrupts using the EISA configuration utility provided with your computer.)

Additional Hardware Recommendations

The following are generic hardware considerations that may help prevent system problems:

- To install on a system with 8 MB of RAM, either
  - Each device must be SCSI device and all device and all devices must be connected to a single HBA, or
  - If you have an ESDI or IDE disk, then you can install from a non-SCSI cartridge tape drive.
- If you disable BIOS on some EISA cards, such as the Adaptec 2742, the IRQ and memory address range are disabled. Since the IRQ is disabled, you may not be able to access the card. If this occurs, contact your hardware vendor to see if you can disable memory without disabling the IRQ.

  For example, if you have multiple HBA controllers, you may have to disable some of these controllers since they are configured with conflicting memory address ranges. As a result, UnixWare can not access devices connected to such controllers.
- Some devices and controllers hang when trying to perform synchronous negotiation. Typically, you want synchronous negotiation enabled; however, try disabling synchronous negotiation if a device or controller does not work.
- By default, the CPU speed on some systems is set to low. To significantly increase the performance of your UnixWare system, change the CPU speed to high.
- Some systems with the "Power Saver" option (also referred to as "Power Management" or "Green PC") enabled are not supported by UnixWare. If this option is enabled and the installation fails at random points after setting up the hard disk, disable the Power Saver option.

  Also, if installation is successful but the message `WARNING: Disk Driver Request Timed Out, Resetting Controller` is displayed, disabling the Power Saver option may correct the problem.

For more information, see the hardware documentation provided with your hardware devices and controllers.

appendix C

Information About Partitions and File Systems

What are Partitions and Slices?

When you load multiple operating systems on a hard disk, each operating system must be contained in its own partition. A partition is a portion of a hard disk reserved for the operating system, files, directories, and so on. Partitions are created during installation and cannot be changed without destroying the files they contain. It is therefore very important that you carefully consider the number, type, and size of partitions you want on your hard disk.

Think of a hard disk as a whole pie. One piece of the pie is known as a partition. You can further divide a partition into slices. These are useful when you want to restrict the amount of partition space used for a particular purpose. For example, you can create a separate slice for a */home* file system to prevent users' home directories from depleting space in the root (/) file system.

Figure C-1
Hard Disk Partitions and Slices

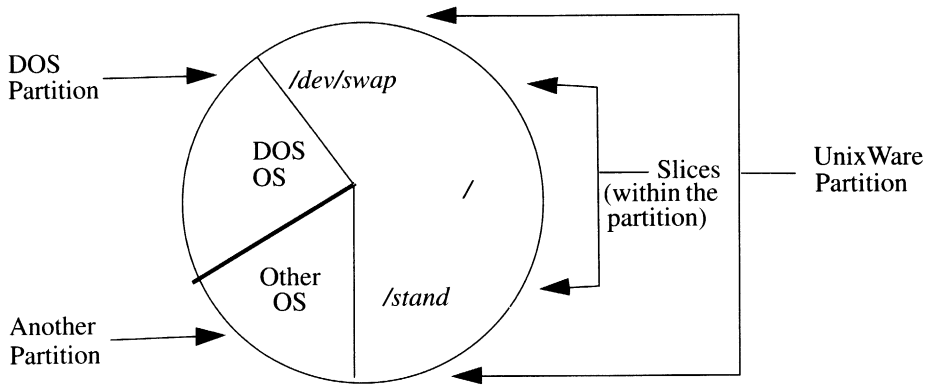


Figure C-1 illustrates how partitions and slices can divide a single hard disk.

Information About Partitions

When installing the Personal Edition or Application Server, you can define the partition(s) for your hard disk(s) and the file systems (or slices) for the active UNIX System partition. (UnixWare is installed in a UNIX System partition.) By default:

- If you have an existing UNIX System partition on your computer and it is the active partition (the partition you boot from), then this partition is used

  If your system has two or more UNIX System partitions, UnixWare 2.0 is installed in the active UNIX partition.

- If you are performing a nondestructive installation, you can not change your system disk partitions.

  If you are performing a destructive installation, you are provided with a choice of whether to use your whole disk for UnixWare or to only use a portion of the disk for UnixWare.

- UnixWare requires at least 80 MB of formatted disk on Disk 1; more space is necessary if you want to install additional UnixWare products or additional Personal Edition/Application Server packages. (For more information about product sizes, see Appendix D, "Information About UnixWare Products," and the *Overview and Installation* instructions for the products you are installing.)

  If partitions already exist on your disk, but the active partition is not large enough to install UnixWare, the installation software informs you of this and requires that you either modify your partitions or cancel the installation.

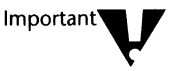
If you want to change your disk partitioning, you may create up to four partitions. For example, you can have two UNIX partitions (perhaps you have a previous version of UnixWare such as such as UnixWare 1.1, or another UNIX operating system such as SVR4.2, Microsoft XENIX®, SCO™ XENIX, SCO UNIX, or ISC UNIX that you want to keep in addition to UnixWare 2.0), a DOS partition, and another operating system partition such as OS/2®.

Setting Up Partitions

When you set up your disk partition(s), note the following:

- If you want to install UnixWare on two hard disks, you must enter the *View or Change Disk Configuration* menu and define an active UNIX System partition on both disks. Then you must use the "File System" menu to assign at least one file system or slice to Disk 2. If both of these actions are not performed, the installation process ignores Disk 2 and its contents are not touched.

- Any change in the size, type (UNIX, DOS, etc.), or cylinder position (location on the disk for the partition) of an existing partition results in the partition being removed and recreated. In this case, all data in the partition is lost.



If you expand the size of one partition and, as a result, then need to change the cylinder location of a second, existing partition, the data in both partitions are lost.

For any partition you are changing in this way, it is very important that you back up your existing applications, files, and directories. (Backing up the applications and operating system may not be necessary if you still have your original installation media.)

For example, if you have an existing DOS partition on your hard drive with an application such as WordPerfect®, first back up your working files, then your application, and finally your operating system. After UnixWare is installed, reinstall your operating system, applications, and files. For further details, see "Using DOS" on page 7 in Chapter 1, "Before You Begin."

- If you plan to have both a pre-5.0 DOS system partition and a UnixWare partition 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 your UnixWare partition. To boot a Pre-5.0 DOS partition, it must be less than 32 MB and must start at cylinder 0.

  Post-5.0 DOS partitions do not need to follow these requirements.

- If a *System* partition is listed, do not delete it or change it. This partition is created by some hardware manufacturers such as Compaq. If the *System* partition is not listed, then it is not needed and should not be created.

For details on changing disk configuration during installation, see the section "How to Change Disk and File System Configuration" later in this appendix.

Information About File Systems

Note

Although flexibility is provided to customize your file system selection, selecting the defaults is recommended unless you are an experienced user.

Slices are used to reserve space for a specific file system. A file system consists of a directory and its subdirectories. For example, suppose you create slices for */*, */var*, and */var/tmp*; then

- All files and directories under */var/tmp* are stored in the slice for the */var/tmp* file system.
- All files and directories under */var* that are not in the */var/tmp* subdirectory are stored in the slice for the */var* file system.
- All files and directories under */* that are not in the */var* subdirectory are stored in the slice for the */* file system.

Based on the size of your active UNIX System partition, the installation process automatically selects slices and assigns default sizes. Using the *View or Change Disk Configuration* menu during installation, you can change the default selection to the configuration you want. The installation software only lets you select valid slices (based on your partition size) and valid file system types for your slices

- Depending on your system size, up to twelve directories can be assigned their own slice during the installation process. (A minimum of three slices are always defined.) The following table lists these file systems, indicates which ones are required, and briefly describes each one.

Table C-1
File Systems

File System	Name	Req.	Description
/	Root File System	Yes	Foundation of the UnixWare directory structure. For simple configurations, this file system requires most of the disk space.
/stand	Boot File System	Yes	Contains the system start-up files.
/dev/swap	Swap Slice	Yes	Contains the data needed for the system to run. Since this slice does not contain files, the file system type must be designated as "slice".

Table C-1
File Systems

File System	Name	Req.	Description
/home	User File System	No	Contains users' files. Use of this file system helps prevent users from depleting the / file system.
/home2	2nd User File System	No	Contains an additional set of users' files. This file system is useful when your system contains two sets of users. Together, */home* and */home2* provide both user groups with their own area.
/var	Add-ons File System	No	Contains data files for add-on packages and administration.
/tmp */var/tmp*	Temporary File Systems	No	Holds temporary files. Using temporary storage helps avoid file space problems in the / file system. The */tmp* and */var/tmp* directories are available to any user.
/usr	usr File System	No	Contains application software executables and some of the data files.
/dev/dump	Dump Slice	No	Provides a storage area for an image of the running system that can be stored for later analysis if the system fails. The dump slice should be the same size as the amount of RAM on your system.
volprivate	VxVM® Private Slice	Yes	Ensures that data is not lost if the Online Data Manager product is installed.
Alt/Sector	Alternate Sector Slice	Yes	Provides a mapping of bad blocks to good blocks for use by the disk driver.

- The following file system types can be assigned: *bfs* (for */stand* only), *memfs* (for */tmp* and */var/tmp* only), *s5*, *ufs*, and *vxfs*. A separate slice, which has no file system type, is assigned for */dev/swap*.

  For any given file system, only a subset of these choices is allowed.

Choosing File Systems

When you change file systems from the default, note the following:

- The default file system type is VjFS™ (VERITAS Journaling File System, referred to as *vxfs* in this handbook). The *vxfs* file system is known for speed, reliability, and recoverability.

Some applications written for older releases of the UNIX operating system prior to UnixWare 1.0 are not compatible with the *vxfs* file system type. Check the prerequisites for the applications you may want to install; otherwise, you may configure your computer in a way that prevents you from installing such software, and you will have to reinstall UnixWare and reconfigure your system again.

- System performance is enhanced if you limit the number of file system types on your system, particularly on systems with 8 MB of RAM. For 8 MB systems, we recommend that you only use the following file system types:
  - */stand* must always be `bfs`.
  - */dev/dump* and */dev/swap* should be designated as `slice`.
  - If */tmp* and */var/tmp* are file systems, selecting *memfs* as their file system type enhances system performance.
  - All other file systems should have the same file system type (*s5*, *ufs*, or *vxfs*).
- The */tmp* and */var/tmp* slices are by default *memfs* file systems. As a result
  - Files in these directories are not preserved across system reboots.
  - Most of the time, file pages for *memfs* file systems are in memory. However, they need to be backed up by swap space in case the operating system reclaims the memory.
  - To protect against filling up the swap space, the amount by which */tmp* and */var/tmp* together exceed 8 MB is included in the default size for */dev/swap*. This 8 MB savings in disk space is possible since it is unlikely that */dev/swap*, */tmp*, and */var/tmp* are all full at the same time.
- The default amount of swap space is the amount */tmp* and */var/tmp* together exceed 8 MB plus the minimum of twice the amount of RAM or 16 percent of the UNIX partition for UnixWare (if this minimum is less than 12 MB, then 12 MB is used instead).

If your system is used for software development, particularly for large applications such as graphics development, the default swap space may not be large enough to link the applications. In this case, you should allocate a larger swap space (generally three to four times the amount of RAM on your computer plus, if */tmp* and */var/tmp* are *memfs* file systems, the amount */tmp* and */var/tmp* together exceed 8 MB).

You can also use file system space to provide additional swap space after installation. For details, see the chapter "Monitoring and Tuning Your System" in the *System Owner Handbook*.

- By default the maximum number of inodes (the maximum number of files in a file system) is 64 KB. This is to maintain compatibility with some older applications (written for System V Release 3.2 or earlier) without having to recompile them. If you want to extend the number of inodes of your larger file systems above 64 KB, select <F6> on the "File Systems" screen and change the inode limit.

- If you are performing a nondestructive installation, you must keep the existing file systems, slices, and partitions.

- If you plan to install the ODM product, allocate 1024 KB for the Volume Manager private slice. This ensures that data is not lost when the ODM is installed.

- If you want to add additional file systems besides those listed in Table C-1, you should leave enough space and add them after installation. For details on adding file systems after installation, see the chapter "Managing File System Types" in the part "Storage Devices and File System Administration" in the book *System Administration*.

If you have a second hard disk, you can improve system performance after installing the Personal Edition or Application Server by creating an additional slice in the UNIX System partition on the second hard disk.

- If your system suffers from frequent I/O errors, increasing the size of the Alt/Sector slice may improve the system reliability.

  However, if your system has its own alternate sector subsystem (for example, if you have a SCSI hard disk), then you can reduce the size of the Alt/Sector slice.

- An *s5* file system cannot be larger than one gigabyte.

How To Change Partitions and File System Configuration

When performing a destructive installation, you are prompted whether to use the entire primary hard disk for UnixWare. If you select no, you are given a chance to update the disk configuration on the primary hard disk. For details on updating the disk 1 (primary hard disk) partition, see the "Viewing/Changing Disk Partition" section below.

You can also update your disk 1, disk 2, or file system configuration as well as selecting whether to perform a surface analysis or to overwrite the boot code by doing the following:

1. **From the "Install Menu," select *View or Change Disk Configuration.***

2. **From the "Disk Configuration" menu, select:**

   - *Disk 1 Partitions* (or *Disk 2 Partitions*) to view and/or change your primary or secondary disk partition. If you only have one hard disk drive, the *Disk 2 Partitions* option is not displayed.

     Then see the "Viewing/Changing Disk Partition" section.

   - *File Systems* to view and/or change the file system configuration on your primary hard disk.

     If you select *File Systems* and a warning message is displayed instead of the "File Systems" screen, enter the "Disk 1 Partitions" screen and define an active UNIX partition of at least 80 MB. You can then enter the "File Systems" menu

     Then see the "Viewing/Changing File Systems Allocation" section.

   - *Disk Operations* to view and/or change the advanced installation options and to overwrite the system boot code and/or to perform a surface analysis.

     Then see the "Performing Special Disk Operations" section.

3. **After viewing or changing your disk configuration, select *Return to the Previous Menu.***

Viewing/Changing Disk Partition

If you select *Disk 1 Partitions* or *Disk 2 Partitions* (if displayed) from the "Disk Configuration" menu, the four disk partitions are displayed. You can use this menu to add partitions, delete partitions, select which partition is active, and change the size of partitions.

Any change in the size, type (UNIX System, DOS, etc.), or cylinder position of an existing partition causes the partition to be removed and recreated. As a result, all data in the partition is lost. In particular, if expanding the size of one partition requires changing the cylinder location of a second existing partition, the data in both partitions are lost. However, the data is not removed until after you select *Accept All Settings and Install Now.*

Partition Type

To change a partition type, do the following:

1. **Move the cursor to the type field for the partition you are changing.**
2. **Press <F2> to display the partition choices.**
3. **Use the <Tab> or up/down arrow keys to cycle through the choices (UNIX System, pre-5.0 DOS, DOS, other, unused, or System partition) and select the partition type you want.**
4. **Press <Enter> to register your selection and exit the "Choose Type" menu. The new partition type is displayed.**

Partition Status

To change the status (active or not active) of a partition, do the following:

1. **Move the cursor to the status field for the partition you are changing.**
2. **Press <F2> to change an active partition to a non-active partition, or vice versa. Each time you press <F2>, the status changes.**

   You can have multiple partitions, including multiple UNIX System partitions, but only one partition can be active and the active partition must be a UNIX System partition

The software provides a warning and prohibits you from leaving the current menu without having an active UNIX System partition.

The installation menu interface collects user choices and implements them only after you select *Accept All Settings and Install Now.* Therefore, if you use the disk partitioning menus to try and change the active partition, and then select *Cancel the Installation*, the active partition is not changed. However, you can use the procedure in the section "Changing Your Active Partition" of Chapter 1, "Before You Begin."

Partition Size

To change the size of a partition, you can change either the percentage of disk space or the number of cylinders assigned to the partition by doing the following:

1. **Move the cursor to the % or Cylinders field for the partition you are changing.**

2. **Type the new value (as a percentage or in cylinders, depending on which field you are in).**

When you are done updating the disk partition information, press <F10>. The system checks the disk partitions you requested. If you have defined a legitimate set of partitions—including an active UNIX partition of at least 80 MB—you are returned to the "Disk Configuration" menu. Otherwise, a warning message is displayed and the "Disk 1 Partitions" or "Disk 2 Partitions" menu remains so you can correct the partitions.

Viewing/Changing File Systems Allocation

If you select *File Systems* from the "Disk Configuration" menu, the list of available file systems is displayed. The first time you enter this menu, the default file system configuration is shown. File systems with "off" in the Type column are omitted from the configuration. Use the <Tab> key to move between fields. When you complete all the changes, press <F10> to apply the changes.

File System Type or Disk

To change a file system type, or the disk that it is installed on, do the following:

1. **Move the cursor to the Type or Disk field for the file system you are changing.**

The Disk field is only displayed if a second hard disk is detected.

2. **Press <F2> to display the choices.**

3. **Use the <Tab> or up/down arrow keys to cycle through the choices.**

4. **Press <Enter> to register your selection and exit the choices menu. The new file system type is displayed.**

File System Size

To change the size of a file system, do the following:

1. **Move the cursor to the Size field for the file system you are changing.**
2. **Type in the new value.**

File System Block Size and Inode Limit

To change the block size or inode limit for a file system, the file system type must first be defined (see "File System Type" above). Then do the following:

1. **Use the <Tab> key to move the cursor to a field containing the file system type.**

   If you just changed the file system type for the current field, press <Tab> to register the change. Then press <Tab> to move the cursor to the field containing the file system type you want to view or change. This ensures that you view or change the block size or inode limit for the intended file system type.

2. **Press the <F6> advanced options function key. A menu is displayed listing the file system block size and 64K Inodes Limit.**
3. **Press <F2> to view the valid block sizes for this file system type.**
4. **Press the up/down arrow keys until the block size you want is highlighted.**
5. **Press the <Tab> or down arrow key to move to the 64K Inodes Limit field. By default the maximum number of inodes (files per file system) is 64 KB in order to maintain compatibility with some older applications (written for Unix System V Release 3.2 or earlier) without having to compile them again.**
6. **To change whether the 64 KB inodes limit is in effect, press <F2>. In this field, *yes* means provide the 64 KB limit and *no* means do not limit the number of files.**
7. **Press <F10> to return to the "File Systems" menu.**

Performing Special Disk Operations

If you select *Disk Operations* from the "Disk Configuration" menu, you are prompted whether to perform a surface analysis of your disks and whether to overwrite the master boot code. Use <Tab> to move between fields and press <F2> to change the answer to the current question from yes to no, or vice versa. Press <F10> to return to the "Disk Configuration" menu.

Surface Analysis

By default, a surface analysis of the hard disk is performed to check for defects in each disk block. Only valid sectors are then used by the installation process

Surface analysis is a destructive operation which is only done on your active partition. (Surface analysis is not performed for a nondestructive installation.) If your system has a second disk, surface analysis is only performed on that disk if file systems are assigned using the "File Systems" menu. If no file systems are assigned to Disk 2, then Disk 2 is not touched during the installation process.

Surface analysis is a time-consuming operation. However, it is strongly recommended that you allow the installation process to perform the surface analysis. Surface analysis is only performed for disk sections used by the installation process.

If you do not perform a surface analysis and your system has bad boot sectors, your system may behave erratically.

Overwrite the Boot Code

By default, the boot code is overwritten when a UNIX partition is the only partition defined on your primary hard disk. If multiple partitions are listed on the "Disk 1 Partitions" menu, then by default the boot code is not overwritten. To change the default, use the "Disk Operations" menu after configuring your partitions.

Overwriting the boot code is generally not required. However, if your computer already has an operating system (for example, OS/2) before installing UnixWare, it may have a boot code on the hard disk that is incompatible with UnixWare. In this case, to boot UnixWare you need to overwrite the boot code. (This may prevent booting of the other operating system.)

If you do not overwrite the boot code and are then unable to boot UnixWare, see the section "System Has Incompatible Boot Code" on page 118 in Appendix E, "Troubleshooting," for instructions on how to overwrite the boot code after completing the UnixWare installation.

appendix **D**

Information About UnixWare Packages

This appendix describes the packages that make up the UnixWare Personal Edition and Application Server products.

The first section of this appendix provides general package information about the amount of disk space required to install UnixWare, how to combine files when performing a nondestructive installation, UnixWare 1.1 packages that are not part of UnixWare 2.0, package-specific questions that are asked during the installation process, and package dependencies.

The second section describes each package in the Personal Edition and Application Server products.

General Package Information

This section provides general packaging information.

Product Sizes

The amount of space required to install a product depends on many factors, including which packages you install, the options you select when installing packages, the file system type(s) you select (*vxfs*, *ufs*, etc.), the block size for your file system(s), your system language, and the amount of RAM on your system. For example, the size of the Network Interface Card Support package depends on which device drivers are installed (different device drivers are installed based on the networking cards you select).

To install UnixWare, a 150 MB partition is recommended. Of this, approximately (depending on language) 100 MB is needed in the / file system to install the default set of Personal Edition and Application Server packages. If additional file systems (such as */usr*) are created, then less space is needed for the root (/) file system since some of the installed software is placed under the additional file systems.

The installation software verifies that your file system configuration is large enough to install the packages you select. If insufficient space is allocated for a file system, an error message is displayed and you must either change your file system configuration or install fewer packages.

The values listed are based on having a standard configuration (12 MB RAM for the Personal Edition and 16 MB RAM for the Application Server) and using system defaults such as the *vxfs* file system type and a block size of 1024.

If you plan to install additional applications, or more than just the default set of UnixWare packages, your partition and file system allocations must be large enough to accommodate these applications while leaving enough space for user files.

Combining System Files

When performing a nondestructive installation of the Personal Edition or Application Server (see Chapter 2, "Installing the Personal Edition or Application Server"), you have the option to retain changes to volatile files (the system configuration files such as */etc/passwd*) that were made since the initial installation. If you select this option

- For an upgrade installation, changes to your UnixWare 1.1 files are merged into the new UnixWare 2.0 files.

System files for the graphical desktop are always merged in order to provide the enhanced UnixWare 2.0 Desktop environment.

- For overlay installations, the contents of the volatile files do not change.

When installing packages using the desktop (the App Installer icon in the *Admin Tools* folder) or **pkgadd** command, the volatile files are typically combined. If you do not want to keep the previous contents of the volatile files, perform an overlay of the Personal Edition or Application Server and, when prompted on the "Choose merge options" screen, select not to combine the volatile files.

Regardless of whether you select to combine volatile files, copies of the volatile files are saved in */etc/inst/save.user* and the desktop files are saved in */usr/X/.SAV.2.0*.

Obsolete Packages

The following software packages were provided in UnixWare 1.1 but are not included in UnixWare 2.0: *cmdref, ddiprog, ddiref, fileref, flib, guiprog, inetref, license, motifref, netpg, nfsadmin, nwapiref, nwcprog, nwxfrpg, osapiref, pdiguide, progstdc, sdtpg, strpg, sysadmin, syscalls, tcpadmin, wdwingref, xmpg, xmstypg*, and *xscrnpg*. Since the capabilities provided by these packages are included in or replaced by UnixWare 2.0 packages, these UnixWare 1.1 packages (if installed) are removed from your system during an upgrade installation.

Package Options

When installing a product (also referred to as a "set") using the desktop or the **pkgadd** command, you are prompted for the packages you want to install. Some packages can be installed in either the automatic or the custom installation mode. You are prompted to choose the installation mode for only those packages that support this option.

Packages are installed in the automatic installation mode by default. You should accept the defaults unless you are knowledgeable about the packages and options involved.

If you are familiar with a package and want fine control over its configuration, select the custom option. You are then prompted to provide additional information.

When selecting packages during installation of the Personal Edition or Application Server, custom installation questions are not asked.

Table D-1 lists the packages in the Personal Edition and Application Server, the package short name used by the App Installer and **pkgadd**, whether the package is installed by default, and the package installation options:

- The *Installed by Default?* column applies to installation of the Personal Edition or Application Server, and not for adding packages through the desktop or using **pkgadd**.

- The *Installation Options* column lists the options available when performing a custom installation using the desktop or **pkgadd**. When installing the Personal Edition or Application Server, you are only prompted for the options marked with asterisks (*). Default values are used for the other options.

Note

If you are performing an overlay installation, you cannot change package installation options for some packages.

- All of the language-specific packages (*deASdocs, dele, demerge, dePEdocs, esASdocs, esle, esmerge, esPEdocs, frASdocs, frle, frmerge, frPEdocs, itASdocs, itle, itmerge, itPEdocs, jaASdocs, jale, jamerge,* and *jaPEdocs*) may not be included on your installation media because only the packages for your locale are needed.

Table D-1

Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
Access Control List Utilities	*acl*	no	
Additional Platform Utilities (Application Server only)	*platform*	no	*Which hardware platform? (default: none) If Compaq, which port for UPS connection? (default 2) If Compaq with UPS connection, what UPS threshold? (1 -30 minutes; default 5)
Adobe Type Manager®	*atm*	yes	
Advanced Commands	*cmds*	no	
Advanced Merge	*merge*	yes	
Applications and Demos	*dtclients*	no	
Application Server Documentation (Application Server only)	*ASdocs*	no	Allow access to books on mounted CD? (yes/no; default no) Install books on system? (yes/no; default yes) Which directory should books be installed in? (default: */usr/doc*) Which categories of books to install? (default: all categories)

Table D-1

Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
Auditing Utilities	*audit*	no	
Base System	*base*	yes	
BSD Compatibility	*bsdcompat*	no	
Desktop Manager	*desktop*	yes	
Distributed File System Utilities	*dfs*	no	
*Dyna*Text Document Browser	*dynatext*	no	Full browser or icon only? (default: full browser) Which directory should books be installed in? (default: */usr/doc*)
Enhanced Application Compatibility	*acp*	yes	Number of SCO-compatible pseudo-terminals? (0-32; default 32)
Extended Backup and Restore (Application Server only)	*bkrs*	no	
French Advanced Merge	*frmerge*	yes	
French Application Server Documentation (Application Server only)	*frASdocs*	no	See Application Server Documentation package
French Language Extension	*frle*	yes	
French Personal Edition Documentation (Personal Edition only)	*frPEdocs*	no	See Personal Edition Documentation package
German Advanced Merge	*demerge*	yes	
German Application Server Documentation (Application Server only)	*deASdocs*	no	See Application Server Documentation package
German Language Extension	*dele*	yes	

Table D-1

Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
German Personal Edition Documentation (Personal Edition only)	*dePEdocs*	no	See Personal Edition Documentation package
Graphics Display Support	*display*	yes	
Graphics Supplemental Fonts	*dtxtfonts*	no	
Graphics Utilities	*dtxt*	yes	
Internet Utilities	*inet*	yes	*System IP address? *System Netmask? *System Broadcast address? *Router IP address? *DNS Servers? *DNS domain name? *Network Frame Type?
Italian Advanced Merge	*itmerge*	yes	
Italian Application Server Documentation (Application Server only)	*itASdocs*	no	See Application Server Documentation package
Italian Language Extension	*itle*	yes	
Italian Personal Edition Documentation (Personal Edition only)	*itPEdocs*	no	See Personal Edition Documentation package
Japanese Advanced Merge	*jamerge*	yes	
Japanese Application Server Documentation (Application Server only)	*jaASdocs*	no	See Application Server Documentation package
Japanese Language Extension	*jale*	yes	

Table D-1
Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
Japanese Personal Edition Documentation (Personal Edition only)	*jaPEdocs*	no	See Personal Edition Documentation package
Language Supplement	*ls*	yes	Change default keyboard setting? (default no) *Which country? (default: C locale) *Support related countries? (default: no)
NetWare Integration Kit	*nwsup*	no	
NetWare Networking	*nwnet*	yes	
NetWare UNIX Client	*nuc*	yes	
Network File System Utilities	*nfs*	no	
Network Information Service (Application Server only)	*nis*	no	* Configure NIS now? (yes/no; default no) * Type of NIS host (master server, slave server, or client)? * NIS domain name? * Host name of master server? (for slave server configuration) * Name of NIS servers? (For master server or client configuration.)

Table D-1

Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
Network Interface Card Support	*nics*	yes	*Which cards and how many of each to support? * Card-specific hardware parameters (IRQ, memory address, I/O address, DMA channel, and so on)
Network Management	*netmgt*	yes	
Network Support Utilities	*nsu*	yes	number of pseudo-terminals? (16-256; default 64 for PE and 256 for AS)
OA&M	*oam*	no	**sysadm* password?
Optimizing C Compilation System	*ccs*	no	replace existing C system? (only when performing nondestructive installation; default replace)
OS Multiprocessor Support	*osmp*	no	*Which platform?
Personal Edition Documentation (Personal Edition only)	*PEdocs*	no	Allow access to books on mounted CD? (yes/no; default no) Install books on system? (yes/no; default yes) Which directory should books be installed in? (default: */usr/doc*) Which categories of books to install? (default: all categories)
Printer Support	*lp*	yes	
Remote Procedure Calls Utilities	*rpc*	no	
Server Utilities	*server*	no	

Table D-1
Personal Edition and Application Server Packages

Packages	Short Name	Installed by Default?	Installation Options
Spanish Advanced Merge	*esmerge*	yes	
Spanish Application Server Documentation (Application Server only)	*esASdocs*	no	See Application Server Documentation package
Spanish Language Extension	*esle*	yes	
Spanish Personal Edition Documentation (Personal Edition only)	*esPEdocs*	no	See Personal Edition Documentation package
Terminfo Utilities	*terminf*	no	
Traditional Manual Pages	*manpages*	no	

Package Dependencies

Some package dependencies exist. Before deciding not to install a package, check the following table to ensure that it is not required for packages you intend to install later. See Table D-1 for the full package names that correspond to the short package names listed here.

Table D-2
Package Dependencies

Product	You Must Install...	Before You Can Install...
pe/as	*acp*	*ls*
	ASdocs	*deASdocs, esASdocs, frASdocs, itASdocs, jaASdocs*
	base	any other package
	ccs	*c++*
	cmds	*oam*
	desktop	*desksup, dtclients, dtxtfonts, dynatext, mdev, nuc*

Table D-2
Package Dependencies

Product	You Must Install...	Before You Can Install...
	dtxt	*atm, desktop, display, dtclients, dtxtdev, dynatext*
	ls	*dele, esle, frle, itle, jale*
	inet	*nfs, nis*
	lp	*nuc, nwnet*
	netmgt	*nmsdk*
	nwnet	*nuc*
	nsu	*acp, bsdcompat, cmds, dtxt, inet, nfs, nics, nis, nuc, nwnet, rpc, server*
	oam	*bkrs*
nfsset/as	*dfs*	*nfs*
	rpc	*nfs, nis*
sdk	*dtxtdev*	*mdev*

The C++ Compilation System (*c++*), Desktop Manager Development (*desksup*), Motif Development (*mdev*), and NetWare Management Software Development Kit (*nmsdk*) packages are in the UnixWare 2.0 Software Development Kit (sdk) add-on product.

Personal Edition/Application Server Packages (*pe* and *as*)

The Personal Edition provides the UnixWare 2.0 operating system for stand-alone two-user computer systems and client computer systems in a client-server environment. The Application Server provides the UnixWare 2.0 operating system for an unlimited number of users and for server computer systems in a client-server or environment.

The Personal Edition and the Application Server (which includes a superset of the Personal Edition packages) must be installed before installing any other UnixWare 2.0 product or package. The following sections describe each package in these products. (For a listing of all packages in the Personal Edition/Application Server, see Table D-1, "Personal Edition and Application Server Packages," on page 82.)

Access Control List Utilities (*acl*)

The Access Control List Utilities package provides enhanced Discretionary Access Control, which allows a file owner to grant different access permissions for specific individuals or groups.

The Access Control List capabilities only apply to the (default) *vxfs* or the *sfs* file system type.

Additional Platform Utilities (*platform*)

The Additional Platform Utilities package provides hardware platform-specific software

- For the Compaq platform, this package provides support for the Compaq Wellness, Uninterruptable Power Supply (UPS), and SCSI Monitoring features.
- For AST Manhattan platform, this package provides support for the Front Panel Control features.
- For the Tricord platform, this package provides support for the Tricord Intelligent Management Subsystem (IMS).

You are prompted for your platform type when installing this package.

If your platform is not listed, select "None of the Above." Installation will fail and/or your system may behave erratically if you attempt to install software for a different platform type.

If you select *Compaq* and are performing a custom installation through the desktop or using **pkgadd**, you are then prompted for:

1. Which serial port is connected to the uninterrupted power supply (UPS)?

The UPS feature monitors the AC Power Supply and, in the event of a power failure, gracefully shuts down the system.

2. If you assigned a port for the UPS, when should the UPS begin a system shutdown?

   You select the threshold for the number of minutes of reserve power that are left before the UPS begins a shutdown.

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 Windows™ application can take advantage of *atm*. This package also includes scalable Courier, Helvetica, and Times Roman fonts.

Advanced Commands (*cmds*)

The Advanced Commands package provides supplemental user and administrative command-line interfaces typically found on UNIX System V that are not included in the *base* package.

Advanced Merge (*merge*)

The Advanced Merge package allows you to open a DR DOS 6.0 window from your UnixWare desktop and run DOS applications, the Windows environment, and applications for the Windows environment.

There are language-specific versions of the Advanced Merge package as follows:

Package Name	Short Name	Supports DOS windows in this locale:
Advanced Merge	*merge*	English
French Advanced Merge	*frmerge*	French
German Advanced Merge	*demerge*	German
Italian Advanced Merge	*itmerge*	Italian

Package Name	Short Name	Supports DOS windows in this locale:
Japanese Advanced Merge	*jamerge*	Japanese
Spanish Advanced Merge	*esmerge*	Spanish

Important

Only one of these six packages (*merge*, *frmerge*, *demerge*, *itmerge*, *jamerge*, and *esmerge*) can reside on your system at any time. If you want to change the locale for your DOS windows, you must first remove the current Advanced Merge package before installing the Advanced Merge package for the other locale.

Applications and Demos (*dtclients*)

The Applications and Demos package provides a variety of graphical utilities that are useful as is and as sample applications for graphics application developers. Included in this package are several Windowing Korn Shell™ (**wksh**) sample programs.

Application Server Documentation (*ASdocs*)

The Application Server Documentation package contains English versions of the Application Server books listed in Table D-3. These books can be viewed using the *Dyna*Text document browser provided in the *dynatext* package.

Table D-3
Application Server Books

Subset	Titles	Description
AS Guides	*Network Administration*	*Network Administration* consists of modules that support basic network services, as well as TCP/IP, DFS, NFS, RPC, and NIS administration.
	System Administration	*System Administration* consists of stand-alone documentation modules covering a broad range of topics from system setup and configuration to security administration.

Table D-3
Application Server Books

Subset	Titles	Description
Desktop Handbooks	*Desktop User Handbook* *System Owner Handbook*	Guides designed for novice users and administrators relying primarily on the graphical user interface
AS Reference	*Command Reference* *System Files and Devices Reference*	UNIX System reference manual pages describing user-level commands and files
Compaq Administration Guide	*Administration Supplement for Compaq Systems*	Guide supporting administration of UnixWare 2.0 on Compaq hardware
Additional AS Guides	*NLM Installation and Administration* *Terminal Emulators for DOS/MS Windows* *Terminal Emulator Scripts for MS Windows*	Guides supporting administrators who need to interface with a NetWare server, and DOS/Windows users who want to log in remotely to UnixWare 2.0.

Application Server Documentation Options

The following installation options are provided when using the desktop or **pkgadd** to perform a custom installation (if this package is selected when installing the Application Server product, default options are used):

1. Choose whether to provide access to books on a mountable CD-ROM drive (`cddrive1`). (Default is *no*.)

   If system space is limited and your installation media is a CD-ROM diskette, you can access books directly from the CD-ROM diskette without using space on your system. For further details, see the *System Owner Handbook*.

2. Choose whether to install the books on your system. (Default is *yes*.)

   If you choose to install the books on your system, additional prompts are displayed:

   2a. Choose the directory that should contain the books.

By default the books are installed under */usr/doc*. However, the books require a large amount of disk space so you may want to install this package in a file system other than */usr*.

2b. Choose which books to install.

By default, all the Application Server books are installed when you install this package. However you can select to install any combination (or none) of the following categories: AS Guides, Desktop Handbooks, AS Reference Manuals, Compaq Administration Guide, or Additional AS Guides.

In a client-server environment, the browser and online books are typically installed on the server and access permissions are provided for client systems in order to save space.

Application Server Documentation for Multiple Languages

In addition to the Application Server Documentation package, which provides books in English, your installation media may include documentation packages for other languages:

- French Application Server Documentation (*frASdocs*)
- German Application Server Documentation (*deASdocs*)
- Italian Application Server Documentation (*itASdocs*)
- Japanese Application Server Documentation (*jaASdocs*)
- Spanish Application Server Documentation (*esASdocs*)

These packages provide translated versions of the books in the Desktop Handbook and Additional AS Guides categories listed in Table D-3, "Application Server Books," on page 91. (The *jaASdocs* package also provides translated versions of the books in the AS Reference category.)

Depending on the preferred locale for the users on your system, you may want to install the same category (for example, Desktop Handbooks) for multiple languages. Alternatively, you may prefer not to install the English versions of these books if you are installing versions for another locale.

The *deASdocs*, *esASdocs*, *frASdocs*, *itASdocs*, and *jaASdocs* packages have the same installation options as described above for the *ASdocs* package.

Note If your installation media includes the *deASdocs*, *esASdocs*, *frASdocs*, *itASdocs*, or *jaASdocs* package, then the *ASdocs* package is not listed on the "Package Selection" menu when installing the Application Server. However, if you choose to install the *deASdocs*, *esASdocs*, *frASdocs*, *itASdocs*, or *jaASdocs* package, then the *ASdocs* package is also installed.

Auditing Utilities (*audit*)

The Auditing Utilities package provides auditing facilities which allow a system administrator or security auditor to record and report all security-related events that occur on the system.

Note Generally you should create a separate */var/audit* file system if the Auditing Utilities package is installed on your system. The size of this file system depends on how much activity is expected on the system and how often files in the */var/audit* directory are archived. The */var/audit* directory is used to store the audit log files; once this directory is full the auditing capability does not function. For details on creating file systems after installing the Personal Edition or Application Server, see the "Managing File System Types" chapter in the *System Administration* guide.

If the Auditing Utilities package is installed prior to creating the */var/audit* file system, save any existing auditing data in */var/audit/auditmap* to a safe location (optional), create the */var/audit* file system, type **mkdir /var/audit/auditmap**, and restore the auditing data to the */var/audit/auditmap* directory (optional).

For further details about the Auditing package, see the *Audit Trail Administration* part of the *System Administration* guide.

Base System (*base*)

The Base System package provides the minimal set of user and administration commands needed for industry standard Application Binary Interface (ABI) compliance, rebuilding the kernel, supporting required system hardware and basic file system types, and basic electronic mail, networking, and printing capabilities.

This package must be installed using the installation software provided with the *Install Diskette* and not using the desktop or **pkgadd** command.

BSD Compatibility (*bsdcompat*)

The BSD Compatibility package provides additional BSD commands and utilities (beyond those provided in the *base* package) that a sophisticated BSD user or application might require.

On some UNIX systems prior to UnixWare, 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
```

Desktop Manager (*desktop*)

The Desktop Manager package provides a graphical Desktop Manager, a graphical administration facility allowing you to do basic administrative tasks; a variety of productivity tools including a simple editor, electronic mail tool, and a calculator; and the Motif graphical user interface look and feel.

This package also provides the OSF/Motif® versions of the Motif window manager, and the dynamically shared Motif libraries, along with a set of sample Motif applications.

If you decide to install the *desktop* package after the Personal Edition or Application Server is installed, identify the owner's account to the desktop by logging in as *root* and typing:

```
/usr/X/adm/dtadduser login-id

/usr/X/adm/make-owner login-id
```

Replace *login-id* with the owner's login ID.

Distributed File System Utilities (*dfs*)

The Distributed File System Utilities package provides a simple user interface for performing networked operations such as advertising local resources and accessing remote resources.

*Dyna*Text Document Browser (*dynatext*)

The *Dyna*Text Document Browser provides a robust, easy-to-use graphical tool for viewing UnixWare books online. Capabilities include

- Access to the books installed on your system
- Hyperlink viewing and searching of online books

- Annotation facility (ability to write in the margin and leave bookmarks) for inclusion of notes in the books. An annotation can either be shared (other users on your system can view it) or private (other users will not see the annotation).

- Common access facility to UnixWare and NetWare documentation.

When installing *dynatext* using the desktop or **pkgadd**, you can select to install the full browser or an icon only

- If you install the full browser, then you are prompted for the directory where the browser should be installed. By default the browser is installed under */usr/doc*.

  Typically, the browser is installed in the same directory as the other documentation packages (*PEdocs*, *ASdocs*, *SDKdocs*, and so on). However, since the other documentation packages are large, you may want to install the browser in a file system other than */usr*.

- If you install the icon only, you can later configure the icon to access a browser on another system. In a client-server environment, the browser is typically installed on the server and access permissions are provided for client systems in order to save space. For details on accessing books from a server, see the *System Owner Handbook*.

You must have access to the browser provided in the *dynatext* package in order to read the books provided in the other documentation packages (*PEdocs*, *ASdocs*, *SDKdocs*, and so on).

If you choose to install the *Dyna*Text Document Browser when installing UnixWare, the full browser is installed. If you do not install the *Dyna*Text Document Browser package when installing UnixWare, the icon only is installed.

Enhanced Application Compatibility (*acp*)

The Enhanced 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.

When installing this package using the desktop or **pkgadd**, if you select custom installation you are asked how many SCO-compatible pseudo-terminals should be configured (0 - 32, default 32).

To set the number of SCO-compatible pseudo-terminals to values other than the defaults, install the *acp* package using **pkgadd** or through the desktop. If you installed *acp* using the *Install Diskette* software (by following the instructions in Chapter 2, "Installing the Personal Edition or Application Server"), use the desktop or **pkgadd** to perform an overlay custom installation of *acp* and select to automatically merge files. Otherwise networking may not function correctly.

Extended Backup and Restore (*bkrs*)

The Extended Backup and Restore package includes a flexible set of backup and restore utilities in addition to the standard backup and restore tools provided with UnixWare. This package provides the capability to back up raw disk partitions instead of just files and directories. It also includes tape library management facilities for automatically rotating backup media.

If you are performing an upgrade of *bkrs*, you must first upgrade the *oam* package.

French Packages (*frASdocs, frle, frmerge, frPEdocs*)

For details on the French Advanced Merge (*frmerge*) package, see "Advanced Merge (merge)" on page 90.

For details on the French Application Server Documentation (*frASdocs*) package, see "Application Server Documentation (ASdocs)" on page 91.

For details on the French Language Extension Package (*frle*) package, see "Language Extension Packages (dele, esle, frle, itle, jale)" on page 101.

For details on the French Personal Edition Documentation (*frPEdocs*) package, see "Personal Edition Documentation (PEdocs)" on page 108.

German Packages (*deASdocs, dele, demerge, dePEdocs*)

For details on the German Advanced Merge (*demerge*) package, see "Advanced Merge (merge)" on page 90.

For details on the German Application Server Documentation (*deASdocs*) package, see "Application Server Documentation (ASdocs)" on page 91.

For details on the German Language Extension Package (*dele*) package, see "Language Extension Packages (dele, esle, frle, itle, jale)" on page 101.

For details on the German Personal Edition Documentation (*dePEdocs*) package, see "Personal Edition Documentation (PEdocs)" on page 108.

Graphics Display Support (*display*)

The Graphics Display Support package provides support for a variety of video boards and the Display Setup desktop application. This allows high resolution access to the UnixWare graphical features from a variety of commonly available graphical displays.

Graphics Supplemental Fonts (*dtxtfonts*)

The Graphics Supplemental Fonts package provides the complete set of ISO 8859-1 bit-mapped fonts and Type 1 Utopia scalable outline fonts that are shipped with X11R5.

Graphics Utilities (*dtxt*)

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

This package allows users to run graphical applications across the network. It also provides the ability to restrict machine access in the networked X environment.

Internet Utilities (*inet*)

The Internet Utilities package includes the software needed to run the TCP/IP network and popular tools such as **ftp**, **rcp**, **rlogin**, **rsh**, and **telnet**. Administrative software for setting up the network and additional transport mechanisms to assist in the sending and receiving of electronic mail over TCP/IP networks is also included. Software is provided both for graphical administration from the desktop and for forms-and-menus administration through OA&M.

When installing this package, you are prompted for the following information (depending on your network configuration, some of the TCP/IP configuration data may not be needed):

- **Gateway** (yes/no): A gateway allows data to be transferred between networks. If your system has multiple networking cards, you are prompted whether it should be configured as a gateway. Systems with only one networking card can not be configured as a gateway.

Only experienced system administrators should install multiple networking cards on a single system.

- **Node Name**: For systems with multiple networking cards, each networking card must be assigned a unique node name. If you are installing only one networking card, then the node name is the system node name and this prompt does not appear.

- **Device Handle**: If you are installing multiple networking cards, then you must identify each card with its node name. If you are only installing one networking card, the device handle is automatically assigned and this prompt does not appear.

- **System IP Address**: The Internet Protocol (IP) addresses for your system. Each system on a TCP/IP network must have a unique IP address.

If you are installing multiple networking cards, then the system IP address and netmask must combine to define distinct networks.

- **System Netmask**: A code for determining which portion of the network address corresponds to the network and which portion corresponds to the host.

- **System Broadcast Address**: An address used to send broadcast messages to other systems on your local network (also called a "subnet"). Several networks can be configured within a single organization or site. The Broadcast address allows you to send broadcast messages to all the systems on your subnet.

- **Router IP Address**: The IP address for your local network router. A router is a system configured to transmit data between networks. If a router is not configured on your local network, networking capabilities are limited to the local network.

- **Domain Name**: The name by which your company or organization is known within the Internet. For example, *novell.com* is the domain name for Novell. (This field is required to access Domain Name Servers.)

- **Domain Name Server(s) IP Address(es)**: The IP address for a system configured to provide networking information to other systems on your network. For example, instead of defining a new system to each existing system on your network and vice versa, you can define the new system t a Domain Name Server and provide the name of the Domain Name Serve to the new system. The Domain Name Server then updates network information for each system in the domain.

  Up to three Domain Name Servers can be listed when installing the Internet Utilities package.

- **Network Frame Type**: The type of networking (Ethernet II, Ethernet SNAP, Token Ring, or Token Ring SNAP) for your network.

The proper values for these parameters are specific to your network. Since TCP/IP networking will not work if the wrong values are entered, you shoul obtain the correct values from your network administrator before installing thi package. Alternatively, you can leave all fields blank and configure TCP/IP networking after installing the *inet* package and before you reboot. To do so, either see the *System Owner Handbook* or use the **/etc/inet/menu** utility.

When installing the *inet* package, the TCP Listener (the software that control TCP/IP networking) is automatically configured. If the *desktop* package is installed, an icon for TCP/IP administration is automatically installed. Also, i the *oam* package is installed, then OA&M administrative capabilities for TCP/IP networking are automatically installed.

If the *desktop* or *oam* package is installed after *inet*, use the App Installer or **pkgadd** to perform an overlay installation of the *inet* package and install the TCP/IP icon and OA&M capabilities for TCP/IP.

For further details about TCP/IP networking, see *Network Administration*.

Italian Packages (*itASdocs, itle, itmerge, itPEdocs*)

For details on the Italian Advanced Merge (*itmerge*) package, see "Advanced Merge (merge)" on page 90.

For details on the Italian Application Server Documentation (*itASdocs*) package, see "Application Server Documentation (ASdocs)" on page 91.

For details on the Italian Language Extension Package (*itle*) package, see "Language Extension Packages (dele, esle, frle, itle, jale)" on page 101.

For details on the Italian Personal Edition Documentation (*itPEdocs*) package, see "Personal Edition Documentation (PEdocs)" on page 108.

apanese Packages (*jaASdocs, jale, jamerge, jaPEdocs*)

For details on the Japanese Advanced Merge (*jamerge*) package, see "Advanced Merge (merge)" on page 90.

For details on the Japanese Application Server Documentation (*jaASdocs*) package, see "Application Server Documentation (ASdocs)" on page 91.

For details on the Japanese Language Extension Package (*jale*) package, see "Language Extension Packages (dele, esle, frle, itle, jale)" on page 101.

For details on the Japanese Personal Edition Documentation (*jaPEdocs*) package, see "Personal Edition Documentation (PEdocs)" on page 108.

anguage Extension Packages (*dele, esle, frle, itle, jale*)

Each language extension package provides the system messages for a particular locale:

Package Name	Short Name	Provides system messages in this locale:
French Language Extension	*frle*	French
German Language Extension	*dele*	German
Italian Language Extension	*itle*	Italian
Japanese Language Extension	*jale*	Japanese
Spanish Language Extension	*esle*	Spanish

Language Supplement (*ls*)

The Language Supplement package provides generic support for keyboard mapping, including locale-related fonts and special keyboard characters.

When installing UnixWare, you are prompted for your console keyboard type If the *ls* package is installed through the desktop or using **pkgadd**, you are prompted whether to change the default keyboard type.

You are prompted for your country (the language locale for the users on you system) and whether to install support for related countries or for all countries If your system is used by users from different countries, you should select al countries.

NetWare Integration Kit (*nwsup*)

The NetWare Integration Kit package provides the capability to create diskettes for a NetWare server and for DOS client systems.

The NetWare Integration Kit provides NetWare Loadable Modules™ (NLM™s) and the Host Presenter™ terminal emulators that can be uploaded from UnixWare to a DOS or Windows system. These emulators, along with th capabilities provided in the NetWare Networking package, allow DOS and Windows users to log in to UnixWare across a NetWare network.

NetWare Networking (*nwnet*)

The NetWare Networking package provides Novell Virtual Terminals 2 (NVT2) for accessing NetWare services and for sharing resources with other NetWare clients. This package supports networking over IPX/SPX networks (including NetWare networks), graphical administration tools, and NetWare auto-authentication tools.

NetWare UNIX Client (*nuc*)

The NetWare UNIX Client provides a complete, fully integrated client for accessing NetWare services and for sharing resources with other NetWare clients.

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.

In addition to the system software allowing NFS to run on your system, network administration software for the UnixWare Desktop and OA&M products are provided in this package. The administration software for the UnixWare Desktop is only installed if the Desktop Manager (*desktop*) package is already installed on your system. Similarly, the OA&M software is only installed if the OA&M (*oam*) package is installed.

If the *desktop* or *oam* package is installed after *nfs*, use the App Installer or **pkgadd** to perform an overlay installation of the *nfs* package and install the TCP/IP icon and OA&M capabilities for TCP/IP.

Network Information Service (*nis*)

The Network Information Service (NIS) package provides a distributed database that allows information on one machine in a network to be accessed by applications running on other machines in the network.

When installing the *nis* package you are prompted whether to configure NIS. If you select to configure NIS you are prompted to:

- Choose the type of NIS system that you are installing: a master server, a slave server, or a client system.

  A master server is an NIS system that contains the NIS database.

  A slave server is an NIS system that serves as a backup to a master server in case network connections cannot be made to the master server.

  A client system is an NIS system that uses a master server for maintenance of its configuration data.

- Choose the NIS domain name for your system.

  An NIS domain is a collection of systems that share the same configuration data and is administered on a single master server.

- If you are installing a master server or client system, you are prompted fo the system node name(s) for one or more NIS servers (master or slave) ir your network.

- If you are installing a slave server, provide the name of its master server.

If you decide not to configure NIS during installation, you can configure NIS at any time after the *nis* package is installed.

For details on configuring and administering NIS, see the "Administering NIS" part of the *Network Administration Guide*.

Network Interface Card Support (*nics*)

The Network Interface Card Support package supplies hardware device drivers for most popular Ethernet and Token Ring network interface cards (also referred to as boards). UnixWare detects the hardware configuration parameters for many network interface cards and configures the system to access such hardware without user interaction. However, to confirm that the correct hardware is installed (or if UnixWare cannot detect the values used by the network interface cards), you are prompted for some or all of the following information:

- Type of networking card (you choose the type of card, and the number of cards for each card type, from a form which lists supported networking card 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, BNC, or TP)

It is important to know the brand and type of networking cards that are installed, and the hardware settings at which they are configured or jumpered (that is, the IRQ, I/O addresses, memory addresses, and so). Please see "Network Interface Cards" on page 60 in Appendix B, "Hardware Configuration Notes," for information about these settings. If you are unsure of this information, accept the default values. The defaults match the settings for supported networking cards as they are shipped from the factory (except for

nondestructive installations where defaults correspond to the existing system configuration).

For ISA cards, the defaults usually work well but sometimes there may be a conflict with another controller or adapter on your computer. If there is a conflict, the networking card will not work properly. In this case, you must determine which cards are in conflict and run the DCU to resolve the conflict.

If installing this package using the desktop or **pkgadd**, any existing networking device driver on your system is removed. It is therefore important to complete the package installation and to identify all networking cards on your system.

Network Management (*netmgt*)

The Network Management package provides the basis for network management over a UnixWare/NetWare network. This package includes Simple Network Management Protocol (SNMP) capabilities for managing a UnixWare system from a remote system on a NetWare network.

Network Support Utilities (*nsu*)

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

When installing this package using the desktop or **pkgadd**, if you select custom installation you are asked for the total number of pseudo-terminals that should be configured (16 to 256, default 64 for the Personal Edition and 256 for the Application Server).

To set the number of pseudo-terminals to values other than the defaults, install the *nsu* package using the desktop or **pkgadd**. If you installed *nsu* using the *Install Diskette* software (by following the instructions in Chapter 2, "Installing the Personal Edition or Application Server"), use the desktop or **pkgadd** to perform an overlay custom installation of *nsu* and select to automatically merge files. Otherwise networking may not function correctly.

OA&M (*oam*)

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

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

If you install this package when installing the Personal Edition or Application Server, or if you select custom installation when using the desktop or **pkgadd**, you are prompted to assign a *sysadm* account password. The procedure for assigning this password is the same as for the owner and *root* accounts. Anyone who knows this password can use OA&M to perform administrative tasks.

Optimizing C Compilation System (*ccs*)

The Optimizing C Compilation System (Release 3.0) forms the basic software environment. It provides the tools needed to create and maintain ABI-compliant binaries and executables, and supports the Pentium processor chip

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.

OS Multiprocessor Support (*osmp*)

The OS Multiprocessor Support package enables multiple processes, or multiple threads of execution within a single process, to run simultaneously on separate processors in a single system. This can greatly improve system performance. (UnixWare operates as s a uniprocessor system until this package and the appropriate multiprocessor hardware are successfully installed.)

Supported Multiprocessor Platforms

This package provides support for the following hardware platforms:

- Acer® AcerAltos 17000
- AST® Manhattan SMP
- Compaq SYSTEMPRO®/SYSTEMPRO XL/ProLiant and compatible systems

Before installing the OS Multiprocessor Support package for this platform, you must disable shadow RAM on your system if it is mapped above 16 MB (it is mapped above 16 MB on some computers, such as the COMPAQ SYSTEMPRO, by default). Check the documentation that came with your computer to determine

how to disable the shadow RAM. Alternately, you can limit your computer's memory to 16 MB by placing the following line in */stand/boot*:

```
MEMRANGE=0-640K:256,1M-16M:512
```

- Corollary™ Extended C-bus™ and C-bus II™ architectures
- Intel® Multiprocessor Specification architecture
- Olivetti LSX5050
- Tricord PowerFrame

Independent Hardware Support Vendors (IHVs) may provide additional platform support diskettes. In this case, you should still install the OS Multiprocessor Support package. If the system does not recognize your multiprocessor platform, you are then prompted to use the IHV hardware support diskettes.

Installing the OS Multiprocessor Support Package

The installation software attempts to automatically detect the appropriate hardware platform. If a supported platform is not detected, you are prompted to do one of the following:

- Identify which of the supported platforms your system has.
- Provide a platform support module (PSM) diskette for another platform.
- Do not install platform-specific multiprocessor support at this time.

  If you select this option, some multiprocessor software is installed. However, multiprocessor support is not enabled until you use the desktop App Installer or the command-line **pkgadd** command to install a platform support module (PSM).

Warning

Installing the appropriate multiprocessor hardware platform is critical. If the wrong hardware support software is installed, you will not be able to reboot your system.

Personal Edition Documentation (*PEdocs*)

The Personal Edition Documentation package contains English versions of the Personal Edition books listed in Table D-4. These books can be viewed using the *Dyna*Text document browser provided in the *dynatext* package.

Table D-4
Personal Edition Books

Subset	Titles	Description
Desktop Handbooks	*Desktop User Handbook* *System Owner Handbook*	Guides designed for novice users and administrators relying primarily on the graphical user interface
PE Reference	*Command Reference* *System Files and Devices Reference*	UNIX System reference manual pages describing user-level commands and files
Additional PE Guides	*NLM Installation and Administration* *Terminal Emulators for DOS/MS Windows* *Terminal Emulator Scripts for MS Windows*	Guides supporting the administrator who needs to interface with a NetWare server, and DOS/Windows users who want to log in remotely to UnixWare 2.0.

Personal Edition Documentation Options

The following installation options are provided when using the desktop or **pkgadd** to perform a custom installation (if this package is selected when installing the Personal Edition product, default options are used):

1. Choose whether to provide access to books on a mountable CD-ROM drive (`cddrive1`). (Default is *no*.)

   If system space is limited and your installation media is a CD-ROM diskette, you can access books directly from the CD-ROM diskette without using space on your system. For further details, see the *System Owner Handbook*.

2. Choose whether to install the books on your system. (Default is *yes*.)

   If you choose to install the books on your system, additional prompts are displayed:

2a. Choose the directory that should contain the books.

By default the books are installed under */usr/doc*. However, the books require a large amount of disk space so you may want to install this package in a file system other than */usr*.

2b. Choose which books to install.

By default, all the Personal Edition books are installed when you install this package. However you can install any combination (or none) of the following categories: Desktop Handbooks, PE Reference Manuals, or Additional PE Guides,.

In a client-server environment, the browser and online books are typically installed on the server and access permissions are provided for client systems in order to save space.

Personal Edition Documentation for Multiple Languages

In addition to the Personal Edition Documentation package, which provides books in English, your installation media may include documentation packages for other languages:

- French Personal Edition Documentation (*frPedocs*)
- German Personal Edition Documentation (*dePEdocs*)
- Italian Personal Edition Documentation (*itPEdocs*)
- Japanese Personal Edition Documentation (*jaPEdocs*)
- Spanish Personal Edition Documentation (*esPEdocs*)

These packages provide translated versions of the books in the Desktop Handbook and Additional PE Guides categories listed in Table D-4, "Personal Edition Books," on page 108. (The *jaPEdocs* package also provides translated versions of the books in the PE Reference category.)

Depending on the preferred locale for the users on your system, you may want to install the same category (for example, Desktop Handbooks) for multiple languages. Alternatively, you may prefer not to install the English versions of these books if you are installing versions for another locale.

The *dePEdocs*, *esPEdocs*, *frPEdocs*, *itPEdocs*, and *jaPEdocs* packages have the same installation options as described above for the *PEdocs* package.

Printer Support (*lp*)

Although some printing capabilities are provided in the *base* package, more advanced printing capabilities (such as sharing printers across a network) and support for a wider range of printers are included in the Printer Support package.

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

Remote Procedure Calls Utilities (*rpc*)

The Remote Procedure Calls Utilities package provides support for RPC-based client-server applications such as NFS and the remote execution facility.

Server Utilities (server)

The Server Utilities package provides the software needed to configure your Application Server to stage network installations of the Personal Edition and Application Server, as well as additional add-on packages. For details, see the section "Setting Up and Administering an Install Server" in the chapter "Installing Add-on Software" in the part "Setting Up the System" of the *System Administration* guide.

Spanish Packages (*esASdocs, esle, esmerge, esPEdocs*)

For details on the Spanish Advanced Merge (*esmerge*) package, see "Advanced Merge (merge)" on page 90.

For details on the Spanish Application Server Documentation (*esASdocs*) package, see "Application Server Documentation (ASdocs)" on page 91.

For details on the Spanish Language Extension Package (*esle*) package, see "Language Extension Packages (dele, esle, frle, itle, jale)" on page 101.

For details on the Spanish Personal Edition Documentation (*esPEdocs*) package, see "Personal Edition Documentation (PEdocs)" on page 108.

Terminfo Utilities (*terminf*)

The Terminfo Utilities package provides support for a wide variety of terminals beyond those provided in the Base package.

Traditional Manual Pages (*manpages*)

The Traditional Manual Pages package provides manual pages (concise descriptions of UnixWare commands, files, and device drivers) that can be viewed using the command-line **man** command. This package is designed for users who do not access the graphical desktop.

Desktop users can view the same manual pages, as well as UnixWare handbooks and guides, by using the *Dyna*Text documentation browser:

- To install the browser, install the *Dyna*Text Document Browser package.
- To install books (including manual pages) that can be viewed using the *Dyna*Text browser, install the Personal Edition Documentation or Application Server Documentation package.

appendix **E** ***Troubleshooting***

This appendix alphabetically lists by major categories problems and solutions for UnixWare software and some of the hardware on which it runs.

If a problem occurs, it is important to gather as much data as possible (what is your system configuration, has anything changed since you last used the system, did you add/remove/remember to power on hardware, and so on).

When investigating solving problems, you may have to invoke the DCU to view/change device driver parameter settings. For information on invoking the DCU once your system is installed, see the "Setting Up and Configuring Hardware" chapter in the *System Owner Handbook.*

For additional troubleshooting information, see the "Troubleshooting" appendix in the *System Owner Handbook.*

Boot Problems, Hangs, and Panics

The following items explain how to solve some of the problems you may encounter during system boot or reboot.

Ctrl-Alt-Del Does Not Reboot UnixWare

Problem. <Ctrl>+<Alt>+<Del> does not reboot UnixWare.

Solution. Some computers require that the <NumLock> key be pressed for <Ctrl>+<Alt>+<Del> to reboot the system. This is because the <Del> key is shared with the period.

Booting UnixWare Message Is Not Displayed

Problem. When booting your system the `Booting UnixWare...` message is not displayed.

Solution. Check whether the boot disk drive contains a diskette. If so, remove the diskette and reboot your system. Otherwise, you may have a system hardware problem. See the documentation provided with your hardware.

Many add-on devices and cards come with configuration utilities. Check all the connections and run the configuration utilities.

Panics or Resets While Booting From Install Diskette

Problem. After booting your system with the *Install Diskette*, the UnixWare logo screen is displayed and then the system either displays a panic message or resets (the system FIRMWARE messages are displayed again).

Solution. This problem is typically the result of not running a hardware configuration program, such as the ECU or the CMOS setup program, before installing UnixWare. To fix the problem, run all machine and peripheral hardware setup programs provided by your hardware vendor and verify that your hardware is correctly configured. In particular, check your memory size/control, cache control, bus speed, and video specifications. See your hardware documentation for details.

For example, this problem may occur if the correct amount of memory is not configured. (To determine the amount of memory on your system, either check your hardware documentation or CMOS settings.) For more information, see "Configuring Your Hardware" on page 7 in Chapter 1, "Before You Begin," and see "Memory Problems" on page 131 in this appendix.

If running hardware setup programs does not solve the problem, then there may be a memory problem. You can try to manually set the amount of memory on your system as follows

Procedure

1. **Reboot your system.**
2. **When the `Booting UnixWare...` prompt or the Novell logo is displayed, press the** <SpaceBar>**.**

   The interactive boot session prompt, `[boot]#`, is displayed.
3. **Set the MEMRANGE parameter by typing**

   ```
   MEMRANGE=0-640K:256,1M-nM:16896

   GO
   ```

Here, *n* is the amount of available contiguous RAM in megabytes (see your hardware documentation for details).

4. **Follow the instructions in Chapter 2, "Installing the Personal Edition and Application Server" until you are prompted to reboot your system (Step 26 on page 34).**

5. **When prompted to reboot your system, invoke a UnixWare shell by typing**

   ```
   <Alt>-<SysRq>-<H>
   ```

   The VT0> prompt is displayed.

6. **Update the */stand/boot* file by typing**

   ```
   echo "MEMRANGE=0-640K:256,1M-nM:16896" \

   >> /stand/boot
   ```

7. **Type**

   ```
   <Alt>-<SysRq>-<F1>
   ```

8. **Continue the installation by following the instructions in Chapter 2, "Installing the Personal Edition and Application Server." See Step 26 on page 34.**

System Hangs During Installation

Problem. A system with 8 MB of RAM hangs during installation.

Solution. Verify that your system configuration is supported (see "Additional Hardware Recommendations" on page 64). If your current system configuration is not supported, either add more memory or configure your system to support installation with 8 MB of RAM. If your current system configuration is supported, then see below.

Problem. Your system hangs during installation. The gauge showing the percentage of files installed does not appear or, during a nondestructive installation, stops moving.

Solution. This occurs under the following circumstances:

- If your computer has a system cache, this can cause installation problems. Try disabling the cache during installation. If this solves the problem, contact Novell and inquire about a possible support update.
- If your computer is not accessing your diskette drive, check in CMOS that your diskette drive type is properly configured. For example, if a 1.44 MB diskette drive is configured as a 1.2 MB drive, the diskette drive will not be accessed. Also check that your system memory is installed properly.
- If you suspect a hardware problem (SCSI or non-SCSI CD-ROM or cartridge tape) or loose cable, check your system hardware.

If you are sure that your system has none of these problems, contact your Novell software reseller and exchange your installation media for new media.

Problem. Your PCI system hangs or panics during installation and the UnixWare installation prompts are not displayed.

Solution. UnixWare supports installation on PCI systems that are compliant with the PCI 2.0 specification. If your PCI system is not compliant with these specifications, then do the following to boot UnixWare:

Automatic detection of PCI peripherals is disabled if you follow this procedure. Therefore, it is recommended that you first review the other sections in this appendix and attempt to solve the problem before using this procedure.

1. **Press reset (or power the computer off, then on again if you do not have a reset button).**
2. **Wait for the** `Booting UnixWare...` **prompt; then press the** <SpaceBar> **key to begin an interactive boot session.**
3. **When the** `[boot]#` **prompt is displayed, type**

   ```
   PCISCAN=NO

   go
   ```

4. **Follow the instructions in Chapter 2, "Installing the Personal Edition and Application Server" until you are prompted to reboot your system (Step 26 on page 34).**

5. **When prompted to reboot your system, invoke a UnixWare shell by typing**

   <Alt>-<SysRq>-<H>

   The VT0> prompt is displayed.

6. **Update the *stand/boot* file by typing**

   echo "PCISCAN=NO" >> /stand/boot

7. **Type**

   <Alt>-<SysRq>-<F1>

8. **Continue the installation by following the instructions in Chapter 2, "Installing the Personal Edition and Application Server." See Step 26 on page 34.**

System Hangs During Reboot

Problem. After the system self-test completes, the Booting UnixWare... message does not appear. The system may be hung.

Solution. To correct this, try one of the following solutions:

- If there is a diskette in diskette drive 1, remove it. Press any key on the keyboard and the system should come up properly. If it does not, use <Ctrl>+<Alt>+<Del> or press reset to reboot the system.

- If you recently installed an add-on card, and if your computer worked properly before installing the card, remove the new card and see if you can reboot the system. If this resolves the problem, there is probably an IRQ or address conflict. Reconfigure the card with a non-conflicting IRQ or address and then reinstall the card. (See your hardware documentation for details.)

- 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 UnixWare.

- If your computer is not accessing your diskette drive, check in CMOS that your diskette drive type is properly configured. For example, if a 1.44 MB diskette drive is configured as a 1.2 MB drive, the diskette drive will not be accessed. Also check that your system memory is installed properly.

- Computers with a 80287 co-processor may hang on soft reboot. In this case, the last line displayed on your monitor is probably: `The system is coming up. Please wait.`

  To resolve the problem, perform a hard reboot (turn the computer power off, then on). The system should then boot up properly. Alternately, remove the 80287 co-processor from your computer.

- If your computer has BIOS caching enabled, disable BIOS caching.

- If your system has an IDE disk drive that is larger than 512 MB, and your disk parameter heads are defined as greater than 16, verify that your system BIOS supports disk drive parameters with more than 16 heads. If your system BIOS does not support large disk drives, redefine your disk drive parameters using 16 or less heads. See your hardware documentation for details.

- If your computer has a hard disk drive greater than one gigabyte and you have an Adaptec 1542 SCSI controller with extended translation enabled, disable the extended translation.

- If your computer already had an operating system (for example, OS/2) before installing UnixWare, it may have a "boot code" on the hard disk which is incompatible with UnixWare. If this is the case, UnixWare will not boot and you may receive a message such as `Cannot Load User Driver` or `No Active Partition Found`.

  To resolve this problem, see the section "System Has Incompatible Boot Code" below.

System Has Incompatible Boot Code

Problem. You did not overwrite the boot code when installing UnixWare and the boot code from your previous system will not boot UnixWare.

Solution. If you previously booted UnixWare and created emergency recovery diskettes, use those diskettes to access your system and to correct the problem. For details, see the chapter "Recovering Your System" in the *System Owner Handbook*.

Otherwise, do the following:

1. **Insert the *Install Diskette* into the boot drive (diskette drive 1).**
2. **Reboot your system.**
3. **Respond to the prompts as if you are performing a nondestructive installation until you reach the "Install Menu."**
4. **Press** <F9>**. If prompted, enter the serial number provided on the media used to install UnixWare. A UnixWare prompt is displayed.**
5. **Type**

   ```
   /usr/sbin/fdisk
   ```

   If the `ERROR: Default device (/dev/rdsk/c0b0t0d0s0) cannot be opened` message is displayed, then you need to enter

   ```
   /usr/sbin/fdisk /dev/rdsk/device-name
   ```

   To determine the *device-name*, type

   ```
   ls /dev/rdsk/c0*s0
   ```

   The *device-name* is first file name listed.
6. **Select option 0 to overwrite the boot code.**
7. **Select option 4 to exit the `fdisk` utility. The UnixWare command-line prompt is displayed.**
8. **Return to the "Install Menu." Type**

   ```
   exit
   ```
9. **Select *Cancel Installation and Shutdown System*.**
10. **When prompted, reboot your system.**

System Hangs or Panics During Reboots

Problem. The kernel builds successfully but the system does not boot or the system panics.

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. If the Kernel Debugger (*kdb*) package is installed, control transfers to the kernel debugger program.

Solution. 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 controllers 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 UnixWare installed on your system, you can restore the old UnixWare system as follows:

1. **Press reset (or power the computer off, then on again if you have no reset button).**
2. **Wait for the** `Booting UnixWare...` **prompt; then press the** <SpaceBar> **key to begin an interactive boot session.**
3. **When the** `[boot]#` **prompt is displayed, type**

   ```
   KERNEL=unix.old
   ```

   ```
   go
   ```

- If the problem is not hardware-based but you think you can correct it by accessing your UnixWare file systems, do the following:

The following procedures should only be done by users with experience modifying file systems.

1. If you previously created emergency recovery diskettes, follow the instructions in the "Recovering Your System" chapter of the *System Owner Handbook*. Otherwise go to Step 2.

2. If you did not create emergency recovery diskettes, use the Install diskette to repair your system. See the section "Manually Repairing a System from the Boot Diskette" in the chapter "Booting and System States" in the part "System Setup and Configuration" of the *System Administration* guide.

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 sometimes 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 your 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. If no upgrade or fix is available, keep the cache disabled to prevent reoccurrences of the problem.

Resource Manager Database Corrupted

Problem. The system will not boot and an error message indicates that the resource manager database, */stand/resmgr*, is either corrupted or missing.

Solution. Reboot UnixWare. Press <SpaceBar> when the `Booting UnixWare...` prompt is displayed. The interactive boot session prompt, `[boot]#`, is then displayed. Type

```
RESMGR=resmgr.sav

GO
```

This loads a backup copy of the resource manager database. You system should then reboot.

When the system comes up you may want to invoke the DCU to verify that all device driver parameters are set correctly. A corrupted or missing resource manager database is normally the result of improper changes made when adding/modifying hardware parameters.

Power Saver Option Enabled

Problem. Installation fails at random points after the hard disk is set up (or the message `WARNING: Disk Driver Request Timed Out, Resetting Controller` is displayed after a successful installation) on systems with the "Power Saver" option (also referred to as "Power Management" or "Green PC") enabled.

Solution. Turn off the "green/energy star" power saving time outs in the system BIOS. (Refer to the hardware manual for details.)

Controller Problems

The following items explain how to solve some of the problems you may encounter with a controller.

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 hardware cards are 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 Appendix B, "Hardware Configuration Notes," and verify that all hardware cards are configured correctly with nonconflicting IRQ and addresses.

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.

If all else fails, check whether any interrupts occupy one of the controller locations in the processor "set up" configuration. For example, this problem may occur if an adapter has interrupt 12 and a PS/2 mouse is used. In this case, you should either change the interrupt for the adapter or disable the mouse.

Incorrect IRQ Value

Problem. The IRQ for a device driver was changed from 9 to 2 and then some devices do not function correctly (for example, modems).

Solution. Use the DCU to change the IRQ value back to 9. In particular, when the jumper is set to 2 on an AT bus system, the IRQ should be set to 9. If the IRQ value is 9, do not change it. If the IRQ value is 2, change it to 9.

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 fails 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. Use the parameters for "UNIX GROUP" (1).

Destructive Installation Problems

The following items explain problems you may encounter if you want to restore user data from a UnixWare 1.1 system on your UnixWare 2.0 system after performing a destructive installation.

Need to Restore UnixWare 1.1 Data

Problem. You performed a destructive installation and you now want to restore data from a UnixWare 1.1 backup.

Solution. You must be very careful when restoring data from a UnixWare 1.1 backup. If you replace UnixWare 2.0 desktop files with UnixWare 1.1 files, your desktop may become dysfunctional. Therefore, only restore selective files (user data files, application data files, and so on). Do not restore system and desktop files provided with UnixWare 1.1.

If you need to restore an entire system worth of data, do the following:

1. **If possible, perform a nondestructive installation of your UnixWare 1.1 system. If you have already performed a destructive installation, go to Step 2.**

2. **Reinstall your system applications and perform first-time set up tasks to configure your system.**

Perform the tasks in Chapter 3, "Configuring Your System." Do not create the emergency recovery tapes and system backup until after you restore the user accounts.

3. **For each user on your system, reinstall the user account by following the procedure in the next section, "Need to Restore UnixWare 1.1 User Account ."**

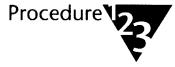
4. **Create new UnixWare 2.0 emergency recovery tapes and a full system backup. For details, see the *System Owner Handbook*.**

Need to Restore UnixWare 1.1 User Account

Problem. You performed a destructive installation and now need to restore a UnixWare 1.1 user,

Solution. If the user has already created data files using their UnixWare 2.0 account, ask the user to identify which files they want restored from their UnixWare 1.1 account. Then restore only those files.

If the user has not created data files using their UnixWare 2.0 account, do the following:



1. **If you have not already created an account for the user, create the account. Use either of the following two methods:**

   - Create the account using the User Setup application. For details, see the *System Owner Handbook*.
   - As root or system owner, from the UnixWare command-line type

     `/usr/X/adm/dtadduser` *`login-id`*

2. **Log in as the owner of the account that you are restoring.**

3. **If you plan to use the desktop to restore the user data, click on the Backup-Restore icon in the Admin Tools folder.**

4. **Click on the Terminal icon in the Applications window.**

5. **Create a list of the user's desktop files. To do so, in the Terminal window type**

```
find . -print | grep -v .Xauthority | \
/usr/bin/sed "1 d" > /tmp/file-name
```

You can select any name you like for *file-name*.

6. **Remove all files from the user desktop. To do so, type**

```
for i in `cat /tmp/file-name`
do
  rm -rf
done
```

7. **Restore the user home directory from the UnixWare 1.1 backup. For details, see the *System Owner Handbook*.**

For example, you can use the Backup-Restore icon if you clicked on it in Step 3 above. Or you can invoke this application by typing

```
/usr/X/MediaMgr
```

8. **Log off the system.**

The next time the user logs in to the system, their account will automatically be upgraded to a UnixWare 2.0 account.

Disk Drive Problems

The following items explain how to solve some of the problems you may encounter with your disk drive.

Insufficient Space on Hard Disk

Problem. Message indicates your computer does not have the required minimum 80 MB primary hard disk and installation cannot continue.

Solution. There are several circumstances where a message is displayed indicating that you do not have an 80 MB hard disk

- When your disk partition does not include an active UNIX system partition of at least 80 MB and you select *Accept Settings and Install Now* from the "Install Menu," a warning message is displayed. To correct the problem, select *View or Change Disk Configuration* from the "Install Menu."

- When an HBA diskette is needed but has not been installed, a message is displayed indicating that an 80 MB hard disk is required and installation cannot continue. To correct the problem, repeat the installation and insert an HBA diskette when prompted.

- When your SCSI host bus adapter or SCSI disk is configured improperly, an error message is displayed. Check your hardware configuration.

- When your interrupt is not correctly set on the SCSI controller, an error message is displayed. For example, the Compaq FAST SCSI III embedded controller must have the interrupt set to 15. On some systems the interrupt is set to 11 and appears to function correctly until you try to install an operating system. In this case, you need to use the EISA configuration utility provided with the controller to change the interrupt.

Setting up Hard Disk Problems

Problem. An error message indicates that setting up your hard disk failed.

Solution. Typically, performing a surface analysis is recommended in order to avoid data corruption. However, if installation then fails, perform a destructive installation and disable surface analysis. For details on disabling surface analysis, see "Performing Special Disk Operations" on page 76 in Appendix C, "Information About Partitions and File Systems."

Display Problems

The following items explain how to solve some of the problems you may encounter with your monitor display.

Display Not Readable During Installation

Problem. When booting from the *Install Diskette*, the installation screens are garbled and cannot be read.

Solution. UnixWare typically detects the correct video hardware. However, on occasion incorrect information is provided to UnixWare by the video hardware. Do the following to correct the problem

1. **Reboot your system.**

2. **When the `Booting UnixWare...` prompt or the Novell logo is displayed, press the** <SpaceBar>**.**

   The interactive boot session prompt, `[boot]#`, is displayed.

3. **Set your video display**

   - If you have a color monitor, type

     ```
     resmgr:kd:KDMONITOR=COLOR

     GO
     ```

   - If you do not have a color monitor, type

     ```
     resmgr:kd:KDMONITOR=MONO

     GO
     ```

   The installation then continues with your video display correctly set.

Improper Display in Enhanced Video 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 card or monitor.

Solution. The UnixWare Desktop assumes you use the standard VGA mode (widely supported by a variety of video card manufacturers), with a resolution of 640x480. It also assumes that you have a standard 9.75 x 7.32 size monitor. Any higher resolution needs special video drivers (some of these special

drivers are provided with the base system). Use Display Setup to change your video configuration. (See the *System Owner Handbook* for details.)

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 occurs regardless of the operating system you are using. Try waiting to power up the monitor until after powering up the computer.

Problem. The monitor screen is blank and the system hangs during installation.

Solution. On AT&T 386/25 machines, the base setting in BIOS must be 640 KB. Otherwise, the monitor screen will blank out and your system will hang when the boot diskette is inserted and running.

EGA Displays

Problem. EGA class of video cards do not function correctly. The screen may be unreadable.

Solution. The default display is standard VGA. If you have EGA, do the following:

1. **Press** <Alt>+<SysRq> <P>
2. **Log in as *root*.**
3. **Type**

```
LD_LIBRARY_PATH=/usr/X/bin

export LD_LIBRARY_PATH

/usr/X/lib/display/setvideomode
```

4. **When prompted for vendor, select *Miscellaneous VGA*.**
5. **When prompted for the video mode, select *EGA*.**

Memory Conflicts With Trident 8900 Video Cards Fast Address Decode

Problem. The Trident 8900 supports a fast address decode mode that may cause kernel memory address conflicts and boot problems.

Solution. Change the jumper pins to configure the Trident 8900 to use slow address coding. For details see the documentation provided with this video card.

Internal Errors

The following item explains what to do if you encounter a system error.

Internal Error in System Installation. Cannot continue.

Problem. This message indicates a fatal and probably unrecoverable error.

Solution. Perform a destructive installation from the beginning to clear the problem.

Kernel Build

The following items explain how to solve some of the problems you may encounter when the UnixWare kernel is built.

Kernel Build Fails

Problem. Kernel build fails during installation.

Solution. If a kernel build fails during installation, review the error messages in the */tmp/kernel.build* error file for details.

- If a failure occurs while rebuilding the UnixWare kernel, this may be the result of a corrupted kernel file or **`idbuild`** tool caused by bad media or a malfunctioning device. The installation halts at this point.

  Determine if your hardware (CD-ROM, cartridge tape, diskette, or network) is working properly. To do so, run any hardware and vendor diagnostic utilities or contact your network administrator. If necessary, replace the installation media and restart 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, the reason may be that the application failed to install properly.

Rebuild the kernel by typing

```
/etc/conf/bin/idbuild -B
```

The `-B` option allows the kernel to be built immediately without having to reboot.

Media Errors

The following item explains what to do if a media error is displayed or if the media you want to install UnixWare from is not listed.

Error Reading Media

Problem. A "fatal" error message indicates that there was a problem reading your installation or HBA diskette media.

Solution. Such error messages can either be a hardware problem, a problem with your network (if you are performing a network installation), or a problem with your media. Do the following:

1. **If you are performing a network installation, contact your network administrator to verify that there is not a problem with the Install Server or network. If there is a problem with either the Install Server or your network, you may have to perform the installation again.**

2. **If the problem was not resolved in Step 1, shut down your system and check for hardware problems. Check all connections and run the diagnostic utilities provided with your system hardware.**

3. **If the problem was not resolved in Step 1 or Step 2, contact your Novell reseller to obtain replacement media. (If you used an HBA diskette from a third-party vendor, contact that vendor for a replacement diskette.)**

Installation Devices Not Listed

Problem. If you are installing from cartridge tape or CD-ROM and the medium from which you want to install is not listed on the "Selection Installation Method" screen, then UnixWare does not see the device.

Solution. If UnixWare cannot see your install device, check the following:

- Make sure the hardware in your system is supported: Host Bus Adapters, CD-ROM readers, and so on.
- Make sure the device is powered on at boot time.
- Check the cabling to the device.
- Make sure your controller and devices are set up properly.
- If you are using a SCSI device, ensure that SCSI termination rules are followed. For more information, check the documentation provided with your SCSI devices and see the section "SCSI Termination" in Appendix B, "Hardware Configuration Notes."
- Repeat the installation and enter the DCU. Check whether the device driver for this device has been configured.
- Run diagnostic software on that device to make sure it is not faulty.
- If necessary, swap that install device with another make or model.

Memory Problems

The following items explain how to solve some of the system memory problems you may encounter.

Add-on Card(s) Do Not Work on Computer with Greater than 16 MB RAM

Problem. Many add-on cards do 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.

ECC or Parity Errors

Problem. Bad memory or fatal memory parity errors.

Solution. Check if a diagnostic disk or some other system disk is available that will mask the bad memory module.

Incorrect Amount of RAM Memory Detected

Problem. On EISA systems, during installation an error message indicates that there is insufficient memory to load UnixWare.

Solution. Run the ECU provided by your hardware vendor and set the correct amount of memory.

Problem. On EISA systems with 16 MB or less of RAM, the incorrect amount of RAM may be detected.

Solution. Run the ECU provided by your hardware vendor and set the correct amount of memory. If the correct amount of memory is set and you still can not reboot your system, specify in the ECU that your system has more than 16 MB of RAM. Although you are providing an incorrect value to the ECU, this should allow you to boot UnixWare.

Problem. On computers using more than 16 MB RAM, the system might not detect RAM above 16 MB.

Solution. Perform the following procedure.

1. **Run `memsize` from the *root* ID to determine the amount of RAM your computer detects. If less memory is detected than is actually present, go to Step 2.**

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. For further details, see *boot*(4).

Type this carefully. An error in the */stand/boot* file can prevent your system 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.

Shadow Memory

Problem. Shadow memory on a Compaq system is mapped above 16 MB and is not disabled before installing the OS Multiprocessor Support package. Then your system does not boot.

Solution. You must either disable shadow memory (see the documentation that came with your system) or do the following:

Procedure

1. **Press reset (or power the computer off, then on again if you do not have a reset button).**
2. **Wait for the** `Booting UnixWare...` **prompt; then press the** <SpaceBar> **key to begin an interactive boot session.**
3. **When the** `[boot]#` **prompt is displayed, type**

   ```
   KERNEL=unix.old

   go
   ```

4. **Limit your computer's memory to 16 MB by placing the following line in */stand/boot*:**

   ```
   MEMRANGE=0-640K:256,1M-16M:512
   ```

5. **Reboot your system.**

Mouse Problems

The following item explains how to solve some of the problems you may encounter configuring a mouse for your system.

Mouse Does Not Work

Problem. Your mouse does not work.

Solution. First check that your mouse is properly installed in your system. If it is:

- For PS/2 and serial mouse on a EISA system, check the ECU to verify that your mouse is enabled and that other hardware controllers are not configured with conflicting hardware parameter settings (IRQ, memory address range, and so). See your hardware documentation for details on using the ECU.
- On an ISA system, check your BIOS setup.

Multiprocessor Problems

The following item explains how to solve some of the problems you may encounter on a multiprocessor system.

Receive Unknown Traps or Spurious Interrupts

Problem. A defective Interrupt Distribution Board causes an unknown trap or an interrupt in the system.

Solution. Contact your hardware vendor for a replacement board or, if possible, rejumper your system in a different interrupt mode that bypasses the Interrupt Distribution Board.

Network Installation Problems

Network Install Diskette Not Detected

Problem. An error message is displayed indicating that the *Network Installation Utilities* diskette is not inserted.

Solution. A *Network Installation Utilities* diskette is provided with UnixWare. Check whether you inserted this diskette into your 3.5-inch diskette drive. Then press <Enter>. (If this is not the problem and your boot drive is a 5.25-

inch diskette drive, check the CMOS hardware settings for your 3.5-inch diskette drive.)

Cannot Configure Network Interface Card

Problem. When prompted to provide your network interface card configuration data, the value for one or more of your card's hardware parameter settings is not listed (for example, the IRQ, I/O address range, memory address range, and/or DMA channel).

Solution. Only hardware parameter values that are not already in use are listed. If the value for a hardware parameter is not listed, then another hardware controller is configured to use the same hardware setting. There are several ways to fix this problem:

1. Repeat the installation and install from cartridge tape or CD-ROM diskette.

2. Repeat the installation and use the DCU to disable hardware controllers that are not needed during installation (for example, a cartridge tape drive).

3. Record the choices that are listed and then shut down your system. Reconfigure your networking card to use one of values you recorded and then repeat the installation.

Error When Configuring Network

Problem. When performing a network installation, an error message is displayed following the `Configuring Network` message.

Solution. The last line of the error message explains the cause of the problem:

- If the message indicates a problem with your networking card selection, then either the wrong networking card or the wrong networking parameters were selected. Press <Enter> to restart installation from the beginning.

- If the message indicates a problem contacting an Install Server, first check that your networking cable is securely attached to your system.

  - If the cable is securely attached to your system, ask your network administrator to check whether your network is up and whether an Install Server is enabled for network installation. (For details, see the

chapter "Installing Add-on Software" in the *System Administration* guide.) Then select whether to return to the previous menu or to cancel the installation.

- If the cable is not securely attached to your system, attach the cable. Then select whether to return to the previous menu or to cancel the installation.

- For any other message, check that the networking cable is securely attached to your system and confirm with your network administrator that your network is up and an Install Server is enabled for network installation.

System Hangs When Loading Drivers or Installing Software

Problem. When performing a network installation, the `Loading Software Drivers` message is displayed for several minutes or the installation gauge does not move for several minutes.

Solution. Check whether your networking cable is securely attached to your system.

- If the cable is securely attached to your system, ask your network administrator to check whether your network is up and whether an Install Server is enabled for network installation. (For details, see the section "Setting Up and Administering an Install Server" in the chapter "Installing Add-on Software" of the part "System Setup and Configuration" of the book *System Administration*). Then press <Enter> to restart installation from the beginning.

- If the cable is not securely attached to your system, attach the cable. Then press <Enter> to restart installation from the beginning.

Network Interface Card Problems

The following items explain how to solve some of the problems you may encounter with a network interface card.

For network interface card problems, also see the "Controller Problems" section earlier in this appendix and the section "Network Interface Cards" in Appendix B, "Hardware Configuration Notes."

Networking Interface Card is Not Found During Installation

Problem. The network interface card is not detected during installation of the *nics* package.

Solution. If this problem occurs with networking cards compliant with the ISA architecture, then there is typically a mismatch between the networking parameters entered when installing the *nics* package and actual settings on the networking card (IRQ, I/O address, memory address, and so on).

To correct the problem, either reinstall the *nics* package with the correct parameter settings or change the settings on the networking card. To do so, reboot your system using DR DOS boot floppy. Then use the networking card configuration diskette provided by the networking card vendor to change the hardware settings on the card. For further details, see the section "Configuring Your Hardware" in Chapter 1, "Before You Begin."

This problem rarely occurs for an EISA networking card on computers compliant with the EISA architecture, or for an MCA networking card on computers compliant with the MCA architecture. If it does, then your system may not have enough memory.

Network Interface Card Did Not Load

Problem. Configuration of a network interface card appears to succeed when installing the *nics* package, but when the system reboots UnixWare cannot detect the card and/or the device driver cannot be loaded. This may happen if device driver parameter settings were modified using the DCU.

Solution. Use the DCU to verify that the device driver parameter settings are correctly set and that the device driver parameter settings for the networking card do not conflict with any other hardware on your system.

If this does not solve the problem, obtain the correct networking parameter settings by following the procedure described above in "Networking Interface Card is Not Found During Installation." Then use the DCU to enter the correct values.

Problem. When installing the *nics* package, a networking card will not load.

Solution. The device drivers for some network interface cards require contiguous memory in order to successfully load. If such memory is not available, installation of the device driver fails.

If this problem occurs when installing the Personal Edition or Application Server, you are prompted to reboot your system. When the system reboots, the device driver is loaded and installation continues.

If this problem occurs when installing the *nics* package using the desktop or **pkgadd**, then reboot the system. This frees enough space to install the device driver.

Network Interface Card Not Found After Installing *nics* Package

See the previous section, "Network Interface Card Did Not Load."

Networking Fails After Adding New Network Interface Card

Problem. You installed an additional network interface card, rebooted the system, and networking is disabled.

Solution. No more than one of the following eight network interface cards can be installed on your system:

IBM_AutoLANStreamer_MC_32	Olivetti_NCU_9180
IBM_EtherStreamer_MC_32	Olivetti_NCU_9181/S
IBM_LANStreamer_MC_16	Olivetti_NCU_9195
IBM_LANStreamer_MC_32	IBM_Token_Ring_16/4_Adapter_II

If you installed a second network interface card from this group, then shut down your system and remove the card.

Wrong Connector Type

Problem. Software is correctly set but your system is not connected to the network.

Solution. This is typically caused by the wrong connector type setting for the network interface card. Refer to the section "Network Interface Cards" in Appendix B, "Hardware Configuration Notes," for a description of connector types.

To correct the connector type, either reinstall the *nics* package with the correct parameter settings or change the settings on the networking card. To do so, reboot your system using DR DOS boot floppy. Then use the networking card configuration diskette provided by the networking card vendor to change the hardware settings on the card. For more information, see "Running Hardware Configuration Programs" on page 8 in Chapter 1, "Before You Begin."

Nondestructive Installation Problems

The following items explain how to solve some of the problems you may encounter if you perform a nondestructive installation.

No Option Offered for Performing Nondestructive Installation

Problem. Your system contains a version of UnixWare but you are not given an opportunity to perform a nondestructive installation.

Solution. To perform a nondestructive installation

- The active partition must contain the version of UnixWare that you are replacing.
- You must be replacing a version of UnixWare that can be upgraded or UnixWare 2.0 (see "Choosing Between Destructive and Nondestructive Installation" on page 3 in Chapter 1, "Before You Begin").
- The partition containing UnixWare must be at least 80 MB.
- Your system must have at least at least 20 MB free of space in the */* file system, 45 MB in the */usr* file system, and 5 MB in the */var* file system. (Otherwise, the installation software will not allow you to install UnixWare 2.0.)

If you are not prompted to perform a nondestructive installation, then

1. Follow the instructions in the section "Changing Your Active Partition" on page 5 in Chapter 1, "Before You Begin," to set your active partition.
2. Repeat the installation.

If you are still not prompted to perform a nondestructive installation, then you must perform a destructive installation or you must cancel the installation.

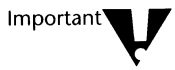
Installation Does Not Complete

Problem. When performing a nondestructive installation, the installation does not complete (for example, because of a power outage).

Solution. If the problem occurs before selection *Accept All Settings and Install Now* from the "Install Menu," you can either repeat the installation or reboot your system.

If the problem occurred later in the installation process but before you were prompted to reboot your system, and if you created emergency recovery diskettes for your previous system, you may be able to restore your previous system and try again.

Otherwise, you need to perform a destructive installation and then restore system and user data from backup tapes.



If you are upgrading from UnixWare 1.1, then you must follow the procedures in the "Destructive Installation Problems" section on page 123.

System Will Not Accept User Number During Nondestructive Installation

Problem. During a nondestructive installation, the system does not accept the user ID 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).

Cannot Use Old Logins After Nondestructive Installation

Problem. When performing an overlay installation, you lost your */etc/passwd* or */etc/shadow* files. Now you cannot log in using the old logins.

Solution. Log in as *root* and delete the problem logins from both */etc/shadow* and */etc/passwd*. Then add the logins again using the desktop or **useradd**(1M) and **creatiadb**(1M).

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/svr4.2/etc/netconfig* to */etc/netconfig* or overlay the *inet* package.

Networking Does Not Work following Overlay of nics

Problem. After overlaying the Network Interface Card Support (*nics*) in order to remove one of the networking cards from the 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 Nondestructive Installation

Problem. You have multiple SCSI adapter cards in your system of the same type and, after you perform a nondestructive installation, you can only access one of them.

Solution. Run **`/sbin/pdiadd`** to add the other cards to the system.

Need to Restore Device Driver From Previous System

Problem. After a nondestructive installation, a hardware controller is no longer configured on your system.

Solution. This is probably caused by not merging device drivers during UnixWare installation. The preferred solution is to reinstall the device driver. However, if you do not have an HBA containing the device driver, do the following:

You should restore device drivers one at a time. If your system cannot boot after restoring a device driver, then that device driver's settings conflict with other hardware on your system. In this case, either reconfigure your hardware or reboot using *unix.old*.

1. **Type**

   ```
   cd /etc/inst/save.user/etc/conf
   ```

2. **Type**

   ```
   find . -print -name driver | cpio -pd /etc/conf
   ```

   Here, *driver* is the name of the device driver that you are restoring.

3. **Rebuild your kernel. Type**

   ```
   /etc/conf/bin/idbuild -B
   ```

Need to Restore Data From UnixWare 1.1 Backup

Problem. You need to restore a user account or user data from a UnixWare 1.1 back up.

Solution. See the section "Destructive Installation Problems" on page 123 for details.

Overlay Installation Problems

If you encounter problems when performing an overlay installation, see the section "Nondestructive Installation Problems" earlier in this appendix.

Rewritable Optical Media Problems

The following items explain how to solve a problem you may encounter when using rewritable optical media.

Cannot Read Optical Media

Problem. Cannot read 1024 byte-per-sector rewritable 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 disk, then either the VERITAS file system type must be used for all file systems on the disk or the optical disk must use 512 bytes-per-sector.

Tape or Tape Drive Problems

The following items explain how to solve some of the problems you may encounter when using a tape drive.

Not Offered Tape as Media Choice for the PE/AS

Problem. This may occur because UnixWare is unable to detect the presence of the tape controller.

Solution. Cancel the installation and then turn off the computer and remove the tape controller. Verify that the controller is correctly configured (see Appendix B, "Hardware Configuration Notes"). 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 and tape drive has a valid SCSI target ID.

After making whatever hardware changes are necessary, restart installation.

Upgrade Installation Problems

If you encounter problems when performing an upgrade installation, see the section "Nondestructive Installation Problems" earlier in this appendix.

Glossary

adapter

A hardware card or board that allows one hardware component to communicate with another.

address

A number, label, or name that shows the location of information in the computer's memory.

client

The requesting computer on a client-server network.

DCU

Abbreviation for Device Configuration Utility.

desktop

The UnixWare screen area that contains windows, icons, and menus.

destructive installation

An installation process where all existing files and directories are overwritten by UnixWare.

device driver

A software routine that contains the instructions to operate a peripheral device.

Device Configuration Utility (DCU)

A UnixWare software program that allows you to review and change hardware configuration, including assigning device drivers to hardware controllers and changing device driver parameters such as the interrupt vector.

Direct Memory Access (DMA) Channel

A designated channel for transmitting data.

Discretionary Access Control (DAC)

The ability to restrict data access based on the user identity and/or the group to which the user belongs.

`fsck` (File System Check)

A tool that checks for file system correctness and repairs damaged data on a disk.

`ftp` (File Transfer Protocol)

A TCP/IP protocol used to log in to another system across the network, list directories, and copy files between systems at high speeds.

group ID (gid)

The integer associated with UNIX permissions in files and directories.

HBA (Host Bus Adapter) diskette

A diskette containing device drivers.

inode

The location where information for a file is stored (one inode per file). A file system is made up of inodes.

Interrupt Vector (IRQ)

An interrupt vector is a signal to stop execution of a process. Distinct hardware components must have unique interrupts.

IPX/SPX (Internetwork Packet eXchange/Sequenced Packet eXchange)

A set of protocols used to communicate across NetWare networks.

I/O address range

A portion of shared memory reserved for communication between the computer operating system and a hardware peripheral.

memory address range

A portion of Random Access Memory (RAM) reserved for communication between the computer operating system and a hardware peripheral.

multiprocessor

A system with more than one processor.

NFS (Network File System)

A distributed file system which allows information to be shared by users on numerous systems in a network.

nondestructive installation

An installation where the operating system is replaced but user files remain untouched. There are two types of nondestructive installations: overlay (where the same release of the UnixWare operating system is installed) and upgrade (where a new release of the UnixWare operating system replaces an earlier release).

owner

See system owner.

overlay installation

A nondestructive installation where one release of the UnixWare operating system replaces another version of the same release. This type of installation is useful when you want to keep user data while replacing potentially corrupted operating system or application software.

partition

A portion of the hard disk reserved for the operating system, files, directories, and so on.

pathname

The route to a file on a disk. This starts with the top directory, then the subdirectories, and finally the file. In the example */usr/bin/ls*, */usr* is the directory, */bin* is the subdirectory, and *ls* is the filename.

pseudo-terminal

The software implementation of a terminal, used as an active agent in communicating between processes and users. For example, a remote login server uses pseudo-terminals for remote login sessions.

rlogin

A remote login command used to start a session on a remote computer.

SCSI (Small Computer System Interface)

A peripheral interface which allows your computer to run at faster speeds and allows you to connect other devices to your computer while only taking up one slot in your machine.

server

The system in a client-server network that provides services to other computers (clients). A server typically runs the UnixWare Application Server software and/or the NetWare® operating system.

slice

A portion of a partition on your hard disk that contains a separate file system.

surface analysis

A hard disk test to check for defects in each disk block. Performing a surface analysis is important to ensure that the disk does not have defects in areas where critical UnixWare data will be placed.

swap space

If internal active and inactive processes fill up the memory, UnixWare automatically swaps some inactive processes out of system memory and onto a special section of the hard disk to allow for more memory space. The area swapped to is known as swap space.

system administrator

The person responsible for administering and managing a machine, network, and/or users.

system owner

The user account that administers UnixWare from the desktop. For example, the system owner performs backs up and restores files, changes network configuration, and adds users. (More than one user can be designated as a system owner.)

TCP/IP (Transmission Control Protocol/Internet Protocol)

A set of protocols used to communicate between networks.

threads

A small task in a computer program. Threads allow a programmer to break large tasks into smaller ones which can be processed concurrently. This increases the program execution speed.

user ID (uid)

An integer value, usually associated with a login name. The user ID of a process becomes the owner of files created by the process.

upgrade installation

A nondestructive installation where one release of the UnixWare operating system replaces an earlier release. Upgrade installations preserve user data.

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