HEWLETT PACKARD

HP 9000
Series 300/400
Computers

Installing and Updating HP-UX 9.0

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HP 9000 Series 300/400

HP Part No. B1864-90019
Printed in USA August, 1992

E0892

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Printing History

New editions of this manual will incorporate all material updated since the previous edition.

The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

August 1992 ... Edition 1.

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3. Installing HP-UX

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Introduction to HP-UX 9.0 Install/Update

This document explains how to perform three tasks:

- Install the 9.0 release of HP-UX on a Series 300/400 computer.
- Update your HP-UX system from an 8.x release to the 9.0 release.
- Update an existing 9.0 HP-UX system by adding software products to it.

The remainder of this chapter discusses the tasks.

You Must Function as a System Administrator

Checklist Item	Information and Tasks
Installation	The hardware/software system is totally shutdown when you begin an installation. You will be asked to perform tasks such as: connect and test devices, boot the system from install media, execute HP-UX commands, manage device files, interpret install screens, and edit customization files.
Post Installation	Immediately following an installation, you utilize various tools, utilities, daemons, and scripts that set up windowing, networking, printing, and so on.
Update	The hardware/software system is running when you begin an update, and you must be logged in as a system administrator.
Post Update	Immediately following an update, you should examine various files to make sure the updated system provides the new functionality you obtained while accommodating the functionality you had. You might also need to restore back-up copies of files.

You Can Get Additional Information

The following items describe documents you might want to use during or right after an installation or update:

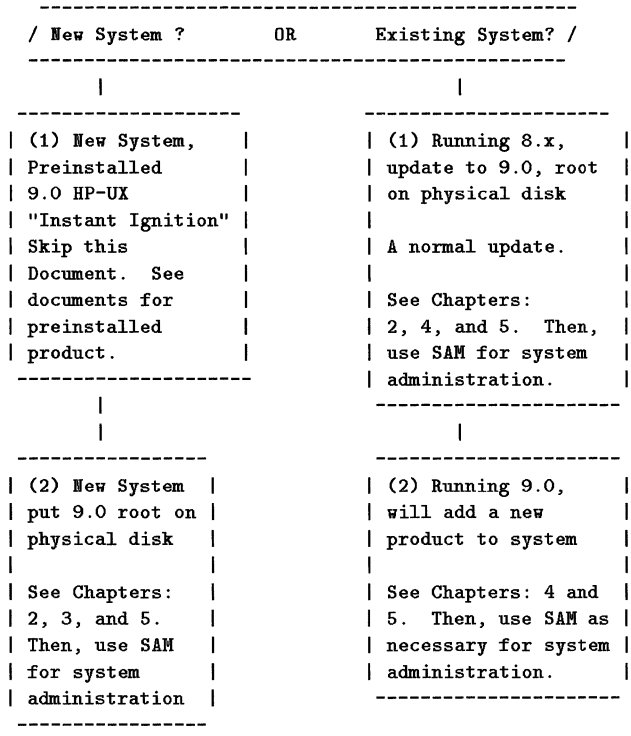
System Administration Tasks	You get information about such tasks as creating device files, using shell escapes, mounting file systems, shutting down the system, and editing customization files.
How HP-UX Works: Concepts for the System Administrator	Explains concepts related to system administration.
Installing Peripherals	Contains information about configuring peripherals. This includes port numbers, device information, select codes, minor numbers, and device files.
HP-UX Reference	A set of volumes that explain HP-UX commands. For example, you get information about commands such as *update*(1M), *mknod*(1M), and *rmfn*(1M).
Solving HP-UX Problems	Provides general information about how to recover from error conditions.
Finding HP-UX Information	This document is online only. After an installation or update, you can use the document to get information about other HP-UX documents.
Special Documents	For example, some products have readme first documents or release notes that you should read before performing an installation or update.

Identify Your Install or Update Situation

Your situation determines whether you perform an installation, perform an update from a previous release to the 9.0 release, or perform an update of the 9.0 release by adding non-core software products to it.

Checklist Item	Information and Tasks
Installation	Installing HP-UX places the 9.0 release on a root disk (or disks), overwriting files that exist on that disk (or disks). If you have no existing operating system, you simply perform an installation. You can have an existing system and need to perform an installation instead of an update (for example, your system crashed or you are running a release that predates an 8.x release).
Update	Updating HP-UX from an 8.x release to the 9.0 release modifies files as necessary and loads new files as necessary. The process does not destroy or alter your customized files.
Software	Adding non-core software to your existing 9.0 system does not destroy that system, but the update might alter some files and might configure a new kernel. You should note any special instructions in the documentation for your software.

The chart shows your alternatives for performing an installation or update. It also shows the chapters to read. If you cannot perform your update or installation, see your HP representative.



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Planning an Installation or Update

If you have already installed the 9.0 release or updated to the 9.0 release and you want only to add a product to that release, go to Chapter 4. Otherwise, plan your installation or update. The checklists in the steps will help you.

Step 1: Check Your Product (or Products) and Your Media

Checklist Item	Information and Tasks
Correct Product?	Examine your core HP-UX product. Be sure it is accommodates the correct number of users.
Multiple Products?	Your installation or update media might consist of several products. For example, you might have a core HP-UX 9.0 product such as the 8-User product and several application products such as ME-10 or SoftBench. If this is the case, you will need to install or update your core HP-UX system. Then, you will update the HP-UX 9.0 system to add each application. If you have more than one media unit (a cartridge, for example), use the documentation for your product (or products) to get the units into the correct order.
Media and Source Device Match?	HP-UX 9.0 media resides on a DDS tape cartridge, an HP cartridge tape (for example, 9144A), or a CD-ROM disc. Make sure your hardware system has a corresponding source device. For an update, the existing kernel must have a device driver for the source device. The *Installing Peripherals* document and the *System Administration Tasks* document have information about devices and device drivers.
Netdist Server?	Your system might have access to a netdist server, which is a system that can deliver install or update media. To use this source of media, see Appendix B, which describes the creation, use, and maintenance of a netdist server.

Step 2: Read Related Information Before You Begin

Checklist Item	Information and Tasks
Release Notes	Mention new, changed, or removed features in the 9.0 release. If you received a *9.0 Release Notes* document, you can examine the new, changed, and removed functionality before performing an installation or update.
README FIRST	Contains special information about the installation or update processes. You might also have *README FIRST* documents for other products. This information usually supplements the information you find in this document.
Hardware Documents	If an installation includes assembling a complete hardware system or if you add devices to an existing system, each device will have some type of documentation. Account for information in those documents before beginning an installation or update. Failing to install and test your devices can result in getting an error condition during an installation or update.

Step 3: Back up Your Existing System as Appropriate

This document does not explain back-up procedures. You decide if a backup is necessary. The *System Administration Tasks* document explains system backup.

Checklist Item	Information and Tasks
If you have no operating system	A backup does not apply. You perform an installation. Later, you set up a back-up procedure.
If you have a system and must do an installation	Backup all user files and data files. Also, for all your applications, make backup copies of files according to the documentation for the application. Later, after the installation, you can restore the backed up files.
If you do an update that modifies the kernel	Some updates add files that require building a new kernel. Such updates accommodate most configuration files, placing new versions of them in `/etc/newconfig`. HP suggests you take one of the following actions: 1. Make printouts of customized files and refer to them after an update. The following sections names the most common ones. 2. Collect customized files in a directory (for example, `/old`). Use *tar*(1) to make a tape archive of the files in `/old`. After the update, restore the files, editing them as desired.
If you do an update that adds files	No backup is required unless the documentation for a product says the update will build a new kernel. You must read to documentation that came with your product to determine this.

Files You Might Want to Back Up

You might want to make copies of the following customized files:

`/etc/group`	`/etc/inetd.conf`	`/etc/inittab`
`/etc/passwd`	`/etc/profile`	`/etc/services`
`/etc/vhe_list`	`/etc/checklist`	`/etc/rc`
`/etc/csh.login`	`/etc/mklp`	`/etc/netbsdsrc`
`/etc/letlinkrc`	`/etc/netnfssrc`	`/etc/powerfail`

You might also want to make copies of your *dot* files (for example, `.profile`, `.mailrc`). The *System Administration Tasks* document and other system administration documents (for example, administering networking) describe customized files.

After you perform an installation (or an update that modifies them), you can restore these files, editing them as necessary.

Step 4: Minimal System Requirements

Besides the minimums shown below, you might have additional requirements for such things as swap space, tools, utilities, facilities, environments, applications, languages, user files, data, graphics, printing, and plotting.

Checklist Item	Information and Tasks
Computer	Any Series 300/400 computer.
Memory	The minimum RAM is 8 MBs. Your HP Representative is your best source of information about installing an adequate amount of RAM.
Disk Drive	At least one hard-disk drive (for example, a C2213A disk) with at least the following capacities: ■ 200 MBs to install HP-UX and minimal applications. ■ 400 MBs for a standalone workstation. ■ 2 GBs or more for systems that run large applications.
Monitor or terminal	Any configurable monitor lets you to perform an installation or update. For an installation, the system console must be HP Term0, VT100, or Wyse30 capable. Your HP Representative has information about obtaining an appropriate monitor.

Checklist Item	Information and Tasks
Install-Update Media and Device	Examine your product and ensure that the system has an appropriate source device and device file. For tape media, make sure the heads on the tape drive are clean. The following items show possibilities: ■ Product on CD-ROM. Have a CD-ROM drive. Probable device file is `/dev/bsrc`). ■ Product on a DDS cartridge tape. Have a DDS cartridge tape drive. Probable device file is `/dev/rmt/0m`. ■ Product on a HP 9144 cartridge tape. Have a cartridge tape drive. Probable device file is `/dev/update.scr`). ■ Netdist server. Know the system hostname and the internet address. See Appendix B if necessary.
Codeword Device	You might need a codeword to complete an installation or update. A codeword is associated with the ID of a device. If you need a codeword, your system must have an associated device. Your HP Representative has information about this, and the *CD-ROM* booklet that came with your media has information about this.
Other Devices	Your system can also have any supported device. If you have an unsupported device, HP assumes no role in making the device function. The *Installing Peripherals* document has information about devices.

Step 5: You May Need to Obtain a Codeword

If your installation/update media is a CD-ROM disk having an ISO 9660 format and containing files intended to be copied onto an HP-UX file system by the *update*(1M) command, you have what is called a *Core* or *Application* disk. To use this type of disk for anything other than a 2-user runtime system, you *must* obtain a codeword that you enter during the installation/update process. You cannot use this type of disk as a boot disk, and you should not expect to execute commands from such a disk.

The following items provide information about obtaining a codeword, allowing that you should also consult a CD-ROM booklet.

- It is possible for one (or more) required codewords to appear on the *CD-ROM Certificate* you received with your product. Be sure you examine *ALL* the contents of the packages that contain your product, and take time to study the certificate. Keep the certificate handy because you will need to refer to the codeword (or codewords).
- Your certificate might not include a codeword. In this case, you need to obtain a codeword from Hewlett-Packard Company. The CD-ROM booklet that came with your CD-ROM disk has directions for obtaining the codeword. The process involves filling out a form, using a FAX machine to transmit the form to your HP Sales Office, and getting a returned FAX that has the codeword. If you do not have access to a FAX machine, you can make other arrangements with your HP Sales Office, but the procedure takes more time.
- If, for any reason, your CD-ROM does not have a certificate, contact your HP Representative to obtain one.
- Take the time to resolve questions you have regarding CD-ROMs, certificates, and codewords *before* you begin an installation or update. Not completing this prerequisite step might cause a delay in completing the installation or update.

Besides just getting a codeword, there are requirements for associating the codeword with hardware IDs.

- Your codeword is tied to the ID for a specific device in your hardware system. For example, your codeword might be tied to your SPU (System Processing Unit) or, perhaps, your HP-HIL ID module.
- The ID might not be the serial number. The CD-ROM booklet contains explanations, according to devices, for what you can use as the IDs for codewords.
- The device ID that is tied to your codeword might impact your use of a system. Consider the following situations:
  - If the codeword is tied to the ID of a SPU, the codeword will allow you to extract software *only* from a CD-ROM drive connected to that system (SPU).
  - If the codeword is tied to the ID of an HP-HIL module, you could move the module among systems, using the codeword to extract software on those systems.

Step 6: Decide on Having Long or Short Filenames

During an installation, you decide to have long or short filenames.

Checklist Item	Information and Tasks
Long Filenames	Copying files from a long-filename system to a short-filename system can result in a loss of data for filenames that become identical due to truncation. Otherwise, you get to use more descriptive filenames.
Short Filenames	Most previous releases were restricted to short filenames. You might have a situation that favors deciding to have short filenames.
Preinstalled HP-UX	If you have a *preinstalled* HP-UX and, for some reason, you need to reinstall that system, you must choose long filenames.
Recommendation	If you have sufficient disk space, you should specify long filenames.

Step 7: Obtain Information for Time and Networking

Checklist Item	Information and Tasks
Time Zone	An installation prompts you to enter a time zone. The *Using HP-UX with HP VUE* document has information.
Time and Date	An installation prompts you to enter the current time and data. See same document as above item.
Hostname and Internet Protocol Address	For a networked system, you enter the system hostname and internet address during an installation. For this information, see your network administrator, or see the *Installing and Administering LAN/9000* document.

Step 8: An Installation Via a Network

If you do not plan to do an installation over a network, skip this step.

Have Information About the Servers

Checklist Item	Information and Tasks
A netdist server	Ensure you can access a netdist server from your system (the *client system*). Your system will obtain media from the netdist server during an installation or update as if you had physical media, provided there is a network connection.
You must have addresses	Obtain the internet protocol address and port number of the netdist server. The *System Administration Tasks* document explains this. As well, your documentation about networking has information.
Local boot server	Ensure that your local LAN has a *local boot server* that can be used by the client system during the start-up process. The next section explains this.

A Local Boot Server

A *cold network install* differs from updating a system over the network. A cold network install allows a system to:

1. boot a client system from LAN via a local boot server,
2. construct a new filesystem on a new root disk, and
3. load software without the use of physical media.

Except for providing information about the networked systems, performing a cold network install is similar to performing an installation from physical media.

Restricting Access To The Boot Server

Checklist Item	Information and Tasks
The install boot server	By default, the server responds to any boot requests. It may be desirable to either temporarily disable the install boot server or to restrict access to a select few clients.
Restricting access	This is useful primarily for Series 300/400 clients. Because the default boot process for the Series 300/400 is to boot from the first available respondent, a Series 300/400 computer can accidentally boot from the install boot server instead of its normal device (server). This happens most often when a cluster server is shut down and its clients are allowed to boot from a different host that is configured as an install boot server (other than itself).
Disabling the install boot server	You edit edit the `/etc/boottab` file on the boot server and insert a **#** (comment character) in front of the line that begins `install:HPS300`. It should then read `#install:HPS300`, allowing that the entire line is not shown here. To enable the boot server at a later time, remove the comment character (**#**). If the file does not contain the line, but the line is preceded by a comment character, **#**, then delete that comment character. The default `/etc/boottab` file has the `HPS300` line commented out, and this line should be uncommented to enable install boot services for Series 300/400 clients.
Restricting host access	This occurs in steps, which are shown next.

1. Determine the LLA (Link Level Address) of all potential install clients and modify (or add) lines in the **/etc/boottab** file to contain their addresses.

   The LLA of a Series 300/400 client can be determined by observing the boot messages that appear during the start-up process. The LLA is a 12 digit hexadecimal number that usually has **080009** as the first 6 digits. Make a list of the addresses.

2. When the LLA's of the install clients are known, edit the **/etc/boottab** file and modify the appropriate line (assuming that only Series 300/400 clients are to be restricted). The following line shows an example:

   ```
   install:HPS300::SYSINSTALL:/usr/lib/uxinstkern.300,/usr/lib/uxinstfs.300
   ```

3. Modify the first field to contain a unique name other than **install**. It can be almost anything (for example, **inst1**).

4. Then insert one of the LLA's between double-colons. Replicate the line for each potential client using its LLA and a unique first field. When this is done, the lines should look something like the following ones:

   ```
   inst1:HPS300:080009008966:SYSINSTALL:/usr/lib/uxinstkern.300,/usr/lib/uxinstfs.300

   inst2:HPS300:080009094db0:SYSINSTALL:/usr/lib/uxinstkern.300,/usr/lib/uxinstfs.300
   ```

   Do not leave an entry with **install** as the first field or the boot services will not be restricted. The **install** keyword is special in this respect.

System Requirements

Checklist Item	Information and Tasks
Related information	Every local LAN that supports cold network installs must have a *local boot server*. The local boot server cannot be a client on an HP cluster, but it can be the internet gateway, an HP cluster server, or a networked system. The local boot server should be already running the 9.0 release of HP-UX and have about 4 MBs of free disk space on the same disk that has the `/usr/lib` directory. It also needs to run the `/etc/rbootd` daemon and have an `/etc/boottab` file, which is provided by the RBOOTD fileset. The kernel needs the `lan01` driver.
NET-INSTL-300 fileset	A local (install) boot server on the local LAN must have loaded the NET-INSTL-300 fileset. This works for Series 300 and 400 systems.
All desired filesets	A netdist server anywhere on the network must be available to distribute Series 300/400 HP-UX filesets (including the NET-INSTL-AUX fileset). (This can be the local boot server.)

Setting Up a Local Boot Server

One system on a local LAN needs to act as an install boot server if cold network installs are to be provided to Series 300/400 systems on that local LAN. The requirement is that any Series 300/400 system doing network install must be able to reach a local boot server via Ethernet/IEEE802.3 packets. Bridges are acceptable, and gateways or routers are not acceptable.

Checklist Item	Information and Tasks
Build server	Use `/etc/update` to load the NET-INSTL-300 fileset from the media to the local boot server. Load the RBOOTD fileset as well.
Edit `/etc/boottab`	The `/etc/boottab` file should contain: `install:HPS300:` If it does not contain the line, copy `/etc/newconfig/boottab` over the new `/etc/boottab`, merging any changes you had made to your existing `/etc/boottab` file.
Run required daemons	If the *rbootd*(1M) daemon is not already running, start it before using this system as a local boot server. You can find two examples of starting `/etc/rbootd` in the `/etc/newconfig/rc` file. Follow the example in which a LAN device file argument is provided. `/usr/bin/rtprio 64 /etc/rbootd $RBOOTD_DEVICES` For `$RBOOTD_DEVICES`, substitute a LAN device file such as `/dev/lan`.
Have the correct device file	Depending on which LAN card the install clients are connected to, `RBOOTD_DEVICES` should be set to the appropriate device file. For example, `RBOOTD_DEVICES="/dev/lan"`.

If the Local Boot Server is not an HP Cluster Server ...

The `rbootd` process is not normally started at boot time by `/etc/rc` when the local boot server is not also an HP cluster server. If you want `/etc/rbootd` to be started each time you start up the server, copy the 9.0 version of `/etc/newconfig/rc` to `/etc/rc`, preserving your customizations as necessary and editing the line:

```
RBOOTD_DEVICES=""
```

so it reads:

```
RBOOTD_DEVICES="/dev/lan"
```

If the Local Boot Server is an HP Cluster Server ...

The above setup does not interfere with the auto-booting of HP cluster cnodes. The `/etc/rbootd` does not serve install requests to any HP cluster cnodes that are configured on the boot server. If an install client appears in the boot server's `/etc/clusterconf`, the server refuses to act as a local boot server for that client. If an old HP cluster cnode wishes to do a network install, it must be removed from the HP cluster server's `/etc/clusterconf` file (Use SAM to remove the client completely).

Some Tips

You can make things easier for other people who perform network installs by setting up some default networking values. Use the *instl_adm*(1M) script. The *HP-UX Reference* document has information about using the script.

Step 9: Continue When Your Planning is Complete

When you have completed the planning steps that apply to your situation, continue by working through the chapters you identified in Chapter 1. Be aware that, in no situation, do you work sequentially through the remaining chapters.

3

Installing HP-UX

Please work through Chapters 1 and 2 to plan an installation before you use this chapter to perform one.

Step1: Have All Devices are Turned OFF

While it might not be mandatory to turn all devices OFF, doing so helps you install the 9.0 release without having problems.

If you Have a Running System ...

If you have a running system and you want to install the 9.0 release on that system, be sure you have done the following tasks:

Checklist Item	Information and Tasks
Be a system administrator	Log in as `root`.
Shutdown the system.	The *System Administration Tasks* document explains this.
Make the system quiet	Turn all devices OFF.

Step 2: Prepare Your Installation Media

You must set up your media so the install process can NOT write to the media.

Checklist Item	Information and Tasks
DDS cartridge tape	Have the write protect slidebar positioned so you can see *white* in the hole in the bottom of the cartridge. The documentation that came with the cartridge tape explains this.
HP 9144 cartridge tape	Have the write protect screw point to *SAFE*. The documentation that came with the cartridge tape explains this.
CD-ROM	Know the codeword if you need one.
Cartridge tape autochanger	Load the install tape in magazine slot 1 and load any update tapes in sequential order, starting in slot 2. Set the sequential/selective switch on the back of the tape drive to *sequential*. The documentation that came with the autochanger explains this.
Netdist server	Know the name and address of the local boot server and the netdist server.

When the media is ready, go on to the next step.

Step 3: Turn on Mass Storage Devices

Checklist Item	Information and Tasks
1) **Source device** ON	You will insert the 9.0 installation media into this drive. It must be ON. If the source device happens to be in a disk drive, turning on the disk drive also turns on the source device. Wait until the source drive is ready according to its documentation.
2) **System disks** ON	Turn on all the disks you plan to use in the installation. Wait until these disks are ready according to their documentation. If the disk is internal, turning the computer ON in a later step turns the disk on.
3) Load the media	When the source disk is running, load your install media (as opposed to any update media you might also have).
4) Problems?	If any drive is not ready, stop the installation and solve any problems related to it according to the documentation for the drive.

When the disks are running and the media is loaded, go on to the next step.

Step 4: Start Up the System

So far, you have turned ON only the drives for the *source* and *destination*.

This step continues the installation by having you turn on additional devices. You must control how this occurs, so you might want to read through this step before performing it.

Checklist Item	Information and Tasks
1) Turn monitor ON	If your terminal (monitor) has its own switch, turn that device ON.
2) Other devices OFF	Leave other peripheral devices such as a printer OFF until the installation is complete.
3) Turn expander ON	If you have an expander unit attached to your computer, turn that unit ON, but leave the computer OFF.
4) Turn Computer ON	Having turned the computer ON, look for messages to appear on the screen. Press and hold the *Space-Bar*. This causes the computer to search for devices to boot from. Release the *Space-Bar* when you see a message such as `Waiting System Selection` at the bottom of the screen.
5) Systems appear	In a few moments, a list of bootable devices appear in the upper left corner of the screen. Each device has one or more boot selection options, and a selection index such as `1I` precedes each option.

Checklist Item	Information and Tasks
6) Select a boot option	The installation device should eventually respond with a boot selection option that contains the word `SYSINSTALL`. The selection index will be `1I`. It might be `2I` if: 1. there is another installation device on the system, or 2. there is a network boot server. Begin the boot process by typing in the selection index followed by (Return).
If nothing happens	If the installation media does not respond, ensure that the installation media is inserted (as opposed to any update media). Also check ensure that the device is installed correctly and is turned on. If a network install boot server is expected to respond and does not do so after 30-40 seconds, then ensure that the server is running the `/etc/rbootd` process and that `/etc/boottab` is configured properly. Also, ensure that no gateway is separating the client from the boot server (See Chapter 2).

When the boot process has occurred, go on to the next step.

Step 5: Observe the Startup Process

This step simply shows the nature of the messages so you know the installation is continuing.

```
-------------------------------------------------------------------------
Loading RAM Filesystem
Booting /usr/lib/uxinstkern.300
    System Console is 98644 at select code 9

I/O System Configuration:
    MC68020 processor
    MC68881 coprocessor
    HP98620C DMA
    Internal HP-IB Interface - system controller at select code 7
    HP98644 RS-232C Serial Interface at select code 9
    HP98625B High-Speed HP-IB Interface - system controller at select code 14
    HP98643 at select code 21
    HP98544 Bit Mapped Display at 0x560000

Disk Information:
RAM fs image size = 1536000
    Root device major is 4, minor is 0xf00010, root site is 0
Warning: unable to configure dump device

Memory Information:
    Physical: 6652 Kbytes, lockable: 4148 Kbytes, available: 4248 Kbytes

-------------------------------------------------------------------------
```

If the startup is progressing, go on to the next step. Otherwise, you will need to shutdown and start the installation over.

Step 6: Account for Your Type of Terminal?

The install program normally detects your type of terminal. If it cannot do this, you see the following screen, which lets you specify your terminal type.

```
-------------------------------------------------------------------

The HP-UX installation utility requires information about the type
of terminal that you are using as the system console.
The terminals supported are:

    1)  HP      type terminals (80x24).
    2)  HP      Graphics displays (128x46).
    3)  VT100   type terminals.
    4)  Wyse 30 type terminals.

    Enter the number corresponding to the terminal type
    that best matches your terminal (default: 1):

-------------------------------------------------------------------
```

When you type the number for your terminal, the installation continues. Go on to the next step.

Step 7: Use the Main Install Screen

At this point, you should see the following screen.

```
-------------------------------------------------------------------------

@(#) $Revision: 68.24 install $

   Welcome to HP-UX install.  There are basically 4 steps to install-
   ing HP-UX, which this and another utility will lead you through.

   Step 1) Select the root "destination disk" and its characteristics.

   Step 2) Optionally modify the file system parameters pre-set
           for your chosen destination disk.

   Step 3) Optionally choose any other disks to be added to the system.
           This may be useful if root disk space is insufficient.

   Step 4) Choose the filesets (functional groups of files) which
           you want loaded onto the destination disk.

   A menu driven interface will guide you through the above steps.

      Press any key when you're ready to proceed to Step 1 >

-------------------------------------------------------------------------
```

Examine the screen and then type a key to go on to the next step.

Possible Step 8: If You do a Network Installation . . .

If you *are not* using a netdist server as a source of installation media, *skip this step.* You get the following screen only if you specified a LAN address as the source of installation media in an earlier step.

If a netdist server will be the source of installation media, you see the following screen.

```
-------------------------------------------------------------------
Since this is a network install, some extra information regarding
networking will be required.  Specifically, you will be asked to
provide:

1) The Internet Protocol address of this system.

2) The Internet Protocol address of the system running the netdist
   server.

3) The port number to use when connecting to the netdist server.

4) The Internet Protocol address of the Internet gateway or router
   between this system and the system running the netdist server.
   Depending on the network topology, a gateway might not be needed
   or it might be that no gateways exist.

5) A subnet mask, in either dot-notation (eg. '255.255.248.0') or as
   a hexadecimal value (eg. '0xfffff800').  This is required only if
   subnetting is in use on this network.

Press any key to continue. >

-------------------------------------------------------------------
```

When you have the information, press a key and continue on the next page.

Step 8, Substep A: Possible Site-specific Message/Screen

Depending on the configuration of your *instl_adm*(1M) utility, you might get a message related to a network install. If you get a message, note the information and continue.

Step 8, Substep B: Specify the Network Parameters

The following screen lets you set values for the parameters related to using a netdist server. The screen shows some default values that were set by running the *instl_adm*(1M) utility on the local boot server.

```
------------------------------------------------------------------------

    HP-UX INSTALLATION UTILITY  vv  NETWORK CONFIGURATION MENU


Internet protocol address (eg. 15.2.56.1) of this host [              ]

Internet protocol address of the netdist server system [15.1.48.3     ]

The port number (eg. 2106) of the netdist server.      [8050          ]

The internet protocol address of the gateway system
(If none is needed, enter 'none' or 'not required')    [none          ]

The subnet mask (eg. 255.255.248.0 or 0xfffff800)
(If none is needed, enter 'none' or 'not required')    [255.255.248.0 ]


   CTRL-X = Done,  CTRL-U = Undo changes,  ? = Help on current item.

------------------------------------------------------------------------
```

Enter the values required for your installation. Use arrow keys to highlight fields and type the values.

When you finish, type Ctrl-X *and go on to the next substep.*

Step 8, Substep C: Note Message and Take Any Necessary Actions

After you specify the values, you see several messages. Note them and, if necessary, take the suggested actions. The following items examine what happens:

- A brief message (network installs only) appears that looks like this:

  ```
  Bringing up network, and verifying netdist server connection.
  ```

- If the network connection cannot be made, you see:

  ```
  Network did not initialize correctly, would you like to
  change the network parameters?
  ```

  If you answer `Y`, the installation program takes you back to the screen in which you provided values for networking parameters.

  If you answer `N`, the installation assumes you cannot supply the information and aborts, letting you stop the installation.

- The system searches for disks connected to the system. You can select the root-disk, being aware that the types of disks can vary. The next substep deals with this.

Go on to Substep D.

Step 8, Substep D: Select the Root Destination Disk

The following screen appears to let you select the disk that will subsequently contain the root file system.

```
-------------------------------------------------------------------------

      HP-UX INSTALLATION UTILITY  vv ROOT DESTINATION MENU

  Select one of the following disks (name and system location)
  connected to your system to be the ROOT destination device for this
  installation.  Enter the item number, or highlight the item using
  the arrow keys and press Return.
  If the desired ROOT disk is not listed, make sure it is connected
  properly and turned on, then select the "Search Again" item.
  If your disk is STILL not recognized, you can use the
  "Other disk" item to manually enter the Disk address.

                  Slot  Bus  Unit
   Disk          Number Addr Num
   -------------------------------
1. QUANTUM PD210S  at  0  6    0
2. QUANTUM PD210S  at  0  5    0
3. Search Again
4. Other disk
5. Exit Install

Enter selection [1]

-------------------------------------------------------------------------
```

Select the disk for the root device, or use another option as suggested by the option name. If you select `Other disk`, you get a screen that lets you specify the disk according to its address.

Except for exiting, you must eventually select a disk and move to Step 8, Substep E.

Step 8, Substep E: Verify That the Disk is Desired

The installation program checks the selected disk and, if the disk already contains an HP-UX filesystem, the following message indicates this state.

```
Warning: There appears to be an HP-UX system already on this disk.
(Press any key to continue.)
```

You must press a key and continue by moving on to the next step.

Step 9: Choose the Type of Filenames for File Systems

```
----------------------------------------------------------------

                Root Filesystem Type Selection.

                 QUANTUM PD210S  at  0  6    0

This screen allows you to choose whether or not you want this filesystem
to allow long filenames (up to 255 characters); or if you want to
have the filenames restricted to 14 characters in length (short
filename system).  You may convert from a short filename filesystem
to a long filename filesystem at any future time, but once you have
a long filename filesystem you can't go back to a short filename
system.  (See also mkfs(1M) and convertfs(1M)).

Each individual filesystem (disk) on your system can be specified as
being long or short (it is not a system wide parameter).

    Do you want the root filesystem to allow long filenames? [y]

----------------------------------------------------------------
```

Type Y or N and move on to the next step.

Step 10: Use the Main Menu to Continue the Installation

The following screen shows the Main Menu.

```
-------------------------------------------------------------------------

                HP-UX INSTALLATION UTILITY -- MAIN MENU

              Major    Slot     Bus       Unit
              Number   Number   Address   Number     Model    Mount Point

     Source:   -1       0       -1        -1        Network
Root Device:    7       0        6         0        QUANTUM    /

      If the destination device shown above is correct, and you
      do not want to modify filesystem parameters or add any additional
      non-root filesystems, select the "CONTINUE" option below.

                  1. Continue Installation Process.
                  2. Change ROOT Destination Device.
                  3. Change ROOT Filesystem Type.
                  4. Change ROOT Filesystem Parameters.
                  5. Add a non-root Disk/Filesystem.
                  6. Modify/Display non-root Disks/Filesystems.
                  7. EXIT the Installation.

                  Enter selection [1]

-------------------------------------------------------------------------
```

Study the screen as necessary and decide what to do. The checklist items for this screen appear on the next page.

Checklist Item	Information and Tasks
Recommendation	HP highly recommends that you set up your system during planning and the previous install steps so you can continue at this point.
Continuing	Selecting 1 continues the installation. If you select other options, you will work through one or more additional screens. You must eventually continue or exit the installation.
Changing	If you do not continue (option 1), the following substeps indicate what appears or happens. No attempt is made to completely explain them. Use `Help` as required to work through the screens.
What if You Exit	Deciding to exit from the above screen aborts the entire installation.
Decision	Select one of the options from the screen and go on to the appropriate step or substep. You must eventually decide to continue, or exit.

Step 10, Substep X: Change Root Filesystem Parameters

While this menu lets you change the values of parameters, you should not change them unless you have expert knowledge. Appropriate defaults are offered, and you can change the swap size after you complete the installation.

The menu looks like this.

```
----------------------------------------------------------------

   HP-UX INSTALLATION UTILITY -- ROOT FILESYSTEM PARAMETERS MENU
          204287 Kb Disk: QUANTUM  D210S  at  0  6    0

The only parameter below that you may want to change is "Swap Size".
All others should be correct.

        Swap space (in 1024 byte blocks): [36987   ]

        Block size:                       [8192    ]\
        Fragment size:                    [1024    ] \
        Rotational Delay (millisec):      [dynamic ]  } File System
        Free Space Threshold (%):         [10      ]  } Parameters
        Density - bytes per inode:        [2048    ] /
        Cylinders per group:              [16      ]/
        1024 byte sectors per track:      [25      ]\
        Tracks per cylinder:              [7       ] } Hard Disk's
        RPMs of the disk:                 [3600    ] } Parameters
        Interleave Factor:                [0       ]/
        Run mediainit(1) on disk?         [n]


 CTRL-X = Done,  CTRL-U = Undo changes,  ? = Help on current item.

----------------------------------------------------------------
```

When you are ready, go on to the next substep, or go on to Step 11.

Step 10: Substep Y: Add a non-Root Disk/Filesystem

If you decide to specify an additional, non-root disk/filesystem, you use the following menu, and if you use the menu, you work through a series of menus that are much like the menus you have already seen. This substep shows the additional menus you will see, but it assumes you know how to specify values and make decisions. Use `Help` as required.

```
-------------------------------------------------------------------------

HP-UX INSTALLATION UTILITY  --  ADDITIONAL FILESYSTEM DESTINATION MENU

    Current Root Destination:     QUANTUM  D210S  at  0  6    0

If the disk shown below (name and system location) is the desired
destination device, press Return.
If the desired NON-ROOT disk is not listed, make sure it is connected
properly and turned on, then select the "Search Again" item.
If your disk is STILL not recognized, you can use the
"Other disk" item to manually enter the Disk address.


                 Slot  Bus  Unit
   Disk          Number Addr Num
  -------------------------------
1. QUANTUM PD210S  at  0  5    0
2. Search Again
3. Other disk
4. Exit Install
5. Previous Menu

Enter selection [1]

-------------------------------------------------------------------------
```

If you add a non-root disk, work through Substeps Y-A, Y-B, and Y-C.

Step 10, Substep Y-A: Specify a Mount Point

After selecting a device, you are asked for the mount point for the filesystem.

```
------------------------------------------------------------------------
                  Additional Filesystem's Mount Point

                     QUANTUM PD210S  at  0  5    0

Enter the directory path for this filesystem's mount point.

 >

  CTRL-X = Done,  CTRL-U = Undo changes,  ? = Help on current item.
------------------------------------------------------------------------
```

For example, the directory path might be `/usr`.

After you specify the directory path, go on to Substep Y-B.

Step 10, Substep Y-B: Specify Type of Filesystem

After selecting the mount point, you are asked for the type of filename (long or short).

```
------------------------------------------------------------------------
                     Filesystem Type Selection.

                      QUANTUM PD210S  at  0  5    0

This screen allows you to choose whether or not you want this filesystem
to allow long filenames (up to 255 characters); or if you want to
have the filenames restricted to 14 characters in length (short
filename system).  You may convert from a short filename filesystem
to a long filename filesystem at any future time, but once you have
a long filename filesystem you can't go back to a short filename
system.  (See also mkfs(1M) and convertfs(1M)).

Each individual filesystem (disk) on your system can be specified as
being long or short (it is not a system wide parameter).

    Do you want this filesystem to allow long filenames? [y]

------------------------------------------------------------------------
```

Enter the desired type and go on to Substep Y-C.

Step 10, Substep Y-C: Set Parameters for the Additional Disk

At this point, you are presented with a menu similar to the *Main Menu*, but the options apply only to the disk just added.

```
-------------------------------------------------------------------------

        HP-UX INSTALLATION UTILITY -- ADDITIONAL FILESYSTEM MENU


             Major    Slot     Bus       Unit
             Number   Number   Address   Number     Model    Mount Point

 FS Device:    7        0        5         0        QUANTUM    /usr

If there is some aspect of the disk/filesystem listed above that you
would like to change, select that aspect.  Return to the Main menu when
done.  Note: changes done here will only affect the disk/filesystem above.


                1. Return To Main Menu
                2. Change Destination Device.
                3. Change Filesystem Type.
                4. Change Mount Point.
                5. Change Filesystem Parameters.
                6. Delete This Disk/Filesystem.
                7. Add Another Disk/Filesystem.
              Enter selection [1]

-------------------------------------------------------------------------
```

The actions you can take here bring up screens that are similar to those already shown. Most of the menus have been discussed earlier. To add swap space to a non-root disk, you must use option 5.

When you finish the above actions, move on to Step 11.

Step 11: Verify the Swap Space

The installation process sets up enough swap space to install and start up your HP-UX system. The screen shows the default value.

```
-------------------------------------------------------------------------

                    Swap space verification

Verify that the root disk swap space is sufficient and change if necessary.

  Root Disk Swap space (in 1024 byte blocks): [36987   ]

   CTRL-X = Done,  CTRL-U = Undo changes,  ? = Help on current item.

-------------------------------------------------------------------------
```

Checklist Item	Information and Tasks
System swap space	In most cases, the default swap space is sufficient to install the system.
Additional swap space	For servers and applications that need large amounts of swap space, you can provide additional space after the installation is completed or after you subsequently update your system to add an application.
Information about swap space	The *System Administration Tasks* manual explains how to alter swap space, should you need to do so after an installation. The *Managing Clusters of HP 9000 Computers Using the HP-UX File System* manual has information about swap space for cluster servers. The documentation for many applications explains the required swap space.
?	Explains how to alter the swap space.
Ctrl-U	Restores the original default if you change it.
Ctrl-X	Continues the installation.

Step 12: A Final Opportunity to Change Values

After completing the above series of screens, you get a final opportunity to review your choice of destination devices. No data has been destroyed on the destination disks at this point.

```
-------------------------------------------------------------------------

                Major    Slot     Bus       Unit
                Number   Number   Address   Number     Model    Mount Point

Root Device:     7        0        6         0        QUANTUM    /


Continuing the installation process destroys
the contents of the disk listed above.

Do you wish to continue? [ ]

-------------------------------------------------------------------------
```

Checklist Item	Information and Tasks
Entering Y	This option continues; move on to the next step.
Entering N	This option returns you to the Main Menu; see appropriate previous steps.

Step 13: Initial Loading of Partitions Containing Filesets

The following screen is the first in a series of screens related to loading software. The loading process transfers HP-UX files from your source disk to your system disk (destination disk). During this time, your system takes several actions and shows associated screens; for example, loading files and rebooting itself. If your media is a 9144 cartridge tape, it is remotely possible to get an error (`read error, check your data path`) and have a system hang during the rebooting process. If this happens, leave the media alone and turn the computer OFF, then ON. The installation will continue, and there is nothing wrong with your system.

Initial Messages

After several minutes (perhaps five), you see messages like the ones shown below:

```
------------------------------------------------------------

        Unpacking tar(1) files
x ./etc/mkboot, 81920 bytes, 160 tape blocks

 ...

x ./hp-ux, 1900544 bytes, 3712 tape blocks
        Done unpacking files
        Installing boot programs
        Copying /ram/sbtab.tmp
        Copying EISA configuration files
        Creating /etc/checklist
        Creating flag file for update

sync'ing disks (0 buffers to flush):
0 buffers not flushed
0 buffers still dirty

------------------------------------------------------------
```

System Reboot

About 5 minutes later, the system reboots and you see this message:

```
------------------------------------------------------------

Initializing...


    Ensure that the installation media unit has been removed and an
    update media unit is online and prepared for reading.


            --- Press "Return" to continue ---

------------------------------------------------------------
```

Checklist Item	Information and Tasks
Media on tape or disc?	Remove the media as suggested and insert your next media unit. Information about the order for using media should be be provided with the product you purchased regardless of the type of media.
Network installation?	You see messages about the state of the system. They indicate what you should do.
How to continue	Press Return. Informational messages appear on the screen. Do not press any keys if there appears to be a transition.

Go on to the next step.

Step 14: Select Filesets to Load (Main Menu)

The following screen shows the main menu. Your screen might vary, depending on your source device. The menu might contain `Enter Codeword ->`).

```
------------------------------------------------------------------
 INSTALL                          Main Menu

       Highlight an item and then press "Return" or "Select Item".
       To refresh the screen press CTRL-L.

       Source:  Tape Device                Destination: Local System
                your_device                        /

                Select All Filesets on the Source Media ->
                Select Filesets for a Minimum System ->
                Select/View Partitions and Filesets ->

                How to Use Install
------------------------------------------------------------------
```

Read This Before You Choose a Main Menu Option

The following checklist items discuss what happens in relation to the options in the main menu and the installation process.

Checklist Item	Information and Tasks
You must eventually load filesets	Regardless of which options you use, you must eventually activate `Start Loading` to load your selected filesets.
Do not interrupt the loading	Once you choose an option for loading filesets, the system will begin loading. Messages will appear on the screen, and the messages will be recorded in `/tmp/update.log` so you can review them after the installation. The loading takes one to several hours.

Checklist Item	Information and Tasks
Install runs customization scripts	After the filesets are loaded, the install program runs customization scripts for individual filesets and builds a new kernel. Again, you should not interrupt the system during this time.
A new kernel is built	An installation results in getting a totally new kernel.
Install prompts for time zone, time, and date	When the loading of filesets completes, install prompts you to enter a time zone and time/date. For example, `MST7MDT` for Mountain Standard Time, which is 7 hours off the Prime Meridian) and `0412093292` for April 12 at 9:32 in the morning in 1992.
Install prompts about networking	Optionally, you can specify a hostname and an internet protocol address. If you get to this point in the installation and do not know your hostname and internet protocol address, you should probably continue and set your system up for networking later. The *System Administration Tasks* manual explains how to do this.
End of an installation	Getting a login prompt indicates the installation is complete. Remove the media and store it in a safe place. Then, go on to Chapter 5 to perform post-installation tasks.

Having noted this information, read on and choose an option.

Is Your Media on a CD-ROM?

If you install from CD-ROM *and* you install software other than the 2-user Runtime product, activate the `Enter Codeword` option. You get the following screen.

```
-------------------------------------------------------------
                From CD-ROM (directory) to Local System

        Modify the desired fields and press "Done".


        Source Directory: /UPDATE_CDROM

        Destination Directory: /

        Codeword Certificate:

        Codeword :____ ____ ____ ____
                  ----short form-----

        Verified Hardware ID:
-------------------------------------------------------------
```

Checklist Item	Information and Tasks
Hardware IDs	You can get the current hardware IDs on your system by moving the prompt to the `Verified Hardware ID` option and pressing `Help`. You are not allowed to enter anything, you only get some information.
Codeword field	Enter the codeword from your CD-ROM Certificate and continue.

Continue Here Whether You Enter a Codeword or Not

The following checklist items have some information you might want to consider.

Checklist Item	Information and Tasks
Help and Escapes	You can get help about how to use the Main Menu. Also, while using the Main Menu, you can escape to a shell to execute HP-UX commands by activating `Shell`. (This document assumes that, if you want to escape to a shell, you know what to do and how to do it.)
You must select an option	The Main Menu has three major options (besides entering a codeword or getting help). To continue, you must highlight and activate an option. HP highly recommends that you activate `Select ALL Filesets on the Source Media ->`. If you activate another options, you should know what you want to accomplish. The following sections describe the options.

Option 1: Select All Filesets on the Source Media ->

Checklist Item	Information and Tasks
What this option does	Automatically loads every fileset on the source media.
What happens	The `Select All ...` screen appears, which has options you can use.
Start the loading	From the `Select All ...` screen, activate `Start Loading`. When it completes, go to Chapter 5.

The options continue on the next page.

Option 2: Select Filesets for a Minimum System->

Activating this option causes the following minimum set of filesets (plus the appropriate user license) to be selected:

```
UX-CORE             CORE-DIAG   For a network install, you also get:
KERN-BLD            C-MIN           NETINET
TOOL                EDITORS         NETTRACELOG
CORE-SHLIBS         CMDS-MIN        NET
                                    LAN
```

Checklist Item	Information and Tasks
Related Information	The `Select Filesets for a Minimum System` screen appears. Be aware that you can install a minimal system now. After the installation, you can use *update*(1M) to load additional filesets.
Load the filesets	Activate `Start Loading` from this screen. When it completes, go to Chapter 5.

Option 3: View/Select Partitions and Filesets->

You can use the following screen to tailor the functionality you load onto your system. Appendix A has information about partitions and filesets. The screen can vary, depending on the product you are installing.

```
------------------------------------------------------------------------
              View or Select Individual Partitions

Mark "y" or "n" to make a selection.
Press "Main" to return to the partition selection screen.

Select   Partition           Partition Description      Size in Kbytes

n     DIAGNOSTICS            Hardware Diagnostic Programs       37663
p     NETWORKING             Networking Products                 8919
y     NLS                    Native Language Support              472
y     OS-ADMIN               Recommended Administration Cmds     2292
y     OS-CORE                Recommended System Core             5517
y     OS-FEATURES            Selectable OS Features              8176
y     PROG-LANGUAGES         Programming Languages               8542
y     REFERENCE-DOC          Reference Manual Pages               348
y     SHARED-LIBS            Runtime Shared Libraries            2757
y     WINDOWS                Windowing Products                   102

Help            Shell    Start       Disk     View      Global    Main
                         Loading     Space   Filesets   Select
------------------------------------------------------------------------
```

Checklist Item	Information and Tasks
Y, N, and P	Y selects and N deselects a partition. As you select or deselect partitions, a P indicates a partial selection of the filesets in that partition.
Update checks dependencies	The install program does not let you load (or not load) partitions without accommodating required dependencies.
You eventually start loading	After you select/deselect the partitions/filesets, activate `Start Loading`, watch the loading process, and then go to Chapter 5.

Step 14: Complete Post-installation Tasks

After the filesets are loaded, the update program runs customization scripts for individual filesets and builds a new kernel. Move on to Chapter 5 to complete the installation.

4

Updating HP-UX

This chapter assumes you worked through Chapter 1 and, if necessary, Chapter 2. If you need to perform an installation instead of an update, see Chapter 3.

An update provides new functionality without destroying the existing system. You must have a running HP-UX system to perform an update. You update HP-UX (as opposed to install HP-UX) when you have any of the following situations.

- You are running the 8.x release and want to move to the 9.0 release, keeping your root file system on a physical disk as it is now.
- You are running the 9.0 release and you want to add software to that release (for example, Starbase Graphics or ARPA Services).
- You want to convert an existing system to a network distribution server (a netdist server). Appendix B has information about creating, managing, and maintaining a netdist server.

Step 1: Determine Your Type of Update Before You Begin

An Interactive Update

This chapter describes an *interactive* update mode in which menus, prompts, and help screens guide you through the procedure. You perform an interactive update by executing *update*(1M) with no arguments.

Your existing system must meet the minimal requirements discussed in Chapter 2. If you reconfigure your system before you begin an update, you should accommodate all the requirements for using the reconfigured system.

Besides using a supported HP terminal or monitor, you can use a VT-100 or Wyse 30 compatible terminal while performing an update. This includes Xterm windows because they run as VT-100 compatible terminals. If you use such a terminal and the screen does not behave correctly, examine the value of your *TERM* variable. The following items show appropriate values:

VT-100 Compatible Terminals	Wsye 30 Compatible Terminals
TERM=vt100	TERM=30
TERM=vt100-am	TERM=wy30
TERM=vt100	TERM=400-41
TERM=vt102	
TERM=xterm	
TERM=ansi	

If you have a VT-100 or Wsye 30 compatible terminal, and the value is not in the above list, set the value of the *TERM* variable to one of the above values. If your terminal does not display screens correctly, reset the value of *TERM* to another value from the table. For an update to work in the interactive mode, your terminal must display the screens appropriately.

A Non-interactive Update

You perform a *non-interactive* update by executing *update*(1M) as a shell command, specifying the options that control the update. The interface is less friendly than that of the interactive update, and you need to know which options to specify.

You might want to use a non-interactive update under the following conditions:

- You have a non-HP terminal other than a Vt100 or Wyse30 compatible terminal, and the terminal does not function in the interactive update mode.
- You are very familiar with *update*(1M), and you want to bypass the interaction.

This chapter does not discuss the *non-interactive* update. To get information, see the *update*(1M) entry in the *HP-UX Reference* manual.

If Problems Occur During an Interactive Update

An error message appears on the display when an interactive update encounters an error condition. The message is also recorded in `/tmp/update.log`. Typically, you can return to a previous step, correct the error condition, and continue. After the update, you should examine the log file.

If Problems Occur During a Non-interactive Update

Error messages are sent to `/tmp/update.log` and to standard error. If an error condition occurs before *update*(1M) begins to load filesets, the program aborts. Otherwise, the program completes the update and you can examine the log file to see what happened. To get more information, see *update*(1M) in the *HP-UX Reference*.

Step 2: Get Everything Ready to Perform the Update

Checklist Item	Information and Tasks
Media ready?	Have the update media ready to insert in a device. Since you might have several products, and need to perform several updates, identify and sequence the media as desired and possibly according to the documentation for the media.
Need codeword?	If your media is a CD-ROM, obtain and note any codewords. Chapter 2 explained codewords.
New devices?	If you added new devices, configure and test them. Chapters 2 discussed this.
README FIRST documents?	Check all *README FIRST* documents that came with your media. Such documents often contain information that supplements the information in this chapter.
Backup necessary?	Backup your existing system as necessary and perform housekeeping chores (for example, clean up directories that have unnecessary files). After the update, compare the backed up files with any newly loaded customize files and make edits as necessary.

Step 3: Clean Up File Systems As Necessary

With extended use, HP-UX can accumulate unnecessary files. Note the following checklist items and take actions as necessary. If you need help, the *System Administration Tasks* manual has information about the items.

Checklist Item	Information and Tasks
Check standard directories	Note directories under / (root) that are larger than expected (for example, use the *du*(1) command to look at `/bin`, `/etc`, `/usr`, `/lib`, and so on). You need some expertise to note discrepancies; but wherever you see some, the directory probably contains unnecessary files.
Check for miscellaneous files	Examples of things to check include: ■ Archived files for accounts under `/user` (check with the users). ■ Core dump files, which are named `core`, can be very large. Listing root with ls / shows if you have core dump files. Typing ll core shows the size. Typing rm core removes the core dump file and frees up space. ■ Extra backups of the kernel (only `SYSBCKUP` is necessary). Check for extra copies of the kernel in `/` and `/etc/conf`.
Edit files	Some files such as `/etc/btmp` and `/etc/wtmp` grow without bounds, becoming very large over time. You can edit them with *vi*(1) (that is, type vi /etc/wtmp and delete the lines).

Step 4: Read Associated Documentation

Checklist Item	Information and Tasks
Release Notes	See the 9.0 Release Notes if you have them in paper form.
Special documents	Read any *README FIRST* documents. Read any *certificates*. Read any *special* documentation you received with your products; for example, an application note.
Windowing documents	HP VUE is the default windowing system. The *HP Visual User Environment Configuration Guide* has information about such things as the window manager.
Networking documents	If you are adding networking products, you may need to see the following documents: ■ *Installing and Administering ARPA Services* ■ *Installing and Administering NFS Services* ■ *Installing and Administering LAN/9000*
System Administration	You might need to supplement the directions in this chapter by referring to three documents for system administration. ■ *System Administration Tasks* ■ *How HP-UX Works: Concepts for the System Administrator* ■ *Installing Peripherals*

Step 5: Reconfirm Having Enough Disk Space

Your current system might need to grow to accommodate your 9.0 products. If you do not have enough space, you have two alternatives.

1. Free up disk space on your existing system, or
2. Shut down your system, add another disk (or disks), restart the system, and perform the update.

Minimum Free Space Requirements

Checklist Item	Information and Tasks
Default free space	Each disk has 10% of its capacity reserved for **minimum free space**. The parameter named *minfree* determines the amount. Only the system administrator can reallocate space on a file system having less than the minimum free space.

Possible error messages	During an update, you might see either of these messages:
	`It is recommended you free up` *n* `Kbytes`
	`Loading the selected filesets results in less free disk space ...`

How to continue	Either message means the disk will have less than the minimum space on one or more file systems after the update. In an interactive update, you can continue to load files, but you should correct the problem later. In a non-interactive update, the program aborts.

Insufficient Disk Space

Checklist Item	Information and Tasks

Error messages	During an update, you might see either of the following messages:
	`You MUST free up` *n* `Kbytes`
	
	`Loading the selected filesets is impossible due to insufficient space on one or more file systems....`

To continue	You must free up disk space to load filesets.

How to Free Disk Space

Option 1	Deselect filesets to load during an update.
Option 2	Remove some existing files on the system.
Option 3	Mount another file system.
Option 4	Create symbolic links.
Option 5	Use a combination of the above methods.

Option 1: Deselect Filesets

Checklist Item	Information and Tasks
Appropriate screens	The `Partition Selection`, `Fileset Selection`, and `Disk Space Analysis` screens let you deselect filesets.
What to do	In any of the above screens, examine the options for deselecting filesets and deselect those you do not want. Update does not let you deselect a required fileset.
You can add filesets later	After an update completes, you can add more disk space and then update your system again, adding the desired filesets.

Options continue on the next page.

Option 2: Remove Unnecessary Files

Checklist Item	Information and Tasks
1) Escape to a shell	Leave the update program so you can remove files. The *System Administration Tasks* document has information about shell escapes.
2) Remove unnecessary files	The update program might have placed some files in `/tmp` that you cannot remove. They include: `/tmp/INDEX`, `/tmp/INFO`, `/tmp/CDFinfo`, and `/tmp/update.log`. However, you can check the following directories for unnecessary files: `/tmp`, `/etc/*tmp*` (you might remove `wtmp` or `btmp`), `/usr/adm`, `/usr/local`, `/usr/contrib`, `/usr/tmp`, `/users`.
3) Remove unnecessary filesets	You can remove unnecessary filesets in the existing system by using *rmfn*(1M). Do not remove files or directories under `/system`.

Option 3: Mount Another File System

Checklist Item	Information and Tasks
1) Escape to a shell	Leave the update program so you can mount another file system. The *System Administration Tasks* document has information about shell escapes.
2) Mount a file system	Using information from the *System Administration Tasks* manual, mount a file system, which should add another physical disk.

Options continue on the next page.

Option 4: Create Symbolic Links

Checklist Item	Information and Tasks
1) Escape to a shell	Leave the update program so you can create symbolic links. The *System Administration Tasks* document has information about shell escapes.
How links help	Moving files or directories and creating *symbolic links* from the old locations to the new locations can span file systems and refer to directories as well as files. See *ln*(1) in the *HP-UX Reference*.
A reminder	Do not create symbolic links under the root file system. In particular do not create symbolic links under `/bin`, `/etc`, `/lib`, `/dev`, or `/system`.

The following example moves `/usr/man` from `/usr` to `/extra/man`:

1. Copy the subdirectory from `/usr` to `/extra`:

```
cd /usr
find man -print | cpio -pdumv /extra
```

2. Temporarily rename the original man (this is your "backup"):

```
mv /usr/man /usr/man.old
```

3. Create a symbolic link between the directory's new and old locations:

```
ln -s /extra/man /usr/man
```

4. List the contents of the directory:

```
ls /usr/man
```

5. List the "backup" contents; the output should match the previous output:

```
ls /usr/man.old
```

6. If the outputs match, remove your "backup":

```
rm -rf /usr/man.old
```

   If they don't, remove the link, and start over at Step 1.

```
rm -rf /usr/man /extra/man
mv /usr/man.old /usr/man
```

Step 6: Gather Information About Media and Devices

Examine the checklist questions posed by the following sections, performing the tasks that relate to your update.

Update from Tape?

You need to know the device file name for your tape drive. The *System Administration Tasks* manual and the *Installing Peripherals* manual have information about device files for tape drives.

Update from a Netdist Server?

If you plan to update from a netdist server and need information about using a netdist server, see Appendix B.

Need to Mount or Unmount File Systems?

If you do not want a file system to be mounted (for example, `/users`), comment out the line in `/etc/checklist` before you start the update program. Leave NFS file systems (if any) in the checklist file so the update program does not load files under them locally.

Updating the Operating System?

If you are updating the operating system to release 9.0, accommodate the following items:

Checklist Item	Information and Tasks
Have users log off	Updating the system while users are logged on and accessing files can have undesirable consequences.
Use the normal kernel	If you are not running on **/hp-ux** (the normal kernel), you might want to reboot the system on **/hp-ux**.
Some updates require single-user state	If you load filesets that cause HP-UX to reboot, put the system being updated into the single-user state. The *System Administration Tasks* manual and the *shutdown*(1M) entry in the *HP-UX Reference* manual explain this.
You might want to run **/etc/fsck**	After you shut down the system, and before you begin an update, it is a good practice to run *fsck*(1M) if you suspect you have any file-system corruption. The *System Administration Tasks* manual and the *fsck*(1M) entry in the *HP-UX Reference* manual explain this. The *HP-UX Error Message Catalog* explains errors related to **fsck**.

Updating from CD-ROM after a Shutdown?

Perform this step if you run `/etc/shutdown` because the shutdown process unmounts the CD-ROM drive.

Checklist Item	Information and Tasks
The CD-ROM needs a directory	Make a directory where the CD-ROM will be mounted by executing: `mkdir /UPDATE_CDROM`
Insert the CD-ROM disc	The documentation for the CD-ROM drive explains this.
Mount the CD-ROM drive	Execute a command similar to: `/etc/mount /dev/dsk/bsrc /UPDATE_CDROM -t cdfs` The command mounts the CD-ROM drive at `/UPDATE_CDROM`. The `-t cdfs` indicates the file system type on the CD-ROM disc. If an appropriate device file does not exist (for example, the `/dev/dsk/bsrc`), use the *mknod*(1M) command to create one.

Step 7: Some Final Tips for Performing an Update

Checklist Item	Information and Tasks
You can refresh a blank screen	Some terminals might get a blank screen if the keyboard is not used frequently (for example, while you take time to read another document). If the screen goes blank, press Shift. The Shift key is *not* interpreted as input. *Do not use use any other key.*
Check status of console	Do not run console processes in the background. Unexpected output to the terminal can produce unreadable screens. Except when the update program is loading filesets, use CTRL-L to refresh the screen. If the program is loading filesets, do not press any key until the loading completes.

Move on to the next step to start the update.

Step 8: Load the TOOL Fileset

If You Have DDS or HP 9144 Cartridge Tape ...

1. Write protect the tape according to its documentation.
2. Insert the tape in its drive. Wait until the drive is ready according to the drive's documentation.
3. If you are not in the root directory, change to it (`cd /`).
4. Execute the following command, which assumes a device file named `update.src`. Use the appropriate device file name. Wait for the extraction to complete before you type anything. After no files are extracted for a minute or so, stop the command by typing the interrupt character (probably Break or Ctrl-C). It takes a long time for the command to read the entire tape.

```
tar -xvf /dev/update.src TOOL
```

If You Have CD-ROM ...

1. If you are not in the root directory, change to it (`cd /`).
2. Execute the following command. The update program expects to find the CD-ROM drive mounted under the directory named `/UPDATE_CDROM`. Specify the directory where the CD-ROM drive is mounted. You get an error message if you do not insert the CD-ROM disc or mount the CD-ROM drive. Wait for the extraction to complete, which can take several minutes.

```
tar -xvf /UPDATE_CDROM/TOOL
```

Options for media continue on the next page.

If You Use a Netdist Server ...

1. Have the netdist server configured and have the update program available for clients. If necessary, see Appendix B to get information about this.
2. Copy the 9.0 TOOL fileset from the netdist server to the local client system. HP recommends using FTP in the anonymous mode. The *Installing and Administering ARPA Services* document has information.
   a. Type `ftp` *netdist_server_name* (Use the name of the server from which you want to copy `/etc/update`.)
   b. At the login prompt, type: `anonymous`
   c. At the password prompt, type: `ftp`
   d. You should see the `ftp>:` prompt. (If you do not, the previous steps did not succeed, and you must try again.)

      To extract the fileset, type:

      ```
      get dist/TOOL.400 /tmp/TOOL

      or

      get dist/TOOL.300 /tmp/TOOL
      ```

   e. You should see messages like this:

      ```
      Opening data connection for dist/ ...
      nn bytes received ...
      ```

   f. When the `ftp>:` prompt reappears, type: `bye`.
3. From the client system, type:

   ```
   cd /
   ```

4. To complete the extraction, type the following command.

   ```
   tar -xvf /tmp/TOOL
   ```

Step 9: Load the Filesets

Start the loading by executing:

```
/etc/update
```

You get a screen like the following one.

```
------------------------------------------------------------------
UPDATE                        Main Menu

  Highlight an item and then press "Return" or "Select Item".
  To refresh the screen press CTRL-L.

  Source: Tape Device                Destination: Local System
          /dev/rmt/0m                             /

           Change Source or Destination ->

           Load All Filesets on the Source Media ->
           Select Only Filesets Currently on Your System ->
           Select/View Partitions and Filesets ->
           Enter Codeword ->

           How to Use Update

------------------------------------------------------------------
```

The following page has information about the options and using update.

Read This Before You Load Filesets

Checklist Item	Information and Tasks
Using Softkeys	Besides options, which appear in the middle of the screen, the bottoms of update screens display softkey labels such as `Shell`, `Select Item`, and `Start Loading`. The labels change to correspond with the functionalities of the screens. Use the softkeys to take desired actions.
You must eventually load filesets	Regardless of which option you choose for loading filesets, and regardless of the subscreens you use off the Main Menu, you must eventually activate `Start Loading` to cause the update program to load selected filesets.
Do not interrupt the loading	Once you choose an option for loading filesets, the system begins loading. Messages appear on the screen and are recorded in `/tmp/update.log` so you can review them after the update. The loading takes several minutes to several hours.
Update might run customization scripts	After the filesets are loaded, the update program might run customization scripts for individual filesets and might build a new kernel. Do not interrupt the system during this time.
A new kernel might be built	An update can result in getting a totally new kernel. After an update that builds a new kernel completes, you might need to customize and restore some files.
End of an update	Getting a login prompt indicates an update is complete. Remove the media and store it in a safe place. Then, go on to Chapter 5 and perform appropriate post-update tasks.

Having noted this information, read on and choose an option.

Checklist Item: Is Your Media on a CD-ROM?

If you update from CD-ROM *and* you update software other than the 2-user Runtime product, activate the `Enter Codeword` option. You get the following screen.

```
------------------------------------------------------------
                From CD-ROM (directory) to Local System

        Modify the desired fields and press "Done".


        Source Directory: /UPDATE_CDROM

        Destination Directory: /

        Codeword Certificate:

        Codeword :____ ____ ____ ____
                  ----short form-----

        Verified Hardware ID:
------------------------------------------------------------
```

Checklist Item	Information and Tasks
Hardware IDs	You can get the current hardware IDs on your system by highlighting the `Verified Hardware ID` and pressing `Help`. You are not allowed to enter anything, you only get some information.
Codeword field	Enter the codeword from your CD-ROM Certificate and continue.

Continue Here Whether You Enter a Codeword or Not

The following checklist items have information you might need to consider.

Checklist Item	Information and Tasks
Help and Escapes	You can get help about how to use the Main Menu. Also, while using the Main Menu, you can escape to a shell to execute HP-UX commands by activating `Shell`.
You can change the destination	You can still, at this point, change the source or destination device before you choose an option for loading filesets. You get a secondary screen. ■ To change the source for a cartridge tape drive, specify its device file. ■ To change the source for a CD-ROM, specify a mounted directory. ■ To change the destination, specify the destination directory (for example, `/apps`).
You must select an option for loading	The Main Menu has three options for loading filesets. The following sections describe the options.

Option 1: Select All Filesets on the Source Media ->

Selecting `Select All Filesets on the Source Media ->` automatically loads every fileset on the source media. Unless you know why you should NOT load all the filesets, you should activate this option. If you activate it, the `Select All ...` screen appears. At this point, if you wish to examine the filesets selected for loading, activate `Modify/View Partitions and Filesets`, which gives you another opportunity to load or deselect filesets. When you are ready, activate `Start Loading`. When it completes, go to Chapter 5.

Option 2: Select Only Filesets Currently on Your System ->

Activating this option selects filesets from the source media that match the existing functionality on your system.

Checklist Item	Information and Tasks
Related Information	The update program surveys the `/etc/filesets` directory on the destination system, selecting the filesets on the source media that match. If any fileset names have changed for the 9.0 release, the update program maps old fileset names in `/etc/filesets` to any new filesets names on the source media.
Load the filesets	Activate `Start Loading` from this screen. When the loading completes, go to Chapter 5.

Option 3: View/Select Partitions and Filesets->

The following screen lets you tailor the functionality loaded onto a system. If you need information about the partitions and filesets for some core HP-UX products, see Appendix A. If you are adding an application, the documentation for the application might have information about its partitions and filesets.

```
-------------------------------------------------------------------------
              View or Select Individual Partitions

Mark "y" or "n" to make a selection.
Press "Main" to return to the partition selection screen.

Select   Partition           Partition Description      Size in Kbytes

n     DIAGNOSTICS            Hardware Diagnostic Programs       37663
p     NETWORKING             Networking Products                 8919
y     NLS                    Native Language Support              472
y     OS-ADMIN               Recommended Administration Cmds     2292
y     OS-CORE                Recommended System Core             5517
y     OS-FEATURES            Selectable OS Features              8176
y     PROG-LANGUAGES         Programming Languages               8542
y     REFERENCE-DOC          Reference Manual Pages               348
y     SHARED-LIBS            Runtime Shared Libraries            2757
y     WINDOWS                Windowing Products                   102

Help           Shell    Start       Disk     View      Global    Main
                        Loading     Space    Filesets  Select
-------------------------------------------------------------------------
```

Checklist Item	Information and Tasks
Y, N, and P	Y selects and N deselects a partition. As you select and deselect filesets in partitions, a P can appear for a partition to indicate a partial selection of its filesets.
Update checks dependencies	The update program does not let you load (or not load) partitions without accommodating required dependencies.
You eventually start loading	After you select/deselect the partitions/filesets, activate `Start Loading`. When the loading completes, go to Chapter 5.

5

Post Install or Update Tasks

Typical Post-installation System Administration Tasks

Checklist Item	Information and Tasks
Superuser password.	See the *System Administration Tasks* manual.
Information across documentation.	See the *Master Index* document. It has indexes for all the HP-UX documents.
Update log file	Check for problems in `/tmp/update.log`. Follow any instructions you find in this file.
Information about new functionality.	See the release notes file, which is named `hpuxsystem` and which is stored in `/etc/newconfig/90RelNotes`.
System security	See the *HP-UX System Security* document.
Add software	If you have additional software products, now is a good time to use the update program to add them to your system. If you do this, note any README documents.

Suggested Tasks

The following checklist items mention things you might need to do. The *System Administration Tasks* manual has information about most of the tasks. You might want to see special documents (for example, the *UUCP User's Guide* to set up UUCP).

Checklist Item	Information and Tasks
Add users	See the *System Administration Tasks* document.
Add groups	Same document as above.
Mount file systems	Same document as above.
Set up the LP Spooler	Same document as above.
Set up UUCP	See the section about UUCP in the *Remote Access User's Guide.*
Manage the windowing system	This can require reading several documents. See the *Finding HP-UX Information* document. Look for the documents about windows that relate to your release and desired functionality.
Create system run levels	See the *System Administration Tasks* document.
Create an accounting system	This can require reading several documents. See the *Finding HP-UX Information* document. Look for the documents about accounting and system security that relate to your release and desired functionality.
Remove extraneous software	Use the `/etc/rmfn` command. See a later section in this chapter. Also, see the *rmfn*(1M) entry in the *HP-UX Reference* document.
Back up your system	See the *System Administration Tasks* document.

Remove Unwanted Software Using rmfn(1M)

After you finish installing HP-UX, you might have software you do not need. The *rmfn*(1M) (remove functionality) utility lets you remove unnecessary system software. The *HP-UX Reference* manual has complete information for this command.

Use rmfn with Caution

Although *rmfn*(1M) checks dependencies to prevent you from inadvertently removing functionality, you still need to be cautious. The command is designed to help you quickly remove major pieces of software. It is important to avoid making mistakes.

Important Points About Using rmfn(1M)

Checklist Item	Information and Tasks
Filesets and partitions	The filesets and partitions that the `rmfn` command displays depend on the contents of the directories named `/etc/filesets` and `/system`. Do not change the contents of these directories or the command will display an inaccurate list of filesets.
Dependencies	The *rmfn*(1M) command only lets you remove filesets that will not subsequently harm the integrity of your system. The *rmfn*(1M) command does not allow you to remove a minimum set of filesets needed by the system. For example, you cannot remove `UX-CORE`.
Remote systems	The *rmfn*(1M) command does not remove files on a remote, mounted system (NFS).
Symbolic links	As the *rmfn*(1M) command removes a symbolic link contained in a fileset, it does not remove a symbolic link's target file. A target file remains intact until *rmfn*(1M) removes the fileset containing the target file.

How to Use rmfn

To use the remove fileset command, log in as the system administrator and execute:

```
/etc/rmfn
```

The example below shows a typical main screen.

```
--------------------------------------------------------------------------

rmfn                          Partitions

Press "y" to select an entire partition for deletion.  Press "n" to undo a
selection.  Press the "Select Filesets" key to view the filesets within
a partition.  Press the "Start Removing" key when selection is complete.


Mark Partition        Arch.   Partition Description          Size in Kbytes

p    DIAGNOSTICS      400     Hardware Diagnostic Programs       37663
n    NETWORKING       400     Networking Products                 8919
n    NLS              400     Native Language Support              472
n    OS-ADMIN         400     Recommended Administration Cmds     2292
n    OS-CORE          400     Recommended System Core             5517
n    OS-FEATURES      400     Selectable OS Features              8176
y    PROG-LANGUAGES   400     Programming Languages               8542
n    REFERENCE-DOC    400     Reference Manual Pages               348
n    SHARED-LIBS      400     Runtime Shared Libraries            2757
n    WINDOWS          400     Windowing Products                   102

[Help]                                        [Shell]  [Start Rem]

--------------------------------------------------------------------------
```

Checklist Item	Information and Tasks
Arrow keys	Move the highlight among the items in a screen as implied by the key.
Y	This key selects a highlighted item for deletion. The letter **y** appears on the screen under **Mark**.
N	This key undoes the effects of a selection. For example, if you select a partition with Y, pressing N deselects the partition. The letter **n** appears on the screen under **Mark**.
Help	Pressing this softkey explains how to use the **rmfn** command.
Shell	Pressing this softkey lets you escape to a shell to execute HP-UX commands. Type **exit** on a shell command line to return to the **rmfn** screen.
Exit rmfn	Pressing this softkey terminates the removal process and exits the **rmfn** command.
Select Filesets	For a highlighted partition, pressing this softkey lets you select individual filesets in that partition for deletion. If you do this, a **p** appears on the screen under **Mark** to indicate a partial selection of filesets.
View Selected	Pressing this softkey lists the names and sizes of the partitions and filesets selected for removal.
Start Removing	Pressing this softkey removes the selected partitions and filesets from your system.

A

Product and Fileset Information

A feature of the install and update programs is that you can decide to load or not load certain filesets. The programs do not let you deselect a fileset that is required for other filesets you decide to load.

The following sections contain information about certain, core HP-UX products. You might want to consider the information while making decisions about loading partitions and filesets for certain, core HP-UX products. For applications you purchased to add to your system, the documentation for those applications might have information about partitions and filesets.

Order of Loading Products

The order in which you load products can depend on which products you obtain and whether you perform an installation or update of the operating system. In general, you should load products as follows:

1. Load any product that will install or update the core operating system. For example, a installing the operating system on a new hardware system or updating the operating system to a newer release.
2. Load any products that interact with the core system . This includes, for example, languages, tools, and utilities.
3. Load special-purpose applications that run on top of HP-UX. This includes, for example, a word processor or an inventory program.
4. Load entire software environments that run on top of HP-UX and consist of applications that work together. This includes, for example, SoftBench.

Filesets and Sizes

This section lists filesets and their sizes (in KBs) without regard to products. Seeing a fileset in the section provides information but does not imply that the product you obtained contains the fileset.

Subsequent sections have information about filesets for certain products. Be aware that product bundling and other considerations can cause products to change. This appendix does not generally contain information about non-core products.

Fileset	Size	Fileset	Size
02-USER	26	ACCOUNTNG-MAN	72
ACCOUNTNG	202	AGRM	102
ALLBASE-MAN	36	AMERICAN	52
ARABIC	52	ARABICW	40
ARPA-AUX-MAN	60	ARPA-AUX	124
ARPA-INC	40	ARPA-MAN	284
ARPA-RUN	1122	AUDIO-MAN	254
AUDIT-MAN	54	AUDIT	164
BIF-CMDS-MAN	60	BIF-CMDS	238
BMS	390	BSDIPC-SOCKET	298
BULGARIAN	36	C-AUX	208
C-INC	1924	C-MAN	124
C-MIN	1482	C-TOOLS	892
C	1266	CE-UTIL	834
CFRENCH-CAT	544	CFRENCH-X11	442
CFRENCH	52	CHINESES-CAT	390
CHINESES-X11	484	CHINESES	38
CHINESET-CAT	394	CHINESET-X11	402
CHINESET	48	CMDS-AUX-MAN	264
CMDS-AUX	946	CMDS-MIN-MAN	294
CMDS-MIN	900	CORE-DIAG	664
CORE-SHLIBS	1244	CZECH	36
DEBUGGERS-MAN	62	DEBUGGERS	1446
DISKLESS-BLD	11158	DISKLESS-MAN	42
DISKLESS	82	DOS-UTILS-MAN	42
DOS-UTILS	58	DQUOTA-MAN	50
DQUOTA	78	DRIVERS	270
DUTCH	52	ECC-TOOLS-MAN	28
ECC-TOOLS	34	EDITORS-MAN	68
EDITORS	268	ENGLISH	52
FAFM-MAN	92	FAFM-PRG	130
FAFM-RUN	270	FAFM-SHLIBS	82
FDDI-MAN	40	FINNISH	52
FORTRAN-DOC	46	FORTRAN-MAN	128

FORTRAN-PRG	4228	FPA	30
FRENCH-CAT	544	FRENCH-X11	442
FRENCH	52	GERMAN-CAT	536
GERMAN-X11	542	GERMAN	52
GRAPH-SRX-DIAG	2850	GRAPH-VRX-DIAG	5204
GREEK	52	HEBREW	52
HPUX-HELP	1748	HUNGARIAN	38
ICELANDIC	52	IGNITION-HELP	178
IGNITION	826	IMAGNG-RUN-MAN	28
ITALIAN	52	JAPANESE-CAT	482
JAPANESE-MAN	444	JAPANESE-X11	526
JAPANESE	62	KATAKANA	38
KERN-BLD-MAN	74	KERN-BLD	4654
KEYSHELL-MAN	46	KEYSHELL-RUN	512
KOREAN-CAT	462	KOREAN-X11	494
KOREAN	38	LAN-MAN	360
LAN	292	LANG-SHLIBS	586
LISP-MAN	36	LP-SPOOL-MAN	72
LP-SPOOL	678	LSSERVER-ADMIN	1156
LSSERVER-MAN	44	LSSERVER-RUN	570
LVM-MAN	118	MAILERS-MAN	82
MAILERS	584	MIRROR-MAN	36
MKFONTDIR	232	MULT-USER	28
NCSNCK-MAN	110	NCSNCK-RUN	1830
NET-INSTL-300	2752	NET-INSTL-700	4438
NET-INSTL-AUX	4546	NET	306
NETINET	884	NETIPC	264
NETTRACELOG	728	NFS-INC	156
NFS-MAN	228	NFS-RUN	1200
NLS-CORE-MAN	98	NLS-CORE	854
NONHPTERM	934	NORWEGIAN	52
NS-MAN	36	NS-SERV	148
PASCAL-BLD	138	PASCAL-MAN	36
PASCAL-PRG	710	PASCAL-RUN	28
POLISH	36	PORTUGUES	52
PROG-AUX-MAN	1526	PROG-AUX	1356
PROG-MIN-MAN	34	PROG-MIN	214
RBOOTD-MAN	26	RBOOTD	58
RUMANIAN	36	RUSSIAN	36
SAM-MAN	34	SAM	6768
SBDL-DEMO	498	SBDL-MAN	216
SBDL-PRG	514	SBDL-SHLIBS	422
SDF-CMDS-MAN	62	SDF-CMDS	232
SERBOCROATIAN	38	SLIP-RUN	112
SLOVENE	38	SOE-MAN	36
SPANISH	52	SPELL-MAN	28
SPELL	182	SRC-CNTL-MAN	122
SRC-CNTL	668	STAR-DEMO	2182
STAR-MAN	622	STAR-PRG	4012

STAR-RUN	6900	STAR-SHLIBS	4098
SWEDISH	52	SWITCHOVER-MAN	50
SYS-ADMIN-MAN	536	SYS-ADMIN	782
SYSCOM-MAN	68	SYSCOM	452
TERM-MNGR-MAN	36	TERM-MNGR-MIN	1494
TERM-MNGR-NHP	640	TEXT-FMT-MAN	78
TEXT-FMT	1064	THAI	34
TOOL-MAN	82	TOOL	3082
TURKISH	52	USRCONTRB	830
UUCP-MAN	82	UUCP	728
UX-CORE-MAN	724	UX-CORE	3942
VT3K	56	X11-FONTA	942
X11-FONTB	3540	X11-FONTC	4620
X11-FONTSRV	4916	X11-RUN-HELP	5740
X11-RUN-MAN	460	X11-RUN	12092
X11-SERV	3000	X11R4-SHLIBS	3776
X11R5-PRG-MAN	5220	X11R5-PRG	15810
X11R5-SHLIBS	2572	X25-MAN	114

SE Core Only Functionality Filesets and Sizes

Part Numbers

24998-10210/0900	1000
24998-10208/0900	1000

USRCONTRB	50

B1861A: HP-UX Run-Time, 1-2 User Filesets and Sizes

```
Part Numbers

B1861-13412/0900        10000
B1861-13314/0900        10000
B1861-87014/0900        10000

02-USER          120        ACCOUNTNG        50
ACCOUNTNG-MAN    50         AGRM             50
AUDIT            50         AUDIT-MAN        50
BIF-CMDS         50         BIF-CMDS-MAN     50
BSDIPC-SOCKET    120        C-INC            50
C-MAN            50         C-MIN            50
CMDS-AUX         50         CMDS-AUX-MAN     50
CMDS-MIN         50         CMDS-MIN-MAN     50
CORE-SHLIBS      50         DOS-UTILS        50
DOS-UTILS-MAN    50         DQUOTA           50
DQUOTA-MAN       50         DRIVERS          50
ECC-TOOLS        50         ECC-TOOLS-MAN    50
EDITORS          50         EDITORS-MAN      50
FPA              50         HPUX-HELP        50
IGNITION         50         IGNITION-HELP    50
KERN-BLD         120        KERN-BLD-MAN     50
KEYSHELL-MAN     50         KEYSHELL-RUN     50
LAN              120        LAN-MAN          50
LANG-SHLIBS      50         LP-SPOOL         50
LP-SPOOL-MAN     50         MAILERS          50
MAILERS-MAN      50         NET              120
NETINET          120        NETIPC           120
NETTRACELOG      50         NONHPTERM        50
SDF-CMDS         50         SDF-CMDS-MAN     50
SLIP-RUN         50         SPELL            50
SPELL-MAN        50         SYS-ADMIN        50
SYS-ADMIN-MAN    50         SYSCOM           50
SYSCOM-MAN       50         TEXT-FMT         50
TEXT-FMT-MAN     50         TOOL             150
TOOL-MAN         50         UUCP             50
UUCP-MAN         50         UX-CORE          50
UX-CORE-MAN      50

# Diskless

DISKLESS         50          DISKLESS-BLD     130
DISKLESS-MAN     50

# SAM

SAM              50         SAM-MAN          50
```

```
# NW Install

NET-INSTL-300     50          NET-INSTL-700     50
NET-INSTL-AUX     50          RBOOTD            50
RBOOTD-MAN        50

# TSM

TERM-MNGR-MAN     50          TERM-MNGR-MIN     50
TERM-MNGR-NHP     50

# Diagnostics

CORE-DIAG         120         CE-UTIL           50
GRAPH-SRX-DIAG    50          GRAPH-VRX-DIAG    50

# Internationalization

NLS-CORE          50          NLS-CORE-MAN      50
AMERICAN          50          ARABIC            50
ARABICW           50          BULGARIAN         50
CFRENCH           50          CHINESES          50
CHINESET          50          CZECH             50
DANISH            50          DUTCH             50
ENGLISH           50          FINNISH           50
FRENCH            50          GERMAN            50
GREEK             50          HEBREW            50
HUNGARIAN         50          ICELANDIC         50
ITALIAN           50          JAPANESE          50
KATAKANA          50          KOREAN            50
NORWEGIAN         50          POLISH            50
PORTUGUES         50          RUMANIAN          50
RUSSIAN           50          SERBOCROATIAN     50
SLOVENE           50          SPANISH           50
SWEDISH           50          THAI              50
TURKISH           50

# X11/OSF/Motif/VUE RT

BMS               50          MKFONTDIR         50
X11-FONTA         50          X11-FONTB         50
X11-FONTC         50          X11-FONTSRV       50
X11-RUN           50          X11-RUN-HELP      50
X11-RUN-MAN       50          X11-SERV          50
X11R4-SHLIBS      50          X11R5-SHLIBS      50

# Starbase RT
```

```
STAR-MAN          50          STAR-RUN          50
STAR-SHLIBS       50          FAFM-MAN          50
FAFM-RUN          50          FAFM-SHLIBS       50

# Stbse DL RT

SBDL-MAN          50          SBDL-SHLIBS       50

# NCS/NCK RT

NCSNCK-MAN        50          NCSNCK-RUN        50

# NetLS RT

LSSERVER-ADMIN    50          LSSERVER-MAN      50
LSSERVER-RUN      50

# NFS

NFS-INC           50          NFS-MAN           50
NFS-RUN           120

# ARPA

ARPA-AUX          50          ARPA-AUX-MAN      50
ARPA-INC          50          ARPA-MAN          50
ARPA-RUN          50

#MAN PAGES

ALLBASE-MAN       50
AUDIO-MAN         50          FDDI-MAN          50
IMAGNG-RUN-MAN    50          LISP-MAN          50
X25-MAN           50            FORTRAN-MAN       50
PASCAL-MAN        50            LVM-MAN           50
MIRROR-MAN        50            SOE-MAN           50
SWITCHOVER-MAN    50
```

B1862A: HP-UX Run-Time, 1-32 User Filesets and Sizes

```
Part Numbers

B1862-13412/0900        10000
B1862-13314/0900        10000
B1862-87014/0900        10000

MULT-USER         120

# OS (all)

ACCOUNTNG         50          ACCOUNTNG-MAN     50
AGRM              50          AUDIT             50
AUDIT-MAN         50          BIF-CMDS          50
BIF-CMDS-MAN      50          BSDIPC-SOCKET     120
C-INC             50          C-MAN             50
C-MIN             50          CMDS-AUX          50
CMDS-AUX-MAN      50          CMDS-MIN          50
CMDS-MIN-MAN      50          CORE-SHLIBS       50
DOS-UTILS         50          DOS-UTILS-MAN     50
DQUOTA            50          DQUOTA-MAN        50
DRIVERS           50          ECC-TOOLS         50
ECC-TOOLS-MAN     50          EDITORS           50
EDITORS-MAN       50          FPA               50
HPUX-HELP         50          IGNITION          50
IGNITION-HELP     50          KERN-BLD          120
KERN-BLD-MAN      50          KEYSHELL-MAN      50
KEYSHELL-RUN      50          LAN               120
LAN-MAN           50          LANG-SHLIBS       50
LP-SPOOL          50          LP-SPOOL-MAN      50
MAILERS           50          MAILERS-MAN       50
NET               120         NETINET           120
NETIPC            120         NETTRACELOG       50
NONHPTERM         50          SDF-CMDS          50
SDF-CMDS-MAN      50          SLIP-RUN          50
SPELL             50          SPELL-MAN         50
SYS-ADMIN         50          SYS-ADMIN-MAN     50
SYSCOM            50          SYSCOM-MAN        50
TEXT-FMT          50          TEXT-FMT-MAN      50
TOOL              150         TOOL-MAN          50
UUCP              50          UUCP-MAN          50
UX-CORE           50          UX-CORE-MAN       50

# Diskless

DISKLESS          50          DISKLESS-BLD      130
DISKLESS-MAN      50
```

```
# SAM

SAM              50          SAM-MAN          50

# NW Install

NET-INSTL-300    50          NET-INSTL-700    50
NET-INSTL-AUX    50          RBOOTD           50
RBOOTD-MAN       50

# TSM

TERM-MNGR-MAN    50          TERM-MNGR-MIN    50
TERM-MNGR-NHP    50

# Diagnostics

CORE-DIAG        120          CE-UTIL          50
GRAPH-SRX-DIAG   50          GRAPH-VRX-DIAG   50

# Internationalization

NLS-CORE         50          NLS-CORE-MAN     50
AMERICAN         50          ARABIC           50
ARABICW          50          BULGARIAN        50
CFRENCH          50          CHINESES         50
CHINESET         50          CZECH            50
DANISH           50          DUTCH            50
ENGLISH          50          FINNISH          50
FRENCH           50          GERMAN           50
GREEK            50          HEBREW           50
HUNGARIAN        50          ICELANDIC        50
ITALIAN          50          JAPANESE         50
KATAKANA         50          KOREAN           50
NORWEGIAN        50          POLISH           50
PORTUGUES        50          RUMANIAN         50
RUSSIAN          50          SERBOCROATIAN    50
SLOVENE          50          SPANISH          50
SWEDISH          50          THAI             50
TURKISH         0900    50

# X11/OSF/Motif/VUE RT

BMS              50          MKFONTDIR        50
X11-FONTA        50          X11-FONTB        50
X11-FONTC        50          X11-FONTSRV      50
X11-RUN          50          X11-RUN-HELP     50
X11-RUN-MAN      50          X11-SERV         50
X11R4-SHLIBS     50          X11R5-SHLIBS     50
```

```
# Starbase RT

STAR-MAN          50          STAR-RUN          50
STAR-SHLIBS       50          FAFM-MAN          50
FAFM-RUN          50          FAFM-SHLIBS       50

# Stbse DL RT

SBDL-MAN          50          SBDL-SHLIBS       50

# NCS/NCK RT

NCSNCK-MAN        50          NCSNCK-RUN        50

# NetLS RT

LSSERVER-ADMIN    50          LSSERVER-MAN      50
LSSERVER-RUN      50

# NFS

NFS-INC           50          NFS-MAN           50
NFS-RUN           120

# ARPA

ARPA-AUX          50          ARPA-AUX-MAN      50
ARPA-INC          50          ARPA-MAN          50
ARPA-RUN          50

#MAN PAGES
ALLBASE-MAN       50          AUDIO-MAN         50
FDDI-MAN          50          IMAGNG-RUN-MAN    50
LISP-MAN          50          X25-MAN           50
FORTRAN-MAN       50          PASCAL-MAN        50
LVM-MAN           50          MIRROR-MAN        50
SOE-MAN           50          SWITCHOVER-MAN    50
```

B1865A: Developer's Toolkit

```
Part Numbers

B1865-13412/0900        10000
B1865-13313/0900        10000
B1865-87013/0900        10000

# X11/OSF/Motif/VUE Prog.

X11R5-PRG         50          X11R5-PRG-MAN     50

#Starbase Prog

FAFM-PRG          50          STAR-PRG          50
STAR-DEMO         50

# Starbs DL Prg

SBDL-PRG          50          SBDL-DEMO         50

# Gn'l Prg.Tool

PROG-AUX          50          PROG-AUX-MAN      50
PROG-MIN          50          PROG-MIN-MAN      50
SRC-CNTL          50          SRC-CNTL-MAN      50
```

B2379A: General Programming

```
Part Numbers

B2379-13413/0900        10000
B2379-13313/0900        10000
B2379-87014/0900        10000

# Gn'l Prg.Tool

PROG-AUX          50          PROG-AUX-MAN      50
PROG-MIN          50          PROG-MIN-MAN      50
SRC-CNTL          50          SRC-CNTL-MAN      50
```

B1012B: NS

```
Part Numbers

B1012-13301/0900        10000
B1012-87001/0900        10000
B1012-13601/0900        10000

VT3K            50          NS-MAN          50
NS-SERV         50
```

B2386A Japanese HP-UX Run-Time, 1-2 User = Japanese NLIO + Japanese L10N

```
Part Numbers

B2386-13401/0900        1000
B2386-13303/0900        1000
B2386-87002/0900        1000

# Japanese NLIO

KFA-FM          50          NLIO-JPN        50
NLIO-JPN-MAN    50          NLIO-MIN        50
NLIO-MIN-MAN    50          NLX11-JPN       50
NLX11-SUB       50          STICK-JPN       50

# Japanese L10N

JAPANESE-CAT    49          JAPANESE-MAN    49
JAPANESE-X11    49
```

B2388A: Korean HP-UX Run-Time, 1-2 User = Korean NLIO + Korean L10N

```
Part Numbers

B2388-13401/0900        1000
B2388-13302/0900        1000
B2388-87002/0900        1000

# Korean NLIO

NLIO-KOR          50          NLIO-MIN          50
NLIO-MIN-MAN      50          NLX11-KOR         50
NLX11-SUB         50          STICK-KOR         50

#Korean L10N

KOREAN-CAT        49          KOREAN-X11        49
```

B2389A: T-Chinese HP-UX Run-Time, 1-2 User = T-Chinese NLIO + T-Chinese L10N

```
Part Numbers

B2389-13401/0900        1000
B2389-13302/0900        1000
B2389-87002/0900        1000

# T-Chinese NLIO

NLIO-CHT          50          NLIO-MIN          50
NLIO-MIN-MAN      50          NLX11-CHT         50
NLX11-SUB         50          STICK-CHT         50

# T-Chinese L10N

CHINESET-CAT      49          CHINESET-X11      49
```

B2390A: S-Chinese HP-UX Run-Time, 1-2 User = S-Chinese NLIO + S-Chinese L10N

```
Part Numbers

B2390-13401/0900        1000
B2390-13302/0900        1000
B2390-87002/0900        1000

# S-Chinese NLIO

NLIO-CHS          50          NLIO-MIN          50
NLIO-MIN-MAN      50          NLX11-CHS         50
NLX11-SUB         50          STICK-CHS         50

#S-Chinese L10N

CHINESES-CAT      49          CHINESES-X11      49
```

B2391A: German HP-UX Run-Time, 1-2 User = German L10N

```
Part Numbers

B2391-13401/0900        1000
B2391-13302/0900        1000
B2391-87002/0900        1000

# German L10N

GERMAN-CAT        49          GERMAN-X11        49
```

B2392A: French HP-UX Run-Time, 1-2 User = French L10N

```
Part Numbers

B2392-13401/0900        1000
B2392-13302/0900        1000
B2392-87002/0900        1000

# French L10N

FRENCH-CAT       49          FRENCH-X11       49
CFRENCH-CAT      49          CFRENCH-X11      49
```

B

Creating, Using, and Managing a Netdist Server

This appendix explains how to use a network distribution server (called a **netdist server**). A netdist server has the capability to be a source of update media for *update*(1M). The media is distributed to a remote system (called a **client system** or a **local system**) over a network.

The *netdistd*(1M) entry in the *HP-UX Reference* document supplements the information in this appendix.

To use a netdist server during an update, run the `/etc/update` program on the client system as usual and specify a netdist server as the source of media (filesets) instead of specifying a tape or CD-ROM disk. You need to know the networking address or hostname for the netdist server. Otherwise, you use the update program according to the steps described in Chapter 4: Updating HP-UX.

This appendix does *not* explain how to use a netdist server. Instead, it describes server requirements and how to perform the following tasks:

- Create (set up) a network distribution server (*netdist server*).
- Add filesets to the netdist server. This includes isolating a netdist server from processes related to ongoing updates. Isolating the server lets you add new or modified filesets to it without affecting the filesets being distributed by the server to client (remote) systems.
- Identify the filesets that are available for a network installation or update.
- Examine the log file created during an installation or update to identify possible problems.

Overview of a Network Distribution Server

The following items indicate why you might want to use a netdist server to obtain filesets for an update:

- You have a group of networked systems, and you want to update all of them to a new release of HP-UX.
- You have a group of networked systems, and you must add software to all of them.
- You need to perform an update across architectures, making a Series 300/400, 700, or 600/800 computer into a netdist server.

You cannot use a netdist server to perform an update until the server exists on a network that client systems can access. You create a server, if necessary, by running `/etc/updist` (a variant of `/etc/update`) on the desired system.

When you create a netdist server, the `/etc/updist` program transfers filesets from conventional media (tapes or CD-ROM disks) to a directory that is typically named `/netdist`. These filesets subsequently become the ones a client system can use as the source media for its update.

After you create the netdist server (that is, the `/etc/updist` program adds the distribution filesets to the server and completes its work), you start up a `netdistd` daemon on the server. Client systems on the network can then obtain filesets during their update from the `/netdist` directory on the server because the `netdistd` daemon delivers the filesets as if they were on conventional media.

Requirements for a Network Distribution Server

The system you make into a netdist server must meet the following requirements. If your system does not meet the requirements, take time to configure it so it does. Then, return to this section and continue.

Hardware and Disk Space Requirements

- Have the necessary networking hardware installed and configured.

  See the *LAN Interface Controller (LANIC) Installation and Reference Manual* and the *LAN Cable and Accessories* Manual if you need information.

- Ensure that the server has adequate disk space. The following items offer guidelines for minimum amounts of space:

  - 100 MBs for the Series 300 runtime product.
  - 120 MBs for the Series 700 runtime product.
  - 140 MBs for Series 800 multi-user runtime product.
  - 200 MBs for the Series 800 server runtime product.

- Also, you might need additional space for applications. You might want to mount a separate disk on the `/netdist` directory and let the netdist server distribute files from that disk (directory). The *System Administration Tasks* manual has information about mounting disks on file systems.

  For example, to distribute software for Series 300, 400, 700, and 800 systems, you might mount a disk of 660 MBs (or more) on the `/netdist` directory.

Software Requirements

- To distribute the 9.0 release to client systems, the netdist server must be running an appropriate release (at least 8.05, unless the 8.05/9.0 versions of updist/netdistd are obtained from an 8.0 system). Regardless of the release, the netdist server should have the LANLINK and ARPA filesets.
- If necessary, configure the LANLINK software according to directions given in the following documents:

  Installing and Administering ARPA Services.
  Installing and Administering LAN/9000 Series 800.

- To transfer the TOOL Fileset Archive files between the netdist server and client systems, set up FTP (File Transfer Protocol) in the *anonymous* mode on the netdist server. FTP is not the only facility for transferring files, but it does provide an effective one for transferring files among networked systems. In the past, the use of FTP was optional. For the 9.0 release, the netdist server must have *anonymous ftp*. You can use *sam*(1M) to set up *anonymous ftp*, or you can use the document named *Installing and Administering ARPA Services* to set it up manually.

Create and Use a Network Distribution Server

This section attempts to be complete. If you need additional information, the final section (in this appendix) named "If You Need More Information ... " contains pointers to other documentation.

You cannot perform an update over a network to a client system unless some system on the network is a netdist server.

If your network does not already have a netdist server, create one by working through the steps in this section. If your network does have an accessible netdist server, you can ignore this section.

Working through the following steps assumes the system you make into a netdist server is not already one. (In a later section, you will see the need to isolate a netdist server before you add filesets that the server can subsequently distribute to client systems. The procedure for isolating and then updating an existing netdist server is separate from the one for creating a server.)

Step 1: Create the Netdist Server

1. Be sure the system you make into a netdist server meets the minimal hardware and software requirements described in the previous section.
2. The system that will become the server must be running at least an 8.05 release of HP-UX, and you must be logged in as the superuser.
3. On the system that will become the server, make a directory named `/netdist` (if it does not already exist). You can specify a different path if you do not like `/netdist`. If you use a different path, know why using a different path is important and account for it when you perform other tasks.
4. Examine the file named `/etc/services` to see if it contains an entry for the netdist server. The entry should look something like this:

   ```
   netdist          2106/tcp          # network file distribution
   ```

   The `2106` is the default port number on the server.

   If the entry does not exist, edit `/etc/services`, adding the line as shown above. Enter the appropriate port number if you do not use the default.
5. Insert the media for the 9.0 release in the drive you intend to specify as the source device (for example, a DDS cartridge tape drive or CD-ROM disk drive). You can, when you run the `/etc/updist` program, specify another netdist server as the source device. If you intend to do this, you must know the network name of the server before you run `updist`.
6. Run the `/etc/updist` program to load filesets from the source-device media to a hierarchical structure beneath the `/netdist` directory.

   The filesets you load during this step are the *only* ones the netdist server can subsequently distribute to a client system when that system requests filesets during an update.

To distribute software for Series 300, 400, 700, *and* 800 systems, run the `updist` program for each set of update media. The filesets are loaded into separate directories under the `/netdist` directory according to the series.

7. When the filesets have been loaded and the `updist` program completes its work, you should start up the system as a netdist server by executing:

   ```
   /etc/netdistd -l
   ```
   The option is a lowercase L

   You may need to specify other options if you do not use the defaults or if you specified a directory other than `/netdist`.

   When you execute the command shown in the example, the netdist server functions as follows:

   a. The `netdistd` program is a daemon that monitors the network for distribution requests.

   b. The `-l` option causes the netdistd daemon to log activity and error information, saving the information in a file named `/usr/adm/netdist.log`. (A later section in this appendix describes the netdist log entries.)

   If you need information about other options to the `/etc/netdistd` program, see *netdistd*(1M) in the *HP-UX Reference*.

Step 2: Make /etc/update Available to Clients

The `/etc/update` program on the netdist server must be available for network distribution of filesets requested by client systems.

1. On the newly created netdist server, build the TOOL archive from the `/netdist` directory by executing the following commands as appropriate.

   Series 300/400 Execute the following commands to distribute software to Series 300/400 clients:

   ```
   cd /netdist/300/TOOL/product
   tar -cvf /tmp/TOOL.300 etc system
   ```

   Series 700 Execute the following commands to distribute software to Series 700 clients:

   ```
   cd /netdist/700/TOOL/product
   tar -cvf /tmp/TOOL.700 etc system
   ```

   Series 800 Execute the following commands to set up the server distribute software to Series 800 clients:

   ```
   cd /netdist/800/TOOL/product
   tar -cvf /tmp/TOOL.800 etc system
   ```

2. This step assumes you set up *anonymous ftp* on the netdist server. (The need to do this was discussed in a previous section named "Requirements for a Network Distribution Server".)

Make the TOOL archive available to client systems by putting the archives in a directory where other systems can get them. Execute the following commands as appropriate.

Series 300/400

```
mkdir /users/ftp/dist
mv /tmp/TOOL.300 /users/ftp/dist/TOOL.300
chmod 444 /users/ftp/dist/TOOL.300
```

Series 700

```
mkdir /users/ftp/dist
mv /tmp/TOOL.700 /users/ftp/dist/TOOL.700
chmod 444 /users/ftp/dist/TOOL.700
```

Series 800

```
mkdir /users/ftp/dist
mv /tmp/TOOL.800 /users/ftp/dist/TOOL.800
chmod 444 /users/ftp/dist/TOOL.800
```

Step 3: Set Appropriate Permissions

The client systems must have permission to access the netdist server. You set permissions in the `/usr/adm/inetd.sec` file on the netdist server. It is not possible to anticipate every situation, but the following two examples show some entries.

The following example denies host `192.23.4.3` access to the NFS server named `rpc.mountd`.

```
mountd     deny    192.23.4.3
```

The example following the list allows the use of `rlogin` to:

- Hosts in subnets 3 through 5 in network 10.
- The host with internet address of 192.34.56.5.
- The host with the name `ahost`.
- All the hosts in the network named `anetwork`.

```
login      allow   10.3-5 192.34.56.5 ahost anetwork
```

At this point, set the permissions for your netdist server. If you need some help, the *inetd.sec*(5) entry in the *HP-UX Reference* has information about creating permissions. When you complete this step, the netdist server should be ready to accept requests from client systems for distribution of filesets.

If You Need More Information ...

If working through the above steps causes you to need more information about creating and using a netdist server, read the following documents as appropriate:

- For information on the netdistd daemon, see the *netdistd*(1M) entry in the *HP-UX Reference*.
- For information on creating or using *anonymous ftp*, see the *Installing and Maintaining NS-ARPA Services* document or the *sam*(1M) entry in the *HP-UX Reference* manual.
- For information on disk space, see the *How HP-UX Works: Concepts for the System Administrator* manual.
- For information on networking hardware, see available hardware configuration manuals and data sheets (for example, the *HP9000 Series 300 Hardware Configuration Guide*).

Isolate Processes on a Server Before Updating It

After you create a netdist server, you will probably update the server's `/netdist` tree periodically to make new or updated filesets available to clients.

Before you update a netdist server so it can distribute new software, you need to isolate the server from any child processes that are accommodating current updates of clients via the server's parent process for the netdistd daemon. *Isolating a netdist server* relates to killing certain processes and not killing other processes. As well, it relates to letting some processes terminate.

You need to isolate the netdist server *before* you update it.

This section explains how to isolate the server. The next section explains how to add filesets to an existing server (this includes updating the server to a new release of HP-UX). Be sure to coordinate your actions across the two sections.

Isolating the Server

1. The daemon named `netdistd` spawns child processes to handle incoming requests for updates, one child process for each request. For example, if three requests are being serviced, four copies of the netdistd daemon are running (one parent process and three child processes).
2. Before you isolate the server so as to *not* disturb any updates being performed by clients, you need to identify the parent process for the server's netdistd daemon. To do this, examine the log file named `/usr/adm/netdist.log`. The line showing the parent process in the log file should look something like this:

```
netdistd.560 14:59:46...Started on port 2106
```

A line in the log file that begins with **netdistd** indicates a *parent* daemon. The process ID (PID) immediately follows the period after **netdistd** (which is 560 in the line above). Lines for *child* processes begin with a digit (for example, 1 or 2).

3. Having determined the PID of the parent process of the netdistd daemon, kill the process. Do *not* kill any of the child processes, wait for them to terminate normally. In reference to the above example, you could execute:

   ```
   kill 560
   ```

   If you need more information about killing a process, see the *kill*(1) entry in the *HP-UX Reference*).

Having isolated the netdist server from updates it is providing for client systems, you can update the server without disturbing the updates of clients. You need to wait for the server to *drain* itself. In the state you just created for the server, no new distributions are allowed. The server waits for existing distributions to finish.

Add Filesets to a Netdist Server as Appropriate

This section explains how to update an existing server, adding filesets to the server or updating the server to a new release.

Do *not* update an existing server unless you have isolated it from updates it might be providing for client systems. Not isolating the server might cause a core dump or cause the filesets being distributed to a client system to become corrupted. The previous section explained how to isolate the server. Once you have isolated the server, work through the following steps to update it:

1. Insert the media for the filesets to be added in the device you intend to specify as the source device (probably a tape drive or CD-ROM disk drive). You can, when you run the `/etc/updist` program, specify another, existing netdist server as the source device. If you intend to do this, you must know the name and port number of the server before you run `updist`.
2. Run the `updist` program to load filesets from a tape, CD-ROM disk, or another netdist server to a hierarchical structure beneath the `/netdist` directory.

   The filesets you load during this step (plus the filesets that are already on the server) are the *only* ones the netdist server can subsequently deliver to a client system when the client system requests filesets during its update.

   To distribute software for Series 300, 400, 700, *and* 800 systems, run the `updist` program for each set of update media. The filesets are loaded into separate directories under the `/netdist` directory according to the series.

3. When the filesets have been loaded and the **updist** program completes its work, start up the system as a netdist server by executing:

   /etc/netdistd -l *Option is a lowercase L*

   You may need to specify other options if you do not use the defaults or if you specified a directory other than **/netdist**.

   When you execute the command shown in the example, the netdist server functions as follows:

   a. The **netdistd** program is a daemon that monitors the network for network distribution requests.

   b. The **-l** option causes the netdistd daemon to log activity and error information, saving the information in a file named **/usr/adm/netdist.log**. The next section in this appendix describes the netdist log entries.

   If you need information about other options to the **/etc/netdistd** program, see the *netdistd*(1M) entry in the *HP-UX Reference*.

Use the netdist.log File to Get Information

The netdistd daemon records events in a file named `usr/adm/netdist.log` if you specify the `-l` option when you start the daemon (that is, when you execute `/etc/netdistd -l`).

The log file contains the following information:

- Process ID of the parent netdistd daemon.
- Number of remote, incoming requests from the update program.
- Number of update program requests currently being serviced. By default, a netdist server can service twenty remote update sessions simultaneously. To change the default, use the `-C` option, as described in the *netdistd*(1M) entry in the *HP-UX Reference*.

Here is an example of a log file (The example is explained on the following page. The series numbers will vary according to your systems.):

```
Version @(#)$Revision: 64.7 $
Startup
Building database 14:56:42

Database ready 14:59:46

netdistd.560 14:59:46...Started on port 2106
Parent daemon
netdistd.560 14:59:46...Connection limit is 20

1.562 15:09:22...Begin service for hptest on port 2106
First child daemon
1.562 15:09:22 update @(#) $Revision: 64.492 $

1.562 15:09:22 HP-UX hptest A.B7.00 B 9000/800 15453

2.570 15:10:36...Begin service for hpclient on port 2106
Second child daemon
2.570 15:10:36 update @(#) $Revision: 64.492 $
```

```
2.570 15:10:36 HP-UX hpclient 7.0 B 9000/300

1.562 15:13:02...End service for hptest

2.570 15:27:17...End service for hpclient
```

Startup: The first three lines in the preceding example print when you start the **netdistd** program. The first line shows the version of the **netdistd** program; the second and third lines indicate that the database was initialized successfully.

Parent daemon: Entries beginning with **netdist** indicate a *parent* daemon. The parent daemon's process ID (PID) is the number immediately following **netdist** (560 in the example). When isolating the **netdist** server, use this PID to kill the parent daemon process.

Child daemons: Entries beginning with a digit indicate "child" daemons. The first number (for example, the 1 in 1.562) is a counter that increments by one each time a child daemon is spawned. This counter lets you determine the number of update sessions that have used this netdist server since the server was started. In the opposite example, two child daemons (1.562 and 2.570) have been spawned from the parent daemon (560).

The number following the counter (for example, the 562 in 1.562) is the child daemon's process ID (PID). *Do not kill the child process*. Killing a child process will interrupt an update of a client system that is in progress.

Manage Fileset Availability on a Server as Necessary

The purpose of a netdist server is to make filesets available to client systems for an update. This means you might, at times, want to know which filesets are available and control the access to those filesets.

Examining the MAIN.pkg File

The `updist` program automatically creates a file named `/netdist/MAIN.pkg`. The lines in the file look something like this:

```
source "/netdist/300/ACCOUNTING/netdist.pkg";
source "/netdist/300/ALLBASE1/netdist.pkg";
```

Statements that begin with `source` identify filesets that are available for network distribution.

Restricting Access to Filesets

You can make a fileset unavailable for distribution to clients by editing `MAIN.pkg` in either of the following ways, noting that the file is in `/netdist` (the default) or the directory you specified when you created the netdist server:

1. insert a pound sign (`#`) at the beginning of each line naming a fileset you do not want to distribute, *or*
2. delete each statement having a fileset you do not want to distribute.

Exercise care in restricting access to a fileset because some filesets have dependencies on other filesets. Looking at lines in `MAIN.pkg`, you will see comments under lines that begin with `source`. The comments indicate dependencies on other filesets. The following lines show examples:

```
...
source "/netdist/800/NS-SERV/netdist.pkg";
#NOTE:  NS-SERV depends on LANLINK
...
source "/netdist/800/NFS-RUN/netdist.pkg";
#NOTE:  NFS-RUN depends on LANLINK
...
source "/netdist/800/LANLINK/netdist.pkg";
...
```

Looking at the example, you see that the NS-SERV and NFS-RUN filesets depend on the LANLINK fileset. Therefore, do *not* comment out the source statement for a fileset (LANLINK) that contains files required by other filesets (NS-SERV and NFS-RUN unless you also comment out those filesets.

To restrict access by editing MAIN.pkg, work through the following procedure:

1. Isolate the netdist server according the directions given earlier in the section named "Isolate Processes on a Server Before Updating It".
2. Determine which filesets you do not want to distribute over the network. Do this by inspecting MAIN.pkg and any other documents you may have that relate to network distribution of HP products.
3. Edit the MAIN.pkg file as explained above (comment out or delete lines). This does *not* remove the filesets from the netdist server. You are only making them unavailable to client systems. If you update an existing netdist server, it is possible to have duplicate entries in the MAIN.pkg file. You must comment out or delete all related entries to make filesets unavailable to clients.
4. If you need to remove any filesets from the server, you can use the following command, which removes the specified directory.

   ```
   rm -rf /netdist/300/ACCOUNTING
   ```
   Specify a series number and fileset name as appropriate.
5. Restart the netdist server by executing the following command:

   ```
   /etc/netdistd -l
   ```
   The option is a lowercase L

   .

C

Troubleshooting an Update

This appendix has information that crosses architectures. Note your system as appropriate.

Situation	Possible Problem	What to Do
Updating from a local tape drive.	Cannot verify the specified source. Change the source specified, or ensure the media is loaded and ready to read.	Take the following actions: 1. Have the media inserted in the drive and wait until the drive finishes the initialization process (the indicator says the drive is ready). 2. Ensure your source is correct: ■ For Series 300/400/700, the default source is `/dev/update.src`. ■ For Series 800, the default source is `/dev/rmt/0m` . If your system does not have the default device file, if you are updating from a different source, or if you are updating a Series 800 from cartridge tape, you must specify the correct name of the source device's device file.

Situation	Possible Problem	What to Do
Updating from a local source.	Cannot open source *name*:	Ensure your source is correct: ■ For Series 300/400/700, the default source is **/dev/update.src**. ■ For Series 800, the default source is **/dev/rmt/0m**. If your system has no default device file, if you update from a different source, or if you updae from cartridge tape, you must specify the name of the source device's device file.
Updating from CD-ROM.	Not all the software you purchased is displayed.	You did not enter a codeword, or you entered an incorrect codeword. Return to the Main Menu and select the menu item **Enter Codeword**. Check your CD-ROM Certificate (shipped with your software purchase) for your codeword. Re-enter it correctly.

Situation	Possible Problem	What to Do
While updating from CD-ROM, you entered an incorrect codeword.	The codeword you entered cannot be verified ...	Examine the following situations: ■ Make sure you typed the codeword correctly. ■ Highlight the `Verified Hardware ID` field and activate `Help`. The hardware ID listed on the CD-ROM Certificate must match one of the displayed legal IDs. If the hardware ID is not present, connect the hardware device represented by that ID (for example, an HP-HIL module). ■ Also, make sure you inserted the correct CD-ROM disc.

Situation	Possible Problem	What to Do
The CD-ROM disc is not mounted.	Cannot update from source directory *dir_name*.	Take the following steps: 1. Do a shell escape (activate `Shell`). 2. Mount the CD-ROM drive as described in the update chapter. 3. Type `exit` to return to the update. 4. Activate the `Change Source or Destination`. Then, activate `From CD-ROM (directory) to Local System`. Type the CD-ROM information and continue.

Situation	Possible Problem	What to Do
While updating from CD-ROM, you inserted the HP-UX Install disc instead of the HP-UX Core Operating System disc or HP-UX Application Software disc.	Cannot copy *file_name* to *file_name*.	Take the following steps: 1. Exit the update program. 2. Execute: `umount /UPDATE_CDROM` 3. Remove the HP-UX Install disc. 4. Insert the correct disc and then mount the disc. 5. Executing `ll /UPDATE_CDROM` should show a date that indicates the disc is mounted. 6. Restart the update program and work through the program again as required.
A customize script has failed.	Type `exit` to return to update.	Check `/tmp/update.log` and re-run the customize script as indicated.
Garbled display or odd behavior after the update.	No error message appears.	The `TERM` variable is probably set incorrectly. Chapter 2 discussed this, and typing CTRL-L refreshes the screen.

Situation	Possible Problem	What to Do
Updating from a netdist server.	The following items indicate a problem: 1. Netdist server host *name* is not in the hosts database. 2. Cannot connect to netdist server running on host *x* at port *y*: Server not running or connection refused. 3. Connection closed by netdist server on host *name*: Access to this server is restricted. 4. Server has no filesets for this architecture.	For each messages, make sure the host name and port number are correct. If you do not know the correct name or number, see the network or system administrator. 1. Either add an entry for the server host to the hosts database, or use the server host's internet address instead of its host name. 2. The **netdist** server probably is not running on the specified host. Contact the network administrator. 3. The network administrator must modify the server's security file so your system can use the **netdist** service. 4. Either locate a server that can distribute software for your system type, or configure the specified server so it can distribute software.

Situation	Possible Problem	What to Do
Updating a cluster.	The following items indicate a problem: 1. The Series 300 software on this update media cannot be loaded correctly on a Series 700 clustered system due to missing CDF information. 2. The software on this update media might not function correctly on a clustered system due to missing CDF information.	Take the following actions: 1. On a Series 700 cluster, **update** requires CDF information that does not exist on pre-8.0 media. Obtain a 9.0 version of this software. 2. If you want to convert this system into a cluster server, you need a 9.0 version of this software. If you do not intend to convert the system into a cluster server, you can ignore this message.
Configuring a **netdist** server (running **updist**).	The software on this update media cannot be distributed by a **netdist** server due to missing CDF information.	Network distribution requires CDF information that does not exist on pre-8.0 media. Obtain a 9.0 version of this software.
The **netdistd** program does not start up.	The following items indicate the problem: 1. Network service *name* is not in the services database. 2. Address already in use.	Take the following actions: 1. Either add an entry to **/etc/services**, or specify a port number using the **-P***port* option (see *netdistd*(1M) in the *HP-UX Reference* and *services*(4) in the *Networking Reference*). 2. Another **netdist** server program is running on the specified (or default) port. Specify a different port using the **-P***port* option.

Situation	Possible Problem	What to Do
You neglected to load the 9.0 version of the **update** program on your system.	This update media requires *req_version* or greater of update. This is *existing_version* of update.	Take the following actions: 1. Exit the update program. 2. Return to the update chapter and work as required, being sure to work through the step that has you extract the TOOL fileset.
You inserted the first update tape, and you cannot continue.	The following items indicate possible problems: 1. The media type appears to be Logical Interchange Format (LIF) ... 2. The media is an unrecognized (invalid) type, or it might be corrupt. 3. The information files on the media did not exist or could not be read ... 4. You might get other messages that indicate the media is not appropriate.	You possibly took any of the following actions: 1. You inserted a tape for a previous version that is not supported. 2. You inserted a tape that, itself, has a defect. 3. You inserted a tape that has an incorrect format. For any of these problems, contact your HP representative.

Situation	Possible Problem	What to Do
Destination disk is almost full.	The following items show this problem. ■ It is recommended you free up *n* kbytes. ■ Loading the selected filesets would result in less free disk space.	See freeing up disk space in the update chapter. Also, see "Managing the File System" in the *System Administration Tasks* document.
Not enough disk space to complete the update.	The following items show the problem: ■ You MUST free up *n* kbytes. ■ Loading the selected filesets is impossible due to insufficient space on one or more file systems.	See freeing up disk space in the update chapter. Also, see "Managing the File System" in the *System Administration Tasks* document.

Situation	Possible Problem	What to Do
Selected filesets caused a system reboot, and unexpected processes are running.	A non-essential process started (other than those expected at the time of system reboot).	Take any of the following actions: ■ Continue, and the processes will terminate when **update** reboots the system. Users may lose work in progress. ■ Do a shell escape and run **cat** or **more** on **/tmp/update.procs** to get PIDs of nonessential processes. Kill those processes using **/tmp/update.killall**. ■ Do a shell escape and run **ps -ef** to inspect all processes running on the system. ■ Exit **update** and run **shutdown**. Then, restart **update**. You will lose partition and fileset selections already made. ■ Do a shell escape and run **/tmp/update.killall**, a script built by update to terminate non-essential processes.

Situation	Possible Problem	What to Do
Series 800 The **update** program quit without successfully building a kernel.	The screen will not have messages, but they are logged to **/tmp/update.log**.	Probably a mismatch between your hardware configuration and the **/etc/conf/gen/S800** file. Fix **S800**. See "Reconfiguring the Kernel" in the *System Administration Tasks* manual. Type **exit** to return to the update facility, and that program will attempt to rebuild the kernel.
Series 800 You are given a shell and instructed to fix a gen file.	Messages will vary.	Perhaps due to a mismatch between your hardware configuration file and the configuration file (**/etc/conf/gen/S800**). See "Reconfiguring the Kernel" in the *Series 800 System Administration Tasks* manual, and perhaps the hardware installation and configuration guide. Before you re-execute **/etc/update**, ensure that the running kernel (**/hp-ux**) and the kernel-generation file agree.

Situation	Possible Problem	What to Do
Series 800 Messages are overwriting the update screen (update media: 9-track tape).	Any variety of kernel messages.	Use (CTRL)-(L) to refresh the screen if **update** is not loading filesets (do not touch keyboard during loading).

Series 800 The process quits at boot-up, either during or after an update.	Utility requires more memory than is configured.	Reset the ISL *fastsize* parameter:
		1. Turn the processor off and then on.
		2. When you see the following prompt, interrupt the autoboot process by pressing any key:
		`To override, press any key within 10 seconds.`
		3. Press **y** at this prompt:
		`Boot from primary boot path`
		4. Press **y** at this prompt:
		`Interact with IPL`
		5. When you see the **ISL>** prompt, type:
		`fastsize f`
		6. Again, turn the processor off and then on. The autoboot should now succeed.

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