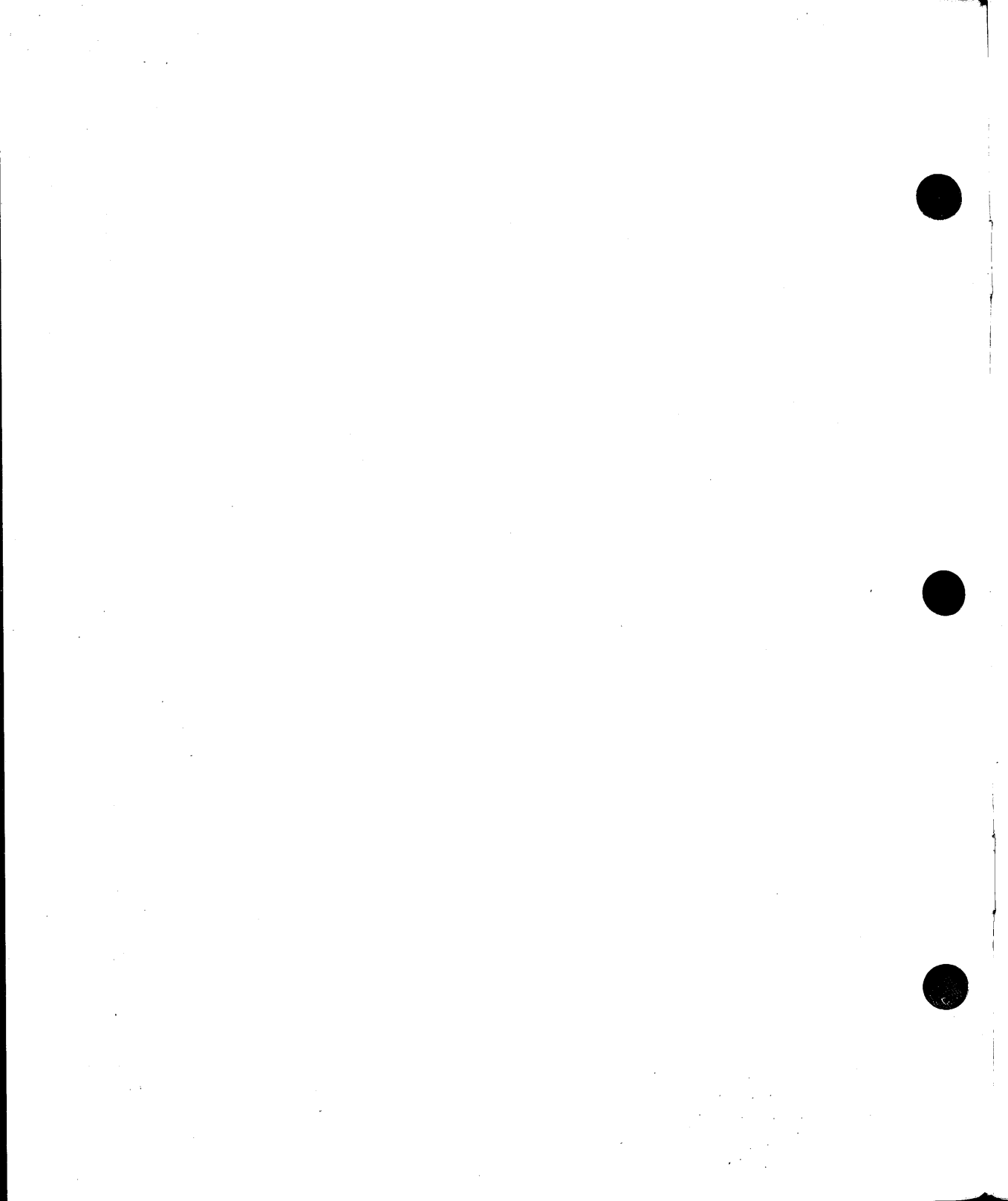


HP 9000 Series 300 Computers



Application Execution Environment Installation Manual

HP-UX
HP-UX
HP-UX
HP-UX
HP-UX
HP-UX



Application Execution Environment Installation Manual

HP 9000 Series 300 Computers

HP Part Number 98515-90010



Hewlett-Packard Company

3404 East Harmony Road, Fort Collins, Colorado 80525

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MANUAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

WARRANTY

A copy of the specific warranty terms applicable to your Hewlett-Packard product and replacement parts can be obtained from your local Sales and Service Office.

Copyright 1986 Hewlett-Packard Company

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced or translated to another language without the prior written consent of Hewlett-Packard Company. The information contained in this document is subject to change without notice.

Restricted Rights Legend

Use, duplication or disclosure by the Government is subject to restrictions as set forth in paragraph (b)(3)(B) of the Rights in Technical Data and Software clause in DAR 7-104.9(a).

Copyright 1980, 1984, AT&T, Inc.

Copyright 1979, 1980, 1983, The Regents of the University of California.

This software and documentation is based in part on the Fourth Berkeley Software Distribution under license from the Regents of the University of California.

Printing History

The manual printing date and part number indicate its current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The manual part number will change when extensive changes are made.

Manual updates may be issued between editions to correct errors or document product changes. To ensure that you receive these updates or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

December 1986...Edition 1. 5.2 Release of AXE

Table of Contents

Chapter 1: The Product Structure	1
Chapter 2: Before Installing AXE	
Overview of Installing AXE	3
Pre-Installation Checklist	4
Chapter 3: Installing AXE from Flexible Disk	7
Chapter 4: Installing AXE from Cartridge Tape	23
Chapter 5: After Installing AXE	43
Appendix A: Installation Errors	
Recoverable Installation Errors	51
Non-Recoverable Installation Error Messages	53
Checking Tapes or Flexible Disks	54
Glossary	55

The Product Structure

You have purchased the Application Execution Environment (AXE). You may also have purchased the Programming Environment (PE), optional programming languages such as Pascal or FORTRAN77, or optional software products such as LAN or ALIS. Whatever you have purchased, your first step is to install AXE.

After you are finished installing AXE you can install the optional software products from the installation procedure, or you can exit the installation procedure and install the optional products using the procedures in "Installing Optional Software and Updating the Kernel" in either the *System Administrator Manual* or the *Application Execution Environment User's Manual*.

AXE is a basic system for users who need only basic commands to run applications; it is called a **run-only** system. If you wish to write and compile programs you must also have PE. Figure 1-1 shows a diagram with some available additions that can be made to AXE.

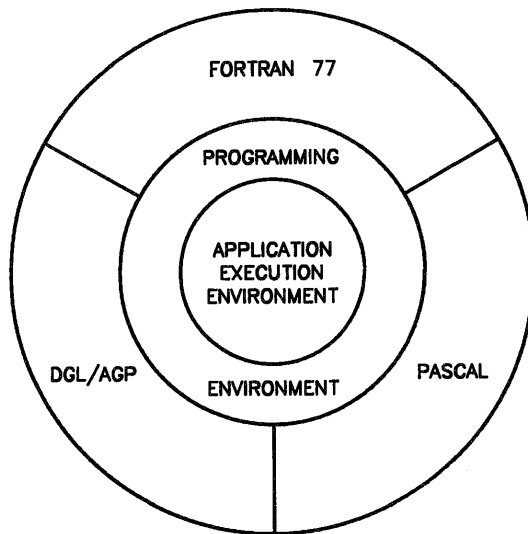


Figure 1-1. HP-UX Structure

The AXE (run-only) part of the operating system is at the innermost level. It includes the PAM shell, administration tools, the vi editor, HP Windows/9000, and other utilities necessary to keep the operating system running. The next level is the Programming Environment (PE). This level includes additional UNIX¹ operating system utilities and libraries, communications packages, a C language compiler, programming control of HP Windows/9000, and other enhancements to AXE. The outermost level shows some additional applications that can be placed on the system: the languages FORTRAN 77 and Pascal, and DGL/AGP, a set of graphics tools to enable advanced graphics.

¹ UNIX is a trademark of AT&T Bell Laboratories, Inc.

Before Installing AXE

If you have not yet installed your computer, hard disk drive, installation tape/flexible disk drive, and all interface and memory cards, do so now. Follow the guidelines in the *Peripheral Installation Guide* or your hardware's installation manual to install your hardware.

If you see terms you are unfamiliar with, refer to the glossary at the end of this manual.

Overview of Installing AXE

You received your AXE system on 17 flexible disks or on one cartridge tape. Installing AXE involves inserting the disks or tape and running the installation process. The installation process moves (or loads) the contents from the installation disks or tape onto your hard disk. After installation, the hard disk contains the information needed to boot AXE when you turn power on to your computer.

If you haven't already installed your hardware, do so now. Follow your hardware's installation guide or the *Peripheral Installation Guide* to install your hardware.

The following list is an overview of the major steps involved in the software installation of the AXE Operating System:

- Fill out the pre-installation checklist on the following pages.
- Install AXE.

If you are installing from flexible disk, use the section called "Installing AXE from Flexible Disk". If you are installing from cartridge tape, use the section called "Installing AXE from Cartridge Tape".

Installing AXE involves several steps. An overview is:

- Insert the media and boot the system to the operating system on your installation media (Steps 1 through 4).
- Fill in the information on the setup menus and let the installation process load the core system (Steps 5 through 12).

- Load additional software products such as Programming Environment (Steps 13 and 14).
- Exit the installation process (Step 15).
- Follow the guidelines in the “After Installing AXE” section.

If you see error messages on your screen, refer to Appendix A. Appendix A lists many installation error messages, along with possible fixes.

Pre-Installation Checklist

At the back of this manual is a tear-out checklist, labelled the Pre-Installation Checklist. Tear out this page and fill it out, using the following information. Information from this checklist will be needed during installation.

1. File Sets and Partitions

File sets and partitions are explained in Appendix C of the *System Administrator Manual* or the *Application Execution Environment User's Manual*.

If you have a hard disk drive with 20 Mbyte (or larger) capacity, and are installing only AXE, you can load all partitions. Check the line on the Pre-Installation Checklist that says “Load ALL AXE partitions”.

If you have a hard disk drive with 55 Mbytes (or larger) capacity, you can load all partitions of both AXE and PE. Check the line on the Pre-Installation Checklist that says “Load ALL PE partitions”.

If your disk drive has less than 20 Mbyte capacity (for AXE) or less than 55 Mbyte capacity (for AXE and PE), or if you do not want all partitions loaded, then use Appendix C to decide which file sets and partitions you want to load. Table C-2 in the *Application Execution Environment User's Manual* and Tables C-2 through C-4 in the *System Administrator Manual* show the functions in each file set. The required file sets for AXE are TOOL, CORE, ACORE, and APAM. The installation process will automatically load these required file sets. On the Pre-Installation Checklist, check the file sets you wish to load. There is a table of AXE file sets and a table of PE file sets. If you check all file sets in a partition, and are loading from cartridge tape, you can load an entire partition from Step 13 of the installation procedures.

2. Swap Space Required

Swap space is space required by the Series 300 AXE operating system to perform memory management. The swap space area will be reserved on your hard disk (destination disk) when your file system is created. The installation process will create your file system and swap space.

You must determine your swap space requirements now; without enough swap space for your applications your system will not run. If you do not specify enough swap space during installation you may need to reinstall AXE.

Calculate your swap space using the following worksheet:

Application Swap Requirements

Determine the largest amount of swap space (in bytes¹) needed by your largest application (look in the manual supplied with your application or ask the manufacturer).

3 000 000

If you will be running several applications simultaneously (at the same time) you must add the swap spaces required by all the applications and enter the amount.

System Overhead

If your largest application is less than 2 097 152 bytes, add 524 288 bytes. If your largest application is more than 2 097 152 bytes, add 2 097 152 bytes.

+ 524 288

HP Windows/9000

If you will be running HP Windows/9000, add 3 670 016 bytes

+ 3 670 016

TOTAL Swap Space in Bytes

TOTAL swap space needed (in bytes)

= 7 194 624

Amount to enter

Divide the TOTAL swap space above by 512. This is the number of 512 byte blocks of swap space your system will need.

÷ 512

default 6920

14052

¹ Your application's instructions may give swap space requirements in units other than bytes. Use the following conversions: 1024 bytes equals one Kbyte (or kilobyte), 1 048 576 bytes equals one Mbyte (or megabyte).

3. Hardware information.

There are two hardware questions:

3-a. Systems with HP 913x or HP 915x Disk Drives

If you have an HP 913x or HP 914x disk drive, check to see if you have the following:

- 98620B DMA card 
- Will your destination (root) disk be connected to an HP98625A high-speed HP-IB interface card? If you have a Model 350 this is probably the case since the Model 350 has this interface built in. 

3-b. Installing from Non-Integrated Devices

If you do not have an integrated device you must fill out the part of the Pre-Installation Checklist labelled "Installing From Non-Integrated Devices". An integrated device is when the flexible disk or cartridge tape drive is part of the hard disk drive you will be installing AXE onto.

If you set up your drives using the guidelines in the *Peripheral Installation Guide*, you can fill in the information from the *Peripheral Installation Guide* worksheet. If not, you may need to look on the hardware to get the information. The select code (SC) is set with switches on the interface card your hard disk drive is connected to. The bus address is set with switches or a knob on your hard disk drive. The Unit and Volume will always be 0.

These numbers can either be in decimal or hexadecimal format. If you enter them in hexadecimal format, each address field must be preceeded by 0x to signify a hexadecimal number. For example, if your select code is decimal 14, you can enter either 14 or 0x0e.

Installing AXE from Flexible Disk

3

If you are installing AXE from cartridge tape, go to Chapter 4, "Installing AXE from Cartridge Tape".

Note

The whole installation process can take anywhere from one to three hours depending upon the size of the disk being initialized and the number of products you decide to load.

You are now ready to install AXE.

Step 1. Turn on the source and destination devices.

The **destination device** is the hard disk drive that will contain your operating system when you have finished installing AXE. The **source device** is the flexible disk drive you will use to load the operating system from.

Step 2. Write-enable and insert the installation disk.

The write-protect mechanism is on the top, left-hand corner of the back of the flexible disk (refer to Figure 3-1). Make sure the shutter is pushed down (away from the label end of the disk) on disks 1 and 2 of the CORE partition (the disks with no colored label). For the installation process to be successful, your system **must** be able to write to the media.

Holding disk 1 of the CORE partition with the label end toward you, insert it into the disk drive door and push until it clicks into place.

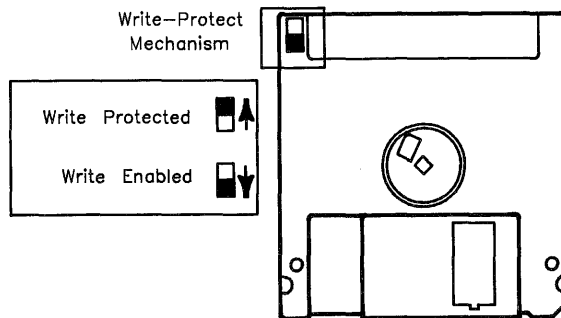


Figure 3-1. Flexible Disk Write-Protect Mechanism

Step 3. Turn on power to your computer and system console (or cycle power).

Turn on your computer and system console display. If your computer is already on, cycle power (turn it off, then, after a few seconds, turn it back on).

If you have a bootable system currently on your disk, you need to immediately hold the space bar down during the boot ROM power-up sequence, and continue holding it down until the word "keyboard" appears on the left side of your screen. Although you do not see any immediate response, this stops the boot ROM from automatically booting an operating system.

You will see a series of messages on your console **similar** to those shown in Figure 3-2. If you do not see messages similar to Figure 3-1 check your hardware, system console address, and interface cards.

If you have a new disk you do not need to hold down the space bar. Your system will automatically boot from the installation disk. Proceed now to Step 5.

Copyright 1985,
Hewlett-Packard Company.
All Rights Reserved.

:HP9122DISK,1402, 0, 0
1H SYSHPUX

BOOTROM REV.A
Bit Mapped Display
MC68020 Processor
MC68881 Coprocessor
Keyboard
HP-IB
HP98644 at 9
HP98625 at 14
2096992 Bytes

SEARCHING FOR A SYSTEM (RETURN To Pause)
RESET To Power-Up

Figure 3-2. First Installation Messages

Step 4. Choose the correct operating system (boot ROM attended mode only).

If your system automatically booted to the installation disk in Step 3, go to Step 5.

If you entered the boot ROM's attended mode in Step 3, you must now choose the correct operating system. If you do not have any operating system currently on your hard disk (i.e. your equipment is new or reinitialized) the only operating system will be on your installation disk.

On the right side of your screen, you will see one or more HP product numbers, followed by a list of operating systems found on the drive associated with the product number. Choose the AXE operating system (SYSHPUX) corresponding to the product number of the disk drive that contains the installation disk. In the example shown in Figure 3-2, using an HP 9122 disk drive for installation, type . If you already have an operating system on your hard disk the correct choice for installation may be or .

Step 5. Choose the correct installation interface.

Once you have chosen an operating system (either from the attended mode in Step 4 or by default), the screen will clear and the following message appears on the screen:

```
Booting /hp-ux
```

The system now starts loading the AXE operating system off the installation tape. It will take several minutes (2 to 5) for the installation program to load onto the hard disk. You will see bootup messages pertaining to the system configuration, how much memory is left, and the system copyrights.

The AXE operating system now loads some more information, then the copyright information will disappear and the following message will appear:

```
The install process has two different interfaces.  The main
interface is intended for the majority of users but requires an
hp terminal other than an hp2621, hp2645, hp2646, hp2647, or hp2648.
```

```
The second interface is for users who have non-hp terminals
and it does not use any of the special print sequences for
highlighting or cursor movement.
```

```
Do you want to use the main interface? (y or n) >>
```

If your system console is an HP terminal type `y` and press the key. The main interface allows you to interact with the install process using softkeys. This is the method described in this manual. Your system console is considered an HP terminal if it is manufactured by Hewlett-Packard and it is **not** an HP 2621, HP 2645, HP 2646, HP 2647, or HP 2648.

You will see a menu similar to that shown in Figure 3-3.

Source Device		Destination Device
Major number	= 4	Major Number = 0
Select code	= 14	Select code = 14
Bus address	= 2	Bus address = 2
Unit number	= 0	Unit number = 0
Volume number	= 0	Volume number = 0

```
CONTINUE installation process
change DESTINATION device
EXIT installation process
change FILESYSTEM parameters
```

Figure 3-3. Main Menu

The source device address will be correct.

If you have an integrated flexible disk and hard disk drive, the destination device address will also be correct. Go to Step 7 to continue.

An integrated device means that both the flexible disk drive (the source device) and the hard disk drive (the destination device) are housed in the same box. This includes the following units: HP 7908, HP 7911, HP 7912, HP 7914, HP 7942 or HP 7946.

If you do not have an integrated device, you must change the destination device address. Go to Step 6 to change the destination device address.

Step 6. Change the destination device.

Use the **NEXT** and **PREVIOUS** softkeys to highlight the **change DESTINATION device** menu item, and press the **SELECT** softkey. You will see a menu similar to that shown in Figure 3-4. You will be asked for the destination device's major number, select code, bus address, unit number, and volume number. These are discussed in your *Peripheral Installation Guide*, and should be written on your pre-installation checklist.

```
*****
HP-UX INSTALLATION UTILITY -- DEVICE MENU
*****

      Destination Device

Major Number      0
Select code       14
Bus address       2
Unit number       0
Volume number     0

Destination Device: Major Number? >>
```

Figure 3-4. Destination Device Menu

For each part of the address, type in the new value followed by **[Return]**. If the requested part of the address is correct, simply enter **[Return]** to keep the old value.

When you are finished changing the values, the message **Checking destination, please wait.** will be displayed on the screen. This check takes about one minute.

If the values seem to be ok, you will be returned to the main menu shown in Figure 3-3. The new menu will reflect any changes you made to the Destination Device address information.

Two common errors (and error messages) are:

- **Source device cannot equal destination device**
Hit [Return] to continue >>

This indicates that the addressing information for the source and destination device are the same. Since that is impossible (or dangerous if true), the installation process will not accept these values. Check the hardware connections, and if necessary change the switch settings, then input the numbers again.

- **Cannot read this device. Make sure it's on and you have the correct address**
Hit [Return] to continue >>

You will receive this message if the installation process cannot read the destination device at the address you specified. This may be because the device was not turned on. If so, turn it on and press the Return key to continue. This message may also mean there is no device at the select code you specified. If so, verify the select code, then press the Return key. You will be returned to Figure 3-4. Re-enter the correct address information.

Step 7. Verify (or change) the file system parameters.

If you need to change any file system parameters or any disk parameters, you need to go to the FILESYSTEM menu. Change these **only** if your application requires you to change them or if you thoroughly understand what you are doing. **Most systems will not need to change these parameters.** The parameters are shown in the menu in Figure 3-5.

Swap space is the only common parameter to change, and you will have a chance to change it in Step 9. If you do not intend to change the file system parameters, or need to change only the swap space, continue the installation with Step 8.

If you need to change block size, fragment size, interleave factor, free space threshold, disk rpm, or bytes per inode, then select the **change FILESYSTEM parameters** menu item. Loading the FILESYSTEM parameters menu takes about one minute.

If you have an HP 913x or HP 915x disk drive you will be asked the following questions now (refer to the Pre-Installation Checklist). Answer the questions:

Will your root disc be on a 98625A/B (disc HP-IB interface card)? [y/n] >>
Does your system have a 98620B (DMA) card? [y/n] >>

You will now see a menu similar to that shown in Figure 3-5. The swap size and disk rpms may vary depending on your hard disk.

```
Swap Size (512 byte blocks): 20496      Interleave Factor:          1
Block Size (bytes):          8192        Free Space Threshold(%):   10
Fragment Size(bytes):        1024        Rpm's of the disc:         3600
Density- bytes / inode:      2048
```

```
QUIT (Return to main menu)
change disc BLOCK size
change DENSITY (bytes per inode)
change disc FRAGMENT size
change disc INTERLEAVE factor
change disc RPMs
change disc SWAP size
change disc free space THRESHOLD size
```

[NEXT](#) [PREVIOUS](#)

SELECT

QUIT

Figure 3-5. File System Parameters Menu

Use the **NEXT** and **PREVIOUS** softkeys to highlight the value you need to change, then press the **SELECT** softkey. You will see a line on the bottom of your screen asking for the new value. For example, if you wish to change the fragment size, you would see the line:

```
Fragment size >>
```

Enter the new value followed by a **Return**. The installation process will perform some error checking, then will enter the new value in the menu.

When you have changed the parameters you want, press the **QUIT** softkey to return to the main menu, and go to step 8.

Step 8. Continue the installation process.

Using the **NEXT** and **PREVIOUS** softkeys, highlight the **CONTINUE** installation process menu item and press the **SELECT** softkey. Loading this menu takes about one minute.

The system will check your destination device. If you have an HP 913x or HP 915x and did not enter the **FILESYSTEM** menu, you will get the following messages:

Will your root disc be on a 98625A/B (disc HP-IB interface card)? [y/n] >>

Does your system have a 98620B (DMA) card? [y/n] >>

You should be able to answer these questions from the pre-installation checklist. When you have answered these questions, the installation will continue.

You will see a message similar to that shown in Figure 3-6 (the amount of swap space will vary with the destination disk). Go to step 9 for instructions on Figure 3-6.

```
*****
HP-UX INSTALLATION UTILITY -- SWAP SPACE VERIFICATION
*****
```

```
The current swap space is xxxxx blocks (1 block = 512 bytes).
Is this correct? (Enter y or n) >>
```

Figure 3-6. Swap Space Verification Menu

Step 9. Verify the swap size.

Compare your total swap space requirements from the Pre-Installation Checklist with the default swap space shown in the menu. **If you do not have enough swap space and you do not change the swap space size now, you may need to re-install AXE later.**

If your total is less than the swap space shown, do not change the swap space. Type **y** and press the **[Return]** key.

If your total is more than the swap space shown, type **n** and press the **[Return]** key. You will be prompted to enter the new value. The system will configure the swap space to be an appropriate value close to the number you request.

In either case, you will see the following message, warning you of how important this value is:

```
The swap space cannot easily be changed once the system is installed.  
If you are going to install an application after installing the AXE system  
you may wish to consult the application manual to make sure your swap space  
is correct.
```

```
Are you sure that xxxxx blocks is correct? (Enter y or n) >>
```

If the swap space is still not correct, type **n** and press the **[Return]** key. You will be prompted to enter a new value.

If the swap space is correct, type **y** and press the **[Return]** key. You will see the menu in Figure 3-7.

```
*****
HP-UX INSTALLATION UTILITY -- INSTALL MENU
*****
```

DESTINATION DEVICE

Major Number	0
Select Code	14
Bus Address	0
Unit Number	0
Volume Number	0

Description

QUIT, return to main menu
BEGIN installation

 NEXT PREVIOUS SELECT QUIT

Figure 3-7. Installation Device Menu

This menu is shown so you can verify the correct address for the destination device. From this menu you can either go back to the main menu to begin again, or you can continue the installation process by following the instructions in Step 10.

Step 10. Continue the installation process.

If the destination device information is correct, use the **NEXT** and **PREVIOUS** softkeys to highlight the **BEGIN** installation menu item. Go to Step 11.

Step 11. Verify there is nothing to save on your destination disk.

The following message and prompt appears on your screen:

```
WARNING !!!!! Proceeding will DESTROY the contents of unit xxx, volume xxx
of the Destination Device, do you want to proceed? (Enter y or n) >>
```

If you think that any of the parameters you entered on previous menus are wrong, or if you do not wish to erase any information on the destination disk, type **n** and press the **Return** key. Answering **n** will return you to the Main Menu (Figure 3-3).

If you are sure that there is nothing to save on your destination disk, type **y** and press the **Return** key. You will see the following message:

```
If you are not sure whether or not your disk needs to be initialized,
you should go ahead and mediainit it. Only skip this step if you are
sure your disk does not need to be re-initialized.
```

```
Do you want to mediainit your disk? (Enter y or n) >>
```

Step 12. Decide if you wish to initialize your disk, then load the core system.

Before installing the system your disk must be initialized. Initializing the disk takes between 4 and 50 minutes depending on your hard disk.

If you are re-installing AXE you probably do not need to re-initialize your disk. Type **n** and press the **Return** key to skip this step. The core system will be loaded onto your hard disk without disk initialization. The message on your screen will tell you the approximate time before you will need to interact with the system again. Continue with Step 13.

If this is the first time you are installing AXE on this disk or if you need to change your interleave factor (from the **FILESET** menu) type **y** and press the **Return** key to initialize your disk.

CAUTION

Do not switch off power to the computer or hard disk drive during disk initialization. Terminating the initialization process in this fashion may seriously corrupt the disk medium.

If you typed **y**, disk initialization begins. You will see the following message on your screen:

```
*****  
HP-UX INSTALLATION UTILITY -- EXECUTION TRACE  
*****
```

```
It will be about one hour before any input is required.  
Initializing: /dev/rhd
```

Figure 3-8. Beginning of Execution Trace

Both the source drive and your destination drive (hard disk) will be accessed during the initialization process. The media initialization process sets up your hard disk for normal use.

In addition to initializing your hard disk, the installation process creates a file system and copies some important files from your installation disk to your hard disk. The total time before you will need to interact with the installation process again is shown on your screen. This will depend on your destination disk drive.

You will see a trace of the steps that occur.

After awhile the first trace will disappear, and you will see the message:

```
Syncing discs...
```

AXE then automatically reboots. This takes about 2 minutes. When the reboot is finished the system loads more files. You will see another execution trace while the system loads the tools.

After loading the tools, you will be instructed to insert the second flexible disk. The screen will clear, and you will see a series of menus indicating that the CORE, TOOL, ACORE, and APAM file sets are being loaded. When these are loaded, your core system is installed. This means you have everything that is necessary to run your system.

You will now see the menu shown in Figure 3-9.

```
Partition: "SYS_CORE"           Media Number: "1"
*****
AXE UPDATE UTILITY -- FILE SET MENU
*****
select choice
```

```
Process ALL file sets
DISPLAY options for a new partition
EXIT update
CHANGE source device
CHANGE destination directory
```

```
MARK  LOAD  NEXT  PREVIOUS  SELECT  QUIT
```

Figure 3-9. Fileset Menu

Note that the heading now says "UPDATE UTILITY". This is exactly the same program as documented in the section "Installing Optional Software and Updating the Kernel" in both the *System Administrator Manual* (Chapter 4) and in the *Application Execution Environment User's Manual* (Chapter 9). You can now load the rest of your AXE system and the Programming Environment (PE), or you can exit and install them later using the procedure referenced above.

If you need to load additional AXE and PE file sets, or if you wish to install an optional software product, go to Step 13. If you wish to load only the core AXE system you are finished: go to Step 15 to exit. You should have made this decision when you filled out the Pre-Installation Checklist.

Step 13. Load additional file sets or optional products.

To load more file sets from AXE or PE, insert another disk of different color now. Each label color indicates a partition.

To install an optional product, insert a disk from that optional product now (it shouldn't matter which disk).

Use the **NEXT** and **PREVIOUS** softkeys to highlight the **DISPLAY options for a new partition**, and press the **SELECT** softkey. You will see a menu similar to that in Figure 3-9. The new partition name or product name will appear in the upper left corner and you will see all file sets from that partition or product listed on the menu.

Step 14. Choose and load file sets.

The file set menu is used to load one or more file sets in a partition or optional software product. The partition is a set of flexible disks with the same color label.

You have the following choices:

- If you wish to process all file sets in this partition, use the **NEXT** and **PREVIOUS** softkeys to highlight the **Process ALL file sets** menu item. Now do one of the following, either:
 - press the **MARK** softkey, then press the **LOAD** softkey. This will put an asterisk (*) next to all the file sets, then will copy all the file sets onto your system.
 - or press the **SELECT** softkey. This will copy all the file sets onto your system.

When you need to change disks, you will see the following message:

```
Fileset x is on media #N of xx,  
Press [RETURN] to unload media or enter s to skip:
```

Remove the current flexible disk and insert the requested disk. Then press the **Return** key to continue loading.

When all the file sets have been loaded onto your system, you will return to the menu shown in Figure 3-9. You can now either exit the installation (Step 15) or install file sets from another partition or install another optional software product (Step 13).

- If you wish to process only selected file sets, do one of the following, either:
 - use the **MARK** softkey to mark all file sets you wish loaded. When all desired file sets are marked (they have an asterisk beside them), press the **LOAD** softkey.
 - or use the **SELECT** softkey to immediately copy the file set from the flexible disk to your hard disk.

If a file set is on another flexible disk you will be see the message:

Fileset *x* is on media #*N* of *xx*,
Press [RETURN] to unload media or enter *s* to skip:

Remove the current flexible disk and insert the requested disk. Then press the [Return] key to continue loading.

You may get the above message for file sets you did not choose. This is because some file sets are **dependent** on other file sets. This means that for functions in one file set to work, another file set (the dependent file set) must also be present. The program will automatically load all dependencies, even if you did not select or mark them.

You will be returned to the menu shown in Figure 3-9. Any file sets that were loaded will not be on the menu. You can now either exit the installation program (Step 15), mark and load more file sets (beginning of Step 14), install file sets from another partition (Step 13), or install another optional software product (Step 13).

Step 15. Leave the install program.

After you finish installing the mandatory operating system (Step 11) and the optional pieces you want (Steps 13 and 14) you can exit the install/update program. Select the **EXIT update** option on the main menu. The program will inform you that it is unloading the media, then will reboot.

You will see the prompt:

Enter the correct date (Format MMDDhhmm[yy]):

The date will be incorrect. Respond to the prompt with [n] [Return]. The system may beep. This is because the line crosses the right margin set on the display.

You will have one minute to enter a new date and time. Go to page 43 for a description of the information to enter.

Installing AXE from Cartridge Tape

4

If you are installing AXE from flexible disk, go to Chapter 3, "Installing AXE from Flexible Disk".

Note

The whole installation process can take anywhere from one to three hours depending upon the size of the disk being initialized and the number of products you decide to load.

You are now ready to install AXE.

Step 1. Turn on the source and destination devices.

The **destination device** is the hard disk drive that will contain your operating system when you have finished installing AXE. The **source device** is the cartridge tape drive you will use to load the operating system from.

Step 2. Write-enable and insert the installation tape.

The write-protect mechanism is on the top, rear, left-hand corner of the cartridge tape and is labelled "SAFE" (refer to Figure 4-1). Make sure the arrow on the protect screw points away from the word SAFE. If it does not, use a coin or screwdriver to turn the protect screw such that the arrow points away from the word SAFE. For the installation process to be successful, your system **must** be able to write to the media.

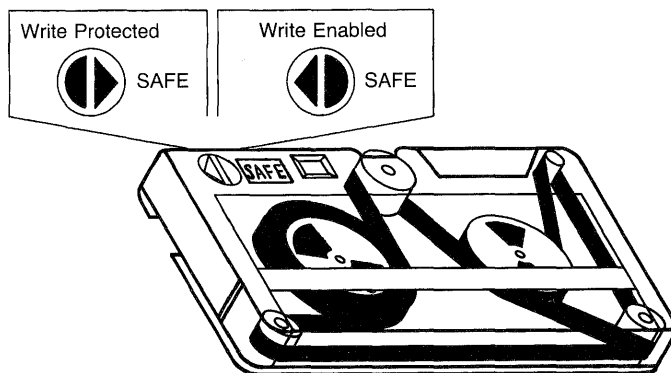


Figure 4-1. Tape Write-Protect Mechanism

Holding the cartridge tape with the label end toward you, insert it into the tape drive door and push until it clicks into place. The BUSY indicator should now be lit. The tape drive will begin a cartridge tape conditioning sequence that takes approximately two minutes. When the BUSY indicator light remains off, continue the installation procedure with Step 3.

Step 3. Turn on power to your computer and system console (or cycle power).

Turn on your computer and system console display. If your computer is already on, cycle power (turn it off, then, after a few seconds, turn it back on).

If you have a bootable system currently on your disk, you need to immediately hold the space bar down during the boot ROM power-up sequence, and continue holding it down until the word "keyboard" appears on the left side of your screen. Although you do not see any immediate response, this stops the boot ROM from automatically booting an operating system.

You will see a series of messages on your console **similar** to those shown in Figure 4-2. If you do not see messages similar to Figure 4-2 check your hardware, system console address, and interface cards.

If you have a new disk you do not need to hold down the space bar. Your system will automatically boot from the installation tape. Proceed now to Step 5.

Copyright 1985,
Hewlett-Packard Company.
All Rights Reserved.

:HP9144TAPE,1402, 0, 0
1H SYSHPUX

BOOTROM REV.A
Bit Mapped Display
MC68020 Processor
MC68881 Coprocessor
Keyboard
HP-IB
HP98644 at 9
HP98625 at 14
2096992 Bytes

SEARCHING FOR A SYSTEM (RETURN To Pause)
RESET To Power-Up

Figure 4-2. First Installation Messages

Step 4. Choose the correct operating system (boot ROM attended mode only).

If your system automatically booted to the installation tape in Step 3, go to Step 5.

If you entered the boot ROM's attended mode in Step 3, you must now choose the correct operating system. If you do not have any operating system currently on your hard disk (i.e. your equipment is new or reinitialized) the only operating system will be on your installation tape.

On the right side of your screen, you will see one or more HP product numbers, followed by a list of operating systems found on the drive associated with the product number. Choose the AXE operating system (SYSHPUX) corresponding to the product number of the tape drive that contains the installation media. In the example shown in Figure 4-2, using an HP 9144 tape drive for installation, type . If you already have an operating system on your hard disk the correct choice for installation may be or .

Step 5. Choose the correct installation interface.

Once you have chosen an operating system (either from the attended mode in Step 4 or by default), the screen will clear and the following message appears on the screen:

```
Booting /hp-ux
```

The system now starts loading the AXE operating system off the installation tape. It will take several minutes (2 to 5) for the installation program to load onto the hard disk. You will see bootup messages pertaining to the system configuration, how much memory is left, and the system copyrights.

The AXE operating system now loads some more information, then the copyright information will disappear and the following message will appear:

```
The install process has two different interfaces. The main
interface is intended for the majority of users but requires an
hp terminal other than an hp2621, hp2645, hp2646, hp2647, or hp2648.
```

```
The second interface is for users who have non-hp terminals
and it does not use any of the special print sequences for
highlighting or cursor movement.
```

```
Do you want to use the main interface? (y or n) >>
```

If your system console is an HP terminal type `y` and press the key. The main interface allows you to interact with the install process using softkeys. This is the method described in this manual. Your system console is considered an HP terminal if it is manufactured by Hewlett-Packard and it is **not** an HP 2621, HP 2645, HP 2646, HP 2647, or HP 2648.

If your system console is not an HP terminal type n and press the **Return** key. You will have a scrolling interface rather than the main interface. You will be asked to type letters or numbers to choose options. The rest of the manual assumes you are using the main interface but the scrolling interface looks similar. Your system console is not an HP terminal if:

- it is not manufactured by Hewlett-Packard
- it is a Hewlett-Packard model HP 2621, HP 2645, HP 2646, HP 2647, or HP 2648.

You will see a menu similar to that shown in Figure 4-3.

```
*****
HP-UX INSTALLATION UTILITY -- MAIN MENU
*****

Source Device                                Destination Device

Major number   =   4                        Major Number   =   0
Select code    =  14                        Select code     =  14
Bus address    =   2                        Bus address     =   2
Unit number    =   0                        Unit number     =   0
Volume number  =   0                        Volume number    =   0


Description

CONTINUE installation process
change DESTINATION device
EXIT installation process
change FILESYSTEM parameters


NEXT PREVIOUS SELECT QUIT
```

Figure 4-3. Main Menu

This screen shows you the source address (cartridge tape drive) and default destination address (root disk drive).

The source device address will be correct.

If you have an integrated cartridge tape and hard disk drive, the destination device address will also be correct. Go to Step 7 to continue.

An integrated device means that both the cartridge tape drive (the source device) and the hard disk drive (the destination device) are housed in the same box. This includes the following units: HP 7908, HP 7911, HP 7912, HP 7914, HP 7942 or HP 7946.

If you do not have an integrated device, you must change the destination device address. Go to Step 6 to change the destination device address.

Step 6. Change the destination device.

Use the **NEXT** and **PREVIOUS** softkeys to highlight the **change DESTINATION device** menu item, and press the **SELECT** softkey. You will see a menu similar to that shown in Figure 4-4. You will be asked for the destination device's major number, select code, bus address, unit number, and volume number. These are discussed in your *Peripheral Installation Guide*, and should be written on your pre-installation checklist.

```
*****
HP-UX INSTALLATION UTILITY -- DEVICE MENU
*****

Destination Device

Major Number      0
Select code       14
Bus address       2
Unit number       0
Volume number     0

Destination Device: Major Number? >>
```

Figure 4-4. Destination Device Menu

For each part of the address, type in the new value followed by **[Return]**. If the requested part of the address is correct, simply enter **[Return]** to keep the old value.

When you are finished changing the values, the message **Checking destination, please wait.** will be displayed on the screen. This check takes about one minute.

If the values seem to be ok, you will be returned to the main menu shown in Figure 4-3. The new menu will reflect any changes you made to the Destination Device address information.

Two common errors (and error messages) are:

- Source device cannot equal destination device
Hit [Return] to continue >>

This indicates that the addressing information for the source and destination device are the same. Since that is impossible (or dangerous if true), the installation process will not accept these values. Check the hardware connections, and if necessary change the switch settings, then input the numbers again.

- Cannot read this device. Make sure it's on and you have the correct address
Hit [Return] to continue >>

You will receive this message if the installation process cannot read the destination device at the address you specified. This may be because the device was not turned on. If so, turn it on and press the **[Return]** key to continue. This message may also mean there is no device at the select code you specified. If so, verify the select code, then press the **[Return]** key. You will be returned to Figure 4-4. Re-enter the correct address information.

Step 7. Verify (or change) the file system parameters.

If you need to change any file system parameters or any disk parameters, you need to go to the FILESYSTEM menu. Change these **only** if your application requires you to change them or if you thoroughly understand what you are doing. **Most systems will not need to change these parameters.** The parameters are shown in the menu in Figure 4-5.

Swap space is the only common parameter to change, and you will have a chance to change it in Step 9. If you do not intend to change the file system parameters, or need to change only the swap space, continue the installation with Step 8.

If you need to change block size, fragment size, interleave factor, free space threshold, disk rpm, or bytes per inode, then select the **change FILESYSTEM parameters** menu item. Loading the FILESYSTEM parameters menu takes about one minute.

If you have an HP 913x or HP 915x disk drive you will be asked the following questions now (refer to the Pre-Installation Checklist):

Will your root disc be on a 98625A/B (disc HP-IB interface card)? [y/n] >>

Does your system have a 98620B (DMA) card? [y/n] >>

You will now see a menu similar to that shown in Figure 4-5. The swap size and disk rpms may vary depending on your hard disk.

```
*****
HP-UX INSTALLATION UTILITY -- FILESYSTEM PARAMETERS MENU
*****

Swap Size (512 byte blocks): 20496      Interleave Factor:      1
Block Size (bytes):          8192      Free Space Threshold(%): 10
Fragment Size(bytes):        1024      Rpms of the disc:       3600
                                   Density- bytes / inode: 2048

                        Description

                        QUIT (Return to main menu)
                        change disc BLOCK size
                        change DENSITY (bytes per inode)
                        change disc FRAGMENT size
                        change disc INTERLEAVE factor
                        change disc RPMS
                        change disc SWAP size
                        change disc free space THRESHOLD size
```

```

NEXT PREVIOUS SELECT QUIT
```

Figure 4-5. File System Parameters Menu

Use the **NEXT** and **PREVIOUS** softkeys to highlight the value you need to change, then press the **SELECT** softkey. You will see a line on the bottom of your screen asking for the new value. For example, if you wish to change the fragment size, you would see the line:

Fragment size >>

Enter the new value followed by a **Return**. The installation process will perform some error checking, then will enter the new value in the menu.

When you have changed the parameters you want, press the **QUIT** softkey to return to the main menu, and go to step 8.

Step 8. Continue the installation process.

Using the **NEXT** and **PREVIOUS** softkeys, highlight the **CONTINUE** installation process menu item and press the **SELECT** softkey. Loading this menu takes about one minute.

The system will check your destination device. If you have an HP 913x or HP 915x and did not enter the **FILESYSTEM** menu, you will get the following messages:

Will your root disc be on a 98625A/B (disc HP-IB interface card)? [y/n] >>

Does your system have a 98620B (DMA) card? [y/n] >>

You should be able to answer these questions from the pre-installation checklist. When you have answered these questions, the installation will continue.

You will see a message similar to that shown in Figure 4-6 (the amount of swap space will vary with the destination disk). Go to step 9 for instructions on Figure 4-6.

```
*****
HP-UX INSTALLATION UTILITY -- SWAP SPACE VERIFICATION
*****
```

```
The current swap space is xxxxx blocks (1 block = 512 bytes).
Is this correct? (Enter y or n) >>
```

Figure 4-6. Swap Space Verification Menu

Step 9. Verify the swap size.

Compare your total swap space requirements from the Pre-Installation Checklist with the default swap space shown in the menu. **If you do not have enough swap space and you do not change the swap space size now, you may need to re-install AXE later.**

If your total is less than the swap space shown, do not change the swap space. Type y and press the key.

If your total is more than the swap space shown, type n and press the key. You will be prompted to enter the new value. The system will configure the swap space to be an appropriate value close to the number you request.

In either case, you will see the following message, warning you of how important this value is:

The swap space cannot easily be changed once the system is installed.
If you are going to install an application after installing the AXE system
you may wish to consult the application manual to make sure your swap space
is correct.

Are you sure that xxxxx blocks is correct? (Enter y or n) >>

If the swap space is still not correct, type n and press the key. You will be prompted to enter a new value.

If the swap space is correct, type y and press the key. You will see the menu in Figure 4-7.

```
*****
HP-UX INSTALLATION UTILITY -- INSTALL MENU
*****
```

DESTINATION DEVICE

Major Number	0
Select Code	14
Bus Address	0
Unit Number	0
Volume Number	0

Description

QUIT, return to main menu
BEGIN installation

☐ NEXT ☐ PREVIOUS

☐ SELECT

☐ QUIT

Figure 4-7. Installation Device Menu

This menu is shown so you can verify the correct address for the destination device. From this menu you can either go back to the main menu to begin again, or you can continue the installation process by following the instructions in Step 10.

Step 10. Continue the installation process.

If the destination device information is correct, use the **NEXT** and **PREVIOUS** softkeys to highlight the **BEGIN** installation menu item. Go to Step 11.

Step 11. Verify there is nothing to save on your destination disk.

The following message and prompt appears on your screen:

```
WARNING !!!!! Proceeding will DESTROY the contents of unit xxx, volume xxx
of the Destination Device, do you want to proceed? (Enter y or n) >>
```

If you think that any of the parameters you entered on previous menus are wrong, or if you do not wish to erase any information on the destination disk, type **n** and press the **Return** key. Answering **n** will return you to the Main Menu (Figure 4-3).

If you are sure that there is nothing to save on your destination disk, type **y** and press the **Return** key. You will see the following message:

```
If you are not sure whether or not your disk needs to be initialized,
you should go ahead and mediainit it. Only skip this step if you are
sure your disk does not need to be re-initialized.
```

```
Do you want to mediainit your disk? (Enter y or n) >>
```

Step 12. Decide if you wish to initialize your disk, then load the core system.

Before installing the system your disk must be initialized. Initializing the disk takes between 4 and 50 minutes depending on your hard disk.

If you are re-installing AXE you probably do not need to re-initialize your disk. Type **n** and press the **Return** key to skip this step. The core system will be loaded onto your hard disk without disk initialization. The message on your screen will tell you the approximate time before you will need to interact with the system again. Continue with Step 13.

If this is the first time you are installing AXE on this disk or if you need to change your interleave factor (from the **FILESET** menu) type **y** and press the **Return** key to initialize your disk.

CAUTION

Do not switch off power to the computer or hard disk drive during disk initialization. Terminating the initialization process in this fashion may seriously corrupt the disk medium.

If you typed **y**, disk initialization begins. You will see the following message on your screen:

```
*****
HP-UX INSTALLATION UTILITY -- EXECUTION TRACE
*****

It will be about one hour before any input is required.
Initializing: /dev/rhd
```

Figure 4-8. Beginning of Execution Trace

Both the source drive and your destination drive (hard disk) will be accessed during the initialization process. The media initialization process sets up your hard disk for normal use.

In addition to initializing your hard disk, the installation process creates a file system and copies some important files from your installation tape to your hard disk. The total time before you will need to interact with the installation process again is shown on your screen. This will depend on your destination disk drive.

You will see a trace of the steps that occur.

After awhile the first trace will disappear, and you will see the message:

```
Syncing discs...
```

AXE then automatically reboots. This takes about 2 minutes. When the reboot is finished the system loads more files. You will see another execution trace while the system loads the tools.

After loading the tools, the screen will clear, and you will see a series of menus indicating that the CORE, TOOL, ACORE, and APAM file sets are being loaded. When these are loaded, your core system is installed. This means you have everything that is necessary to run your system.

Since you probably want to load more than the core (minimal) system, go to Step 13 to load additional pieces of the system.

Step 13. Load additional pieces of AXE, or load PE.

You will now see the menu shown in Figure 4-9. You have now loaded the core (minimal) AXE system. If you wish to load additional partitions and file sets from AXE, or if you wish to load partitions and file sets from PE, do this step. If you have loaded all the AXE and PE partitions and file sets you wish, and you now want to load optional software products, go to step 14. If you are finished loading all AXE and PE partitions and file sets, and all optional software products, or if you want only the core system, go to Step 15 to exit the installation process.

Partition "AXE-MU" Media Number "1"

AXE UPDATE UTILITY -- MAIN MENU

Select Choice

Load "TEXT" partition
Load "SYS_TOOLS" partition
Load "PROG_LANGS" partition
Load "MISC_UTILS" partition

Process ALL partitions
DISPLAY options for a new partition
EXIT update
CHANGE source device
CHANGE destination directory

MARK

LOAD

NEXT

PREVIOUS

SELECT

QUIT

Figure 4-9. Partition Menu for Update on Cartridge Tape

Note that the heading now says "UPDATE UTILITY". This is exactly the same program as documented in the section "Installing Optional Software and Updating the Kernel" in both the *System Administrator Manual* (Chapter 4) and in the *Application Execution Environment User's Manual* (Chapter 9). You can now load the rest of your AXE system and the Programming Environment (PE), or you can exit and install them later using the procedure referenced above.

When you filled out the Pre-Installation Checklist, you choose the file sets you wanted to load onto your system. Use the information from the checklist to make the following choices:

- If you wish to load all files from this tape, use the **NEXT** and **PREVIOUS** softkeys to move to the **Process ALL partitions** menu item. You can now do one of the following:
 - press the **MARK** softkey to put an asterisk (*) to the left of each partition, then press the **LOAD** softkey. You will see the following message:

Do you really want to load? (Enter y or n) >>

Type y and press the key.

- Press the softkey. The program will load all partitions and file sets from this software product. You will be returned to the menu in Figure 4-11 when everything is loaded.

It takes approximately one hour to load everything from one tape.

If you wish to load PE or other software products, select the **DISPLAY options for a new partition** menu item. The program will now prompt you to insert new media so it can read the contents of the new media. Insert the new media and press . If you are loading PE, you will notice that many of the partition names are the same as in AXE. Continue with the beginning of Step 13.

- If you wish to process only some partitions, use the **NEXT** and **PREVIOUS** softkeys to move to the **Load xxxxxx partition** menu item, and press the **MARK** softkey.

When you press the **MARK** softkey, an asterisk (*) appears to the left of the item. If you wish to cancel a selection, press **MARK** again and the asterisk disappears. Pressing **MARK** by itself does not load any software.

Press the **LOAD** softkey after marking the necessary menu entries. You will see the following message:

Do you really want to load? (Enter y or n) >>

Type y and press the key. All items with asterisks are loaded.

You will be returned to the menu shown in Figure 4-9. All partitions you loaded will no longer show on the menu. If you have loaded all the partitions you wish, go to Step 15 to exit the installation procedure.

If you wish to load PE or other software products, select the **DISPLAY options** for a **new partition** menu item. The program will now prompt you to insert new media so it can read the contents of the new media. Insert the new media and press **Return**. If you are loading PE, you will notice that many of the partition names are the same as in AXE. Continue with the beginning of Step 13.

- If you wish to process only a part of a partition, use the **NEXT** and **PREVIOUS** softkeys to move to the **LOAD xxxxxx partition** item, where **xxxxxx** is the partition you want. Then press the **SELECT** softkey to move to the File Set Menu (see Figure 4-10). Loading file sets is described in Step 14.

Step 14. Choose file sets.

You will perform this step only if you wish to choose specific file sets from the AXE or PE tape, or if you are installing optional software products.

If you do not have optional software products to install, and you have processed all the partitions you wish from the AXE and PE disks, continue with step 15 to exit the install process.

The file set menu is used to load one or more file sets in a partition or to load optional software products. The partition name appears on the upper left segment of the screen.

```

Partition: "MISC_UTILS"           Media Number: "1"
*****
AXE UPDATE UTILITY -- FILE SET MENU
*****
select choice

Load "ACONFIG" fileset
Load "ATRMINFO" fileset

Process ALL file sets
Use the [Quit] softkey to exit the menu

```

MARK LOAD NEXT PREVIOUS SELECT QUIT

Figure 4-10. File Set Menu for Updates on Cartridge Tape

Use the **MARK** softkey to mark all file sets you wish loaded. If you exit this menu and go back to the Partition Menu, all of your marks made previously are preserved. When you press the **LOAD** softkey while in either the File Set Menu or the Partition Menu, all the marked menu items will be loaded, including those in other partitions that you previously marked and not yet loaded. Once a file set is loaded, its mark is removed.

If you mark a subset of the file sets, then return to the Partition Menu, the menu will display a "+" to the left of the partially marked partition.

When you have marked all the partitions and file sets you wish loaded onto your system press the **LOAD** softkey from either the Partition Menu or from the File Set Menu.

This will load all the marked file sets onto your system.

If you marked and loaded all file sets you will now be at the menu shown in Figure 4-11. You can now either exit the program (Step 15) or you can install another optional software product by inserting another product into the tape drive, choosing the **DISPLAY options for a new partition** menu item, and continuing with Step 13.

If you marked and loaded only selected file sets, and you are installing AXE or PE partitions, you will be returned to the menu shown in Figure 4-9. Any partitions that were completely loaded will not be on the menu. If you go to the file set menu, any file sets that were loaded will not be on the menu. All file sets and partitions that were not completely loaded will still be on the menu. You can now either exit the program (Step 15), mark and load more partitions and file sets (step 13), or you can install another optional software product by inserting another product into the tape drive, choosing the **DISPLAY options for a new partition** menu item, and continuing with Step 13.

If you marked and loaded only selected file sets, and you are installing optional software products, you will be returned to the menu shown in Figure 4-10. Any file sets that were loaded will not be on the menu. You can now either exit the program (Step 15), mark and load more partitions and file sets (step 13), or you can install another optional software product by inserting another product into the tape drive, choosing the **DISPLAY options for a new partition** menu item, and continuing with Step 13.

```

*****
AXE UPDATE UTILITY -- MAIN MENU
*****
Select Choice

Source Device                                Destination Folder

/dev/update.src                             /
Major Number      = 0                      Major Number      = 0
Select Code       = 14                     Select Code       = 14
Bus Address       = 2                      Bus Address       = 0
Unit Number       = 1                      Unit Number       = 0
Volume Number     = 0                      Volume Number     = 0

DISPLAY options for a new partition
EXIT update
CHANGE source device
CHANGE destination directory

[ ] [ ] [ ] NEXT [ ] PREVIOUS [ ] [ ] SELECT [ ] [ ] QUIT [ ]

```

Figure 4-11. Main Utility Menu

Step 15. Leave the install program.

After you finish installing the mandatory operating system (Step 11) and the optional pieces you want (Steps 13 and 14) you can exit the install/update program. Select the **EXIT update** option on the main menu. The program will inform you that it is unloading the media, which will take a few minutes.

After unloading the media, the system reboots. You will see the prompt:

Enter the correct date (Format MMDDhhmm[yy]):

The displayed date will be incorrect. Respond to the prompt with . The system may beep. This is because the line crosses the right margin set on the display. You will have one minute to enter a new date and time. Go to page 43 for a description of the information to enter.

After Installing AXE

Your AXE system is now installed. Before you can take control, however, AXE requires you to complete some set-up information. Steps 1 through 3 in this chapter describe the required set-up information. Steps 4 through 12 describe several tasks to help protect your system.

If, during any of these steps, you wish to quit and shut off your system, refer to Step 12 for instructions on shutting down the system. **Do not simply turn off power.**

Step 1. Set the date and time.

When you exited the installation procedure, the system rebooted and prompted you for a new date. You should now supply the correct date and time. If the prompt **timed-out** (ie, waited one minute, then continued), you can change the date and time information the next time you boot the system, or you can change it after you are finished with the steps in this chapter. To change it you will use the procedures in "Setting the System Clock" in either the *Application Execution Environment User's Manual* or in the *System Administrator Manual*.

The format for the date and time is:

`MMDDhhmm[yy]`

where `MM` is a two digit integer representing the month. For example, 03 represents March.

`dd` is a two digit integer representing the day of the month. For example, 02 represents the second day of the month.

`hh` is a two digit integer specifying the current hour in terms of a twenty-four hour clock. For example, 03 specifies 3:00 am and 14 specifies 2:00 pm.

`mm` is a two digit integer specifying the number of minutes past the stated hour. For example, 04 specifies four minutes past the hour.

`{yy}` is an optional two digit integer specifying the last two digits of the current year. For example, 84 specifies 1984 as the current year. This parameter may be omitted if the year is already correct.

After typing in the date, the system again asks you to confirm the date. Once confirmed, the system reboots again, and comes up in the screen shown in Figure 5-1.

```

*****
RECONFIG -- SET USER ACCESS
*****

User Access Mode:          <undefined>

The user access modes are:

Single User with PAM      Users must Login

Installation has just completed, you must choose
the mode in which users will access the system.
Use [Next]/[Previous] and [Select] to make your choice.

User Access Mode? >> <undefined>

```

RESTORE NEXT PREVIOUS HELP SELECT MAINMENU

Figure 5-1. Set User Access Menu After Installation

Step 2. Set user access to the system.

There are two types of user access for your system:

- **Single User with PAM**

This type of access does not require a login prompt for users to access the system. With this type of access, every time you boot up your system, you will come up in the PAM shell without a login prompt. Do not use this if you have a multi-user system or if you wish your system to be secure from malicious users.

- **Users must Login**

This type of access requires a login for each user before gaining access to the system. With this type of access, every time you boot up your system, you will be requested to log in. Your shell will depend on how the login was set up. You must choose this if you have a multi-user system.

Use the **NEXT** and **PREVIOUS** softkeys to choose the type of user access you wish.

When you **SELECT** the user access, you will see the following message:

Inittab file has been updated, press [Return] to continue >>

Press the Return key and continue with Step 3.

If you simply press the **MAINMENU** softkey without choosing a valid user access, you will see the following message:

INVALID: Response must be one of the displayed values.

Step 3. Exit the user access menu.

To exit this menu, press the **MAINMENU** softkey. You will see the main menu of **reconfig** on your screen (Figure 5-2).

From this menu you can exit the **reconfig** program or you can perform additional **reconfig** tasks such as adding a new user. To exit the **reconfig** program go to Step 4.

For more information on **reconfig** and the tasks you can perform from **reconfig** refer to the section "The reconfig Command" in Chapter 4 of the *System Administrator Manual*, or Chapter 9 of the *Application Execution Environment User's Manual*.

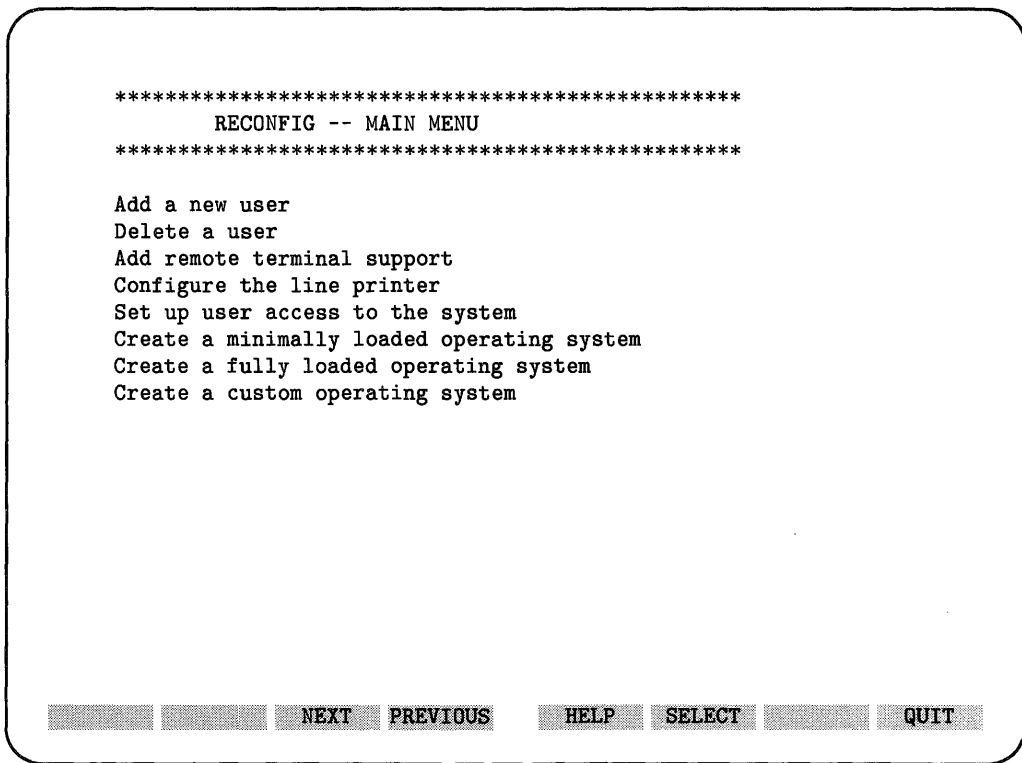


Figure 5-2. Reconfig Main Menu

Step 4. Exit the reconfig program.

Press the **QUIT** softkey from the main menu of reconfig. You will see the following message:

```
Wait while the system changes to init state 2 (allow 30 seconds).  
INIT:New run level:2
```

You will see init state 2 if you choose to require user access, and init state 1 if you choose not to require user access.

If you choose to require logins (Users must Login) the only way for you or your users to gain access to AXE is to complete a login request; the system must know who you are before it will let you execute any programs. There are four logins shipped with your system:

window When you log in you will get the *pam* shell inside a window. You must have HP Windows/9000 installed before you log in as "window". If you loaded all file sets from the AXE disks you will have HP Windows/9000 installed.

To exit this you must either access the HP Windows/9000 pop-up menu or enter the command: **wmstop**. Refer to Chapter 6 in the *Application Execution Environment User's Manual* for more information on using HP Windows/9000 and the pop-up menu.

nowindow When you log in you will get the PAM shell with no window. For more information on using the PAM shell, refer to Chapter 3 of the *Application Execution Environment User's Manual*.

root When you log in you will get the *Bourne shell* with no window. The "root" user has special status and is allowed to execute critical system commands not accessible by other users. Because of this, you must be careful when logged in as root. The root user can potentially damage the system.

You must be logged in as the root user to perform most administrative functions such as shutting down the system (**you must use the shutdown command when shutting down the system**), adding new users, and adding peripheral devices.

The "root" user is often called the super-user. These two terms are used interchangeably. However, when you log in as the super-user (or "root" user) your actual user name is **root**.

guest When you log in you will get a *restricted* shell with no window. The "guest" login should be used by people who should not have access to the whole AXE system. Anyone using AXE regularly should have their own login.

On a newly installed system, none of the four default logins have passwords. If you want to completely secure your system, you must assign a password to these logins. You should assign a password to all logins you create. **Your system is not secure unless root has a password.** Follow the guidelines in Chapter 2 of the *Application Execution Environment User's Manual*, the section "How To Change Your Password", to assign passwords to these default logins.

If you choose not to require logins (Single User with PAM) the system does not need to identify you before you have access. When you turn on your computer, you will be either in the PAM shell in a window (if you have installed HP Windows/9000) or not in a window (if you have not installed HP Windows/9000).

If you do not require logins, then each time you need to perform commands associated with the system administration duties you must become the “root” user by typing in:

```
su root
```

Step 5. Store your installation media in a safe place.

In case you need to load an additional file set, or in case you ever need to re-install AXE, you should store your cartridge tape or flexible disks in a safe place.

Step 6. Check for Additional Information.

Log in and check the following files and folders (or directories):

- The `/etc/newconfig/Update_info` folder contains files with software product update information.
- Any `/etc/update` error messages will be in the `/tmp/update.log` file.
- The file called `/etc/newconfig/README` contains information about your the files in `/etc/newconfig`.

Follow instructions in the above files, and instructions in the *Installation Notes* or *Read-Me-First*, if supplied.

Step 7. Create a recovery system,

A recovery system will allow you to boot up if your root disk is corrupted. It is very important that you create a recovery system. In case your root disk is corrupted, a recovery system may prevent you from having to re-install AXE and possibly losing all the files you have created.

For information on creating a recovery system, read the section, “Creating a Recovery System”, in the Chapter 4 of the *System Administrator Manual* or Chapter 9 of the *Application Execution Environment User’s Manual*.

Step 8. Set a password for root.

This is applicable only if your system requires logins. There are two ways to help secure login access to the user **root**: set a password for **root**, and restrict which terminal can be used to log in as the user **root**.

Setting the Password for Root

The root user is not shipped with a password. To protect your system, assign a password to the root user. To do this, log in as the root user (supply the name “root” when you receive the **login:** prompt). Then type the following (note the spelling is **passwd**, not **password**):

```
passwd
```

The system will prompt you for a password. The password must be at least seven characters and/or digits, one of which must be a digit or other non-alphabetic character. At the end of your password, press **[Return]**. Note that control characters like those generated by **[Back space]** are accepted but sometimes difficult to remember.

The password you enter is not displayed on the console. The system then prompts you to re-enter the password to confirm it. Do so and, if the two entries match, the program accepts the new password. If the two entries do not match, you will be prompted to enter a password twice again. The user **root** will now have to enter that password to login to the system.

Write down the password you assigned and store it in a secure place; if it is lost or forgotten, no one can log in as the super-user. If the super-user password is lost you need to use your recovery system or re-install your system.

Restricting the Port Device for Root

You can restrict which **tty** device (login communication port) the **root** user can use to login by creating a file called **/etc/securetty**. This file contains the device names of the **tty** files where the **root** user can log in. If you do not explicitly create this file, the user **root** may log in on any **tty** device.

The entries contain the name of the special device file for that **tty**, not the path name (i.e. **tty05**, not **/dev/tty05**). The file can contain more than one entry but only a single entry per line. The following is a typical **/etc/securetty** file with two entries:

```
console
tty05
```

To further prevent normal users from using the root login, change the permissions on the `su` command to grant read and execute permission only to the root user:

```
chmod 500 /bin/su
```

Step 9. Customize your system.

This includes tasks such as adding users, adding printers and other peripheral devices, and adding the proper entries to the `/etc/checklist` file. All of these tasks, and many more customization tasks, are described in Chapters 8 and 9 of the *Application Execution Environment User's Manual* and Chapters 4 and 5 of the *System Administrator Manual* (PE users only).

Step 10. Backup your system.

Make a backup of the entire system after you have customized your system. This is explained in the "Backing Up and Restoring the File System" section of Chapter 5 of the *System Administrator Manual* and Chapter 8 of the *Application Execution Environment User's Manual*.

Step 11. Make a copy of the `/etc/sbtab` file.

Once your printer is installed, print a copy of the `/etc/sbtab` file and put it in your system log book. This file contains alternate superblock locations. The information in it may be needed if your file system becomes corrupt.

Step 12. Properly shut down your system.

Every time you wish to turn power off to your system or wish to perform system administrative tasks **you must use the shutdown command**. If you do not follow the recommended procedure you might corrupt your system.

If you wish to turn power off, log in as the root user and execute the following command:

```
shutdown -h
```

You can now turn off the power on your system.

The procedures for shutting down your system are documented in the "System Startup and Shutdown" chapter of both the *Application Execution Environment User's Manual* and the *System Administrator Manual*.

Installation Errors

The following is a list of some the error messages that a user might see while installing AXE or an optional product with the Series 300 5.2 Install programs.

Recoverable Installation Errors

CONSOLE is

Root device major is

Swap device table:

panic: init

syncing disks...done

halted

The kernel failed to come up correctly. The most likely cause is a write-protected install media. Make sure that the media is write-enabled and reboot the system. If the media is write-enabled then either the media is bad or the you are not selecting the proper operating system from the choices offered by the boot ROM.

/etc/mkfs failed with status

Probably due to invalid parameters being set in the FILESYSTEM menu

Install process aborting.

One or more invalid parameters were probably set in the FILESYSTEM menu. You may wish to compare the parameters shown in the message with the description of legal values in *mkfs(1m)* and see if there is one that looks bad. If none of the FILESYSTEM parameters were changed from their default values it may be a hardware problem or a bad media.

Cannot mount /dev/hd, please make sure your device file is correct.

The destination device is incorrect or the *mkfs* did not work correctly. Re-run install and make sure you give it the correct destination device (major number, select code, bus address, unit number, and volume number). If you are sure this information was correct check any FILESYSTEM parameters that you set.

Invalid Destination directory.

Either you specified a non-existent directory or the product being unpacked does not allow any directory except / to be the destination.

Source special file <source device name> does not exist.

The device file specified for the source does not exist.

Invalid parameters for source device.

The device file specified for the source exists but is not a character device file.

Cannot read table of contents on <source device name>

Update cannot read the contents file from the source device. Make sure that the source device is correct and that the media is in the device specified by the source device. If you are using a tape make sure it is done conditioning and is locked in the drive.

If you have a usable system enter the following to see if your installation media has either a file called CONTENTS or a file called INDEX:

```
lifls /dev/update/src
```

Cannot read <fileset> on <source device name>

Update cannot read a file set off of the source device. Make sure that you have the correct media in the correct device. If you have a usable system enter the following to see if your installation media has the <fileset> name with an "A" on the front of it:

```
lifls /dev/update/src
```

Choice not valid

You tried to use the MARK softkey when the highlighted selection was LOAD. This is not allowed and does not have any specified action (other than to print out this message).

Non-Recoverable Installation Error Messages

The following install error messages should never occur. Most of them indicate a hardware problem or a bad media.

Copy of <filename> failed.

Update copies some special files after loading all of the other file sets that were selected or loaded. This message means that one of those copies failed and you probably don't have the file named in the message on your system.

Process cannot fork

The install process tried to fork a sub-process and failed. Make sure you have enough memory (1 Meg) and that it is installed correctly. The boot information in the upper left corner seen after powerup contains the amount of memory that the system has. You should also see if there are any other hardware problems. Otherwise it may be a bad media.

PANIC: EXEC failed

This message is similar to the above message, if you have enough memory and cannot find any hardware problems you may have a bad media.

newfs:

There was a problem copying the secondary boot program onto the destination disk. It could be a hardware problem or a bad media.

menu_module did not run properly

The menu_module is the part of the install process that handles all of the human interface. For some reason it aborted which it should never do. Re-run the install.

Error, could not read ...

Error, could not close ...

Error, could not link ...

Error, could not unlink ...

Error, could not open source file

Error, could not create destination file

There was a problem copying a file from the install media to the destination disk. Probably due to bad or corrupted source media.

ERROR, could not make new device file
ERROR, could not remove old device file

The install process needs to create a device file to talk to your destination device and was not able to do so. Probably due to a bad media.

Checking Tapes or Flexible Disks

If you have an install tape (and a usable system) you can create a block device which corresponds to `/dev/update.src` and mount the install media. You can then look at the files and see if they look reasonable. Also you can `fsck` the media.

To find out if an update tape may be bad try the following (the list of LIF files will vary with each product but you should not get an error):

```
lifls -l /dev/update.src
```

If you suspect a particular file set on the tape is bad enter:

```
mkdir /tmp/dummyroot  
cd /tmp/dummyroot  
lifcp -r /dev/update.src:<lif-file-name> - | cpio -idumvx
```

Where `<lif-file-name>` is the name you see when you execute `lifls` on the media. It corresponds to the file set name with an 'A' on the front of it. If you get any error messages from `cpio` or `lif` then the tape or flexible disk is probably bad.

One of the following two command lines should print out a table. If neither of these files exist then you have a bad media:

```
lifcp -a /dev/update.src:CONTENTS -
```

or

```
lifcp -a /dev/update.src:INDEX -
```

Glossary

The following are several terms you need to be familiar with when installing AXE.

AXE

Application Execution Environment. The operating system you will install.

destination disk

You will install AXE onto a hard disk drive that is referred to as the **destination disk** during the installation procedure. If you have information on your destination disk that you do not want destroyed, you must save the information now. The installation process will overwrite everything on your destination disk.

If you have never used this disk, you do not need to worry about this caution.

directory

A collection of files. Folder and directory mean exactly the same. Directory is the term used in PE manuals. Folder is the term used in AXE manuals since the PAM shell refers to folders.

display

Some people use the term **display** to refer to the CRT display. In this manual it is called a system console.

file set

A group of files. A file set is the smallest grouping of files you can load onto your system.

file system

The data storage structure on disk. Files and directories (or folders) are stored on the disk in a hierarchical structure. The file system organizes the files and directories and keeps track of where they are on the disk. The file system contains all of the files the system uses. Refer to Figure G-1 to see how the file system interacts with other parts of the operating system.

folder

A collection of files. Folder and directory mean exactly the same. Directory is the term used in PE manuals. Folder is the term used in AXE manuals since the PAM shell refers to folders.

HP-UX

HP-UX is Hewlett-Packard's enhanced version of UNIX. HP-UX is made up of the AXE operating system and PE.

kernel

The **kernel** is the level which manages the resources of the computer system. It keeps track of and interacts with all the devices such as disks, printers, communication, and memory. Refer to Figure G-1 to see how the kernel interacts with other parts of the system.

monitor

Some people use the term **monitor** to refer to the CRT display. In this manual it is called a system console.

partition

A group of file sets. If you need all file sets in a partition you can load the entire partition, rather than the individual file sets.

PE

Programming Environment. This is a set of HP-UX commands and utilities that runs on the AXE operating system.

shell

The **shell** is a command interpreter. It receives information from you (when you type commands, for example) and works as a supervisor, translating your requests into actions through the file system and kernel levels. The shell is what you see on the screen.

AXE has several shells available for your use:

- PAM shell located in the APAM file set (automatically loaded)
- C shell (`/bin/csh`) located in the ACMD file set
- Bourne shell (`/bin/sh`) located in the CORE file set (automatically loaded)
- Restricted Bourne shell (`/bin/rsh`) located in the CORE file set (automatically loaded)

A shell allows you to execute AXE commands. The PAM shell is described in a tutorial in Chapter 3 of the *Application Execution Environment User's Manual*. The other shells are described in reference form in on-line manual pages, in the *HP-UX Reference*, and in *A User Guide to the UNIX System*. Both AXE and PE have the on-line manual pages (refer to Appendix B of the *Application Execution Environment User's Manual*). The other two sources are shipped only with PE.

Refer to Figure G-1 to see how the shell interacts with other parts of the operating system.

source device

The flexible disk or cartridge tape drive that you will use to load AXE from.

system console

The **system console** is the first keyboard and display found by the Series 300 boot ROM. It is given a unique status by AXE and associated with the device file `/dev/console`. All boot ROM error messages, AXE system error messages, and certain system status messages are sent to the system console. Under certain conditions (for example, the single-user state), the system console provides the only mechanism for communicating with AXE.

If the installation process is not sending messages to your system console, refer to the "System Startup and Shutdown" chapter in either the *System Administrator Manual* or the *Application Execution Environment User's Manual* for a description of the system console and for the boot ROM search sequence for finding the system console.

terminal

In this manual, terminal refers to your system console unless otherwise stated.

utilities

AXE has many utilities, all stored in files. These files contain the instructions that tell the kernel what to do. An example of a utility is a sorting function. When a file is to be sorted, the utility instructs the kernel how to sort the file. The kernel then instructs the hardware to physically perform the sort.

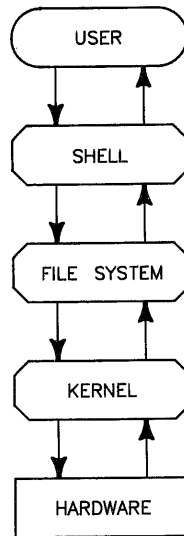


Figure G-1. Interaction Between Levels of the Operating System

Pre-Installation Checklist

1. File Sets and Partitions

- Load ALL AXE partitions: _____
- Load ALL PE partitions: _____
- Load selected AXE partitions and file sets (refer to the table below):

File Sets		File Sets		File Sets	
AWINDOW	<i>Sys-Tools</i>	AMANUAL	----	ACONFIG	----
ACMD	----	AC	----	ATRMINFO	----
ABCMD	<i>Sys-Tools</i>				

- Load selected AXE partitions and file sets (refer to the table below):

File Sets		File Sets		File Sets	
PCORE	<i>X¹</i>	PPERIPH	----	MWINDOW	<i>Sys-Tools 5ff</i>
PTEXT	----	PSCCS	----	PSTARBAS	<i>2</i>
HPUX_MAN	----	PACCT	----	DSTARBAS	<i>4</i>
PPROG	----	PAPPLIC	----	MSTARBAS	<i>4</i>
PC	----	PWINDOW	----	PSYSCOM	<i>4</i>
PFORTRAN	----	DWINDOW	----	PFILTER	<i>2</i>
				PCEUTIL	<i>2</i>

¹ You must load the PCORE file set (in the SYS_CORE parition) in PE. PE will not work without the PCORE file set.

2. Swap Space Required

Total swap space (in 512-byte blocks) required by your system: _____

Use this total in Step 9 during the installation.

3. Hardware information

3-a. Systems with HP 913x or HP 915x Disk Drives:

Does your system have a 98620B DMA card? _____

Will your destination (root) disk be connected to an HP98625A
high-speed HP-IB interface card? _____

3-b. Installing from Non-Integrated Devices:

Major Number	Always 0
Select Code	_____
Bus Address	_____
Unit Number	Always 0
Volume Number	Always 0









HP Part Number
98515-90010

Microfiche No. 98515-99010
Printed in U.S.A. 12/86



98515-90605

For Internal Use Only