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About This Guide

This guide provides all the information you need to install A/UX 3.0 on your Macintosh computer—either as a new A/UX system or as an update to an existing A/UX system. It provides instructions for using the Easy Install option, which prepares your hard disk and installs A/UX files and programs automatically. It also explains the Custom Install option, which allows you more flexibility to prepare your hard disk and install A/UX files and programs in ways that best fit your individual needs.

What's in this guide

Here's a brief summary of what you'll find in this guide:

- Chapter 1, “Before You Start,” provides a brief inventory of the hardware and software components you'll need to install A/UX 3.0 successfully, and it takes you through a number of preliminary tasks before you install A/UX 3.0.
- Chapter 2, “Updating a Previous Version of A/UX to Version 3.0,” explains how to update older versions of A/UX to A/UX 3.0.
- Chapter 3, “Performing an Easy Installation,” gives instructions for using the Easy Install option, which automatically prepares your hard disk and installs A/UX 3.0.
- Chapter 4, “Planning a Custom Installation,” provides information to help you plan a custom installation, which lets you decide how to prepare your hard disk and where to install A/UX files and programs.
- Chapter 5, “Performing a Custom Installation,” gives instructions for using the Custom Install option to prepare your hard disk and install A/UX 3.0.

- Chapter 6, “Running A/UX for the First Time,” tells you how to run your A/UX system for the first time. It also describes how to set up your Macintosh computer so that A/UX starts up automatically whenever you start up your computer.
- Appendix A, “A/UX 3.0 Installation Packages,” provides a list of the A/UX installation packages available on the *A/UX 3.0 CD-ROM* (compact disc read-only memory), along with a description of their contents.
- Appendix B, “Reusing the *A/UX 3.0 CD-ROM*,” describes how to install individual packages and files from the *A/UX 3.0 CD-ROM*—either to restore lost or damaged files, or to install additional A/UX installation packages after the initial installation. The appendix also explains how to use the CD as a mountable A/UX file system.
- Appendix C, “Troubleshooting and Support,” reviews common problems that may occur during the installation process and how to correct them. It also offers information on support services available for A/UX users.

How to use this guide

This guide is written for first-time A/UX users, experienced A/UX users, and veterans of other implementations of the UNIX operating system. How you use the guide depends on your level of experience with A/UX and on whether you are installing A/UX for the first time or updating an earlier version of A/UX.

Regardless of your experience with A/UX or the type of installation you are performing, start with Chapter 1 to make sure you have everything you need. Where you go after Chapter 1 depends on your needs:

- If you are updating an existing A/UX system, read Chapter 2.
- If you're performing an easy installation, go to Chapter 3.
- If you're performing a custom installation, go to Chapter 4.

If you encounter any problems, see Appendix C, “Troubleshooting and Support.”

What you should already know

This guide makes a number of assumptions about your computer system and your level of experience with Macintosh computers:

- You should already have set up your Macintosh computer. If you haven't, follow the instructions in the manual that comes with your computer.
- You should already be familiar with basic Macintosh terms, concepts, and techniques. These are presented in the training disk and manuals that come with your computer.
- You should already have read *Road Map to A/UX* for general background on A/UX and what this powerful operating system offers.

^ **Important** You don't need any UNIX experience to install A/UX 3.0. Even if you are unfamiliar with the UNIX operating system, you can find all the information you need in this guide to install A/UX 3.0 or to update a previous version of A/UX. /

Conventions used in this guide

A/UX guides follow specific conventions. For example, words that require special emphasis appear in specific fonts or font styles. The following sections describe the conventions used in all A/UX guides.

Keys and key combinations

Certain keys on the keyboard have special names. These modifier and character keys, often used in combination with other keys, perform various functions. In this guide, the names of these keys are in Initial Capital letters followed by SMALL CAPITAL letters.

The key names are

CAPS LOCK	DOWN ARROW (↓)	OPTION	SPACE BAR
COMMAND (⌘)	ENTER	RETURN	TAB
CONTROL	ESCAPE	RIGHT ARROW (→)	UP ARROW (↑)
DELETE	LEFT ARROW (←)	SHIFT	

Sometimes you will see two or more names joined by hyphens. The hyphens indicate that you use two or more keys together to perform a specific function. For example, Press `COMMAND-K` means “Hold down the `COMMAND` key and then press the `K` key.”

Terminology

In A/UX guides, a certain term can represent a specific set of actions. For example, the word *enter* indicates that you type a series of characters on the command line and press the `RETURN` key. The instruction

Enter `ls`

means “Type `ls` and press the `RETURN` key.”

Here is a list of common terms and the corresponding actions you take:

<i>Term</i>	<i>Action</i>
Click	Press and then immediately release the mouse button.
Drag	Position the mouse pointer, press and hold down the mouse button while moving the mouse, and then release the mouse button.
Choose	Activate a command in a menu. To choose a command from a pull-down menu, position the pointer on the menu title and hold down the mouse button. While holding down the mouse button, drag down through the menu until the command you want is highlighted. Then release the mouse button.
Select	Highlight a selectable object by positioning the mouse pointer on the object and clicking.
Type	Type a series of characters <i>without</i> pressing the <code>RETURN</code> key.
Enter	Type the series of characters indicated and press the <code>RETURN</code> key.

The Courier font

Throughout A/UX guides, words that appear on the screen or that you must type exactly as shown are in the `Courier` font. For example, suppose you see this instruction:

Type `date` on the command line and press `RETURN`.

The word `date` is in the `Courier` font to indicate that you must type it. Suppose you then read this explanation:

After you press RETURN, information such as this appears on the screen:

```
Tues Oct 17 17:04:00 PDT 1989
```

In this case, `Courier` is used to represent the text that appears on the screen.

All A/UX manual page names are also shown in the `Courier` font. For example, the entry `ls(1)` indicates that `ls` is the name of a manual page in an A/UX reference manual. See "Manual Page Reference Notation" later in this preface for more information on the A/UX command reference manuals.

Font styles

Italics are used to indicate that a word or set of words is a placeholder for part of a command. For example,

```
cat filename
```

tells you that *filename* is a placeholder for the name of a file you want to display. For example, if you wanted to display the contents of a file named `Elvis`, you would type the word `Elvis` in place of *filename*. In other words, you would enter

```
cat Elvis
```

New terms appear in **boldface** where they are defined. Boldface is also used for steps in a series of instructions.

A/UX command syntax

A/UX commands follow a specific command syntax. A typical A/UX command gives the command name first, followed by options and arguments. For example, here is the syntax for the `wc` command:

```
wc [-l] [-w] [-c] [filename]...
```

In this example, `wc` is the command, `-l`, `-w`, and `-c` are options and *filename* is an argument. Brackets (`[]`) enclose elements that are not necessary for the command to execute. The ellipsis (`...`) indicates that you can specify more than one argument. Brackets and ellipses are *not* to be typed. Also, note that each command element is separated from the next element by a space.

The following list gives more information about the elements of an A/UX command.

<i>Element</i>	<i>Description</i>
<i>command</i>	The command name.
<i>option</i>	A character or group of characters that modifies the command. Most options have the form <i>-option</i> , where <i>option</i> is a letter representing an option. Most commands have one or more options.
<i>argument</i>	A modification or specification of a command, usually a filename or symbols representing one or more filenames.
[]	Brackets used to enclose an optional item—that is, an item that is not essential for execution of the command.
...	Ellipses used to indicate that you can enter more than one argument.

For example, the `wc` command is used to count lines, words, and characters in a file. Thus, you can enter

```
wc -w Priscilla
```

In this command line, `w` is the option that instructs the command to count all of the words in the file, and the argument `Priscilla` is the file to be searched.

Manual page reference notation

The *A/UX Command Reference*, the *A/UX Programmer's Reference*, the *A/UX System Administrator's Reference*, the *X11 Command Reference for A/UX*, and the *X11 Programmer's Reference for A/UX* contain descriptions of commands, subroutines, and other related information. Such descriptions are known as *manual pages* (often shortened to *man pages*). Manual pages are organized within these references by section numbers. The standard A/UX cross-reference notation is

command (section)

where *command* is the name of the command, file, or other facility; and *section* is the number of the section in which the item resides.

- Items followed by section numbers (1M) and (8) are described in the *A/UX System Administrator's Reference*.
- Items followed by section numbers (1) and (6) are described in the *A/UX Command Reference*.

- Items followed by section numbers (2), (3), (4), and (5) are described in the *A/UX Programmer's Reference*.
- Items followed by section number (1X) are described in the *X11 Command Reference for A/UX*.
- Items followed by section numbers (3X) and (3Xt) are described in the *X11 Programmer's Reference for A/UX*.

For example,

```
cat(1)
```

refers to the command `cat`, which is described in Section 1 of the *A/UX Command Reference*.

You can display manual pages on the screen by using the `man` command. For example, you could enter the command

```
man cat
```

to display the manual page for the `cat` command, including its description, syntax, options, and other pertinent information. To exit a manual page, press the SPACE BAR until you see a command prompt, or type `q` at any time to return immediately to your command prompt.

For more information

To find out where you need to go for more information about how to use A/UX, see *Road Map to A/UX*. This guide contains descriptions of each A/UX guide and ordering information for all the guides in the A/UX documentation suite.

1 Before You Start

This chapter explains some preliminary tasks you need to perform before installing A/UX 3.0 on your Macintosh computer.

Here's what you'll find in this chapter:

- what you need
- starting up the computer
- reading the Read Me file
- where to go from here

What you need

First, take a moment to make sure you have what you need to install A/UX 3.0. Here's a list of items you will need to complete the instructions in this guide:

- *A/UX 3.0 CD-ROM* (compact disc read-only memory)
- two *A/UX Installer Startup* disks—an 800 kilobyte (K) disk for the Macintosh SE/30, II, IIfx, IICx, IICi, IIsi, and IIfx, and a 1.4 megabyte (MB) disk for the Macintosh Quadras
- two *Read Me* disks—an 800K disk for the Macintosh SE/30, II, IIfx, IICx, IICi, IIsi, and IIfx, and a 1.4 MB disk for the Macintosh Quadras

You will find these materials in the same box in which you found the *A/UX Installation Guide*.

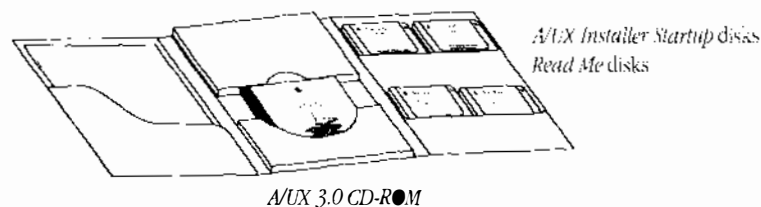


Figure 1-1 What you need

To install A/UX 3.0, you need a Macintosh computer with sufficient processing capability, memory, and storage space. Here's a list of the models that currently support A/UX 3.0:

- Macintosh SE/30
- any model Macintosh II; the original Macintosh II requires a paged memory management unit (PMMU). The Macintosh IIsi requires a floating-point unit (FPU).
- Macintosh Quadras

Regardless of the type of Macintosh computer system you have, it must be equipped with the following to complete the installation:

- a minimum of 8 MB of RAM
- a SCSI (Small Computer System Interface) hard disk with a minimum of 80 MB storage capacity (160 MB recommended—in either one drive or two 80 MB drives)
- a SCSI CD-ROM drive

◆ **Note** The complete A/UX 3.0 system requires a drive with a minimum of 160 MB. You can install a workable A/UX 3.0 system on an 80 MB drive; however, doing so leaves almost no space for storing user-generated files. ◆

If you are uncertain whether your Macintosh computer is equipped to run A/UX 3.0, consult the manual that came with the computer, ask a more experienced Macintosh user, or contact your authorized Apple dealer or representative.

Starting up the computer

Before installing A/UX 3.0, you should already have

- set up your Macintosh computer
- connected any external hard disks on which you wish to install A/UX 3.0
- connected the CD-ROM drive
- learned basic Macintosh concepts and techniques
- read the *Road Map to A/UX*

If you haven't already performed these tasks, do so now. Use the instructions that came with your computer and peripheral devices for setting up your computer system.

- △ **Important** To avoid inadvertently erasing important data, disconnect any hard disk drives and other SCSI devices that you do not need to perform the A/UX installation process and reposition the SCSI terminator on the last active device in the SCSI chain. You can reconnect these devices after you complete the installation. △

Follow these steps to start up the computer:

- 1 Turn on the CD-ROM drive and any external hard disks.**
After turning on the last device, wait 10 seconds before proceeding.
- 2 Turn on the computer (and the monitor if it has a separate power switch).**
Use the method you learned from the manual that came with the computer and monitor.

Reading the Read Me file

Before starting up the Installer program, open the Read Me file on the *Read Me* disk. The purpose of the Read Me file is to inform you of any late-breaking information about A/UX 3.0 that could not be included in the manuals.

Follow these steps to open the Read Me file:

- 1 Insert the *Read Me* disk into the disk drive.**
Use whichever version—800K or 1.4 MB—your computer requires. The same Read Me file is contained on both disks.
- 2 Open the disk's icon to see its contents.**
You see the disk's directory window.

3 **Open the Read Me icon.**

You don't need to read the entire document right now—just look for a section titled “Additional Installation Information.”

Make note of any information that may supersede the instructions presented in this guide. (If you don't find a section with that title, you can assume the instructions here are accurate and complete.)

4 **When you are finished with the Read Me file, choose Quit from the File menu.**

Where to go from here

Now that you've finished with the preliminaries, where you go next depends on whether you are updating an older version of A/UX or installing A/UX for the first time. If you are updating an older version of A/UX, go to Chapter 2, “Updating a Previous Version of A/UX to Version 3.0.” If you are installing A/UX for the first time, go to Chapter 3, “Performing an Easy Installation,” to determine whether the Easy Install option will meet your needs. If you already know that you want to use the Custom Install option, go on to Chapter 4, “Planning a Custom Installation.”

2 Updating a Previous Version of A/UX to Version 3.0

This chapter provides instructions for preserving files from an existing A/UX 2.0 or 2.0.1 system for later restoration after installing A/UX 3.0. With the instructions in this chapter, you will use two programs provided on the *A/UX 3.0 CD-ROM*—`syschk` and `bakchk`. You run these programs from your current A/UX operating system. You also back up your files from A/UX, with floppy disks formatted in the Macintosh Operating System or the A/UX Finder.

- △ **Important** A/UX 3.0 does not support updates from A/UX versions 1.0 or 1.1. If you are currently using one of these versions of A/UX, you will need to make a complete backup of your system, perform a new installation (including repartitioning your hard disk), and then manually restore important files from the earlier version. △

Here's what you'll find in this chapter:

- updating your current A/UX system
- the update process
- about `syschk` and `bakchk`
- using `syschk`

- examining the `/syschk.report` file
- using `bakchk` to back up files
- where to go from here

Updating your current A/UX system

The A/UX Installer program allows you to maintain some features of your current A/UX system automatically if the partitioning scheme on the hard disk you are installing on can accommodate the entire A/UX 3.0 distribution. If it finds a partitioning scheme that can accommodate the additional materials in the new distribution, you can perform an automated update of your current system, rather than repartitioning your hard disk and performing a new installation. There are some important advantages and disadvantages to performing an automated update, and they should be weighed carefully before you proceed.

Advantages

There are some advantages to maintaining your current partitioning scheme and updating your current system. The A/UX Installer will *not* destroy user-generated files, or any other files on the hard disk, provided those files have names that are not used in the A/UX 3.0 distribution. In other words, the A/UX Installer program will replace only those files that have the same names as files in the new distribution. Any others are retained.

The A/UX Installer program performs this “update” automatically. If the current partitioning scheme is suitable, and there is enough extra space on the hard disk, the program indicates that it will use the existing partitions. Both installation options—Easy Install *and* Custom Install—can distinguish between usable and unusable partitioning schemes. You choose the installation option just as you would for a new installation.

Disadvantages

There are also some important disadvantages to performing an automated update. First, there may be some disadvantages to maintaining your current partitioning schemes. The size of the standard A/UX 3.0 MacPartition is 4 MB. If your current MacPartition is less than 4 MB, the A/UX Installer program will install a minimal set of A/UX Startup files.

Second, unless you are installing the complete A/UX 3.0 distribution, you may create a “hybrid” system of new and old files. In an update, any file in your current system that has the same pathname as a new file is replaced by the new file. Any other current files are left on the hard disk. If you do not install *all* of the A/UX 3.0 installation packages, you may end up with a system containing old 2.0 or 2.0.1 files, along with the new A/UX 3.0 files you installed. In many cases, these older files are not compatible with A/UX 3.0, and this hybrid system may cause very unpredictable—and sometimes dire—results.

We recommend

If you are updating from A/UX 2.0 or 2.0.1, and you do not have sufficient space to install *all* A/UX 3.0 installation packages, we strongly recommend that you back up your current system, repartition the hard disk (which removes all data from the disk), and install A/UX 3.0. Then restore important system and user files. The `syschk` and `bakchk` programs described in this chapter are designed to help you identify, back up, and restore these important files.

The update process

First, before doing anything, you should perform a complete backup of your current A/UX system. In the event of a power failure during the update process, you will be able to restore your original system.

- △ **Important** Backup tapes made with the Apple Tape Backup 40SC are incompatible with A/UX 3.0. When backing up your current system prior to installing A/UX 3.0, use A/UX utilities—`pax` or `cpio`, for example—to back up your current system onto floppy disks.

Here's a brief summary of the complete update process:

1. *Before the installation:* Delete any files that are no longer part of A/UX, rename any user files that have the same name as new A/UX 3.0 files, and then back up these renamed files and any essential A/UX files that exist on your current system. Use `syschk` to help you with this process.
2. *The installation:* You will use the A/UX Installer program to prepare the hard disk (if necessary) and then to install A/UX 3.0. You can use either the Easy Install option (described in Chapter 3) or the Custom Install option (Chapters 4 and 5).
3. *After the installation:* You will restore user files and certain system setup files that you backed up. Instead of restoring the system setup files to their original locations, you should edit the new A/UX setup files to restore your own system setups. By editing the new A/UX setup files, you ensure that your system retains all your modifications while getting the benefits of the new A/UX settings. "Restoring Saved Files" in Chapter 6 describes how to restore the files you saved.

Important You will need at least two floppy disks that have been formatted in the Macintosh Operating System or the A/UX Finder before you begin the update process. You will use these disks to back up your current A/UX files. ↗

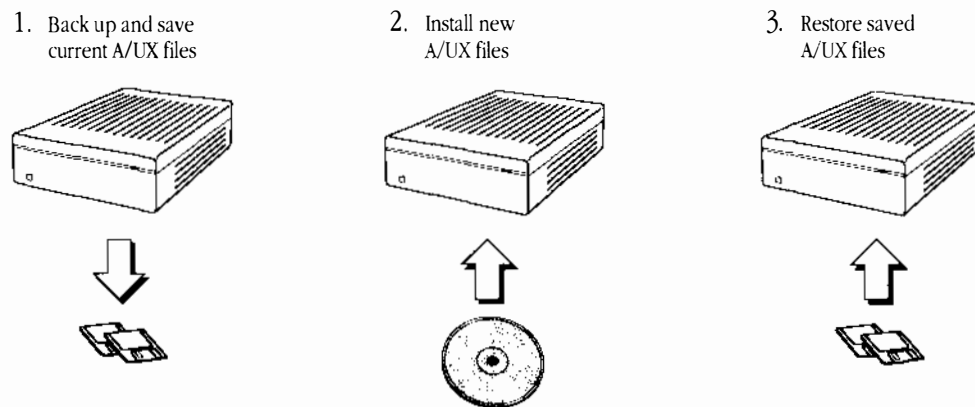


Figure 2-1 Updating your system to A/UX 3.0

About `syschk` and `bakchk`

The *A/UX 3.0 CD-ROM* contains two programs to help you in the update process: `syschk` (the system checker) and `bakchk` (the backup checker). You run `syschk` to discover which of your current A/UX distribution files differ from those in the new A/UX release.

The `syschk` program creates a report file `syschk.report` in the root directory. The `/syschk.report` file lists

- system files in your current A/UX system that will be replaced in the new release
- system files in your current A/UX system that do not exist in the new release
- any user files that have the same names as A/UX 3.0 files that did not exist in prior distributions

The `syschk` program also creates a file called `/backup.report`, which is used by the `bakchk` program to make a backup copy of files reported by `syschk`.

By running `syschk`, you identify these categories of files:

- Current A/UX distribution files that will be replaced with new files of the same name.
Certain files that will be replaced have essential information that you may wish to preserve—for instance, your password file and parts of your `/etc/inittab` file. You can use `syschk` to identify A/UX distribution files that have been modified since their installation. The `syschk` program lists these files in two report files called `/syschk.report` and `/backup.report`. You can modify `/backup.report` and use `bakchk` to copy listed files onto floppy disks.
- User-named files that happen to have the same name as one of the new A/UX distribution files and thus will be overwritten.

The `syschk` program lists in `/syschk.report` and `/backup.report` any existing user files that have the same names as A/UX 3.0 files that did not exist in prior distributions. You can use this information to rename those user files or make backups of them while you are backing up the essential A/UX distribution files. You can later restore your own files from these copies, renaming them or placing them in an appropriate directory to avoid collision with A/UX distribution file names. As a general rule you should not create new files in directories that contain the A/UX distribution, such as `/etc` and `/bin`.

- Files that are no longer part of the A/UX distribution.

You should delete these files before installing A/UX 3.0. The `syschk` program lists these files in the report file called `/syschk.report`. By deleting these files, you increase the space available on your hard disk.

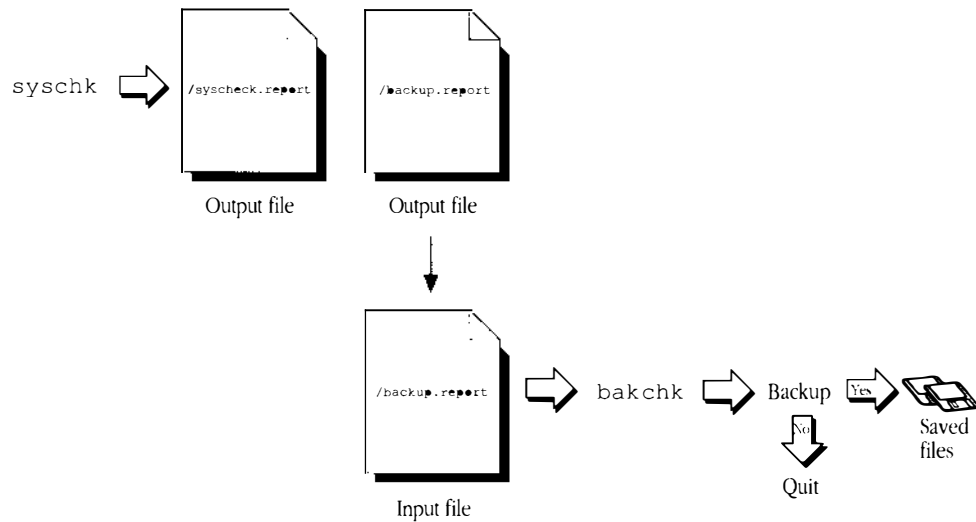


Figure 2-2 Using `syschk` and `bakchk`

Using `syschk`

The `syschk` program helps you identify the files on your current A/UX system that have changed since you first installed your current version of A/UX (either version 2.0 or 2.0.1). Note that `syschk` will check for changes only to distributed text files. If you have made changes to binary or data files, such as programs like `/bin/cat`, you will have to locate and back up these files individually.

Important The `syschk` program will check for changes only to distributed text files. Any other types of files will need to be located and backed up individually.

When you are ready to update your system, follow these steps to run `syschk`:

1 Log in as root to the console emulator.

In the Login dialog box, select Change Session Type from the Options menu. Select Console Emulator and press the button labeled This Session Only.

The `syschk` program must be run from console emulator mode on a “quiet” system. If you have Network File System (NFS) file systems mounted, you should unmount them using the command

```
umount -avt nfs
```

2 Insert the A/UX 3.0 CD-ROM into the CD ROM drive.

3 Mount the disk.

Use the `mount` command to mount the CD on the `/mnt` directory. Enter

```
mount -r /dev/dsk/cxd0s6 /mnt
```

where x is the SCSI ID number of your CD drive. For example, if your CD-ROM drive has SCSI ID 1, you would enter

```
mount -r /dev/dsk/c1d0s6 /mnt
```

4 Use the `syschk` program to check your system.

Run `syschk` by entering

```
/mnt/syschk
```

The `syschk` program asks a question about your current release and then begins checking attributes of your current A/UX distribution files. You see this message:

```
Welcome to the A/UX System Checker.
```

```
This program examines the current attributes of files being  
replaced or added in this release. You will be notified of  
files needing attention.
```

```
Your current release appears to be A/UX Release <2.0.1>.
```

```
If this is correct, press RETURN.
```

```
Otherwise, enter the correct release number:
```

5 **Confirm your current release number.**

Press RETURN if the release number is correct. Or type the release number of your current system and press RETURN.

You see another message:

Examining the system files on your current release, comparing their current attributes with their original attributes, as shipped. This will take a few minutes ...

The `syschk` program examines A/UX distribution files that appear to have been modified since your original system was shipped and lists them in the `/syschk.report` file. At the same time, `syschk` searches for any user files that have the same name as a file on the new release and records them in the `/syschk.report` file. The `syschk` program also searches for any files on the current system that are no longer part of the A/UX release and records them in `/syschk.report`.

6 **Examine the report files.**

When the `syschk` program has finished checking your system, you see a short message directing you to examine the `/syschk.report` file. The `syschk` program also produces `/backup.report`, which contains the list of files to be backed up.

The `/backup.report` file produced by `syschk` can be used as a control file for a backup utility such as `cpio`. You can edit this file and then use `bakchk` to make backup copies. Or you can edit the file and use it as input on a `cpio` command line.

See "Using `bakchk` to Back Up Files" later in this chapter for information on the `bakchk` program.

Examining the `/syschk.report` file

The following sections explain each part of the `/syschk.report` file and discuss how you can use the contents of this file to preserve essential A/UX files and back up user files. You may want to print the `/syschk.report` file for easier examination.

Important The `/syschk.report` file can be a sizable document to print. You can shorten it by removing your current man pages and then running `syschk` again. This will prevent them from being reported in `/syschk.report`. (Your current man pages are reported in `/syschk.report` because the new compression utility used to compress them causes their file names to change. Thus the old man pages are considered obsolete.) To remove current man pages, enter `rm -rf /usr/catman`. Then run `syschk` again. This will substantially reduce the size of `/syschk.report` file.

Preserving essential A/UX distribution files

The `/syschk.report` file shows A/UX distribution files that appear to have been modified since your original system was shipped. Here is part of a sample

`/syschk.report` file:

```
Thu Nov 14 15:07:55 1991
```

```
Package: core aux
```

```
/.cshrc:
```

```
    locally modified, save a copy  
    (distributed file unchanged since 2.0)
```

```
/.login:
```

```
    locally modified, save a copy  
    (distributed file changed since 2.0)
```

```
/etc/fstab:
```

```
    locally modified, save a copy  
    (distributed file unchanged since 2.0)
```

```
/etc/group:
```

```
    locally modified, save a copy  
    (distributed file changed since 2.0.1)
```

These files will be replaced by the corresponding A/UX distribution file in the new release. You can use `bakchk` to back up these files as explained later in “Using `bakchk` to Back Up Files.”

When you install A/UX 3.0, your system will contain the new A/UX distribution files. You can then restore your old A/UX files into a safe location and compare them to the new files, modifying the new A/UX distribution files to include your customized information. (For example, you can back up `/etc/group`, and after installing the new release, incorporate the changes from your old `/etc/group` file into the new `/etc/group` file.) “Restoring Saved Files” in Chapter 6 helps you customize your new A/UX system.

Follow these steps to decide which files to back up:

1 Carefully read the list of modified files in the `/syschk.report` file.

A general rule is to back up filenames that you recognize and files that you may have modified. Most files in `/etc` should be backed up. You probably do not need to back up such files as old log files.

2 Edit the `/backup.report` file.

Edit the `/backup.report` file by deleting each line containing a filename that you do *not* want to back up. Files such as old log files (for example, `/usr/spool/lp/oldlog`) probably do not require backing up.

Here is part of a sample `/backup.report` file:

```
.cshrc
.login
etc/exports
etc/fstab
etc/group
```

- △ **Important** If you later restore any files listed here, be sure to restore them to a new directory to avoid overwriting the new A/UX distribution files with the same name.

Note that `/backup.report` lists relative pathnames of files, so restoring these files to a different directory is easier. You should also use relative pathnames (that is, pathnames that do not begin with a slash [/]) if you add any files to this list.

Preserving user files with name conflicts

The `/syschk.report` file also lists any user files that have the same names as A/UX 3.0 files that did not exist in prior distributions. These may be files that you created, or they may be part of a package—for example, the X Window System, which is now included in the standard A/UX distribution.

You can rename these files so that they won't be overwritten by the new A/UX files. Or you can back them up and later restore them in a directory where they won't conflict with the new A/UX files of the same name.

Here is part of a sample `/syschk.report` file:

```
Thu Nov 14 15:09:15 1991

Package: x11
/usr/lib/X11/.x11start:
    name conflict - save local file
/usr/lib/X11/Sample.twmrc:
    name conflict - save local file
```

Follow these steps to decide which user files to back up:

- 1 **Read the list of conflicting filenames in the `/syschk.report` file.**
- 2 **Edit the `/backup.report` file.**

Edit the `/backup.report` file by deleting each line containing a filename that you do *not* want to back up.

Important If you later restore any files listed here, be sure to restore them to a new directory to avoid overwriting the new A/UX distribution files with the same name.

Note that `/backup.report` lists relative pathnames of files, so restoring these files to a different directory is easier. You should also use relative pathnames (that is, pathnames that do not begin with a slash [/]) if you add any files to this list.

3 Save a copy of the `/backup.report` file.

If you run `syschk` again, the `/backup.report` file will be overwritten. If you've made any changes to `/backup.report`—for example, deleting file names—save your `/backup.report` file by entering

```
cp /backup.report /orig.report
```

Files to be removed

The `/syschk.report` file also lists all A/UX distribution files on your current A/UX system that are not part of the A/UX 3.0 release. These files will automatically be erased if you initialize and repartition the hard disk. If you do not plan to repartition, you should remove these files now to make more space available on your hard disk. In most cases, you should remove these files, since they are no longer supported. However, if you wish to keep something that is not supported, back it up and move it to a “local” directory—that is, not an A/UX system directory.

Here is part of a sample `/syschk.report` file:

```
Thu Nov 14 15:09:13 1991
```

```
Package: uucp
```

```
/usr/bin/uusub:
```

```
    unsupported file - delete
```

```
/usr/spool/uucp/LOGFILE:
```

```
    unsupported file - delete
```

```
/usr/ucb/uudecode:
```

```
    unsupported file - delete
```

```
/usr/ucb/uuencode:
```

```
    unsupported file - delete
```

You should be sure to remove anything listed as unsupported in these locations:

```
etc/startup.d
```

```
etc/boot.d
```

```
etc/master.d
```

```
etc/install.d
```

```
etc/uninstall.d
```

```
etc/init.d
```

You should also back up and remove any third-party files from these locations. Failure to remove these unsupported or third-party files may cause your system to fail when running the `autoconfig` program.

- ▲ **Warning** Old autoconfiguration files (pre-A/UX 3.0) may not work with the A/UX 3.0 release. These files should be removed. After installing A/UX, reinstall third-party drivers *only* after consulting your vendor regarding compatibility with A/UX 3.0. ▲

Using `bakchk` to back up files

The `bakchk` program is designed to help you back up your files. The `bakchk` program uses the list of files in `/backup.report` as an input file to the `cpio` command.

If you save files yourself, without using the `bakchk` program, use relative pathnames (that is, pathnames that do not begin with a slash [/]). Always label the disks to identify the files on them and store them in a safe place.

Follow these steps to back up your files:

1 **Edit the** `/backup.report` **file.**

Edit the contents of the `/backup.report` file so it contains only the filenames you want to back up.

If you want to add any user data files to this list, add them at the end of the list. The installation process will not overwrite any user data files that have names unlike the names of A/UX distribution files. (However, you should always make a full backup of your system before reconfiguring your system.)

2 **Enter** `/mnt/bakchk` **to check files in the** `/backup.report` **file.**

The `bakchk` program is on the *A/UX 3.0 CD-ROM*, which you mounted at `/mnt`. Enter `/mnt/bakchk`

The `bakchk` program checks the `/backup.report` file for inconsistencies and displays this message:

```
Determining archive size...
```

The `bakchk` program inspects the `/backup.report` file to determine whether it contains acceptable input for a `cpio` command. If `bakchk` finds problems with the `/backup.report` file (for example, if `bakchk` could not locate a file), you see a message:

```
could not locate the following files:  
    < reports >  
    < documents >
```

Then the `bakchk` program quits without archiving the files to floppy disks. If you see this message, examine the contents of the `/backup.report` file and correct any errors reported by `bakchk`. Then run `bakchk` again to make sure you have corrected any problems.

If the `/backup.report` file contains filename entries that are acceptable as input to `cpio`, `bakchk` asks if you want to back up the files at this time. Then `bakchk` indicates the number of floppy disks required to make the backup. Note that you must have previously formatted these disks in the Macintosh Operating System or the A/UX Finder. You see a message:

```
The cpio archive will require 1536 bytes.  
You must have 1 pre-formatted 800K diskettes or 1 High  
Density diskettes available to proceed.  
Do you want to make a cpio archive at this time?  
[y/n, default n]: y  
  
Be sure to insert all floppy disks into drive 0.  
Please insert the first floppy disk.  
Press RETURN when ready.
```

Important Write down the number of bytes that the `cpio` archive will require. You will need this number later to determine if you have adequate room to restore files.

3 **Type `y` (for yes) to back up files listed in `/backup.report` to a floppy disk.**

Type `y` if you want to make a backup at this time and if you have the required number of formatted floppy disks.

Type `n` if you do not want to make a backup at this time or if you do not have the required number of formatted floppy disks.

Typing `n` causes the `bakchk` program to quit. You can examine the `/backup.report` file and use it later as an input file to `cpio` if you wish.

After typing `y`, the `bakchk` program displays the following message:

```
Please insert the first floppy disk. Press RETURN when ready.
```

4 **Insert a formatted floppy disk.**

Be sure to insert all floppy disks into drive 0 (usually on the right side of computers with two internal disk drives). Label and number each disk sequentially, starting with 1.

Important Be sure to label and number each disk sequentially. You will need to reinsert the disks in order.

Continue removing and inserting disks as prompted by `bakchk`. After the backup has been made, you see a message:

```
xxxx blocks
```

```
The archive has been written. Please re-insert the first  
floppy disk for verification of readability. Press RETURN  
when ready.
```

5 **Reinsert the backup disks for verification.**

Reinsert the floppy disks one by one, starting with disk 1. The `bakchk` program concludes when you see the message

```
xxxx blocks
```

Remove the last floppy disk and store your backup disks in a safe place.

6 Print a copy of the `/backup.report` file.

Print a copy of the `/backup.report` file for future reference. Print your file by using the `lpr` command. Enter

```
lpr /backup.report
```

Store the printed copy of `/bakchk.report` with the floppy disks that you have just saved your files on. This list will help you when you restore files.

7 Unmount the *A/UX 3.0 CD-ROM*.

Enter `umount /mnt`

8 Eject the *A/UX 3.0 CD-ROM*.

Eject and remove the *A/UX 3.0 CD-ROM*. Store it in a safe place until you begin the installation.

9 Shut down the computer.

Enter

```
sync; sync; powerdown
```

to shut down the computer.

Where to go from here

Now that you've finished making backup copies of all your important *A/UX* files, you can install *A/UX 3.0*. If you have decided to use the Easy Install option, continue to Chapter 3, "Performing an Easy Installation." If you have decided to use the Custom Install option, go directly to Chapter 4, "Planning a Custom Installation."

After installing *A/UX 3.0*, you will need to restore the files you backed up. For instructions, see Chapter 6, "Running *A/UX* for the First Time."

3 Performing an Easy Installation

Using the Easy Install option is the fastest and simplest way to install A/UX 3.0 on your Macintosh system. Easy Install automatically prepares your hard disk and installs both the necessary Macintosh system software and A/UX 3.0 programs and files.

Here's what you'll find in this chapter:

- about Easy Install
- using the A/UX Installer program
- where to go from here

About Easy Install

The Easy Install option automatically installs A/UX 3.0 on a single hard disk. It prepares the hard disk and creates a 4 MB partition, called *MacPartition*, where essential Macintosh system files and the A/UX Startup program are installed. Easy Install then installs as much of A/UX 3.0 as can fit on the hard disk. If the disk is 160 MB or larger, it installs all of A/UX 3.0; if the disk is smaller than 160 MB, some A/UX packages may not be installed. (The Installer program will not install on a hard disk smaller than 80 MB.)

Before completing the installation, the Easy Install option lets you view a list of selected A/UX packages that can fit on your hard disk. This list represents the program's "best guess" of the A/UX packages you'll want on a disk that cannot hold the complete installation. You can change the contents of the list to better suit your needs, or you can accept the selected A/UX packages as listed.

◆ **Updating** The Easy Install option works somewhat differently if you are updating from an earlier version of A/UX and your current partitioning scheme can accommodate the larger A/UX 3.0 distribution. For more information, see Chapter 2, "Updating a Previous Version of A/UX to Version 3.0." ◆

The Easy Install option has some limitations that may require that you perform a custom installation instead:

- Easy Install cannot install A/UX 3.0 on more than one hard disk at a time.
- Easy Install creates a MacPartition of only one size (4 MB).
- Easy Install installs A/UX 3.0 as one mountable file system.

If you need to install on more than one hard disk, increase the size of the MacPartition, or create more than one A/UX file system, you will need to perform a custom installation. Go now to Chapter 4, "Planning a Custom Installation," for instructions.

△ **Important** Under almost no circumstances will you need a MacPartition larger than 4 MB. Almost all Macintosh programs and utilities are compatible with the A/UX system, so they don't need to be kept in a separate partition.

▲ **Warning** The A/UX Installer program erases all data on the hard disk you install A/UX on—unless you are updating an earlier version of A/UX on a hard disk with an acceptable partitioning scheme. If you have any data on the hard disk that you do not want to lose, back up any files you want to keep before continuing in this chapter. ▲

Unfamiliar terms?

You may be unfamiliar with the terms *package*, *partition*, *file system*, and *MacPartition*. Here is a brief explanation.

The complete A/UX 3.0 distribution includes thousands of programs and files. To make the installation process more manageable, these programs and files are organized into logically related groups, or **packages**.

A **partition** is a section of a hard disk. A **file system** resides in a partition and manages the location of files. A/UX and the Macintosh Operating System use entirely different types of file systems: the Macintosh Operating System always resides in one partition, whereas A/UX resides in several partitions, each one with a special purpose.

MacPartition is the partition where the Macintosh file system resides. It contains the System Folder used to start up the computer. MacPartition is also where the A/UX Startup program is stored. This is the program that starts up A/UX on the Macintosh.

Even though the Macintosh and A/UX operating systems reside in different partitions, you do not need to store your Macintosh programs in MacPartition.

For more information about partitions, MacPartition, and file systems, see *A/UX Essentials*.

Using the A/UX Installer program

This section provides instructions for starting the A/UX Installer program, setting Easy Install preferences, viewing and changing A/UX packages, and completing the installation. If you have any problems during the installation, see Appendix C, "Troubleshooting and Support."

Starting up the A/UX Installer program

Follow these steps to start up the A/UX Installer program:

1 Shut down the computer, if it is already on.

You need to start up the computer from the *A/UX Installer Startup* disk. Choose Shut Down from the Special menu to shut down the computer.

2 Turn on the CD-ROM drive and the hard disk you plan to install on.

If necessary, use the instructions that came with your CD-ROM drive or hard disk.

3 Insert the *A/UX 3.0 CD-ROM* into the CD-ROM drive.

First insert the CD into the CD tray, and then insert the tray into the drive. (If necessary, consult the instructions that came with your CD-ROM drive.)

Important The *A/UX 3.0 CD-ROM* must be inserted into the CD-ROM drive *before* you start the computer.

4 Insert the *A/UX Installer Startup* disk into the disk drive.

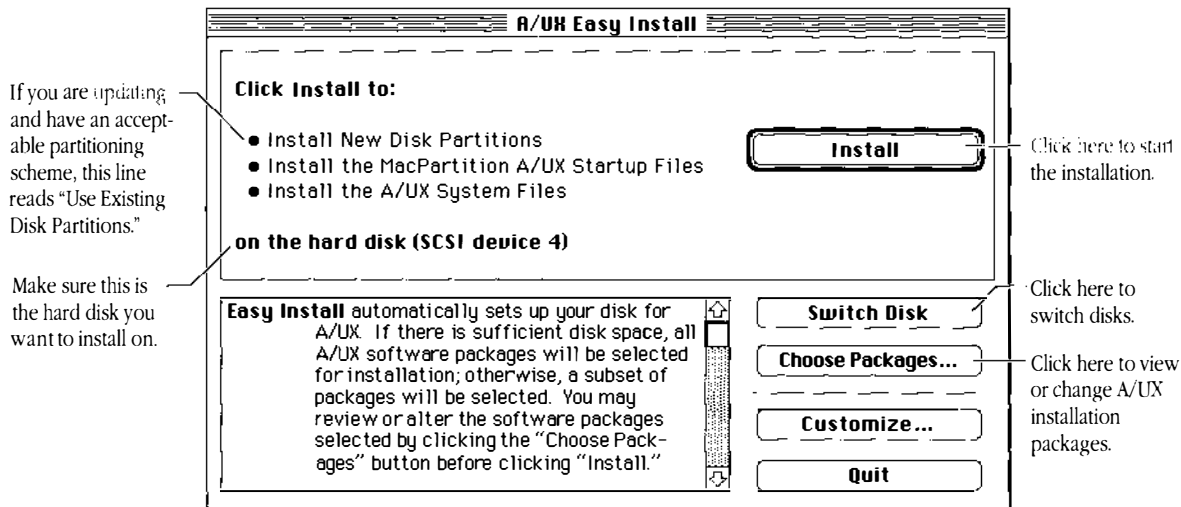
You should have received two copies of the *A/UX Installer Startup* disk—an 800K disk for the Macintosh SE/30, II, IIfx, IICx, IIci, IIsi, and IIfx, and a 1.4 MB disk for Macintosh Quadras. Use the correct type of disk for your model of Macintosh computer.

5 Turn on the computer (and the monitor if it has its own power switch).

You see a dialog box displaying the status of the A/UX Installer's startup procedure.

The A/UX Installer program takes three to five minutes to finish starting up. While you wait, you might want to familiarize yourself with the rest of this chapter.

In a few minutes the floppy disk is ejected, and the Easy Install dialog box appears:



Store the *A/UX Installer Startup* disk in a safe place in case you need to use it again later.

6 Make sure the hard disk indicated in the dialog box is the one you want to install A/UX on.

If you are installing on a new, unformatted hard disk, it will be listed by its drive type and SCSI ID number rather than by a name.

If the wrong disk is listed, click the Switch Disk button until the correct disk is indicated. (If you are uncertain of your hard disk's SCSI ID number, look in the small window on the hard disk's back panel, or see the documentation that came with the disk.)

- ▲ **Warning** Make sure the selected hard disk is the hard disk you want to install on. Double-check the disk's SCSI ID number to make sure you are installing on the correct disk. ▲

◆ **Updating** If you are updating from an earlier version of A/UX and the partitioning scheme on the selected disk can accommodate the larger A/UX 3.0 distribution, the screen indicates that it will use the existing partitioning scheme on the selected disk, rather than installing new disk partitions. ◆

Now, before continuing with the installation, you may want to set Easy Install preferences.

Setting Easy Install preferences

Before actually installing, you have the option of setting three Easy Install preferences: changing the size of the swap space, including an autorecovery partition, and setting the amount of user free space.

Important If you have no specific reason to change these settings, leave them set as they are. The default settings meet the widest possible range of user needs.

- *Swap space* A/UX 3.0 provides the ability to use space on a hard disk to increase the computer's memory. In UNIX terminology, this space is called the *swap space*, and is used to exchange, or *swap*, portions of files in the computer's memory with those being kept temporarily on the hard disk. The swap space is preset to 18 MB, the recommended minimum.
- *Autorecovery partition* The Autorecovery partition maintains a copy of the files used in the A/UX startup process so that, if you ever experience a catastrophic system failure with A/UX, the files that are critical to the A/UX startup process can be restored from the Autorecovery partition, if necessary. The Autorecovery partition option is automatically on, unless you change the setting. The Autorecovery partition requires 3 MB of disk space.
- *User free space* User free space is a portion of the hard disk set aside for storing user-generated files. This is the minimum amount of space that will be left unused after an installation. Depending on the capacity of your hard disk and the number of

packages you choose to install, you may have more than the minimum free space left. The option is preset to 5 MB, the recommended minimum. User free space cannot be set to less than 2 MB.

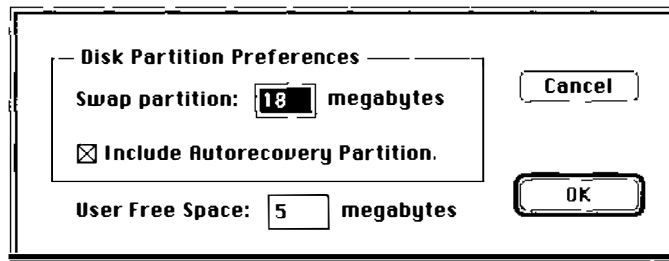
- ◆ **Updating** If you are updating from an earlier version of A/UX and your current partitioning scheme can accommodate the larger A/UX 3.0 distribution, your hard disk will not be repartitioned. Consequently, only the third preference—user free space—is affected by these settings. ◆

If you do not want to change the Easy Install preferences, skip this section and go to “Viewing and Selecting A/UX Packages.”

Follow these steps to set the Easy Install preferences:

1 Choose Easy Install Preferences from the Preferences menu.

The Disk Partition Preferences dialog box appears:



2 In the Swap Partition box, type the amount of disk space, in megabytes, you want for swap space.

The swap space is preset to 18 MB, the recommended minimum. You can increase the size of the swap space; however, increasing it will leave less room on the hard disk for storing A/UX files and programs, or user files.

- ⚠ **Important** Unless you *know* you need more swap space, do not increase this setting. Do not reduce the swap space below 18 MB.

3 **Choose whether to include an Autorecovery partition.**

The Include Autorecovery Partition checkbox is preset to create an Autorecovery partition. If you want the Autorecovery partition, leave the box checked. If you *do not* want an Autorecovery partition, click the checkbox to remove the X. The partition will not be created.

4 **In the User Free Space box, type the minimum amount of disk space, in megabytes, you want for user free space.**

The number you type is the minimum amount of user free space that will be reserved after the installation is completed. The recommended minimum for user free space is 5 MB; under no circumstances can user free space be set to less than 2 MB.

5 **Click OK to accept the settings or click Cancel.**

Click OK to accept the settings or click Cancel to return to the default settings. You return to the Easy Install dialog box.

Viewing and selecting A/UX packages

The Easy Install option automatically determines the size of the hard disk you're installing on and chooses a set of A/UX installation packages that will fit on your disk. The set of packages it chooses is the program's "best guess" of the A/UX packages you're likely to want installed.

The Easy Install option also lets you view the set of packages it has chosen before you proceed with the installation. You then have the option of deselecting packages, and selecting other packages the installer program did not select automatically.

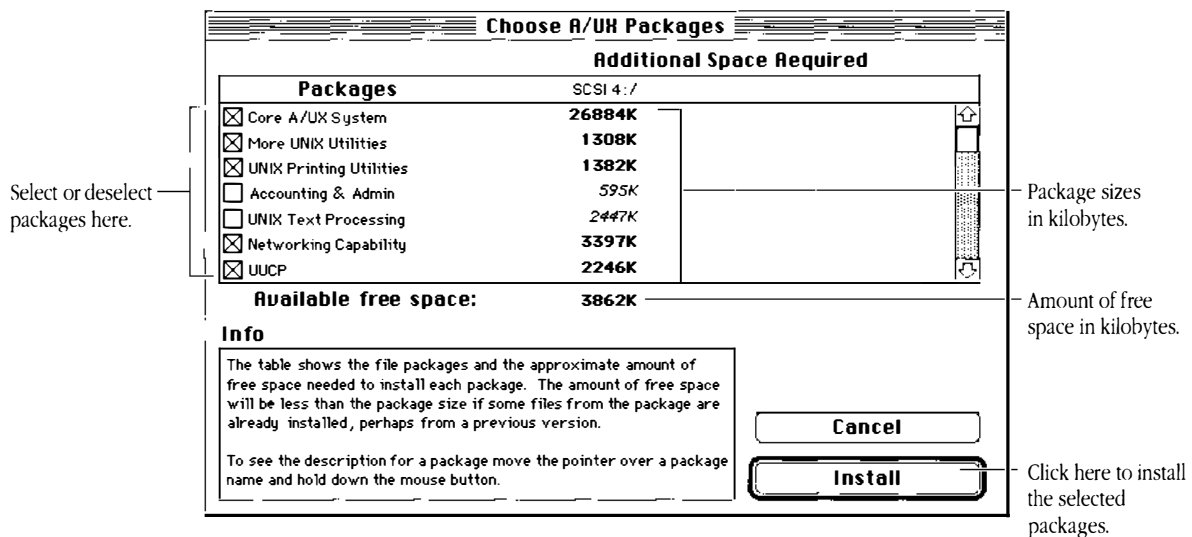
- △ **Important** Even if your hard disk is large enough to hold the entire A/UX distribution (160 MB or larger), you may want to remove some A/UX packages to provide more space for user files and programs. △

If you do not want to view or change the preselected A/UX packages, skip this section and go directly to "Completing the Installation."

Follow these steps to view the preselected A/UX packages:

1 **Click Choose Packages.**

You see the Choose A/UX Packages dialog box:



Packages that the program has selected to install for you appear checked, along with the amount of free space each package requires and the amount of free space that will be available on the hard disk after installation.

To view a description of each package, position the pointer over the package's name or checkbox and press and hold down the mouse button. A description of the selected package appears in the Info box. The description remains as long as you hold down the mouse button. (For your convenience, these same package descriptions are included in Appendix A of this guide.)

Note that you are also selecting or deselecting packages while you are reviewing their descriptions. After you have finished reading a package description, make sure the package is selected or deselected according to your needs.

You will need to use the scroll bar or scroll arrows on the right side of the box to see the entire list of A/UX packages.

2 Select or deselect packages.

Place the pointer over the package's name or checkbox and click.

Deselect the packages you don't want to install. Select any other packages you do want to install.

Note that many packages require that another package be installed with it. These "package dependencies" are indicated in the package descriptions provided in the dialog box.

Take the time you need to choose the A/UX packages you want, noting the space used and the space remaining on your hard disk.

Important The Install button becomes dimmed if you've run out of available space on the hard disk.

If at any point you want to return to the original selection of packages, click Cancel. You return to the Easy Install dialog box.

Completing the installation

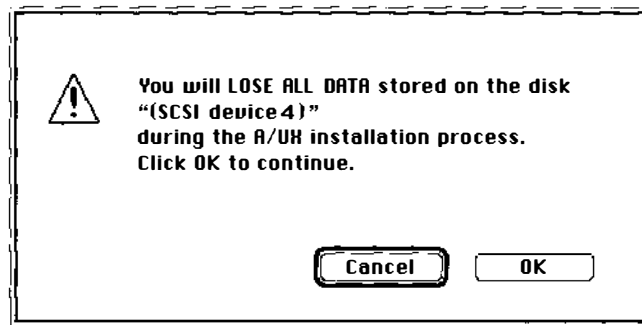
At this point, the A/UX Installer program acts somewhat differently depending on whether you are installing A/UX for the first time or updating an existing A/UX system. If you are installing A/UX for the first time, continue with the next section, "Completing a New Installation." If you are updating, skip the next section and continue with "Completing an Automated Update."

Completing a new installation

Follow these steps to complete the installation:

1 Click Install.

You see a dialog box warning you that any data stored on the selected hard disk will be lost during installation:



2 Click Cancel or OK.

Click Cancel to cancel the installation; click OK to proceed.

This dialog box appears even if the disk you are installing on does not currently contain any data. If you *do* have any data on the hard disk that you do not want to lose, click Cancel. Then back up any files you want to keep.

After you click OK, the installation begins. You see a series of dialog boxes indicating what is currently being installed. The dialog box also includes a Stop button, which you can use to interrupt the installation.

Important Try to avoid interrupting the installation process. If you *must* stop the installation, you will need to repeat the entire installation again.

The length of the installation process varies depending on the amount of storage space your hard disk provides, the number of A/UX packages you've selected, and the type of Macintosh computer you're using—an hour or more is not uncommon. (You won't be asked for any additional information during the installation.)

When the installation is complete, you see this dialog box:



3 Click OK or Restart.

Click OK to perform additional installations, or click Restart to restart the computer.

If you are finished installing, remove the *A/UX 3.0 CD-ROM* and store it in a safe place in case you need it again later.

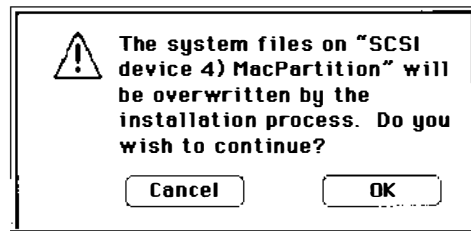
Skip the next section and go now to “Where to Go From Here” later in this chapter.

Completing an automated update

Follow these steps to finish updating your A/UX system:

1 Click Install.

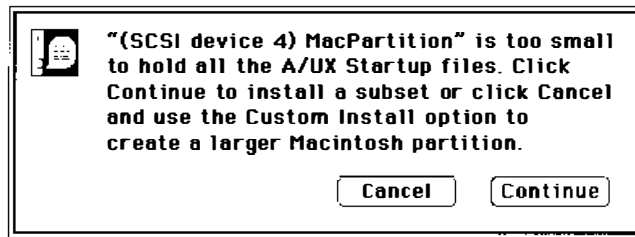
You see a dialog box warning you that system files will be overwritten:



2 Click Cancel or OK.

Click Cancel to cancel the installation; click OK to proceed.

If your current MacPartition is too small to hold all of the new A/UX Startup files, you see another dialog box:

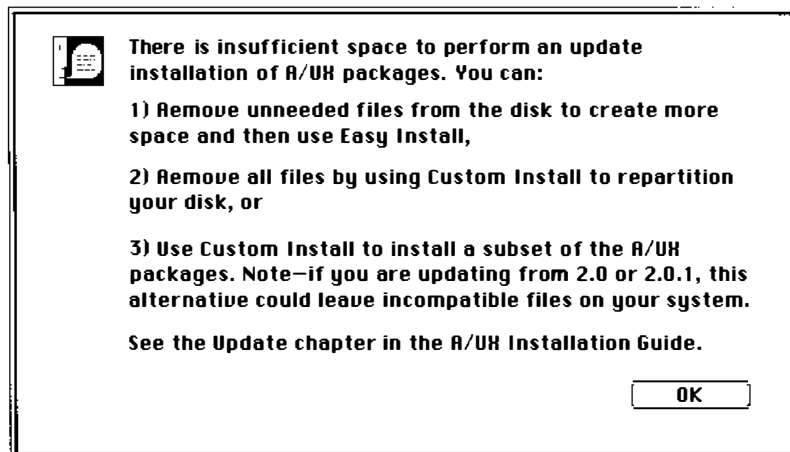


3 If necessary, click Continue or Cancel.

If you click Continue, the A/UX Installer will install a workable subset of the A/UX startup files normally installed in MacPartition. Clicking Cancel takes you back to the Easy Install dialog box. Then click Customize to use the Custom Install option, which lets you create a larger MacPartition by repartitioning the hard disk. If you click Cancel, go now to Chapter 4, "Planning a Custom Installation."

After you click Continue, the A/UX Installer program begins installing A/UX startup files on the hard disk. When it completes this portion of the installation, you see a message that the A/UX Installer program is calculating UNIX sizes, in preparation for installing A/UX packages.

If there is insufficient space on the hard disk to perform an automated update, you see this message:



The message presents a number of alternatives for you. After reading these alternatives, click OK. You must either quit the A/UX Installer program and remove unneeded files, or go on to the Custom Install option to update your A/UX system. See Chapter 2, “Updating a Previous Version of A/UX to Version 3.0.”

If there *is* sufficient space on the hard disk to perform an automated update, you see a series of dialog boxes indicating what is currently being installed. The dialog box also includes a Stop button, which you can use to interrupt the installation.

Important Try to avoid interrupting the installation process. If you *must* stop the installation, you will need to repeat the entire installation again.

The length of the installation process varies, depending on the amount of storage space your hard disk provides, the number of A/UX packages you’ve selected, and the type of Macintosh computer you’re using—an hour or more is not uncommon. (You won’t be asked for any additional information during the installation.)

When the installation is complete, you see this dialog box:



4 Click OK or Restart.

Click OK to perform additional installations, or click Restart to restart the computer.

If you are finished installing, remove the *A/UX 3.0 CD-ROM* and store it in a safe place in case you need it again later.

Where to go from here

You have finished installing A/UX 3.0 on your Macintosh system. For instructions on starting A/UX 3.0 for the first time, and for setting a root password and the system time, go now to Chapter 6, "Running A/UX for the First Time."

4 Planning a Custom Installation

The Custom Install option lets you specify exactly how you want to install A/UX 3.0 on your Macintosh system. You determine how the hard disk is prepared and where A/UX 3.0 files and programs are installed.

Here's what you'll find in this chapter:

- about the Custom Install option
- planning the installation
- performing a dry run
- sample strategies
- where to go from here

About the Custom Install option

The Custom Install option provides you with the flexibility of installing A/UX 3.0 in ways that best fit your needs. The Custom Install option is divided into three separate procedures:

- preparing the hard disk
- installing MacPartition files
- installing A/UX 3.0 packages

Depending on your needs, you may not have to perform all three procedures. For instance, if you are updating from an older version of A/UX and your current partitioning scheme can accommodate the larger A/UX 3.0 distribution, you will not have to prepare the hard disk.

Planning the installation

Using the flexibility of the Custom Install option effectively requires that you plan thoroughly *before* you begin the installation. If you don't have a clear sense of the type of installation you want, the Custom Install option can become difficult.

As you work through each of the three procedures—preparing the hard disk, installing MacPartition files, and installing A/UX 3.0 packages—the choices you make will depend on how you've planned the installation. For instance, you can gain a considerable savings in disk space by installing A/UX packages selectively. It is possible to install the entire A/UX 3.0 system, if your hard disk is large enough; however, it's not likely you will need all of the packages that make up the complete A/UX 3.0 system.

Another example: You can back up user files much more efficiently by creating a separate partition for them and backing up only that partition regularly, rather than the entire A/UX system.

The following sections provide information to help you plan your custom installation. Later you'll read about some common installation strategies that illustrate these concepts.

What are partitions and file systems?

It's easy to become confused by the difference between a partition and a file system. Understanding the difference is important in planning a custom installation:

- A **partition** is a section of a disk. You create partitions by using the Apple HD SC Setup program, a program that initializes and partitions hard disks. It's available through the A/UX Installer program. (When you choose the Disk Setup option in the A/UX Installer, the program starts up Apple HD SC Setup for you.)
- A **file system** resides in a partition. A file system manages the location of files. In Macintosh terminology, a file system is referred to as a **volume**.
- **MacPartition** is the partition where the Macintosh file system resides. The computer always starts from a System Folder in the MacPartition. Also in MacPartition is a program called A/UX Startup. You use it to start A/UX after starting the computer from MacPartition.

You can choose from several predefined partitioning schemes. These schemes provide various combinations of partitions for A/UX system files, A/UX user files, and the Macintosh Operating System. Some of the predefined partitioning schemes are useful only for hard disks of a certain size. Apple HD SC Setup displays a help box on the screen to give you this type of information when selecting partitioning schemes. With the Custom Install option, you can also create your own partitioning schemes to further match your needs.

Keeping user files in a separate partition

User files are any files on an A/UX system other than those you install using the A/UX Installer program. Typical user files are programs you've written and files created with the A/UX text editors or with application programs you run in A/UX. User files are generally stored in home directories under the `/users` directory, unless you create another directory for them.

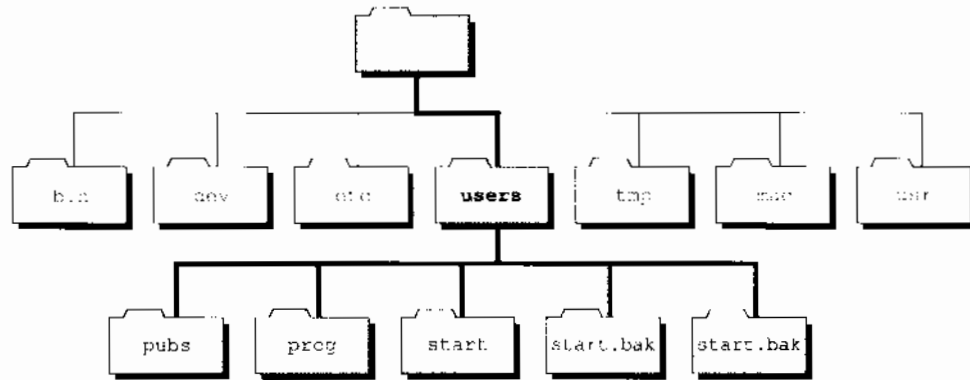


Figure 4-1 User files in their own file system

It's a good idea to put the user files in a separate partition from the files distributed with A/UX 3.0. This will let you concentrate on backing up the file system that contains the user files, which change frequently and thus need backing up frequently, and not the file system containing the system files, which seldom change and thus seldom need backing up. Keeping the user files separate from the distribution files means putting user files in their own file system.

It's a good idea to avoid storing user files in the `/usr` directory. The `/usr` directory is one of the largest directories in the A/UX file system. Putting user files here would make backing up only the user files very difficult. Instead, use `/usr` to store large application programs you may install. To store user files, use the `/users` directory, or another directory that you create just for user files.

Performing a dry run

As you work through the installation process, you will be partitioning the hard disk before you determine how much space is required for the A/UX packages you intend to install. You can avoid guesswork by performing a dry run—that is, using the A/UX Installer program to determine how much space is required for the A/UX packages you intend to install. Here's how:

Follow the step-by-step instructions provided in Chapter 5, "Performing a Custom Installation," to start the A/UX Installer program. Choose the Custom Install option. Prepare the hard disk first by initializing it, if necessary. If you are updating from an

earlier version of A/UX, you do not need to prepare the hard disk. If you are installing A/UX for the first time, partition the disk using the standard partitioning scheme appropriate for your hard disk: either "A/UX for 160 MB or smaller drives" or "A/UX for drives larger than 160 MB." This is only a temporary measure; you'll repartition the disk later with more exact figures.

Skip step 2, Install Startup, and go on to step 3, Install A/UX. In a few moments, the A/UX Package Install dialog box appears, listing the A/UX 3.0 packages available for installation.

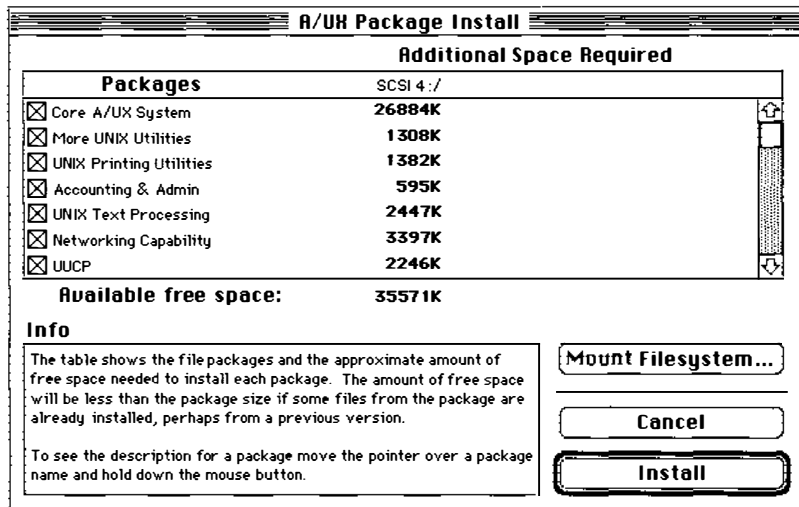


Figure 4-2 A/UX Package Install dialog box

The size of each package is indicated in a column to the right of the packages. Use these figures to determine the size of the partitions you will need to create to hold these packages. Select the packages you want to install. When the space required for the packages you select exceeds the amount of available space on the disk, the Install button appears dimmed and a negative number appears for available free space.

Once you've determined how large your partitions need to be to accommodate the packages you want, click Cancel. Then click Disk Setup and repartition your hard disk according to your calculations. Be sure to add about 15 percent to each partition's size for efficient file management. Also, remember to consider the recommended minimum space allocation for the Autorecovery partition, Swap Space, and user free space. (You'll find information on recommended minimum space allocation in Chapter 5, "Performing a Custom Installation.")

Sample strategies

To help you understand the variety of ways in which you can perform a custom installation of A/UX 3.0, the following sections present some common installation strategies.

Installing on two 80 MB hard disks

If you have two 80 MB hard disks, you can install the complete A/UX 3.0 system, but it must be distributed over both hard disks. Probably the most convenient way to do so is to isolate the `/usr` and `/users` directories as two partitions on one of the two hard disks, and install the rest of A/UX 3.0 on the other. As explained earlier, this arrangement facilitates frequent backing up of user programs and files.

To install A/UX 3.0 on two 80 MB hard disks, first connect both hard disks to the computer through the SCSI connector on the computer's back panel. Follow the instructions provided with the computer for assembling a SCSI chain. Pay careful attention to assigning unique SCSI ID numbers to each of the hard disks, and make certain the SCSI chain is correctly terminated.

Follow the step-by-step instructions provided in Chapter 5, "Performing a Custom Installation," to start the A/UX Installer program. Choose the Custom Install option. At this point, you need to decide which of the two hard disks you want as your startup disk. Prepare the startup disk first by initializing it, if necessary. Then partition the disk using the standard partitioning scheme, "A/UX for 160 MB or smaller drives."

After you have partitioned the startup disk, without quitting the Apple HD SC Setup program, select the second hard disk. Initialize the hard disk, if necessary. Then, rather than using a standard partitioning scheme for this second hard disk, click Custom to customize the partitions.

If necessary, remove any existing partitions except the MacDriver. Then create a new partition approximately 55,000K in size. This will be the partition for `/usr`. Choose "UNIX Usr slice 2" as the partition type for this partition.

Next, create another partition using the remaining space on the hard disk. This will be the `/users` partition. Choose "Free UNIX slice 3" as the partition type for this partition.

Complete the rest of the installation as instructed in Chapter 5. When installing the A/UX packages, remember to use the Mount Filesystem button to mount both "UNIX Usr slice 2" and "Free UNIX slice 3" before completing the installation. When you are asked to choose a mount point for the file systems, choose `/usr` and `/users` as appropriate.

Creating a separate `/users` partition on a single hard disk

Even if your hard disk is large enough for the complete A/UX 3.0 system, it's a good idea to create a separate partition for the `/users` directory. Doing so makes backing up user files and programs much more convenient. If the hard disk you are installing on is larger than 160 MB, one of the standard partitioning schemes automatically provides a separate user partition. On disks smaller than 160 MB, very little space is available for user files, unless you choose not to install some A/UX package or packages. *To create a separate `/users` partition on a disk smaller than 160 MB, you may need to forgo installing some packages to provide space.*

Follow the step-by-step instructions provided in Chapter 5, "Performing a Custom Installation," to start the A/UX Installer program. Choose the Custom Install option. Prepare the hard disk first by initializing it, if necessary. Then partition the disk using the standard partitioning scheme appropriate for your hard disk: either "A/UX for 160 MB or smaller drives" or "A/UX for drives larger than 160 MB."

If you choose the "A/UX for drives larger than 160 MB," complete the rest of the installation as instructed in Chapter 5. When installing the A/UX packages, remember to use the Mount Filesystem button to mount "Free UNIX slice 3" before completing the installation. When you are asked to choose a mount point for the file system, choose `/users`.

If your hard disk is 160 MB or smaller, after you have partitioned the hard disk, customize the partitions you just made by removing the "UNIX Root & Usr slice 0" partition. From that free space create a new partition about 100,000K in size. Choose "UNIX Root & Usr slice 0" as the partition type for this partition.

Note that depending on the size of your hard disk, you may need to create a smaller partition and install fewer packages in it. The minimum size of the UNIX Root & Usr slice 0 partition is 55,000K. For many A/UX systems, this may be impractical.

Next, create another partition using the remaining space on the hard disk. This will be the `/users` partition. Choose "Free UNIX slice 3" as the partition type for this partition.

Complete the rest of the installation as instructed in Chapter 5. When installing the A/UX packages, remember to use the Mount Filesystem button to mount Free UNIX slice 3 before completing the installation. When you are asked to choose a mount point for the file system, choose `/users`.

Increasing the size of MacPartition

As explained earlier, MacPartition is where the Macintosh file system resides. The System Folder the computer uses to start itself resides in MacPartition, as does the A/UX Startup program.

The recommended minimum size of MacPartition is 4 MB. This is sufficient to hold a functional version of System 7, the A/UX Startup program, and related A/UX files and utilities. Because almost all Macintosh application programs run under the A/UX operating system, you needn't keep your Macintosh programs in MacPartition; consequently, there is little reason to substantially increase the size of MacPartition. However, if you use some programs that are not compatible with A/UX 3.0, you may need to increase the size of MacPartition to accommodate them. Finally, if you share your Macintosh computer with other users who work exclusively in the Macintosh Operating System, you will need to increase the size of MacPartition for these users.

◆ **Note** If you secure the startup application for security reasons, MacPartition will not be accessible to other users. For more information see the "Securing the Startup Application" section in Chapter 6. ◆

To increase the size of MacPartition, follow the step-by-step instructions provided in Chapter 5, "Performing a Custom Installation," to start the A/UX Installer program. Choose the Custom Install option. Prepare the hard disk first by initializing it, if necessary. Then partition the disk using the standard partitioning scheme appropriate for your hard disk: either "A/UX for 160 MB or smaller drives" or "A/UX for drives larger than 160 MB."

After partitioning the hard disk, customize the partitions you just made by removing the "UNIX Root & Usr slice 0" partition. From that free space create a new, smaller partition and choose "UNIX Root & Usr slice 0" as the partition type for this partition.

Note that you are taking space from the original Root & Usr partition to provide more space for a larger MacPartition. Keep in mind that the minimum size for the Root & Usr partition is about 55,000K. (The complete distribution requires roughly 130,000K.) On a hard disk smaller than 160 MB, you will need to forgo installing some packages to provide space.

Next, remove the MacPartition. Then consolidate the available free space by clicking the Group button. From the remaining free space create a new partition, and choose Macintosh Volume as the partition type for this partition. This is for your new MacPartition. Complete the rest of the installation as instructed in Chapter 5.

Where to go from here

Now that you've considered how you want to custom install A/UX 3.0, go to Chapter 5, "Performing a Custom Installation," for instructions on performing the installation.

5 Performing a Custom Installation

Using the Custom Install option lets you specify exactly how you want to install A/UX 3.0 on your Macintosh system. You determine how to prepare the hard disk. You also determine where to install A/UX 3.0 files and programs and Macintosh startup software.

Here's what you'll find in this chapter:

- starting the A/UX Installer program
- preparing the hard disk
- installing MacPartition files
- installing A/UX packages
- where to go from here

Important For information on planning a custom installation, see Chapter 4, "Planning a Custom Installation."

Starting the A/UX Installer program

In this section, you will use the *A/UX Installer Startup* disk and the *A/UX 3.0 CD-ROM* to begin the installation. If you have any problems during the installation, see Appendix C, "Troubleshooting and Support."

Follow these steps to start up the A/UX Installer program:

1 Shut down the computer, if it is already on.

You need to start up the computer from the *A/UX Installer Startup* disk. Choose Shut Down from the Special menu to shut down the computer.

2 Turn on the CD-ROM drive and any hard disks you plan to install A/UX 3.0 on.

If necessary, use the instructions that came with your CD-ROM drive and hard disks.

3 Insert the *A/UX 3.0 CD-ROM* into the CD-ROM drive.

First insert the CD into the CD tray, and then insert the tray into the drive. (If necessary, consult the instructions that came with your CD-ROM drive.)

△ **Important** The *A/UX 3.0 CD-ROM* must be inserted into the CD-ROM drive *before* starting the computer. △

4 Insert the *A/UX Installer Startup* floppy disk into the disk drive.

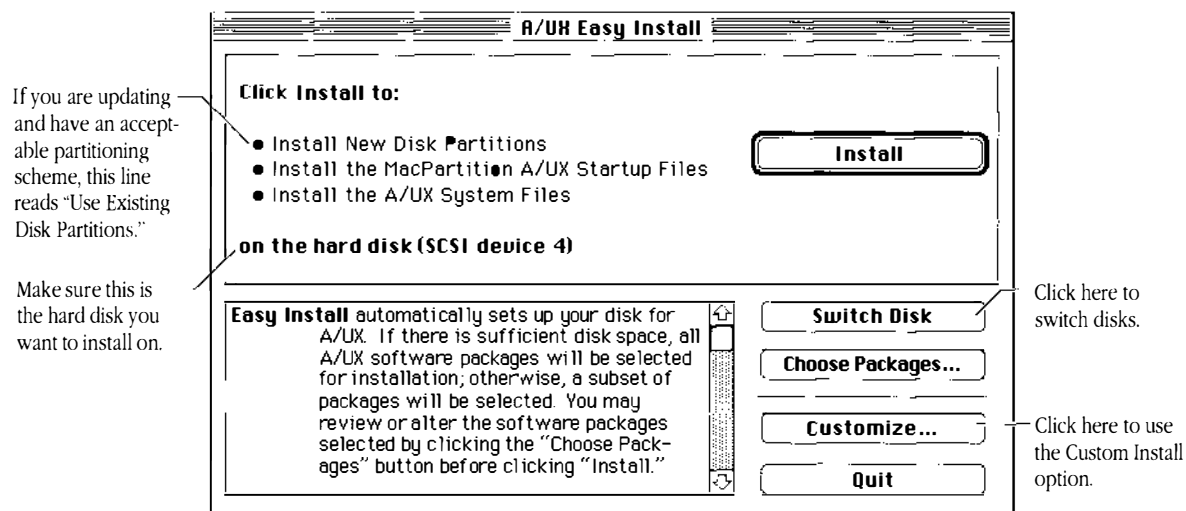
You should have received two copies of the *A/UX Installer Startup* disk—an 800K disk for the Macintosh SE/30, II, IIX, IICX, IICI, IISI, and IIFX, and a 1.4 MB disk for Macintosh Quadras. Use the correct type of disk for your model of Macintosh computer.

5 Turn on the computer (and the monitor if it has its own switch).

You see a dialog box displaying the status of the A/UX Installer's startup procedure.

The A/UX Installer program takes three to five minutes to finish starting up. While you wait, you might want to familiarize yourself with the rest of this chapter.

In a few minutes the floppy disk is ejected, and the Easy Install dialog box appears:



Store the *A/UX Installer Startup* disk in a safe place in case you need to use it again later.

6 Make sure the hard disk indicated in the dialog box is the one you want to install A/UX on.

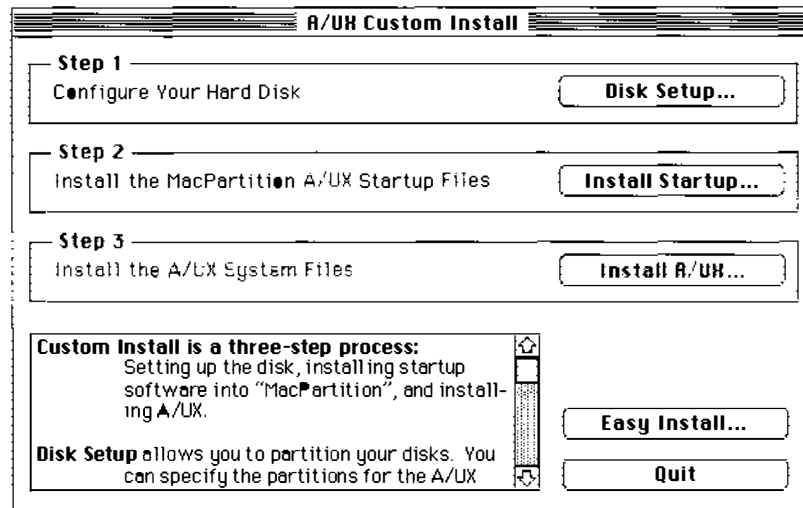
If you are installing on a new hard disk, or a hard disk with no MacPartition, it will be listed by its drive type and SCSI ID number rather than by a name.

If the wrong disk is listed, click the Switch Disk button until the correct disk is indicated. (If you are uncertain of your hard disk's SCSI ID number, look in the small window on the hard disk's back panel, or see the documentation that came with the disk.)

◆ **Updating** If you are updating from an earlier version of A/UX and the partitioning scheme on the selected disk can accommodate the A/UX 3.0 distribution, the screen indicates that it will use the existing partitioning scheme on the selected disk, rather than installing new disk partitions. ◆

7 Click Customize.

The A/UX Custom Install dialog box appears:



◆ **Changed your mind?** If you change your mind and want to use the Easy Install option, click the Easy Install button. You return to the Easy Install dialog box. Go now to the “Setting Easy Install Preferences” section in Chapter 3. ◆

Preparing the hard disk

Preparing the hard disk takes only a few minutes for a 160 MB hard disk, and slightly less time for a smaller hard disk. Before preparing your disk, you need to answer several questions:

- What's your total disk capacity? The larger the available disk space, the more flexibility you have in designing your system.
- How much disk space do you require for user accounts? This will help you decide how much disk space you need to add and which distribution files you'll choose not to install, such as the on-line manual (man) pages.

- How much space do you require for large programs you might add?
- Do you need to increase the size of MacPartition? (By default, it is 4 MB.)

When calculating the required size for any partition, increase your figure by at least 15 percent to allow space for file system maintenance.

Do I need to prepare the hard disk?

The disk preparation procedure consists of two parts: initializing and partitioning. Initializing prepares a hard disk to receive information by organizing its surface into tracks and sectors. Partitioning divides the disk into separate areas for different parts of A/UX and the Macintosh system software. (Most third-party disks come already initialized, but not partitioned. Apple Hard Disk SC drives come neither initialized nor partitioned.)

Your decision to initialize and partition your hard disk depends on the current status of your hard disk:

- If you have a hard disk with a partitioning scheme that can accommodate all of A/UX 3.0, there is no need for you to prepare the hard disk. Go to the section "Installing MacPartition Files," later in this chapter. (If the partitioning scheme is acceptable the Easy Install dialog box indicates that it will use the existing partitions. If it is not acceptable, the dialog box indicates that it will create new disk partitions. For more information see Chapter 2, "Updating a Previous Version of A/UX to Version 3.0.")
- If you have a new hard disk that has not been initialized, you will need to initialize the disk and create disk partitions.
- If you have a new hard disk that is already initialized, you will need to create disk partitions.
- If you have a hard disk that has been previously used with an operating system other than A/UX, or you've been trying to use the disk with A/UX but it has been giving you trouble, go through the initialization procedure to ensure that the hard disk is initialized with the current software, and then create partitions.

Important If you repartition your hard disk, you must do so using Apple HD SC Setup. Other utilities designed to partition hard disks will not work; the A/UX Installer program depends on Apple HD SC Setup to create a UNIX file system.

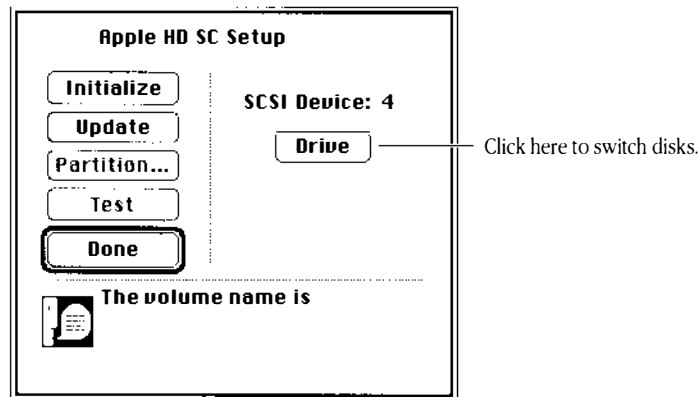
Initializing the hard disk

Follow these steps to initialize a hard disk:

- ▲ **Warning** Initializing the hard disk destroys everything previously contained on the disk. If you have existing files on the hard disk, be sure to back them up before initializing the hard disk. ▲

1 In the A/UX Custom Install dialog box, click **Disk Setup**.

The Apple HD SC Setup dialog box appears:

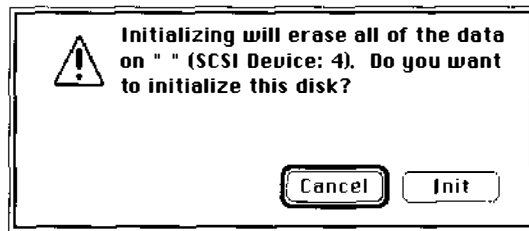


Next to the words *SCSI Device* appears a number from 0 to 6, representing the SCSI ID number for the currently selected hard disk. Make sure the hard disk indicated is the one you want to install A/UX on. If the wrong disk is listed, click Drive until the correct disk is indicated. (If you are uncertain of your hard disk's SCSI ID number, look in the small window on the hard disk's back panel, or see the documentation that came with the disk.)

- ▲ **Important** If you have two or more hard disks, make sure the SCSI device number matches the SCSI ID indicator number of the hard disk you want to initialize. If the numbers do not match, click Drive until they do. ▲

2 Click **Initialize**.

A dialog box appears, reminding you that initializing erases all the information from the hard disk:



3 Click **Init**.

If you want to cancel the procedure, click **Cancel**.

Messages explaining the course of the initialization appear in the Apple HD SC Setup dialog box. Initialization takes several minutes.

If you see a message that the hard disk failed to initialize properly, check all cables and terminators to make sure the connections are tight; then try again. If you are still unable to initialize, contact your dealer.

At the end of the initialization process, the main setup dialog box appears to tell you that the initialization was successful. If this is a new disk drive, the program will ask you to name the disk.

4 Name the Macintosh volume **MacPartition**.

The Name box in the dialog box is selected. Type the name *MacPartition*, and then press RETURN.

If the name prompt does not appear, it means the disk already has a name. You can edit the disk name later in the Finder.

You can assign a name other than *MacPartition*, but keep in mind that the A/UX manuals refer to *MacPartition* throughout.

◆ **Note** If you have a hard disk that is already initialized, you may want to update the hard disk driver, which controls the communication between the hard disk and your computer. To update the driver, click **Update** in the Apple HD SC Setup dialog box. This copies the hard disk driver to your hard disk. ◆

Partitioning the hard disk

The Apple HD SC Setup program offers several predefined disk partitioning schemes that meet most users' needs. You can choose one of the predefined schemes or create your own.

If you want to use a predefined partitioning scheme, continue through the next section, "Using a Predefined Partitioning Scheme." If you want to create your own partitioning scheme, skip the next section and go on to "Creating Your Own Disk Partitioning Scheme."

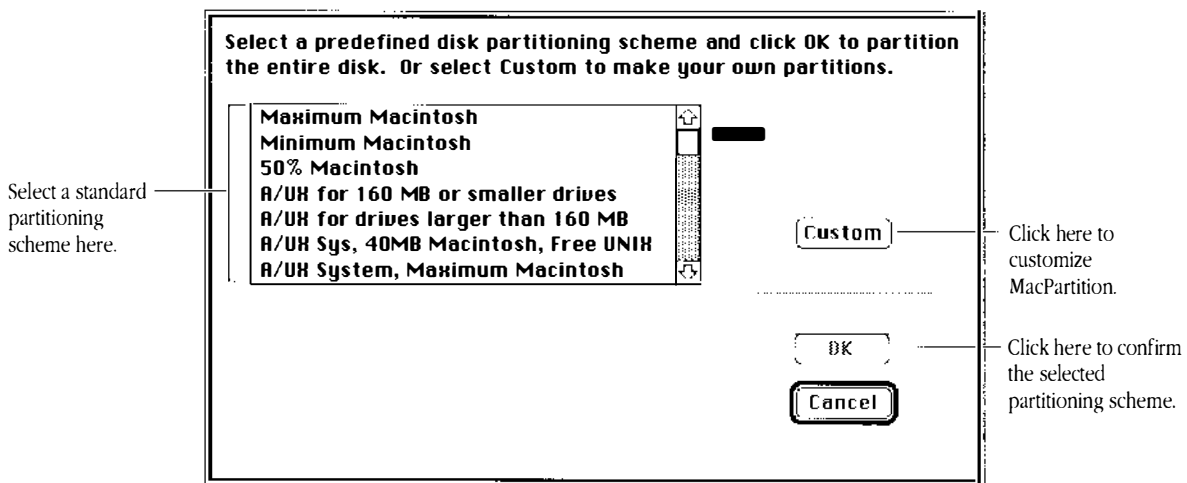
Important For more information on partitioning the hard disk, see Chapter 4, "Planning a Custom Installation."

Using a predefined partitioning scheme

Follow these steps to use a predefined partitioning scheme:

1 **Click Partition.**

The Partition dialog box appears:



Make sure the hard disk icon on the right represents the disk you just initialized and named. The predefined partitioning options are listed in the box on the left side of the dialog box.

2 Select the partition option you want.

You may need to use the scroll arrows to view the complete list of schemes.

When you select a partitioning scheme, an information box appears in the lower-left corner of the Partition dialog box. The box provides a brief description of the partitioning scheme you've selected.

Table 5-1 lists the standard partitioning schemes from which you can choose, along with a description of each.

Table 5-1 Standard partitioning schemes

Partitioning scheme	Description
Maximum Macintosh	Use all of the hard disk for a Macintosh volume.
Minimum Macintosh	Use 4 MB of the hard disk for a Macintosh volume. The remaining space is unallocated.
50% Macintosh	Use only half of the hard disk for a Macintosh volume. The remaining space is unallocated.
A/UX for 160 MB or smaller drives	Standard A/UX Setup for drives 160 MB or smaller. Note: A/UX 3.0 does not fit completely on 80 MB drives.
A/UX for drives larger than 160 MB	The standard A/UX System partitions for drives larger than 160 MB; includes a 4 MB Macintosh partition. Remaining space is used for free UNIX (slice 3).
A/UX Sys. 40 MB Macintosh, Free UNIX	The standard A/UX System partitions with a 40 MB Macintosh partition. Any remaining space for free UNIX (slice 3). Requires a disk larger than 160 MB.
A/UX System, Maximum Macintosh	The standard A/UX System partitions with all remaining space for a Macintosh partition. Requires a disk larger than 160 MB.
Maximum Free UNIX	The entire disk will be used for a free UNIX partition (slice 3), which will be available for user files.
50% Macintosh, 50% Free UNIX	The entire disk will be available for user files. Half the disk will be used for a Macintosh partition, and the remaining half for a free UNIX partition (slice 3).

3 **Click OK.**

In most cases, a dialog box appears, reminding you that partitioning erases the information on your hard disk.

▲ **Warning** Partitioning erases all the information on your hard disk. ▲

4 **Click OK or Cancel.**

If you have any data on the hard disk that you do not want to lose, click Cancel. Quit the A/UX Installer program and back up any data you want to save before partitioning the hard disk. If you know the hard disk is empty, or if it contains data that you have already saved, click OK.

Partitioning usually takes a minute or two. When partitioning is complete, you see a message that partitioning was successfully completed.

5 **If a message asks you to name the Macintosh volume, type a name and click OK.**

If the disk has not been partitioned with a Macintosh partition before, you are asked to name the volume. Type the name *MacPartition*, and then press RETURN. You can assign a name other than *MacPartition*, but keep in mind that the A/UX manuals refer to *MacPartition* throughout.

Volume is another word for file system. The name you supply will appear in the Finder to identify the Macintosh file system.

6 **Click Drive or Done.**

If you have more than one hard disk to prepare, click Drive to select the other hard disk; then repeat the steps in this section to partition the disk. (Or return to the “Initializing the Hard Disk” section, if you need to initialize the hard disk first.)

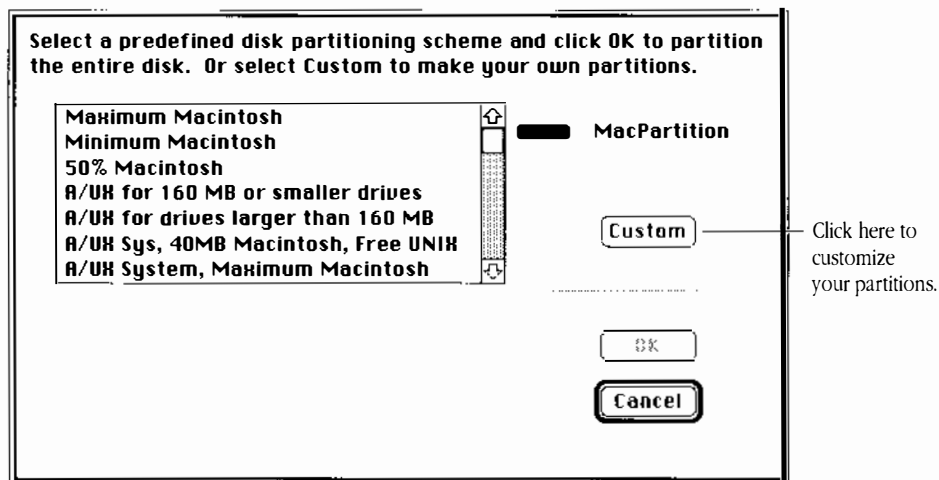
If you are finished preparing the hard disk, click Done to return to the A/UX Installer program. Skip now to the section called “Installing MacPartition Files” later in this chapter to continue the installation.

Creating your own disk partitioning scheme

As an alternative to selecting one of the predefined disk partitioning options, the A/UX Installer program lets you define your own disk partitioning scheme. In the following steps, the figures illustrate a particular partitioning scheme, but you can easily modify these steps to adjust the sizes for other partition types as well.

1 **Click Partition.**

The Partition dialog box appears.

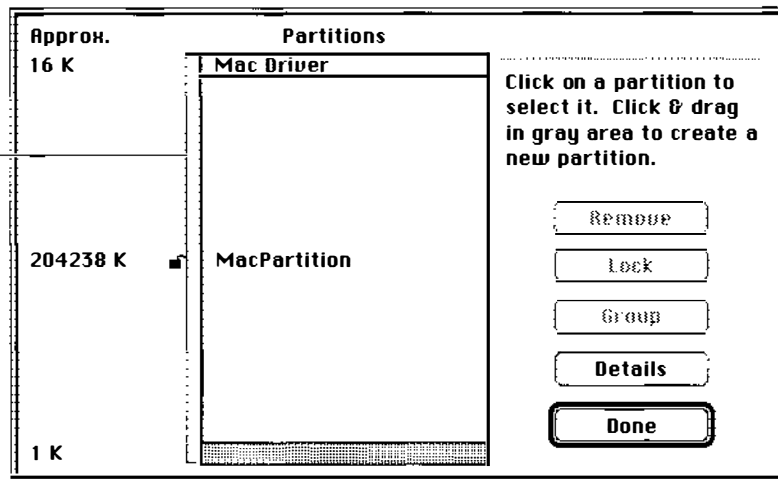


Make sure the hard disk icon on the right represents the disk you just initialized and named. The predefined partitioning options are listed in the box on the left side of the dialog box.

2 **Click Custom.**

The Custom Partition dialog box appears, as shown on the following page.

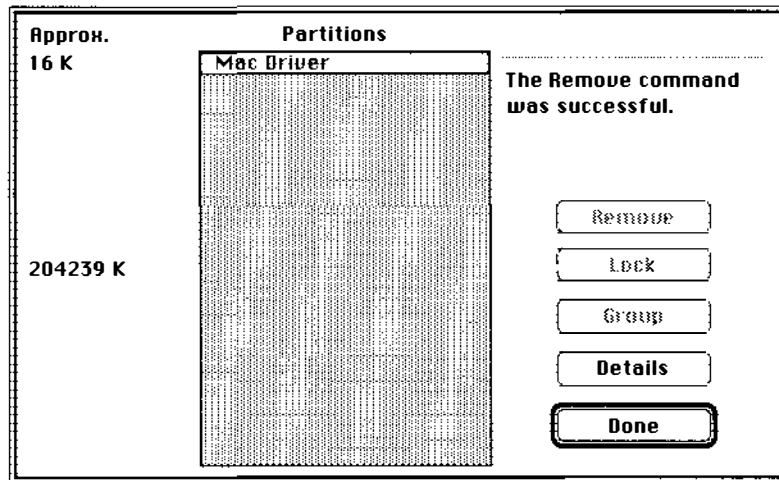
This rectangle represents the partitions on a selected hard disk.



What you see in the dialog box depends on whether your hard disk is currently partitioned. Each partition is represented by a rectangle, and its size, in kilobytes, is shown on the left. Sections of free space—any portions of the disk not contained in a defined partition—appear gray.

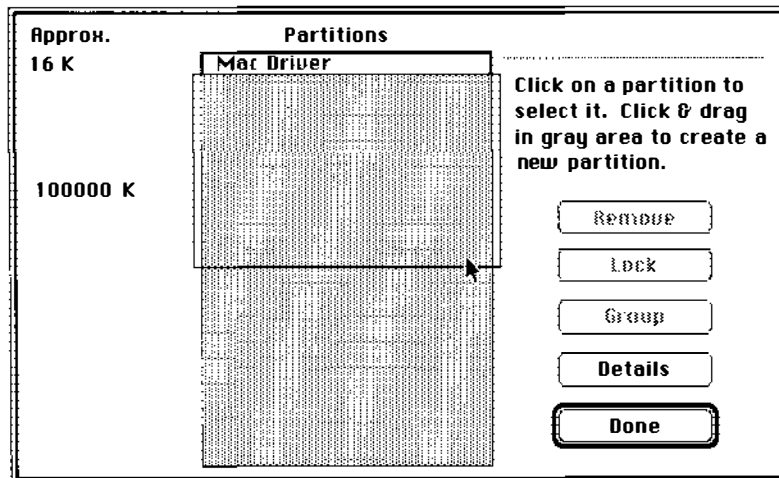
3 Remove all partitions except the MacDriver partition.

Click the partition you want to remove and then click **Remove**. A message warns that removing the partition causes a loss of all data on that partition. Repeat this process until only the MacDriver partition remains. The MacDriver partition is necessary on any disk containing a Macintosh file system.



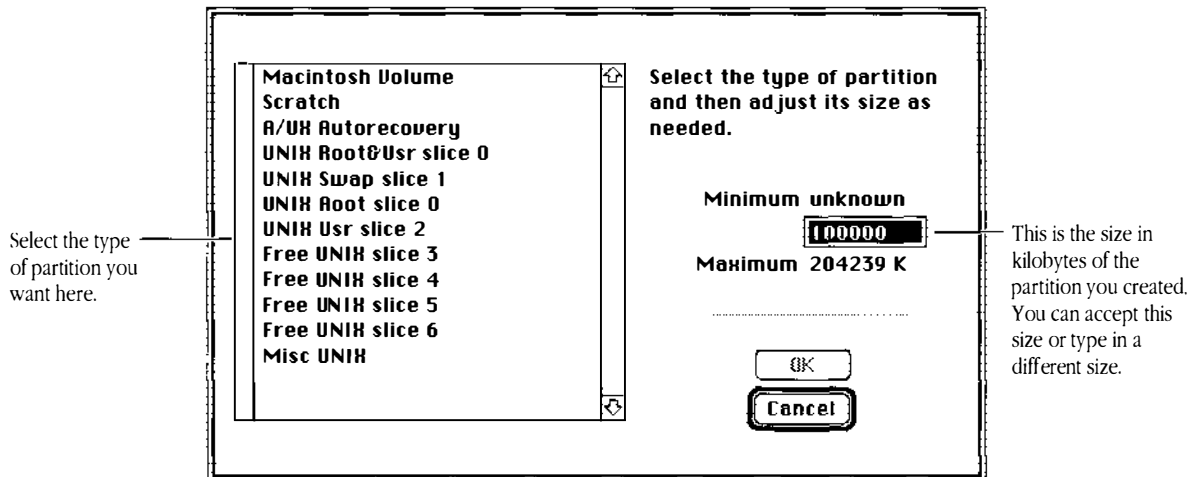
- 4 Press and drag downwards from the top of the gray area, and release the mouse button when the partition is the approximate size you want.

You don't have to be exact; you can enter the exact size in the next dialog box.



◆ **Note** Don't click the MacDriver partition or you'll move this partition instead of selecting the free space. ◆

When you finish dragging, you see a list of individual partition types on the screen. The size, in kilobytes, of the partition you are creating appears selected in its own box.



5 Select the type of partition you want to create.

Select a partition type from the list on the left side of the dialog box by clicking on the name of the partition type.

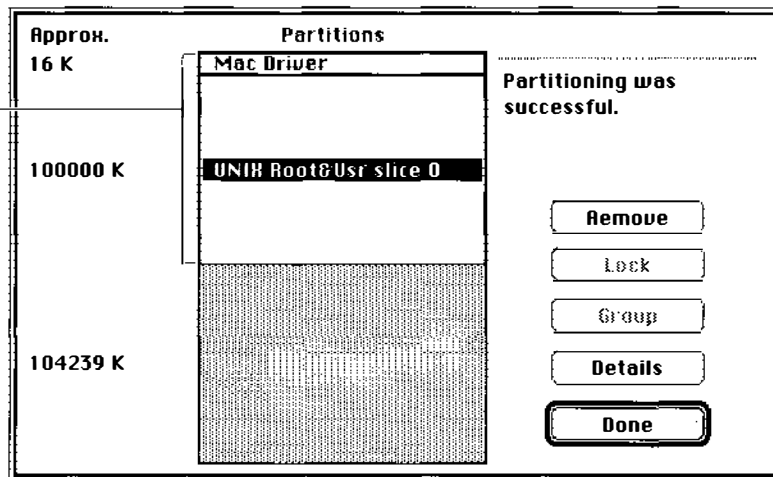
6 If you wish, type a number to enter an exact size for the partition.

Dragging provides only an approximate size for the partition. You can indicate the *exact* size of the partition by typing in the amount.

7 Click OK or Cancel.

Click OK to proceed, or click Cancel to cancel the action. In a moment, you return to the Custom Partition dialog box, where you see a representation of the partition you just created.

Here is the partition you just created.



8 Repeat steps 4 through 7 for each partition you want to create.

Repeat the procedure as many times as needed to create your partitioning scheme.

Some important space considerations

In creating custom partitions, don't forget to create Autorecovery and swap space partitions and to leave a minimum amount of user free space:

Autorecovery partition The Autorecovery partition maintains a copy of the files used in the A/UX startup process so that, if you ever experience a catastrophic system failure with A/UX, the files that are critical to the A/UX startup process can be restored from the Autorecovery partition, if necessary. The Autorecovery partition requires 3 MB of disk space.

Swap space A/UX 3.0 provides the ability to use space on a hard disk to increase the computer's memory. In UNIX terminology, this space is called the *swap space*, and is used to exchange, or *swap*, portions of files in the computer's memory with those being kept temporarily on the hard disk. The recommended minimum amount of swap space is 18 MB. Unless you *know* you need more swap space, do not increase this setting.

User free space User free space is a portion of each file system not used for storing data. The space is used by the operating system to maintain the files in the file system. The recommended minimum is 5 MB. User free space cannot be smaller than 2 MB.

Important MacPartition and the UNIX Root & Usr partition must be installed on the same hard disk.

9 **Click Done.**

When you've finished creating all the partitions you need, click Done. You see a message that custom partitioning is done.

10 **Click Done to return to the A/UX Installer program.**

Installing MacPartition files

Now that you've partitioned your hard disk, you need to prepare MacPartition by installing Macintosh system software, the A/UX Startup program, and associated utilities. The A/UX Installer program lets you choose between using a standard MacPartition installation or customizing the MacPartition installation.

The Standard MacPartition Installation option automatically provides the appropriate system software for the type of Macintosh computer you are using, along with drivers for commonly used peripheral devices, such as printers. The Customize option lets you select the exact combination of Macintosh system files and drivers you want.

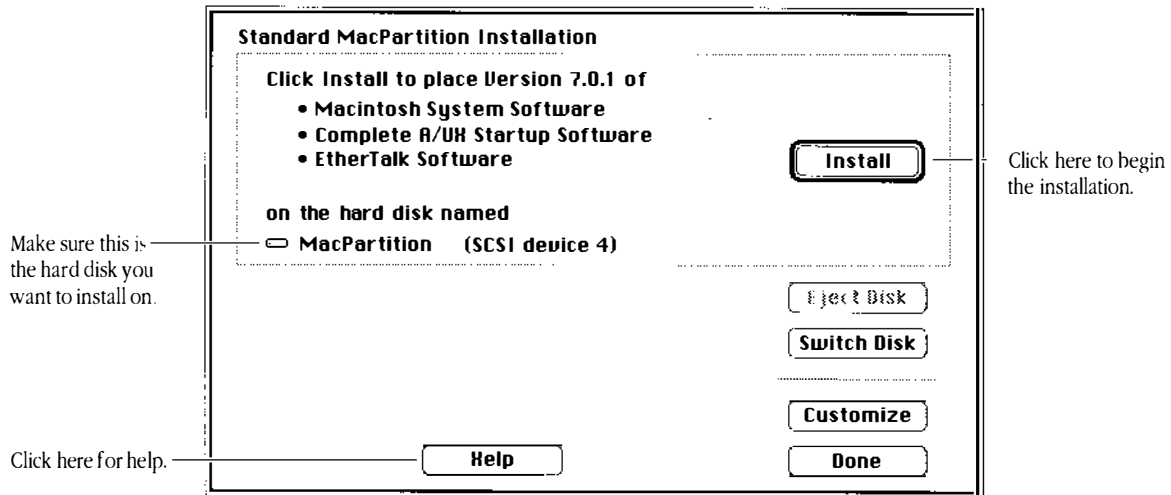
To use the Standard MacPartition Installation option, continue through the next section, "Using the Standard MacPartition Installation." If you prefer to customize your MacPartition, skip the next section and go to "Customizing the MacPartition Installation."

Using the Standard MacPartition Installation option

Follow these steps to use the Standard MacPartition Installation option:

1 Click Install Startup.

The Standard MacPartition Installation dialog box appears:



2 Make sure the disk indicated in the dialog box is the one you want to install on.

If the wrong disk name appears, click Switch Disk until the correct disk name appears.

3 Click Install.

A dialog box indicates the progress of the installation. If you want to cancel the installation before it begins, click Cancel. To stop the installation once the installation is under way, click Stop.

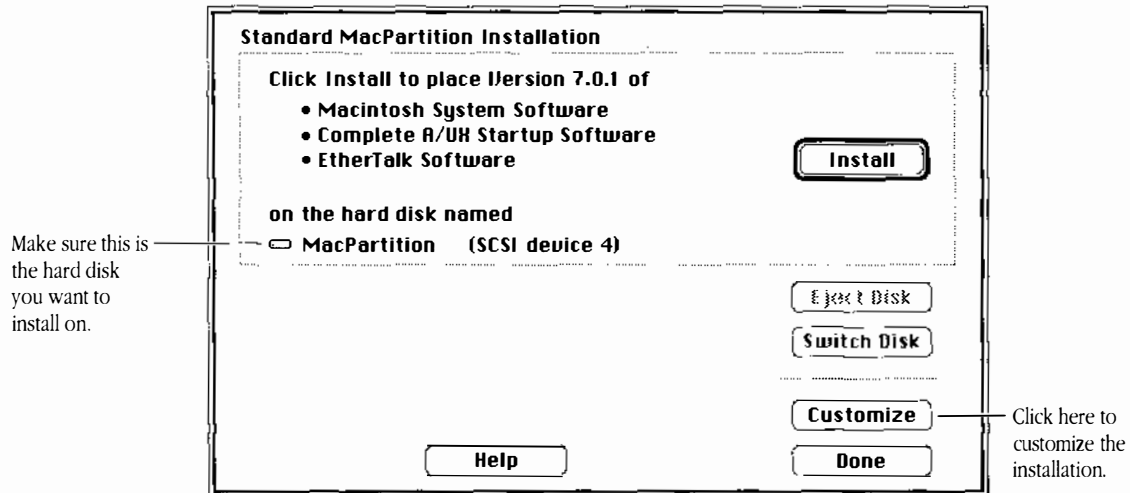
The installation takes several minutes. When the A/UX startup files have been successfully installed, the A/UX Installer dialog box appears again. Skip the next section and continue with "Installing A/UX Packages."

Customizing the MacPartition installation

Follow these steps to customize MacPartition:

1 In the A/UX Installer dialog box, click **Install Startup**.

The Standard MacPartition Installation dialog box appears:

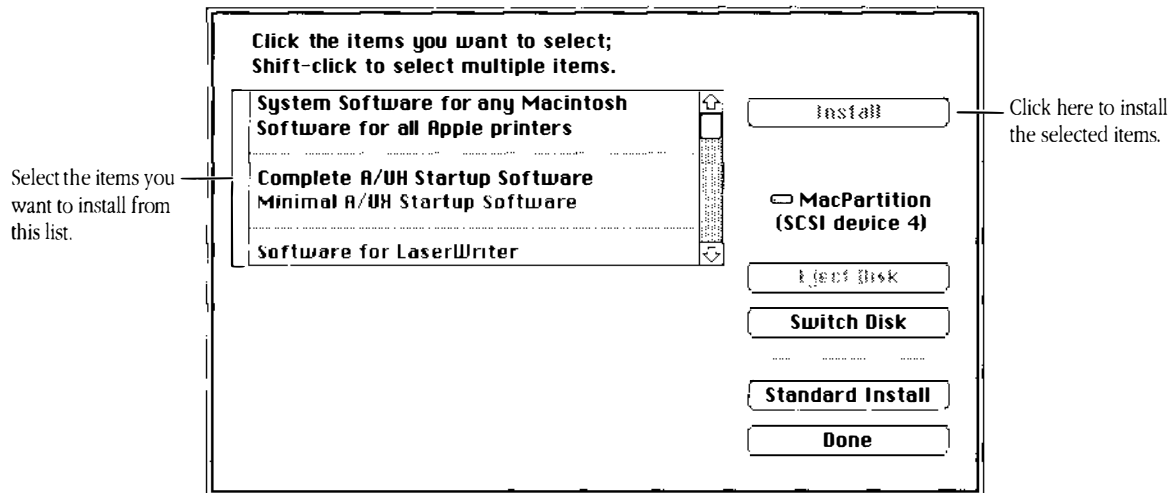


2 Make sure the disk indicated in the dialog box is the one you want to install on.

If the wrong disk name appears, click **Switch Disk** until the correct disk name appears.

3 Click **Customize**.

You see the following dialog box on your screen:



4 Select the items you want to install.

Click the item to select it; Shift-click to select more than one item. Use the scroll bar, if necessary, to see all the available items. As you select items, their names appear in the lower portion of the dialog box.

Important If you are installing in a MacPartition of 4 MB or smaller, select the “Min System for any Macintosh” option.

To return to the Standard MacPartition Installation dialog box, click Standard Install.

Important To run A/UX 3.0, you must install both Macintosh system software and A/UX Startup software on the startup disk. (For other, non-startup disks, you don't need to install the Macintosh system software or the A/UX Startup program.)

5 Click Install.

When you've selected all of the system software you want to install, click Install. You see a dialog box indicating the progress of the installation. If you want to cancel the installation before it begins, click Cancel. To stop the installation once the installation is under way, click Stop.

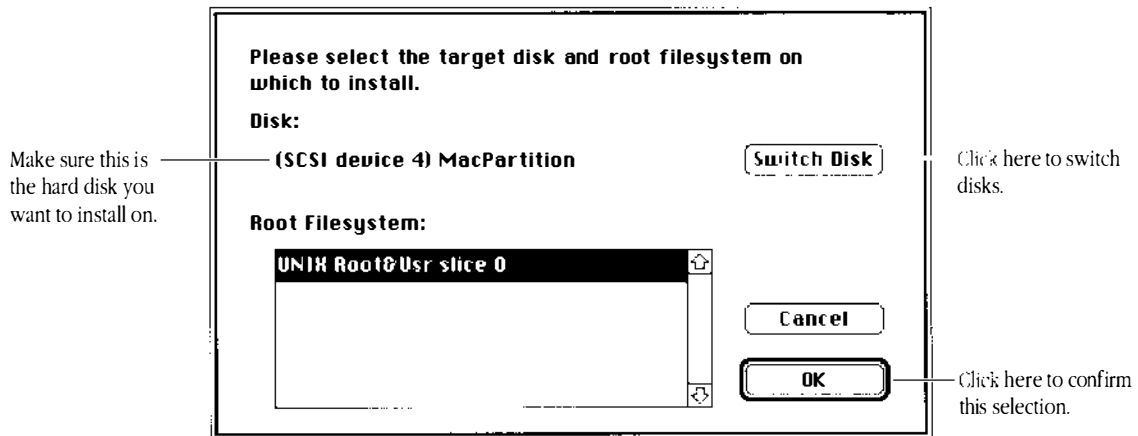
The installation takes several minutes. When the items you selected have been successfully installed, the A/UX Installer dialog box appears again.

Installing A/UX packages

Now that you've partitioned the hard disk and prepared MacPartition, it is time to install A/UX 3.0 packages. Follow these steps to install A/UX packages:

1 In the A/UX Installer dialog box, click Install A/UX.

If you have more than one root file system, you see this dialog box:

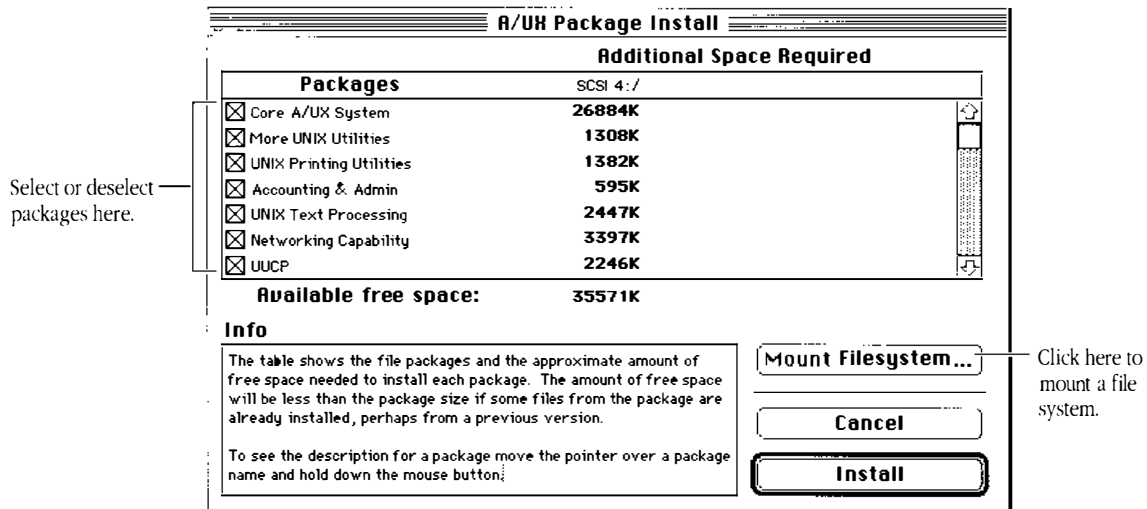


2 Select a disk and root file system and click OK.

If the wrong disk name is listed, click Switch Disk until the correct disk name appears.

Normally, only one file system will appear in the list in the lower-left corner of the dialog box, unless you have more than one hard disk on the SCSI chain with a Root & Usr partition. If so, choose the one you want as your root file system.

When you've selected the correct disk and root file system, click OK. You see a message that the program is calculating file system space requirements. Then in a few minutes, you see the A/UX Package Install dialog box:



Packages that the program has selected to install for you appear checked, along with the amount of space each package requires and the amount of available free space that will be left on the hard disk.

The preselected packages represent the A/UX Installer program's "best guess" of the packages you're most likely to want installed. (These are the same packages you would receive if you were to use the Easy Install option.) With hard disks 160 MB or larger, all A/UX packages are preselected. With hard disks smaller than 160 MB, only some of the packages are preselected.

To read a description of each package, position the pointer over the package's name or checkbox and press and hold down the mouse button. A description of the selected package appears in the Package Description box. The description remains as long as you hold down the mouse button. (For your convenience, these same package descriptions are presented in Appendix A.)

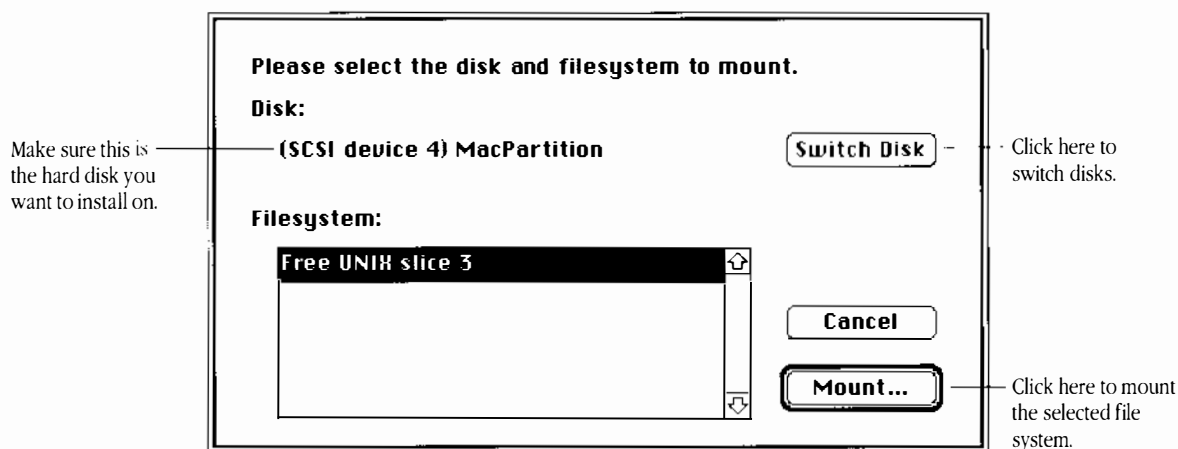
Note that you are also selecting or deselecting packages while you are reviewing their descriptions. After you have finished reading a package description, make sure the package is selected or deselected according to your needs.

You will need to use the scroll bar or scroll arrows on the right side of the box to see the entire list of A/UX packages.

3 To mount a file system, click **Mount Filesystem**.

If you have other file systems—such as `/usr` or `/users`—you need to mount them before you install A/UX packages.

The Mount Filesystem dialog box appears:

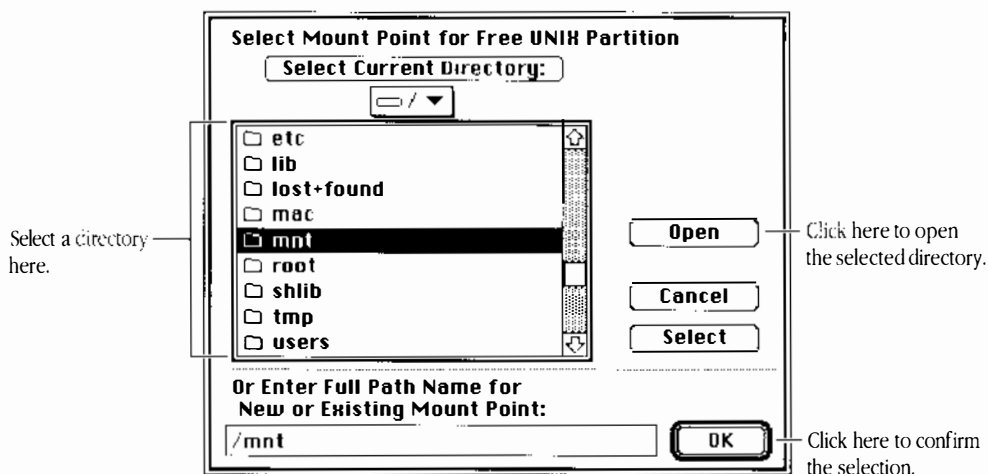


If you created custom partitions for separate file systems when you partitioned your hard disk, you need to mount those file systems before installing A/UX packages in them. For instance, if you created a separate partition for `/users`, you must mount that file system at `/users` before installing packages.

4 **Select the disk and file system you want to mount and click Mount.**

If the wrong disk name is listed, click Switch Disk until the correct disk name appears. Click the file system name and then click Mount.

You see a dialog box asking you to select a mount point:



5 **Select a mount point and click OK.**

Use this dialog box to select a mount point for the file system you just selected. For instance, if you want to mount the file system at `/users`, select `"/users"` from the list and click OK.

The dialog box lets you move through the complete hierarchy of directories. If you want to select a mount point within one of the directories listed in the box, double-click the directory name (or select the name and click Open). The contents of the selected directory appear in the box. To move back up through the hierarchy, use the pop-up menu above the list to select the level you want. Alternatively, you can type the name of a new or existing directory in the text box at the bottom of the dialog box.

When the correct mount point is listed in the New or Existing Mount Point box, click OK. You return to the A/UX Package Install dialog box, where you see a new column representing the file system you just mounted. The numbers in the columns for each file system begin to change as the program recalculates sizes for packages selected in the package list. (You can continue selecting packages without waiting for the program to complete its calculations.)

Select or deselect packages here.

Packages	SCSI 4: /	SCSI 4: /users
<input checked="" type="checkbox"/> Core A/UX System	26841K	43K
<input checked="" type="checkbox"/> More UNIX Utilities	1308K	-
<input checked="" type="checkbox"/> UNIX Printing Utilities	1382K	-
<input checked="" type="checkbox"/> Accounting & Admin	595K	-
<input checked="" type="checkbox"/> UNIX Text Processing	2447K	-
<input checked="" type="checkbox"/> Networking Capability	3397K	-
<input checked="" type="checkbox"/> UUCP	2246K	-
Available free space:	35613K	37485K

Info
 The table shows the file packages and the approximate amount of free space needed to install each package. The amount of free space will be less than the package size if some files from the package are already installed, perhaps from a previous version.
 To see the description for a package move the pointer over a package name and hold down the mouse button.

Mount Filesystem...
 Cancel
 Install

Click here to begin the installation.

6 Select or deselect packages.

Place the pointer over the package's name or checkbox and click.

Deselect the packages you don't want to install. Select any other packages you do want to install. When you select a package, the space needed within each file system is indicated. The number of kilobytes used along with the amount of space remaining in each file system is shown at the bottom of each file system's column. Use these values to plan how you will use your disk space.

Note that many packages require that another package be installed with it. These "packages dependencies" are indicated in the package descriptions provided in the dialog box.

Important The Install button becomes dimmed when you've run out of available space on the hard disk. The amount of space you are lacking on each file system is indicated with a negative number.

Take the time you need to mount file systems and select A/UX packages, noting the space used and the space remaining within each file system.

If you determine that you need more space in a file system than you allocated when partitioning the disk, use the figures to determine how much more space you need. Then return to the “Preparing the Hard Disk” section earlier in this chapter and repartition the hard disk accordingly.

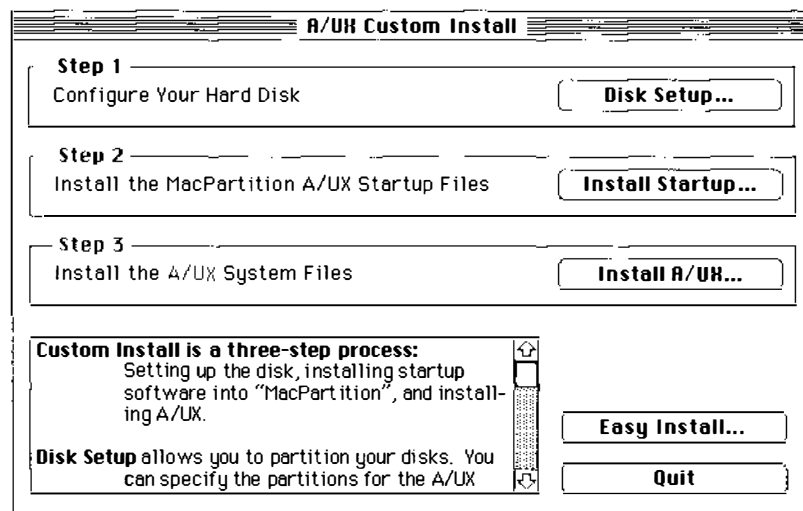
7 Click Install or Cancel.

After you’ve selected the packages you want, click Install. You see a series of dialog boxes indicating what is currently being installed. The dialog box also includes a Stop button, which you can use to interrupt the installation.

Important Try to avoid interrupting the installation process. If you *must* stop the installation, you will need to repeat the installation again.

The length of the installation process varies depending on the amount of storage space your hard disk provides, the number of A/UX packages you’ve selected, and the type of Macintosh computer you’re using—an hour or more is not uncommon. (You won’t be asked for any additional information during the installation.)

When the installation is complete, you return to the Custom Install dialog box:



8 **Perform additional installations or click Quit.**

At this point, you can either perform additional installations, or click Quit to quit the A/UX Installer program and restart the computer.

If you are finished installing, remove the *A/UX 3.0 CD-ROM* and store it in a safe place in case you need it again later.

Where to go from here

You have finished installing A/UX 3.0 on your Macintosh system. For instructions on starting A/UX 3.0 for the first time and for setting a root password and the system time, go now to Chapter 6, "Running A/UX for the First Time."

6 Running A/UX for the First Time

This chapter explains how to run your A/UX system for the first time. It describes how to set up your system so that A/UX starts automatically whenever you turn on your Macintosh computer. It also provides instructions for restoring files you may have saved in updating from an earlier version of A/UX.

Here's what you'll find in this chapter:

- reconnecting SCSI devices
- setting the startup disk
- starting A/UX
- securing the startup application
- setting the root password
- setting the system time
- restoring saved files
- setting up X11
- logging out of A/UX
- where to go from here

Reconnecting SCSI devices

Before you started the installation procedure, you disconnected or turned off any SCSI devices that weren't involved in the A/UX installation process. These may have included hard disks, tape drives, and so on. If you intend to use these devices with your A/UX 3.0 system, you should reconnect them now.

Choose Shut Down from the Special menu to turn off the computer; then reconnect the SCSI devices. If you are uncertain how to connect them to the computer, see the instructions that came with each device.

Important Each SCSI device connected to your computer needs its own unique SCSI ID number. Make sure each device has its own SCSI ID number. For more information, see the manual that came with your computer or the SCSI devices you want to connect.

After completing this chapter, you will need to go to the manual *Setting Up Accounts and Peripherals for A/UX* for instructions on how to set up these devices to work with A/UX 3.0.

Setting the startup disk

Macintosh computers follow a procedure, called the scanning order, to locate the startup disk (that is, a disk containing a System Folder). The computer always looks first in the floppy disk drives, then it looks at external and internal hard disks by SCSI ID number.

To reduce the amount of time it takes to start A/UX, it's best to use the hard disk on which A/UX is installed as the startup disk. You set the startup disk with the Startup Disk control panel.

Follow these steps to set the startup disk:

- 1 Turn on the SCSI devices connected to your computer.**

Wait 10 seconds or so before continuing to step 2.

2 Turn on the computer (and monitor if it has a separate power switch).

Use the techniques you learned in the manuals that came with the computer and monitor.

3 Choose Control Panels from the Apple menu.

4 Double-click the Startup Disk control panel icon.

5 Select the MacPartition icon.

Even though MacPartition is only one partition on the hard disk, the Macintosh Operating System interprets partitions as separate “disks.”

Depending on the number of SCSI devices connected to your computer, you may see only one icon—the MacPartition icon—in the Startup Disk control panel. (It may already be selected.)

6 Close the Startup Disk control panel.

7 Close the Control Panels window.

8 Choose Restart from the Special menu.

The computer restarts, using MacPartition as the startup disk.

Starting A/UX

You have two options for starting up A/UX 3.0—manually or automatically. To start up A/UX 3.0 manually, you double-click the A/UX Startup icon in the MacPartition window. However, you can designate A/UX Startup as the startup application so that the computer automatically starts A/UX each time you turn on the computer.

If you prefer to start up A/UX 3.0 manually, read the next section, “Starting A/UX 3.0 Manually.” If you want A/UX 3.0 to start up automatically, skip the next section and go on to “Setting A/UX 3.0 to Start Automatically.”

Starting A/UX 3.0 manually

Follow these steps to start up A/UX manually:

1 Locate the MacPartition icon.

You should see an icon labeled *MacPartition* near the right edge of the screen.

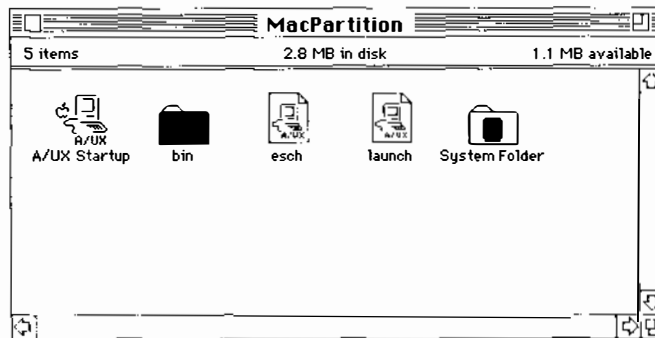


MacPartition

This icon represents the partition that contains the Macintosh file system. The A/UX Startup program, which is used to start up the A/UX operating system, is contained in this partition.

2 Double-click the MacPartition icon.

You see the contents of MacPartition:



3 Double-click the A/UX Startup icon to start A/UX.

Important You may see alert messages during the startup sequence. In some cases, you may need to supply information in response to the message.

At the end of the startup process, the Login dialog box appears. Skip the next section and go now to "Securing the Startup Application."

Setting A/UX 3.0 to start automatically

Follow these steps to have A/UX 3.0 start automatically whenever you turn on your computer:

1 **Locate the MacPartition icon.**

You should see an icon labeled *MacPartition* near the right edge of the screen.

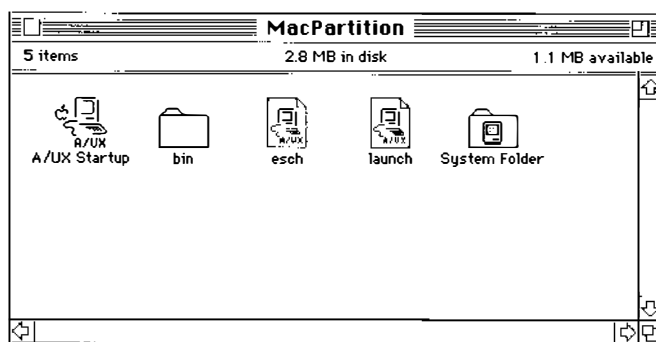


MacPartition

This icon represents the partition that contains the Macintosh file system. The A/UX Startup program, which is used to start up the A/UX operating system, is contained in this partition.

2 **Double-click the MacPartition icon.**

You see the contents of MacPartition:



3 **Select the A/UX Startup icon.**

4 **Choose Make Alias from the File menu.**

You are making an alias of the A/UX Startup program to put in the Startup Items folder.

5 **Double-click the System Folder to open it.**

6 **Locate the Startup Items folder in the System Folder window.**

You should see a folder labeled *Startup Items* in the System Folder window.



Startup Items

7 **Drag the “A/UX Startup alias” icon to the Startup Items folder.**

Any program, or alias of a program, that you place in the Startup Items folder starts automatically whenever you turn on the computer.

You may need to move the System Folder window to see the “A/UX Startup alias” icon.

8 **Close the System Folder window.**

9 **Choose Restart from the Special menu.**

The computer restarts. After it completes the startup process, the computer automatically starts A/UX, using the alias you just placed in the Startup Items folder.

Important You may see alert messages during the startup sequence. In some cases, you may need to supply information in response to the message.

At the end of the startup process, the Login dialog box appears.

Securing the startup application

You may want to ensure that your A/UX system is safe from unauthorized users. One way of providing a measure of security is to secure the startup application.

By canceling the startup process, you can work within the startup application, where you can edit A/UX system files while A/UX isn't running. (This is a useful feature for troubleshooting problems with A/UX.)

However, if you do not secure the startup application, *anyone* can gain access to A/UX system files and MacPartition by canceling the startup process. When you secure the startup application, only users who know the password can cancel out of the startup process.

Follow these steps to secure the startup application:

1 Start A/UX again.

If you started A/UX manually, choose Restart from the Special menu, and then double-click the A/UX Startup icon. If you've set up your system to start A/UX automatically, just choose Restart from the Special menu.

To secure the startup application, you need to interrupt the startup sequence.

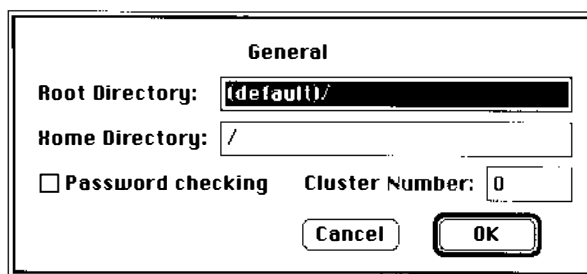
2 During the A/UX startup procedure, click Cancel.

Wait until you see the message, "Welcome to A/UX."

After you click Cancel, you return to the A/UX Startup program.

3 Choose General from the Preferences menu.

The General Preferences dialog box appears:



4 Click the "Password checking" checkbox.

5 Click OK.

6 Choose Boot from the Execute menu.

The A/UX Startup screens reappear as A/UX starts up again.

Setting the root password

Because A/UX is designed as a multi-user operating system, it assumes the need for an administrator—a user with a special account that provides unlimited privileges for administering the A/UX system. That special account is called **root**. The user of this account is often called the **superuser**. The superuser has access to all files, commands, and processes on the A/UX system.

Your own work environment may or may not include other users on your A/UX system. In either case, you may still be the administrator on your A/UX system. You will probably want to protect your system from unauthorized access, regardless of whether you are its only user.

Choose a password that you can remember easily, but don't make it so easy that others might guess it. For example, don't use your name, initials, or telephone number. Also, spell the word with a mixture of uppercase and lowercase letters, and include nonalphabetic characters. For example, *!noSmoking*, *\$2toWin*, and *MacII4me* would make acceptable passwords. (These are just examples. Do not use these as passwords since anyone reading here can guess them.)

Passwords for all accounts other than the root account must meet certain requirements. Although the root password doesn't have to adhere to these requirements, you might follow them now anyway because they help create a more secure password, and because they make you aware of the rules that other users must follow.

Here are the requirements for user passwords:

- A password must consist of at least six characters. Only the first eight characters are used for verification. You can include additional characters if they make the password more meaningful.
- A password must contain at least two alphabetic characters. Remember that A/UX and other UNIX operating systems are case sensitive—for example, *a* and *A* are treated as two different characters.
- A password must contain at least one numeric (0 through 9) or one special character (such as a punctuation mark).

- A password must differ from the login name and from any reverse or circular shift of the login name. Also, in determining the uniqueness of the password from the login name, uppercase letters and their corresponding lowercase letters *are* counted as equivalent. For example, some of the prohibited passwords for the login name `cynthia` are: `aihTnyc`, `ynthiac`, and `cynThia`.

Once you've chosen a root password, follow these steps to set it and to log in to the root account:

1 Choose Boot from the Execute menu.

If you put the A/UX Startup program in the Startup Items folder earlier, the A/UX Startup screens reappear as A/UX starts again. (Otherwise, double-click the A/UX Startup icon to start the program manually.)

In a few minutes, you see the Login dialog box.

2 Choose Change Password from the Options menu.

You assign a root password as if you were changing a password. That is, you use the same combination of dialog boxes and commands to set a password as you would to change a password.

The Change Password dialog box appears:

Change Password

Your new password must satisfy the following requirements:

- at least six characters long
- contain two or more letters
- contain one or more numbers or punctuation marks
- cannot be a rotation of your login name
- at least three characters different from old password

Name:

Old Password:

New Password:

3 Type `root` in the Name text box.

You're indicating the name of the account, usually referred to as the *login name*, not your own name.

4 Click the New Password box.

You can skip over the Old Password box, since you shouldn't have an old password.

5 Type the root password.

Carefully type the password you've chosen. You cannot see what you are typing, but you will have a chance to confirm the password by typing it again.

6 Click OK.

Another dialog box asks you to confirm your new password.

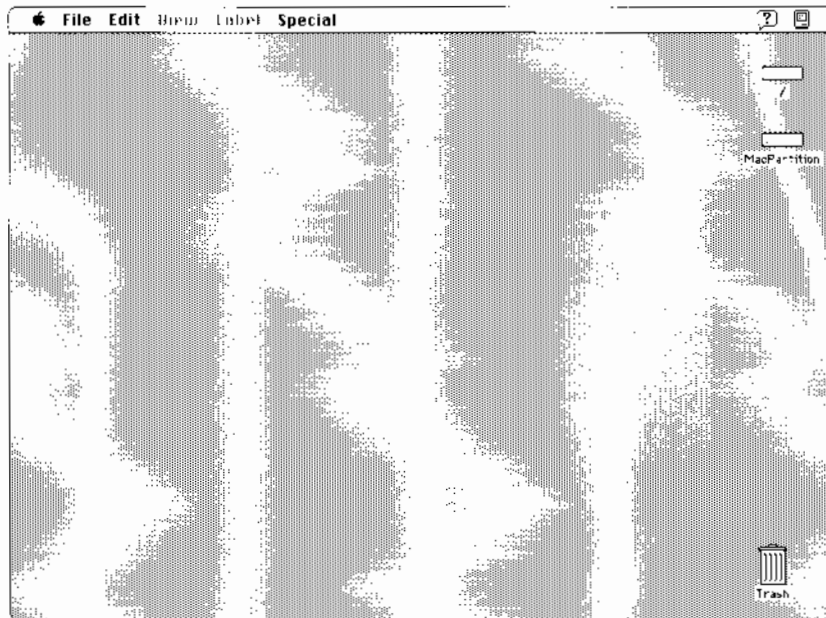
7 Type your new password again.

8 Click OK.

The Login dialog box appears again with the Name and Password boxes filled in. You have the opportunity to use the Options menu again before logging in, if necessary.

9 Click the Login button.

After a few moments, you are logged in to A/UX 3.0 and the Finder appears:



Your root password is now in effect. You will have to enter it the next time you log in to the root account.

Setting the system time

It's important that your A/UX system be set to the correct time and date. UNIX time is derived from a combination of the system clock and your time zone. The system time is factory set to Pacific Standard Time. If you live in another time zone, you need to reset the time zone.

Follow these steps to set the system time. (You'll need to log in first if you haven't done so already.)

- 1 **Choose CommandShell from the Applications menu (on the far right side of the menu bar).**

A CommandShell window appears:


```

CommandShell 1
*****
*                                     *
*          W E L C O M E   T O   A / U X          *
*                                     *
*****
Mon Feb  3 15:07:22 PST 1992
/
./
./          .mac/          dev/          root/
./          .mailrc       etc/          shlib/
.aux_prefs .profile    lost+found/ tmp/
.cshrc     Desktop Folder@ mac/         unix
.kshrc     FILES      mnt/        users/
.login     Install.report newunix     usr/
.logout    bin/        nextunix
localhost.root *

```

If a CommandShell window does *not* appear, choose New from the File menu.

2 Enter the `settimezone` command.

Type `settimezone` in the CommandShell window and press RETURN. Note that there are no spaces in the `settimezone` command.

A list of major world regions appears:

```

/Useful Commands/settimezone (set timezone)
Enter the letter corresponding to your region.
 f Africa
 a Australia, New Zealand
 c Canada
 e Europe
 i Iceland, Caribbean
 x Mexico
 m Middle East
 s South America
 u United States
 w Western Pacific, East Asia
 o Other

- Cancel
Enter letter: w

```

3 Enter the letter that corresponds to your region.

For example, if you live in the United States, type `u` and press RETURN. If you live in Japan, type `w` for Western Pacific and press RETURN. Another menu appears, listing the time zones within the region:

```
Enter the letter corresponding to your time zone.
c Peoples Republic of China
h Hong Kong
j Japan
r Republic of China
k Republic of Korea
m Samoa
s Singapore

- Return to previous menu
Enter letter: j

The time zone has been set to Japan
The corresponding date will be Mon Feb 19 23:08:21 JST 1990
This change will take effect the next time you log in.
* □
```

4 Enter the letter that corresponds to your time zone.

Type the letter that corresponds to your time zone. For example, if you live in Japan, type `j` for Japan and press RETURN.

If your time zone isn't listed, select the Other option, which lets you select your time zone relative to Greenwich Mean Time (GMT). First, determine the difference between your time zone and GMT. Use Figure 6-1 to locate your region. Then count the number of zones between your region and GMT. (Each zone represents a one-hour difference from those next to it.)

Regions east of Greenwich are measured in one hour increments *greater* than GMT; those west of Greenwich are measured in one hour increments *less* than GMT.

Now enter the letter in the menu associated with the number of zones you've counted. For example, for an A/UX system located in New Delhi you would type `ε` for five hours later.

If you use the GMT method to set your system clock and your current time is affected by daylight-saving time, add one hour and enter the letter corresponding to that number.

After you enter the time zone by either method, a message appears, confirming the setting.

5 Enter the `date` command.

Type `date` and press RETURN.

The `date` command should now display the proper date and time. If it does not, the system clock itself is incorrect. Use the date command, the Alarm Clock, or the General Controls control panel to reset the system clock.

Restoring saved files

If you updated your system from a previous release of A/UX to A/UX 3.0, you can make your system administration tasks for the new release easier by using the information in your old system files to customize your new system files.

In most cases, you will want to combine the information from your old system files with those system files in the new release. For example, some of these files include `/etc/passwd`, `/.profile`, `/.login`, `/etc/hosts`, and startup scripts. Use the instructions in this section to keep the new general information while adding customized details from your old files.

◆ **Note** The following steps assume you've saved your files by using the `bakchk` program, explained in Chapter 2. The `bakchk` program uses `cpio` to save files in a multivolume archive. To find a particular file on the floppy disk, you must insert the floppy disks one at a time in the order that the multivolume archive was made. ◆

Restoring files from backup floppy disks

Follow these steps to restore files from your backup floppy disks:

1 **Log in to the root account.**

If necessary, first choose CommandShell from the Applications menu to open a CommandShell window.

2 **Create a directory for the old system files.**

Create a new directory or navigate through the directory structure until you are in the directory in which you want to restore the files. For example, to create a directory named `/oldfiles` enter

```
mkdir /oldfiles
```

3 **Change directories to the newly created directory.**

Change directories to the directory in which you want to restore the files. For example, enter

```
cd /oldfiles
```

4 **Insert the first floppy disk of the multivolume archive into drive 0.**

Drive 0 is the right-hand drive on Macintosh II computers.

The labels you placed on the floppy disks when you saved the files will help you identify the correct floppy disk.

5 **Copy the file or files from your backup floppy disks to your working directory.**

If you backed up your files using `bakchk`, use `cpio` to restore the files. You can read in all files at once, or restore files one at a time.

If you want to restore many files from your backup, make sure you have enough space to restore the entire archive on your hard disk. When you ran `bakchk` (with instructions in Chapter 2), you were instructed to write down the number of bytes `bakchk` reported were required to archive the files. Use the `df` command to verify that you have this number of free bytes on your system.

- To restore all files saved on your backup floppy disks into your current working directory, enter `cpio -idmv < /dev/rfloppy0`

The flag options to `cpio` cause `cpio` to read in (`-i` flag) files from the floppy disk and place the named file or files in the working directory. The `cpio` command creates any necessary directories (`d` flag), preserves the file modification date (`m` flag), and copies the file. (Normally `cpio` will not copy a file older than an existing file with the same pathname.)

Important Be sure to use `/dev/rfloppy0` to ensure that the archive is read properly. Do not use `/dev/floppy0`.

- To restore a single file saved on your backup floppy disks, enter

```
cpio -iBdmuv filename < /dev/rfloppy0
```

This copies the file specified by *filename* from drive 0 into your current working directory.

If `cpio` does not find the file on the first floppy disk, you will be prompted to insert the next floppy disk of the archive. Continue inserting floppy disks as prompted.

6 **Save a backup copy of the system file you want to modify.**

Keep a copy of the new system file as it was originally installed. For example, enter

```
cp /etc/passwd /etc/passwd.orig
```

to save a copy of the `/etc/passwd` file for future reference.

7 **Combine the information from the old system file into the new system file.**

You can combine the information from your old file into your new system file by using any method you choose. See the next section, "Comparing Files," for an overview of the process. Files that you will probably need to combine include

```
.cshrc  
.login  
etc/fstab  
etc/group  
etc/hosts  
etc/hosts.equiv  
etc/inittab  
etc/motd  
etc/passwd
```

Comparing files

This section provides an overview of the steps involved in comparing the information in two different files. Two files are used in the example, one named `/etc/passwd` and one named `/oldfiles/etc/passwd`:

- 1 **Choose CommandShell from the Applications menu.**
- 2 **Choose New from the File menu so that you see two CommandShell windows on your screen.**

- 3 **Choose Tile Horizontal from the Window menu.**
- 4 **Use a text editor to edit the new system file in one window while viewing the old system file in another window for comparison.**
For example, you might use `vi` to edit `/etc/passwd` in the CommandShell 1 window while you display `/oldfiles/etc/passwd` in the CommandShell 2 window.
- 5 **Use the Copy and Paste commands from the Edit menu to customize your new `/etc/passwd` file.**
- 6 **Save the new file you just created.**

Setting up X11

If you selected any of the X11 packages when you installed A/UX 3.0, you need to copy startup files to your home directory to set up X11.

- △ **Important** Each user account needs the startup files in its home directory. However, you need to copy the startup files only for user accounts created prior to installing X11. Accounts you later create with the `adduser` script will automatically receive the X11 files.

These steps assume that you are logged in to A/UX as root.

- 1 **If you don't already have a CommandShell window open, choose CommandShell from the Application menu.**

A CommandShell window appears. (If a CommandShell window does not appear, choose New from the File menu.)

2 Copy the /usr/lib/X11/.x11start file to your home directory.

For example, if your login name is `chris`, you type

```
cp /usr/lib/X11/.x11start /users/chris
```

and then press RETURN.

◆ **Note** Make sure you type a capital *X* when you type `x11`, but a lowercase *x* when you type `.x11start`. ◆

3 Copy the /usr/lib/X11/Sample.twmrc file to the .twmrc file in your home directory.

For example, if your login name is `chris`, you type

```
cp /usr/lib/X11/Sample.twmrc /users/chris/.twmrc
```

and then press RETURN. Notice that the prefix `Sample` is dropped from `.twmrc`.

◆ **Note** Make sure you type a capital *X* when you type `x11`. ◆

4 Set user ownership of the .x11start file.

For example, if your login name is `chris`, you type

```
chown chris /users/chris/.x11start
```

and then press RETURN.

5 Set user ownership of the .twmrc file.

For example, if your login name is `chris`, you type

```
chown chris /users/chris/.twmrc
```

and then press RETURN.

The changes take effect immediately.

Logging out of A/UX

If you are finished working with your computer, log out by choosing Logout from the Special menu.

Where to go from here

Congratulations! You have finished installing A/UX 3.0 and taken the first steps to set up your A/UX system. Where you go from here depends on what you need to do next:

- A source of late-breaking information about A/UX 3.0 is the *Read Me* disk, which includes information that amplifies—or supersedes—the materials in the A/UX manuals. You will want to read through the material on this disk.
- If you have peripheral devices that you plan to use with your computer, or if you need to add user accounts, go to *Setting Up Accounts and Peripherals for A/UX*.
- For more specifics about working in the A/UX environment, see *A/UX Essentials*.
- If your computer is connected to a network, or you plan to connect it to an existing network, read *A/UX Networking Essentials*. It explains how to take advantage of networking capabilities.
- For an introduction to X11, read *X11 User's Guide for A/UX*.

All of these materials should be in the same box that contained this manual. If anything is missing, contact your authorized Apple dealer.

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Appendix A: A/UX 3.0 Installation Packages

This appendix provides a complete list of the A/UX 3.0 installation packages, along with a description of their contents.

The A/UX 3.0 packages

<i>Package</i>	<i>Contents</i>
Core A/UX System	Essential A/UX programs and files. Also includes programs and files that aren't otherwise included in the following packages. Administrative programs in <code>/etc</code> and most programs found in <code>/bin</code> are part of this package.
More UNIX Utilities	Additional useful and interesting UNIX utility programs not required at boot time or included in other packages. Includes <code>banner</code> , <code>calendar</code> , <code>factor</code> , <code>fold</code> , <code>groups</code> , <code>paste</code> , <code>whereis</code> , and other programs.
UNIX Printing Utilities	The UNIX printing utilities, including <code>TranScript</code> , <code>lpr</code> , and <code>lp</code> .
Accounting & Admin	Includes the System Accounting package (<code>acct(1M)</code> , <code>acctsh(1M)</code>) as well as miscellaneous administrative utilities such as system activity reporting (<code>sar(1)</code> , <code>sag(1)</code>), time zone file administration (<code>tzdump(1M)</code> , <code>tzic(1M)</code>), and disk and tape administration (<code>badblk(1M)</code> , <code>volcopy(1M)</code>).
UNIX Text Processing	The UNIX Text Processing tools, including <code>tbl</code> , <code>eqn</code> , <code>pic</code> , <code>grap</code> , <code>troff</code> , and <code>nroff</code> . Also includes UNIX font files (<code>/usr/lib/font</code>), and the UNIX spelling checker. Requires installation of UNIX Printing Utilities.
Networking Capability	Networking tools and daemons for basic networking and client capabilities. Includes files required to use Network File System (NFS), Network Information Service (NIS/YP), File Transfer Protocol (FTP), <code>talk</code> , <code>rlogin</code> , and other UNIX networking utilities. Also includes Compressed Serial Line/Internet Protocol (CSL/IP), and <code>kermit</code> .
UUCP	Files and programs used for UNIX-to-UNIX copy (UUCP). Also includes <code>cu</code> and <code>ct</code> . To use UUCP over a network connection, install the Network Capability package as well.



<i>Package</i>	<i>Contents</i>
Network Server Capability	Additional networking files, useful for Network Administration and server capability. Includes files required by NIS (YP) servers, either master or slave, name server utilities and documentation, and additional sendmail configuration files. Requires installation of the Networking Capability package.
Commando Dialogs	The Commando Dialogs allow users to build UNIX command lines using a graphical interface.
Manual Pages	The on-line manual pages (sections 1-8 and 1M).
Basic C Programming	The basic C programming tools, including the compilers, header files, and common libraries.
Debugging & Version	Programming utilities for debugging and source control code version control, including the C debugging libraries (<code>libg</code>), <code>sdb</code> , <code>dbx</code> , <code>SCCS</code> , and <code>RCS</code> . Requires installation of Basic C package.
Extended C Programming	More advanced C programming tools, including <code>lex</code> , <code>yacc</code> , <code>lint</code> , and <code>cb</code> . This package also includes the C profiler, less common libraries such as the <code>curses</code> and <code>termcap</code> libraries, and tools for compiling very large C programs. Requires installation of Basic C package.
Basic Macintosh Programming	The basic tools for writing hybrid Macintosh programs, including libraries, header files, and sample source code for Macintosh demonstration programs. Requires installation of Basic and Extended C packages.
Misc. Programming Languages	Additional programming languages and tools, including FORTRAN (<code>f77</code>), a BASIC interpreter (<code>bs</code>), a SNOBOL interpreter (<code>sno</code>), and the Extended FORTRAN Language (<code>ef1</code>). Requires installation of Basic C package.
MacX	The X Window System for the Macintosh.
X Client Sampler	A sampling of X Window System clients suitable for use with either MacX or the X11 Server package.

<i>Package</i>	<i>Contents</i>
X11 Server & More	The X Window System, Version 11, Release 4. This package also includes a large number of X client applications, manual pages, and Commando dialog boxes. Requires installation of X client Sampler package.
X Programming	Tools and libraries useful for X Window System programming. Requires installation of the X client Sampler package.
QuickTime	QuickTime is a system software extension that adds multimedia capabilities to the Macintosh.
Games	A collection of UNIX games, including <code>fortune</code> , <code>hangman</code> , <code>quiz</code> , <code>worms</code> , and <code>wump</code> .
Terminal Information	Terminal capabilities files for the more unusual terminals. Also includes printer filters for more unusual printers (e.g. DASI, Tektronix). The most common terminals are included in the core package. These include: <code>ansi</code> , <code>dialup</code> , <code>dumb</code> , <code>arpanet</code> , <code>network</code> , <code>mac2</code> , <code>mac2cs</code> , the <code>vt</code> family (<code>vt52</code> , <code>vt100</code> , etc.), and the <code>televideo920</code> series.
Shell Layering	The System V Shell Layering protocol, which provides an alternative to windows or job control by allowing interaction with more than one shell from a single terminal.



Appendix B: Reusing the *A/UX 3.0 CD-ROM*

This appendix describes how to install individual A/UX packages and files from the *A/UX 3.0 CD-ROM*—either to restore lost or damaged files, or to install additional packages after the initial installation. It also provides instructions for using the CD as a mountable, read-only A/UX file system.



Installing individual packages

To install an individual A/UX package, you use the Custom Install option. Running the A/UX Installer program will *not* change or damage the contents of the hard disk you are installing on, *provided you do not reinitialize or repartition the hard disk*.

Follow these steps to install an individual A/UX package (or packages):

- 1 Shut down the computer, if it is already on.**
You need to start up the computer from the *A/UX Installer Startup* disk. Choose Shut Down from the Special menu to shut down the computer.
- 2 Turn on the CD-ROM drive and the hard disk (or disks) you plan to install on.**
If necessary, use the instructions that came with your CD-ROM drive or hard disk. After turning on the last device, wait 10 seconds before proceeding.
- 3 Insert the *A/UX 3.0 CD-ROM* into the CD-ROM drive.**

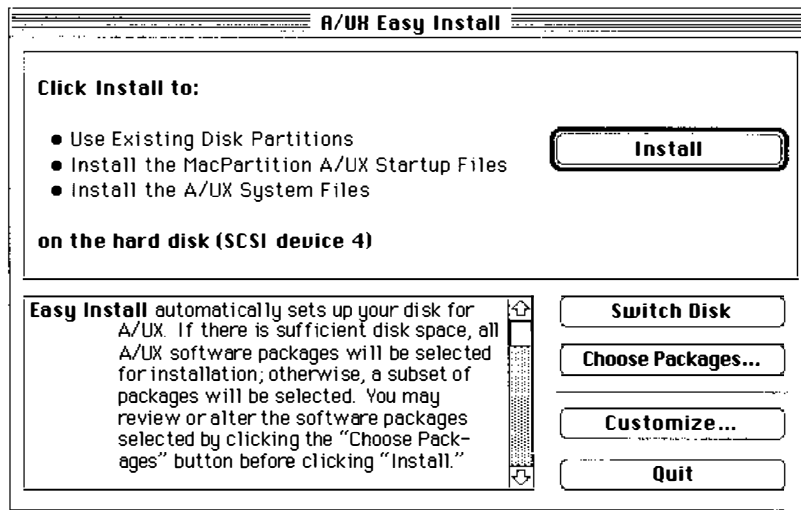
First insert the CD into the CD tray, and then insert the tray into the drive. (If necessary, consult the instructions that came with your CD-ROM drive.)

Important The *A/UX 3.0 CD-ROM* must be inserted into the CD-ROM drive *before* starting the computer.

- 4 Insert the *A/UX Installer Startup* disk into the disk drive.**
Use the correct type of disk for your model of Macintosh computer—the 800K disk for the Macintosh SE/30, II, IIx, IICx, IICi, IIsi, and IIfx, or the 1.4 MB disk for Macintosh Quadras.

5 **Turn on the computer (and the monitor if it has its own power switch).**

The A/UX Installer program starts automatically, the floppy disk is ejected, and in a few minutes the Easy Install dialog box appears:

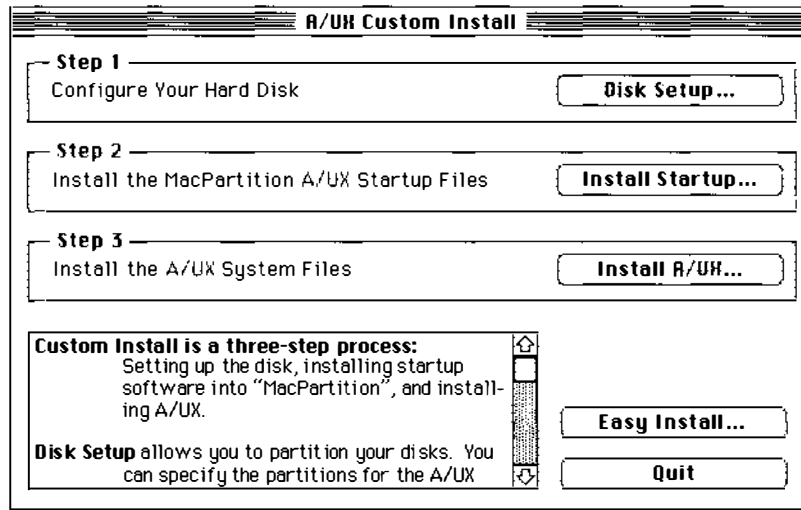


6 **Make sure the hard disk indicated in the dialog box is the one you want to install the A/UX package on.**

If the wrong disk name appears, click the Switch Disk button until the correct disk name appears.

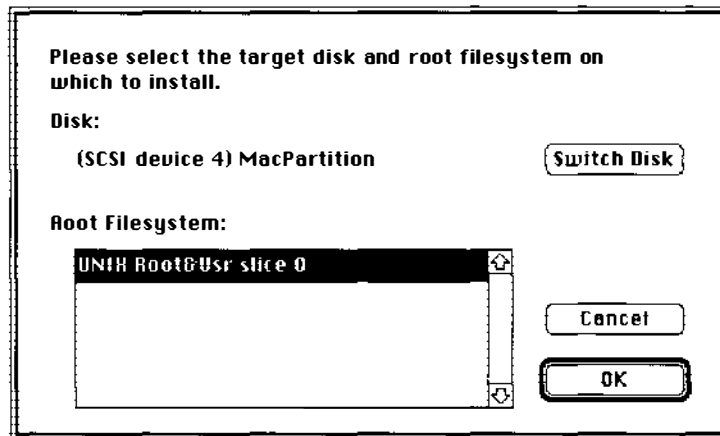
7 **Click Customize.**

The A/UX Custom Install dialog box appears:



8 Click Install A/UX.

If you have more than one root file system, you see this dialog box:

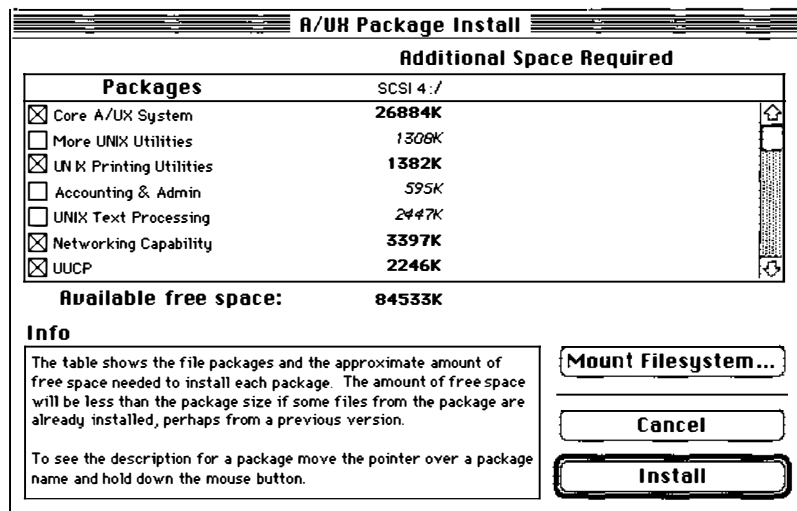


9 If necessary, select a disk and root file system and click OK.

If the wrong disk name is listed, click Switch Disk until the correct disk name appears.

Normally, only one file system will appear in the list in the lower-left corner of the dialog box, unless you have more than one hard disk on the SCSI chain with a Root & Usr partition. If so, choose the one you want as your root file system.

When you've selected the correct disk and root file system, click OK. In a few minutes, you see the A/UX Package Install dialog box:



Refer to Appendix A, if necessary, for a list of packages and a description of their contents, or read the on-screen description for the selected package.

10 If necessary, mount the file system you want to install the A/UX package on.

If the file system you want to install the package on is not mounted, click the Mount Filesystem button. The Mount Filesystem dialog box appears. Double-click the file system you want to mount.

11 Click the checkbox for the A/UX package or packages you want to install.

The size of the package within each file system is indicated, along with the number of kilobytes used and the amount of space remaining on each file system .

12 Uncheck any other packages that the Installer may have selected by default.

13 Click Install.

The A/UX package you selected is installed.

- 14 **When you see a message that the installation was successful, click Quit.**
The Installer window closes. The Macintosh restarts and ejects the CD.
- 15 **Remove the *A/UX 3.0 CD-ROM* and store it in a safe place.**

Copying individual A/UX files

To install individual A/UX files, you do not need to use the A/UX Installer program. Rather, you mount the *A/UX 3.0 CD-ROM* as a read-only file system and copy the file or files from the CD to your hard disk.

Follow these steps to copy an individual A/UX file:

- 1 **Start up A/UX.**

Use the techniques you normally use to start up A/UX.

- 2 **Choose CommandShell from the Applications menu.**

If a CommandShell window does not appear, choose New from the File menu.

- 3 **Temporarily mount the *A/UX 3.0 CD-ROM* as read-only.**

In the CommandShell window, type

```
mount -r /dev/dsk/c.xd0s0 /mnt
```

where *x* is the SCSI ID number of the CD-ROM drive. Press RETURN to enter the command.

- 4 **Use `cp` to copy the file or files you want.**

For example, to copy the `etc/passwd` file, type

```
cp /mnt/etc/passwd /etc/passwd
```

and press RETURN.

5 Unmount the disk.

Enter

```
umount /mnt
```

6 Remove the A/UX 3.0 CD-ROM.

Remove the CD and store it in a safe place.

Using the *A/UX 3.0 CD-ROM* as a mountable, read-only file system

If the CD-ROM drive you used to install A/UX 3.0 is a permanent part of your Macintosh computer system, you may want to use the *A/UX 3.0 CD-ROM* as a mountable A/UX file system.

Because CD-ROM drives tend to be much slower than hard disks, you should avoid using the CD for frequently used programs and files. However, it is perfect for programs and files that you need only occasionally—man pages or Commando dialog boxes, for instance.

Follow these steps to mount the *A/UX 3.0 CD-ROM*:

1 Start up A/UX.

Use the techniques you normally use to start up A/UX.

2 Choose CommandShell from the Applications menu.

If a CommandShell window does not appear, choose New from the File menu.

3 If necessary, create the directory on which you will be mounting the CD-ROM.

Enter the following in the CommandShell window:

```
mkdir /cdrom
```

4 **Insert the *A/UX 3.0 CD-ROM*.**

5 **Mount the *A/UX 3.0 CD-ROM*.**

Enter the following in the CommandShell window:

```
mount -r /dev/dsk/cxd0s0 /cdrom
```

where *x* is the SCSI ID number of the CD-ROM drive. The contents of the *A/UX 3.0 CD-ROM* are now available to you.

If you want to use man pages from the CD, enter

```
ln -s /cdrom/usr/catman /usr/catman
```

This instruction creates a pointer from your hard disk to the files on the CD.

If you have already installed man pages on your system, you will need to rename or remove the old `/usr/catman` first before entering this command.

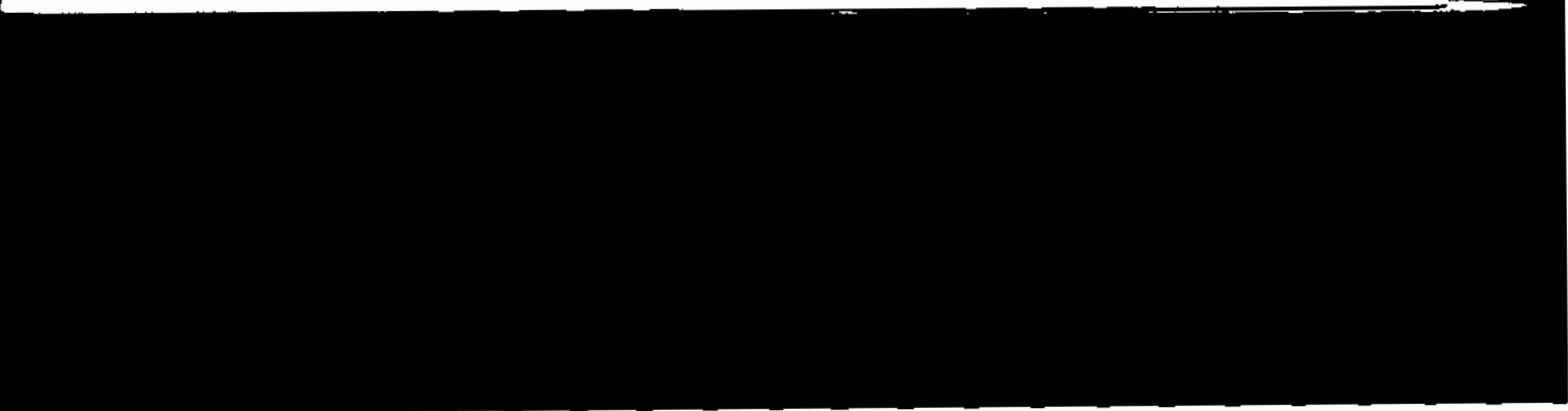

To unmount the *A/UX 3.0 CD-ROM*, enter

```
umount /cdrom
```



Appendix C: Troubleshooting and Support

This appendix discusses common problems that you may encounter during the installation process, along with suggested solutions to those problems. It also provides information on support services available for users of A/UX 3.0.



Troubleshooting

The following sections discuss problems you may experience when installing A/UX 3.0, or in running A/UX 3.0 for the first time. Use the instructions to correct the problem; if it persists, contact your authorized Apple dealer.

Problems starting the A/UX Installer program

The following sections discuss some common problems you may encounter with starting up the A/UX Installer program.

The A/UX Installer program does not start automatically

If you see the message, “The application A/UX Startup has unexpectedly quit”—or “Type 3 error” or “Type 15 error”—you may have a damaged disk. Contact your authorized Apple dealer.

The computer will not accept the *A/UX Installer Startup* disk

If you see the message, “This is not a Macintosh disk. Do you want to initialize it?” or “This disk is unreadable. Do you want to initialize it?” check that you are using the appropriate version of the *A/UX Installer Startup* disk. The disk comes in two versions—an 800K disk for the Macintosh SE/30, II, IIx, IIcx, IIci, IIsi, and IIfx, and a 1.4 MB disk for Macintosh Quadras. These disks are *not* interchangeable.

If your computer still will not accept the *A/UX Installer Startup* disk, and you have determined that you are using the correct version, you may have a damaged disk. Contact your authorized Apple dealer.

No PMMU

If you see a message that your computer does not have a PMMU, your computer is not currently equipped to run A/UX 3.0. Original Macintosh II computers require a Paged Memory Management Unit, or PMMU, before you can install and run A/UX 3.0. For more information, contact your authorized Apple dealer.

No FPU

If you see a message that your computer does not have an FPU, your computer is not currently equipped to run A/UX 3.0. Macintosh IIsi computers require a floating-point unit, or FPU, before you can install and run A/UX 3.0. For more information, contact your authorized Apple dealer.

Not enough memory

If you see the message, "I'm sorry, but this machine has only *x* megabytes of memory," your computer does not have enough memory to run the A/UX Installer program. The program requires a minimum of 8 megabytes (MB) of random-access memory (RAM). If you have less than 8 MB of RAM, you cannot successfully install A/UX 3.0 on your system.

The A/UX Installer program cannot find the A/UX 3.0 CD-ROM

If you see a message, "I'm sorry, but I can't find a volume which looks like an installation CD," check the CD-ROM drive to make sure the *A/UX 3.0 CD-ROM* is properly inserted. Also check to make sure the CD-ROM drive is connected correctly to the computer and to a power source and that the drive is turned on. Make sure the drive has a unique SCSI ID number. (For information on connecting your CD-ROM drive to your computer, see the manual that came with the drive.)

Also make sure you are starting up the computer with the correct version of the *A/UX Installer Startup* disk—the 800K disk for the Macintosh SE/30, II, IIx, IIcx, IIci, IIsi, and IIfx, or the 1.4 MB disk for Macintosh Quadras.

If you still cannot start up the *A/UX 3.0 CD-ROM*, your CD-ROM drive may not be compatible with Macintosh computers, or with the CD driver on the *A/UX Installer Startup* disk. Contact your authorized Apple dealer.

You see the message, "Panic: rootmount: cannot mount root."

If you see the message, "Panic: rootmount: cannot mount root," something may be wrong with the *A/UX 3.0 CD-ROM*. Contact your authorized Apple dealer.

Problems using the A/UX Installer program

The following sections discuss some common problems you may encounter with using the A/UX Installer program.

Invalid partition map

If you see the message, “*Drivename*’ has an invalid partition map or may be unformatted,” you need to initialize or repartition the hard disk before installing A/UX 3.0. Start the A/UX Installer program, click the Custom button, and then click Disk Setup. This will start the Apple HD SC Setup program. Use the program to initialize and repartition the disk, and then complete the installation.

Filesystem mount error

If you see the message “Filesystem mount error,” the hard disk may not contain a file system. You must prepare the hard disk using Apple HD SC Setup running under A/UX to create a file system. You cannot prepare the hard disk with a third-party utility, nor with any other version of Apple HD SC Setup than the one that accompanied the *A/UX 3.0 CD-ROM*.

This message may also mean that you may have a corrupted file system. If there is no data on the hard disk you want to install on, start the A/UX Installer program, click the Custom button, and then click Disk Setup. This will start the Apple HD SC Setup program. Use the program to initialize and repartition the disk, and then complete the installation. If there is data on the hard disk, use `fsck` to check the file system. First quit the A/UX Installer program. Then restart your computer with the *A/UX Installer Startup* disk. As soon as you see the opening display for the A/UX Installer program, press COMMAND-. (period) to halt the startup process. Then enter

```
fsck -y/dev/dsk/c.xd0s0
```

Your hard disk will be examined and repaired if necessary. When you see the Installer # prompt, press COMMAND-Q to quit the program and restart the computer.

The A/UX Installer program does not recognize the hard disk

If your hard disk is correctly connected to your computer, and the A/UX Installer program does not list the hard disk, you may have switched on the hard disk after

starting the A/UX Startup program. Quit the A/UX Installer program, switch on the hard disk, if it is not already on, and start the computer again using the *A/UX Installer Startup* disk. The A/UX Installer program now should list the hard disk.

The Install button is dimmed

There are three reasons why the Install button might become dimmed: there may be no UNIX partition on the selected hard disk; you may have too many packages selected for installation; or the A/UX Installer program may be calculating package sizes. Make sure you have partitioned the hard disk correctly, that you have not selected too many packages, and that the program has completed its size calculations.

The Easy Install preferences have no effect on the disk's partitioning scheme

Only one of the three Easy Install preferences—the user free space setting—has an effect when you use the Easy Install option to update an existing A/UX system. The other two preferences—creating an Autorecovery partition and setting the amount of swap space—are enabled only when the selected hard disk is repartitioned during the installation. Since the selected hard disk is not repartitioned during an update, these two preferences are disabled.

Problems running A/UX for the first time

The following sections discuss some common problems you may encounter while running A/UX for the first time.

The computer won't start

If you see the blinking question mark icon while trying to start your computer, and you have already installed A/UX 3.0 on your hard disk, make sure the hard disk is connected correctly to the computer and a power source and that it is turned on. Check that the hard disk has its own unique SCSI ID number. (For information on connecting your hard disk to your computer, see the manual that came with the drive.)

If your computer still won't start, you may have skipped step 2 of the Custom Install option—Install A/UX Startup. This step installs Macintosh system software and the A/UX

Startup program. Without these files, you will not be able to start your computer. Start the A/UX Installer program, click the Custom button, and then click Install A/UX Startup. After completing this step of the Custom Install option, quit the A/UX Installer program and try starting the computer again.

You can't find A/UX Startup in MacPartition

You may have skipped step 2 of the Custom Install option—Install A/UX Startup. This step installs Macintosh system software and the A/UX Startup program. Start the A/UX Installer program, click the Custom button, and then click Install A/UX Startup. Install the A/UX Startup program. (To be safe, you should reinstall Macintosh system software, too.) Restart the computer.

If you still cannot find the A/UX Startup program, make sure the computer is starting from the hard disk containing the A/UX Startup program. From the Finder, choose Control Panels from the Apple menu. Open the Startup Disk control panel and select the hard disk that contains the A/UX Startup program. Choose Restart from the Special menu, and then try starting A/UX Startup.

A/UX Startup won't start

Be sure to quit all active application programs before starting the A/UX Startup program. Also make sure the computer is starting from the hard disk containing the A/UX Startup program. From the Finder, choose Control Panels from the Apple menu. Open the Startup Disk control panel and select the hard disk that contains the A/UX Startup program. Then choose Restart from the Special menu.

If you still cannot start A/UX Startup, you may have system extensions or control panels (that is, INITs or cdevs) installed in your System Folder that are not compatible with the A/UX Startup program. Remove any system extensions and control panels that you do not need and store them in a separate folder. Restart the computer using the *A/UX Installer Startup* disk. Then try starting A/UX Startup.

A/UX Startup cannot find the A/UX file system

If A/UX Startup is not located on the same hard disk as the root file system, you may need to indicate the location of the A/UX disk for the A/UX Startup program. Start A/UX

Startup and choose General from the Preferences menu; then change the root directory from `(default)/` to the actual disk. For example, for SCSI ID 2, change the setting to `(2, 0, 0) /`. Then click OK.

A/UX support services

To enhance the A/UX work environment, Apple Computer provides some optional support services. These services ensure that you get the help you need to keep your system working optimally.

What's available

Two valuable A/UX support services are available to you for purchase:

- *A/UX Software Update Service* For a single fee, you can receive all A/UX software updates released during a one-year period. The updates—which may be cumulative or incremental—provide product enhancements, system revisions, and software fixes. Subscribers also receive documentation containing a description of the enhancements, as well as software fixes and installation instructions.
- *Phone Support Services for A/UX* You can purchase telephone access to A/UX support experts. The Phone Support Services for A/UX give you a sophisticated support service to enhance your already powerful A/UX environment. You will have daily telephone access for answers, information, and advice on issues such as
 - compatibility
 - installation
 - configuration
 - fundamental usage
 - administration
 - troubleshooting

You don't need to subscribe to the A/UX Software Update Service to subscribe to the Technical Answerline. However, you must be running the latest release of A/UX.

How to order

You may obtain A/UX support services by completing the Phone Support Services card (in the box this guide came in) or by contacting your authorized Apple A/UX dealer or Apple sales representative. You can also order by contacting

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
Attn: Customer Relations
(408) 252-2775



The Apple Publishing System

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Text and display type are Apple's corporate font, a condensed version of ITC Garamond®. Bullets are ITC Zapf Dingbats®. Some elements, such as program listings, are set in Apple Courier, a fixed-width font.

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