

Installing HP-UX 11.0 and Updating HP-UX 10.x to 11.0

HP 9000 Computers

Edition 1



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1 Updating and Installing: Task Information

Chapter Contents

- Updating and Installing: Why Do It?
- Task-Information Roadmap.

Updating and Installing: Why Do It?

One of the first questions needing to be answered when system hardware has to be changed is: should the system undergo an update of just the software concerned, or is it more effective and less error-prone to just re-install the entire disk. Where the change involves a new file system layout, as in the transition between HP-UX 9.x and 10.x, there is also the question of whether to *upgrade* or re-install.

Background

Ignite-UX is the new installation tool from HP which has replaced the old "cold install" toolset for installations, both for single systems and for large replicated sites consisting of many networked systems.

A number of installations tasks are possible, using Ignite-UX:

- Install from media.
- "Pull" or "push" install from Ignite-UX server via network.
- "Push" re-install to many replicated systems from server.
- Re-install/Recovery of a damaged system.
- Recovery of a corrupt root disk.

Ignite-UX provides several advantages over the previous Cold Install product:

- At large sites, where speed of installation is crucial, Ignite-UX can install one system whose configuration can then act as a model for all later installations.
- The user interface employs tabbed dialogs to allow more configuration capabilities. In addition, a wizard mode is available for additional guidance.
- Loads can occur from multiple software sources in a single install session. For example, you can install a base operating system from one SD depot, a set of patches from another depot, and applications from a third depot, all in one session.

Ignite-UX can be set up so that new systems, when cold-booted from the Ignite-UX server, can install a predefined default configuration ("golden disk") without further user intervention.

Moreover, for a system being re-installed with Ignite-UX, the install process can be initiated from the server with no local intervention at the client system.

The System Administrator can also set up configuration files ahead of time for existing systems. Ignite-UX will use these during install instead of the default configuration. This can ensure that specific existing systems get unique configurations.

Install Scenarios

This manual presents a number of scenarios which will help you to follow the following procedures:

- Updating your current OS and applications. This involves using the SD-UX tools to install SD-packaged products and bundles onto your existing system. It can serve to either update the OS or other software, while leaving data files untouched. If you need to upgrade from 9.0x, please see the manual *Upgrading from HP-UX 9.x to 10.01*.
- Installing a system from media. This is usually done with single or few standalone systems, using a CD-ROM source.
- Installing a system from a network ("pull" from a client). This is done with a small networked site (fewer than 50 clients and few servers), and may or may not use a standard system image.
- Installing a number of systems from a network ("push" from a server). This is done where there are many client systems and they all generally require a similar installation. This may use a standard system image, or "golden disk".
- Re-installing a number of systems from a network server. This is done where the client systems are to be "updated" and their data is kept on separate servers, so that only the OS and minimal system information need to be re-installed. This may also use a standard system image, or "golden disk".
- Building a recovery system for the target. This can be done while you are in an install session.

Other "mixed scenarios" are also possible. For information on upgrading a system from HP-UX 9.x, see the manual *Upgrading from HP-UX 9.x to 10.x* (HP Part No. B3782-90073).

The following Task-Information Roadmap will help you find information on the main installation tasks you are likely to encounter.

Task-Information Roadmap.

This manual documents procedures for installing and updating your HP-UX operating system and software. For doing "cold installs" which completely overwrite the data on the specified disk(s), the Ignite-UX tool replaces the old Cold Install toolset. It can be used for installing previous 10.x versions, as well.

The following tasks are covered, in the indicated locations:

Table 1-1

Installation/Update Task Roadmap

Task	Location of Information
Upgrading a 9.0x system to 10.x.	<i>Upgrading from HP-UX 9.x to 10.01.</i>
Updating a 10.x system to 11.0. <i>See the list of supported systems at the beginning of Chapter 2.</i>	See "Updating to HP-UX 11.0" in Chapter 2, "Updating an Existing Operating System and Software." See also <i>Managing Systems and Workgroups</i> and <i>HP-UX 11.0 Release Notes</i> (also available online in /usr/share/doc).
Updating a 10.x system (from any SD depot)	See "Updating HP-UX Software" in Chapter 2, "Updating an Existing Operating System and Software."
Updating applications (from any SD depot)	See "Updating HP-UX Software" in Chapter 2, "Updating an Existing Operating System and Software."
General Ignite-UX system administration (with examples)	Appendix C, "Ignite-UX System Administration."
Setting up for large/repeated installations	Chapter 4, "Configuring an Ignite-UX Server." Also see Appendix C, "Ignite-UX System Administration."

Updating and Installing: Task Information
Task-Information Roadmap.

Task	Location of Information
(Cold) Installing HP-UX from media	Chapter 3, "Installing From Media."
(Cold) Installing HP-UX from the network	Chapter 5, "Installing from the Ignite-UX Server."
Installing Extension Software or bundled applications from media (as part of an install session).	Chapter 3, "Installing From Media."
Installing Extension Software or bundled applications from the network (as part of an update session).	Chapter 2, "Updating an Existing Operating System and Software."
Configuring a network for installation.	Chapter 5, "Installing from the Ignite-UX Server," Appendix C, "Ignite-UX System Administration," and Appendix A, "Configuring for a DHCP Server."
Creating config files for installation.	Appendix B, "Using Configuration Files."
Booting systems from the network.	Chapter 4, "Configuring an Ignite-UX Server."
Booting systems from media.	Chapter 3, "Installing From Media."
Building a recovery system; repairing a damaged OS or file system.	Chapter 6, "HP-UX System Recovery."
Troubleshooting an installation process.	Chapter 7, "Troubleshooting."

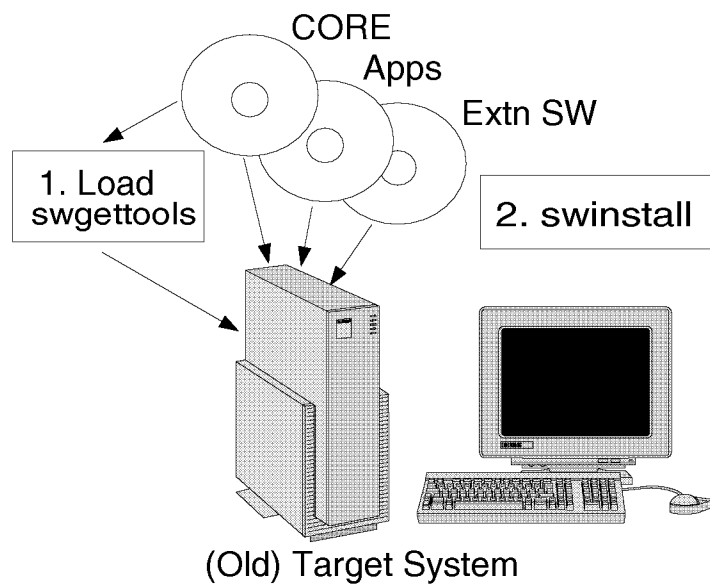
2 Updating an Existing Operating System and Software

Chapter Contents

- Overview.
- HP-UX System Requirements.
- Updating SD-UX Before Installing/Updating Software.
- Updating HP-UX Software.
- Updating to HP-UX 11.0.
- Using HP-UX Extension Software.
- Adding Additional Functionality.

Updating a System

Figure 2-1



Overview.

NOTE

As of the HP-UX 11.0 release, Multi-Stream support has been added which enables SD-UX to store products and filesets of more than one bit-type in a single SD-UX depot, manage these software collections, and install them to systems.

For information on special procedures for 32-bit and 64-bit updates and supported hardware, see “Updating to HP-UX 11.0” in this chapter.

Updating your system from the existing HP-UX 10.x, to another version of HP-UX involves using `swinstall` and other SD-UX tools with a standard source, such as a network server, tape, or CD-ROM, to install the appropriate bundles, products, or filesets.

Upgrading means using a suite of tools (version 9.U3 of the Upgrade tools) to update your system from HP-UX 9.0x to 10.0. It may also involve determining hardware compatibility (see “Updating to HP-UX 11.0”). For upgrading your 9.0x system, refer to the manual *Upgrading from HP-UX 9.x to 10.x*.

- If you plan to update from HP-UX 10.0 to 10.20 or later, you will have to update your system first to HP-UX 10.01 or 10.10.

CAUTION

Executing `swinstall` to update from 10.01 or later will not succeed unless you first obtain and execute the `swgettools` command found on the new media. This will update the SD-UX commands. Failure to update SD-UX from the old version will result in error messages and failure of the update process.

The instructions for using `swgettools` are in “Updating SD-UX Before Installing/Updating Software”, in this chapter.

-
- It is highly recommended that you do a system backup before starting to do an update.
 - If you already have the new HP-UX on your root disk, via Instant Ignition or an installation, and you want to update applications, go to “Updating HP-UX Software”, in this chapter.

HP-UX Update Requirements

Update and Upgrade Paths	You can use the SD-UX tools to update your OS to a later version of HP-UX, from 10.01, 10.10, 10.20, or 10.30. For upgrades to 10.x from 9.0x, see the manual <i>Upgrading from HP-UX 9.x to 10.01</i> . You can also use SD-UX to install or update applications.
Required Kernels	• The 32-bit kernel can execute on any Server or Workstation supported on 11.0, except the V2200 Server. • The 64-bit kernel executes only on certain Servers. The V2200 requires the use of the 64-bit kernel. • Not all PA8x00 CPU-equipped systems are supported for 64-bit operation, even though all PA8x00 CPUs are 64-bit capable.
Supported Workstations:	At release 11.0, the following 32-bit systems are supported (for 64-bit server information, see “Updating to HP-UX 11.0”, in this chapter): Series 700: 712, 715/64, 715/80, 715/100, 715/100XC, 743, 744, 725/100 B-Class: B132L, B160L C-Class: C100, C110, C160, C160L, C180 J-Class: All J-Class systems
Unsupported Workstations	Workstations <i>not</i> supported are the following: 705, 710, 715/33, 715/50, 715/75, 720, 725/50, 725/75, 730, 735, 755 Workstations not supported due to required 100BaseT driver are the following: B132L+, B180L C200, C240
Supported Servers	The following summarizes the HP 9000 Server implementations: • 32-Bit Only: D, E, G, H, and I-class, K-class (PA7x00), T500, and T520. • 32/64-Bit: K-class (PA8x00), and T600, • 64-Bit Only: V2200

Updating an Existing Operating System and Software
HP-UX Update Requirements

NFS Diskless

Updating a cluster server to HP-UX 10.30 or later is not supported. NFS Diskless functionality is not supported in HP-UX 10.30 or later. Do not update your server to HP-UX 11.0 if you intend for that server to operate as an NFS Diskless server.

For the latest information on system support, consult your HP sales engineer.

Fiber Link and HPIB

HP-UX 11.0 does not support HPIB, or Fiber Link disks or controller cards. If you are using this hardware, you should first copy the data from the device(s), and then disconnect it from your system before updating to 11.0. Failure to do this will not cause a data loss, panic, or other catastrophic problem, but will result in not being able to access the data on those devices. Updating before copying the data will render the data inaccessible, except by reinstalling the earlier release.

Memory and Disk Space Requirements

- **RAM:** HP-UX 10.x, including NFS, LAN/9000, and CDE, requires 32 MB of RAM. For HP-UX 11.0, a minimum of 32 MB of RAM is required, and 64 MB is recommended.
- Before you begin the update, you should be sure your target disk has the space needed to accommodate the new OS as well as your data files and all needed backups on disk. You should plan on a minimum disk size of one GB for a general workstation. Disk usage numbers will vary by a factor of 20%, depending on the installation.
- *File System Increments:* Compared to HP-UX 10.20, updating HP-UX to 11.0 (including NFS, LAN/9000, CDE, and the X Window System), requires the following additional file system size for a 32-bit update:
 - /usr: 120 MB additional.
 - /var: 5 MB additional.
 - /opt: 55 MB additional.

Since some of these increases may cause the default file system size and freespace to be exceeded, see “Adjusting File System Size”, in Chapter 7, “Troubleshooting,” for the procedure for making adjustments.

NOTE

In general, the Disk Space Analysis phase of `swinstall` will warn you if disk space is insufficient. However, Disk Space Analysis does not currently check `/var/adm/sw`, where the database is kept, for temporary space usage.

If you are running your system as LVM and `/var` comprises a single volume, be sure you have configured adequate space in the `/var` volume to accommodate the update files. An update requires a minimum amount of free disk space of at least 20 MB to allow for the generation of the installed software database, among other things. The disk space analysis will help you determine the needed volume sizes.

Preparing the Disks

1. Determine your free disk space in `/var` by running `bdf /var` and `bdf /var/tmp`. The default temporary directory is `/var/tmp`.
2. Delete any files in this volume that you don't need.
3. If necessary, set the environment variable `TMPDIR` to point to a directory that has sufficient space. For example (for a directory *dir*):

```
export TMPDIR=/dir
```

After setting and exporting this variable, kill and restart the `swagentd` process.

```
/usr/sbin/swagentd -r
```
4. *Ensure that your system has at least 30 MB of swap enabled before starting the update process.* You can use `swapinfo -mt` and check the total free MB of swap space. Or you can use SAM to see how much swap you currently have. If you do not have enough swap, you can enable file system swap for the duration of the update (until system reboot) by using the following command:

```
/usr/sbin/swapon /var/tmp
```

The directory `/var/tmp` can be used if there is sufficient free space. If `/var/tmp` is full, then specify a different volume that has enough free space to satisfy the swap space requirement.

Alternatively, you can shut down unneeded programs to make more memory and swap space available. This also improves performance.
5. Before updating, you may wish to use `/usr/sbin/swremove` to remove unneeded filesets from your system.

Updating an Existing Operating System and Software
HP-UX Update Requirements

**For More Information
on Space
Requirements**

Refer to the current *System Administration Tasks* manual and the *Release Notes for HP-UX 10.x* for additional information on peripherals and disk space.

Source Media

The general names applied to the HP-UX source media are as follows:

CD-ROMs Used

- CORE
- Applications.
- Support.
- HP-UX Extension Software (Includes essential patches).

NOTE

If you are updating any networking products, such as FDDI or Token-Ring, which are not on the HP-UX Runtime CORE CD, please see “Networking Products on Additional Media”, in this chapter.

**Mounting the Source
Media**

1. Note that your multi-user license is typically supplied on separate media.
2. Ensure that you have made a backup tape of your present system.
3. Ensure that your system is booted and running HP-UX 10.x. You should have a term window opened.
4. Turn *on* the CD-ROM drive, if it is external to your HP-UX 10.x system.
5. Insert the CD-ROM into its drive.
6. Wait for the busy lights to stop blinking.
7. If necessary, identify the drive device, using the following command:

```
/etc/ioscan -fn
```
8. If you are using a single local CD-ROM, note that `swinstall` will automatically mount the disk in the drive. Otherwise, you may have to first mount the disc, using SAM or the `mount(1M)` command. If you do not use SAM, you can do the following to mount the disc:
 - a. Put the CD into the CD-ROM drive. CD-ROM "busy light" should blink.
 - b. Open a term window and, at the shell prompt, type the following:

```
mkdir /SD_CDROM Enter
```

```
mount /dev/dsk/c1t2d0 /SD_CDROM Enter
```

The device name "*c1t2d0*" should be replaced with whatever device name you found using *ioscan* in item 7 above.

Updating SD-UX Before Installing/Updating Software

CAUTION

Before you can update to, for example, 11.0, you *must* extract the new version of SD-UX from the 11.0 CD or software depot from which you plan to update your system.

Do *not* attempt to use your present version of `swinstall` to update the system to a newer version. The update will fail. Updating SD-UX is also necessary when transitioning between word-width versions within a particular release.

Optional Preparation

Some system configurations may hang when `swgettools` is run while the old `SW-DIST.RUPDATE` fileset remains on the system. The following step will prevent this possibility. Run the following before invoking `swgettools` for an update to HP-UX 11.0:

```
/usr/sbin/swremove SW-DIST.RUPDATE
```

Procedure

To update SD-UX, you must first load the `swgettools` utility onto your system, and then use `swgettools` to get the new version of SD-UX.

The `swgettools` command needs a temporary directory with at least 2 MB of free space. By default, `swgettools` will use the `/var/tmp` directory. If there is not enough space in the temporary directory `swgettools` will fail.

You can tell `swgettools` to use a different temporary directory by means of the `-t dir_path` command-line option. You must do this if you do not have 2 MB free in `/var/tmp`. Use `bdf /var/tmp` to determine this.

Preparation: Loading `swgettools`

The `swgettools` utility is shipped in the `catalog/SW-GETTOOLS/pfiles` directory. Depending on whether the new software is on CD or a remote system in a software depot, use `cp` or `rcp`, respectively, to load `swgettools` onto your system. Skip to the section below for more examples and other options.

For example, to load `swgettools` from a local CD-ROM mounted at `/SD_CDROM` into `/var/tmp`, enter the following:

```
cp /SD_CDROM/catalog/SW-GETTOOLS/pfiles/swgettools /var/tmp
```

For additional examples and discussion regarding loading `swgettools` refer to “SW-DIST Installation”, in this chapter.

Action: Getting the New SD-UX Tools

Now, use `swgettools` to update SD-UX. For example:

```
/var/tmp/swgettools -s /SD_CDRROM
```

If you get a message indicating that the software is not compatible, you may disregard this message. This is because the tool is, in effect, “updating itself”.

The expression `-s /SD_CDRROM` indicates a CD-ROM drive mounted at `/SD_CDRROM`. If you get warning messages regarding tool compatibility at this point, this is a normal part of the loading of the new tool set. See the `swgettools(1M)` man page for more information on options.

Next Action

Further examples are in the next section. After you have updated SD-UX, you can use `swinstall` to update your system to the new version of HP-UX, using the procedure described in “Updating HP-UX Software”.

SW-DIST Installation

From CD-ROM

To install the new SW-DIST product from the CD-ROM at `/SD_CDRROM`, enter the following:

```
cp /SD_CDRROM/catalog/SW-GETTOOLS/pfiles/swgettools /var/tmp
/var/tmp/swgettools -s /SD_CDRROM
```

From Remote Depot

For example, to install the new SW-DIST from a remote depot on system `swperf` at `/depot_path`, enter the following:

```
rcp swperf:/depot_path/catalog/SW-GETTOOLS/pfiles/swgettools \
/var/tmp
```

```
/var/tmp/swgettools -s swperf:/var/spool/sw
```

Updating SD-UX Without Root Access to the Remote Depot

Option 1:

If you are a system administrator, you can instruct your users to use this procedure or Option 2 (below) for more restricted access, if you do not want to grant the users `rcp (.rhosts)` access as root to the server.

Updating an Existing Operating System and Software
Updating SD-UX Before Installing/Updating Software

1. Copy the `swgettools` script file and the `swagent.Z` file (both in the `catalog/SW-GETTOOLS/pfiles` directory) from the CD to a location that your users have FTP access to.
2. Tell the user to do the following:
 - a. FTP the two files into the `/var/tmp` directory on the system to be updated.
 - b. Use `chmod +x` to make the `/var/tmp/swgettools` script executable.
 - c. In case `swgettools` is interrupted, enter the following:
`cp swagent.Z swagent.Z.backup`
 - d. Run `swgettools` and specify the remote depot location with the `-s` option (and, if necessary, `-t` to specify a temporary directory other than `/var/tmp`).

Option 2:

This option assumes your users will be running `swgettools` specifying a source depot on a remote server, and you do not want to grant them `rcp (.rhosts)` access as root to the server.

Users can use the SD-UX `swcopy` command to copy the SW-GETTOOLS product from a registered remote source depot to a local depot prior to extracting the files. The remote source depot can be either a CD-ROM or a disk depot.

To copy the SW-GETTOOLS product from the remote CD-ROM depot located at `swperf:/var/spool/sw` to a local depot in `/tmp/depot`:

```
swcopy -s swperf:/SD_CDRUM SW-GETTOOLS @ /tmp/depot
```

Then copy the `swgettools` script and the `swagent.Z` file to the `/var/tmp` directory:

```
cp /tmp/depot/catalog/SW-GETTOOLS/pfiles/sw* /var/tmp
```

As in the backup step above, first make a backup copy of `swagent.Z`. Then execute the `swgettools` script specifying the remote depot to update the SW-GETTOOLS product from the following:

```
/var/tmp/swgettools -s swperf:/SD_CDRUM
```

NOTE

If you will be using a temporary directory other than `/var/tmp` (such as `/usr/tmp`), then `cp` the `swgettools` script and the `swagent.Z` file to the temporary directory you will be using, and specify its location on the `swgettools` command line using the `-t` option.

Example: `cp /tmp/depot/catalog/SW-GETTOOLS/pfiles/sw* /usr/tmp`
`/usr/tmp/swgettools -s swperf:/SD_CDR0M -t /usr/tmp`

For More Information Consult the *swgettools*(1M) and, *swinstall*(1M) man pages, on the new system, the readme document:

`/usr/sbin/swlist -a readme -l product SW-DIST`

Or see the manual *Managing HP-UX Software with SD-UX* for assistance with the following:

- If you encounter an error during the execution of the *swgettools* script.
OR ...
- If you want to see examples of using *swgettools* with other types of media.

Updating HP-UX Software

See the section, “Updating to HP-UX 11.0” in this chapter, for specific information about transitioning to HP-UX 11.0.

You should have installed the new SW-DIST product first, as given in the previous sections in this chapter.

On HP 9000 Workstations, you will see a Graphical User Interface (GUI), by default, for interactive invocation of `swinstall`. On HP 9000 Servers, you will see a character display Terminal User Interface (TUI) on a console. You will have a GUI if you are working from an Xterminal.

Updating HP-UX on a Stand-Alone System

To invoke `swinstall`, do one of the following:

CAUTION

Updating an HP 9000 Server to HP-UX 11.0 will stop the Server from interacting with clients and may jeopardize data. Before attempting such an update you should uncluster (backup and unmount) clients.

Options for 11.0 Transition

Use a command-line invocation, if you are transitioning to HP-UX 11.0. You must use `-x` options specifying the target system word-width and OS version, for either an interactive or non-interactive SD-UX session.

To specify an OS for the update, the following options are used:

`-x os_name=<OS>:<width>`

`-x os_release=<release>`

using the following syntax:

```
swinstall -x os_name=<OS>:<width> -x os_release=<release>
```

The value `<OS>` specifies the name of the OS, such as HP-UX. The value `<width>` specifies the word-width in bits for the OS to be installed, such as 32 or 64. The `<OS>` and `<width>` values must be separated by a colon (:).

The value *<release>* can include the following:

B.11.00

In addition to the size/version options, updating *between* 11.0 word-widths requires the following options to `swinstall`:

```
-x reinstall=true  
-x reinstall_files=true
```

**Interactive
Command-Line
Example**

For example, for an interactive update from 10.x to B.11.00 (32-bit), you would enter the following:

```
swinstall -x os_name=HP-UX:32 -x os_release=B.11.00
```

**Non-interactive
Command Line
(match_target)**

Non-interactive updates to 11.0 require additional options, including specification of `match_target` and `autoreboot`. (For cold-installing non-interactively, see the instructions for using the **Go!** action in “Executing the Installation: Go!”, in Chapter 5, “Installing from the Ignite-UX Server.”) The details are given in “Updating Non-Interactively from Media or Network”.

Updating to HP-UX 11.0

Before Updating or Installing to HP-UX 11.0 64-bit Version

If you are planning to update a system to HP-UX 11.0 64-bit, you need to determine if your system can support the 64-bit version of the operating system. To do this you need determine the following:

- Does your system hardware support 64-bit operation?
- Is the firmware installed in your system recent enough for 64-bit 11.0?

**Firmware Revisions
Needed for HP-UX
11.0 64-bit Operation**

Before installing or updating your HP 9000 Server to HP-UX 11.0 64-bit, you must determine that your system's **Processor Dependent Code** (PDC or firmware) version supports 64-bit operation.

This section describes how to determine the version of firmware operating on your server, and the minimum version of firmware required.

Updating an Existing Operating System and Software

Updating HP-UX Software

Note the following precautions

If you are patching a 10.x system having previous patches, in order to remove all prior patch information from the IPD prior to updating to HP-UX 11.0, see the procedure toward the end of this manual: “Section 8: Loading HP-UX Patches Using Ignite-UX”, in Appendix C, “Ignite-UX System Administration.”

CAUTION

If you try to update a system lacking the correct level of firmware, you risk putting the system into an unusable state.

If your HP 9000 Server does *not* have installed the necessary revision of firmware, you must contact your HP Support Representative to get your firmware updated *before* attempting to install or update to HP-UX 11.0 64-bit version.

Due to library dependencies, you will also have to follow the `swgettools` procedure described in “Updating SD-UX Before Installing/Updating Software”.

Note that you are *not* required to update firmware on any HP 9000 Server on which you will only install or update to HP-UX 11.0 32-bit version. However, it is always advisable to have the most current firmware revisions installed. The revisions of firmware that support 64-bit operation will also support 32-bit operation. You may wish to confirm with your HP Support Representative that you have current firmware revisions installed.

Verifying Hardware Support and Firmware Revision

The following table lists all the HP 9000 servers that support 64-bit operation, along with the minimum required firmware revision levels.

Table 2-1

Supported Hardware and Firmware for 11.0 64-bit Operation

Server model	HP-UX Version Supported	Minimum PDC Revision	Minimum Firmware Revision
9000/802/K250	32 and 64-bit	36	37.40
9000/879/K260	32 and 64-bit	36	37.40
9000/879/K260-EG	32 and 64-bit	36	37.40
9000/898/K370	32 and 64-bit	8	37.23

Server model	HP-UX Version Supported	Minimum PDC Revision	Minimum Firmware Revision
9000/800/K380	32 and 64-bit	8	37.23
9000/804/K450	32 and 64-bit	36	37.40
9000/889/K460	32 and 64-bit	36	37.40
9000/889/K460-EG	32 and 64-bit	36	37.40
9000/889/K460-XP	32 and 64-bit	36	37.40
9000/899/K570	32 and 64-bit	8	37.23
9000/800/K580	32 and 64-bit	8	37.23
9000/893/T600	32 and 64-bit	J537	
9000/800/V2200	64 bit only	All are 64-bit capable.	
9000/800/V2250	64-bit only	All are 64-bit capable.	

NOTE

Only HP 9000 servers listed in this table are supported for 64-bit operation.

All systems not listed in the preceding table are supported *only* for 32-bit operation.

There are different methods of determining your system's firmware revision, depending upon its system class. Using the command `getconf HW_CPU_SUPP_BITS` will indicate your system's bit compatibility. The sections that follow detail the procedures for K-class, T-class, and V-class servers.

Determining the Firmware Revision of K-Class Servers

To determine the firmware revision on HP 9000 K-class servers, perform the following steps.

Step 1. Determine which model of K-class you have by entering:

```
# model
```

Updating an Existing Operating System and Software

Updating HP-UX Software

You will see a string similar to the following:

9000/804/K450

Compare the model string to the listing in the table of supported 64-bit systems.

CAUTION

If the model number does not appear in the table of supported 64-bit systems, do *not* attempt to install or update to HP-UX 11.0 64-bit, because you risk rendering your system unusable. Instead, install or update to HP-UX 11.0 32-bit operation.

If the model number *does* appear in the table of supported 64-bit systems, go to the next step to determine if your system's firmware revision supports 64-bit operation.

There are two methods for determining your system firmware revision level on K-class servers. These are described in Step 2 and Step 3.

- Step 2.** The easiest way to determine the system's firmware (PDC) revision level is to run the Support Tools Manager (STM). STM is provided on the HP-UX Support Disc, which is packaged with HP-UX. Support Tools Manager can be run as a character-based (cstm), menu-driven (mstm), or X-Windows (xstm) application.

If you do not have Support Tools Manager loaded on your system,

1. Insert the Support Disc in the CD-ROM and mount the CD-ROM read-only. For example,

```
mount -r /dev/dsk/c0t2d0 /SD_CDROM
```

If you do not know the device special file name of the CD-ROM, you can find out by using `ioscan` (with options `-kfnC disk`) or SAM (Peripheral Devices -> Device List; select the device, then use the Actions pulldown and choose Show Device Files).

2. List the contents of the DIAGNOSTICS directory on the Support Disc, using `swlist`. For example,

```
swlist -d -l bundle @ /SD_CDROM/DIAGNOSTICS
```

Find the OnlineDiag bundle appropriate to your system.

3. Use `swinstall` to load the OnlineDiag bundle.

For details on SD-UX procedures, refer to *Managing HP-UX Software with SD-UX*.

Execute the Support Tools Manager, to determine the firmware (PDC) revision loaded in your CPU.

NOTE

On a multiprocessor system, you need to determine the firmware revision for only one CPU. The firmware installed applies to all processors.

The following procedure demonstrates use of the Support Tools Manager, using `mstm` to determine the firmware revision level:

1. At an HP-UX prompt, type `mstm` to start the application. Once you press **F2 (OK)** after reading the licensing statement, `mstm` returns an `iocan`-like map of the system hardware. Scroll to a CPU entry and locate the cursor on that line. For example, the line might read:

```
32    CPU    Information Successful
```

Press **space bar** to select the line.

2. Press **F5** for `tools`.
3. Press **F2** for `info`.
4. Press **F2** for `run`. (While the program is executing, the word `run` is replaced by asterisks.) When the program completes, the CPU line will read `Information Successful`.
5. Press **F3**, labeled `info log`, to create the Information Tool Log of the selected CPU.

Examine the Information Tool Log and look for the PDC (firmware) revision level. For example, the line might read:

```
PDC Firmware Revision:      37.31
```

6. Compare the firmware revision level against the information shown in Table 2-1, "Supported Hardware and Firmware for 11.0 64-bit Operation."
- If the firmware installed on your server matches or exceeds the firmware revision listed, you may proceed to install HP-UX 11.0 for 64-bit operation.

Updating an Existing Operating System and Software

Updating HP-UX Software

- If your HP 9000 Server does *not* have installed the necessary revision of firmware, you must contact your HP Support Representative to get your firmware updated *before* attempting to install or update to HP-UX 11.0 64-bit version.

CAUTION

If you try to update a system lacking the correct level of firmware, you risk putting the system into an unusable state.

Step 3. If you have *not* installed the Support Tools Manager (STM) on your system, then you will need to shutdown and reboot your system to check the PDC subsystem and determine the firmware revision. (If you have completed Step 2, you do not need to perform this step). Read through the following procedure before starting.

1. Execute the shutdown command to shutdown and reboot the system.

```
# /sbin/shutdown -r 0
```

2. Processing messages will be displayed, ending with a message like the following:

```
FINAL System shutdown message from root@gsyssem14
System going down IMMEDIATELY
System shutdown time has arrived
sync'ing disks (37 buffers to flush): 37 10
0 buffers not flushed
0 buffers still dirty
Closing open logical volumes...
Done
```

Watch the console. You will see either a boot prompt or a message indicating that the system will autoboot in 10 seconds unless you press a key. If you see the 10 second message, press a key to get the boot prompt.

(If you do not press a key in time, do not worry. Just wait until the system finishes booting and then repeat the shutdown/reboot procedure.)

3. Next you will see the Main menu. At the Enter Command or Menu prompt, enter:

```
Main menu: Enter command or menu > in fv
```

You will see a message similar to the following:

FIRMWARE INFORMATION

Firmware Version: 37.31

4. To display the chip revision, enter:

Main menu: Enter command or menu > in cr

You will see a message listing modules and revisions for the system. Look for the module named PDC. For example,

PDC 34

IMPORTANT

Check the firmware and PDC revision numbers against Table 2-1, “Supported Hardware and Firmware for 11.0 64-bit Operation.” If they are *not* the minimum required, call your HP Representative and arrange for a firmware update *before* installing or updating to HP-UX 11.0 64-bit.

If you try to update a system lacking the correct level of firmware, you risk putting the system into an unusable state.

Determining the Firmware Revision on T-Class Servers

To determine the firmware revision on HP 9000 T-class servers, perform the following steps.

1. At the system console, type **CONTROL -B** to engage the PDC console interface.

NOTE

If the console does not respond to the **CONTROL -B**, make sure the system console interface is enabled by checking the setting of the console key on the main system front panel. It must be set to the unlocked position (padlock with open bar) to access the PDC interface.

2. To connect to the Service Processor, enter:

CM > sp

You see a message similar to the following:

Connecting to Service Processor. (APMSG 10)

3. To display the firmware revision at the SP> prompt, enter

SP> fv

Updating an Existing Operating System and Software

Updating HP-UX Software

You'll see a display showing that the T-class has two PDC banks. For example,

Active Firmware Versions:

SP Bank 0: SP 2.02, PSCM 1.60, Compiled 06/24/97 19:08 UT

PDC Bank 1: J537

PSCM Boot ROM: 2.2

Alternate Firmware Versions:

SP Bank 1: SP 2.00, PSCM 1.60, Compiled 03/21/97 21:45 UT

PDC Bank 0: J533

The critical piece of information is the PDC Bank of the *active* Firmware Version. (In this example, the information is J537.)

IMPORTANT

Check the information shown as PDC version number against Table 2-1, "Supported Hardware and Firmware for 11.0 64-bit Operation." If the PDC Bank number is *not* the minimum required, call your HP sales engineer and arrange for a firmware update *before* installing or updating to HP-UX 11.0 64-bit.

If you try to update a system lacking the correct level of firmware, you risk putting the system into an unusable state.

Determining the Firmware Revision on V-Class Servers

IMPORTANT

All V-class servers are certified solely for 64-bit operation. Do not attempt to install or upgrade V-class servers with the 32-bit version of HP-UX 11.0.

For More Information

For detailed information on what firmware or hardware is needed to update your system to HP-UX 11.0 64-bit version, see the document *Readme Before Installing or Updating to HP-UX 11.0*, the *Release Notes for HP-UX 11.0*, or check with your HP field engineer.

Updating to HP-UX 11.0 32-bit Version

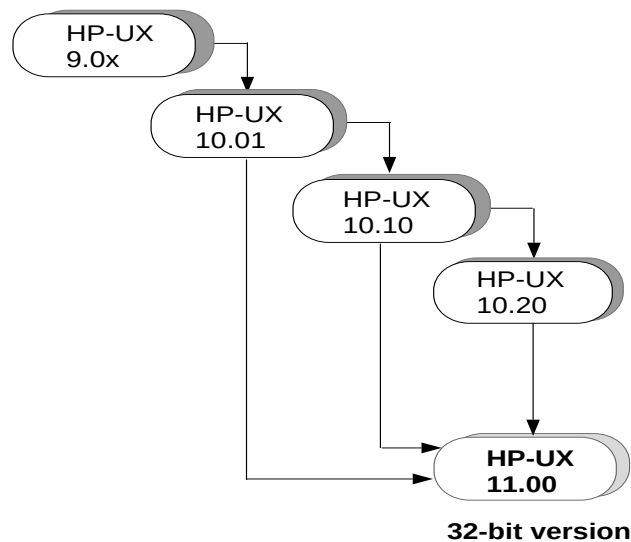
If you are updating your system to HP-UX 11.0 32-bit version, no hardware or firmware updates are required, but note the caution below. When you update a system to 11.0 32-bit version, you have the following choices:

- If you are updating a system running HP-UX 10.01, 10.10, or 10.20, you can update directly to HP-UX 11.0 32-bit version.
- If you are upgrading a system running HP-UX 9.04, first upgrade to HP-UX 10.01, and then update to HP-UX 11.0 32-bit version.

CAUTION

Due to library dependencies, you will also have to follow the `swgettools` procedure described in “Updating SD-UX Before Installing/Updating Software”, even when transitioning within 11.0.

Figure 2-2 **Update Paths to HP-UX 11.0 32-bit Version**

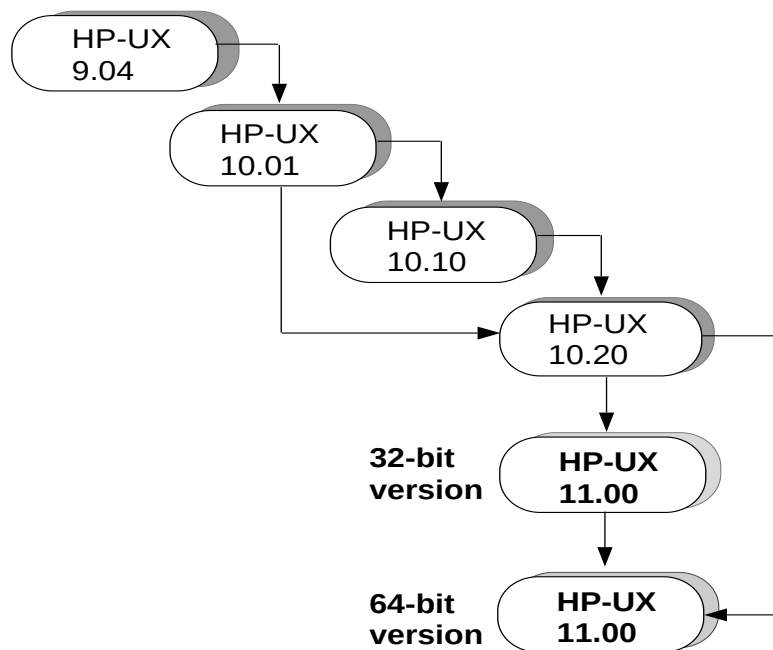


Updating to HP-UX 11.0 64-bit Version

When you update a system to 11.0 64-bit version, you have the following choices:

- If you are updating a system running HP-UX 10.20, and it is 64-bit capable (PA8000 and 64-bit compatible firmware), you can update directly to the HP-UX 11.0 64-bit version.
- If you are updating a system running HP-UX 10.01 or 10.10, you must first update to HP-UX 10.20, make the appropriate hardware and firmware upgrades, and then update to the HP-UX 11.0 64-bit version.
- If you are upgrading a system running HP-UX 9.04, first upgrade to HP-UX 10.01, then update to 10.20, make the appropriate hardware and firmware upgrades, and then update to the HP-UX 11.0 64-bit version.

Figure 2-3 Update Paths to HP-UX 11.0 64-bit Version



Transitions within HP-UX 11.0, between 32-bit and 64-bit, are also possible.

Example of Update Path to 11.0 64-bit (K220 System): For example, suppose you are running HP-UX 10.01 on a K220 system (PA7200), which does not support 64-bit, and you want to update to a K260 system (PA8000), which does support 64-bit, in order to update to HP-UX 11.0 64-bit. You would perform the following steps:

1. Update HP-UX 10.01 to 10.20. (The 10.20 update is needed to support the hardware upgrade in step 2.)
2. Upgrade K220 to K260 hardware.
3. Upgrade the firmware on the K260 (if not done in step 2).
4. Update HP-UX 10.20 to HP-UX 11.0 64-bit.

Example of Update Path 11.0 64-bit (K460 System). For example, suppose you are running HP-UX 10.20 on a K460 system (PA8000, which does support 64-bits), and you want to update to HP-UX 11.0 64-bit. You would perform the following steps:

1. Upgrade firmware on K460 (if not already compatible).
2. Update HP-UX 10.20 directly to HP-UX 11.0 64-bit version.

Transitioning Between Versions

Once HP-UX 11.0 is running on your system, you can transition between the 32-bit and 64-bit versions of the operating system. If you are updating from HP-UX 11.0 32-bit to HP-UX 11.0 64-bit, the transition should be straightforward. However, before switching from HP-UX 11.0 64-bit to HP-UX 11.0 32-bit, you will need to ensure that all applications can accommodate the change. If any 64-bit applications have written binary data files (for example, 64-bit ELF executables), there may be compatibility issues when you switch back to the 32-bit version of the operating system.

NOTE

If you transition between 32-->64 bits or 64-->32 bits, you will need to do the `swgettools` process. See “Updating SD-UX Before Installing/Updating Software” in this chapter.

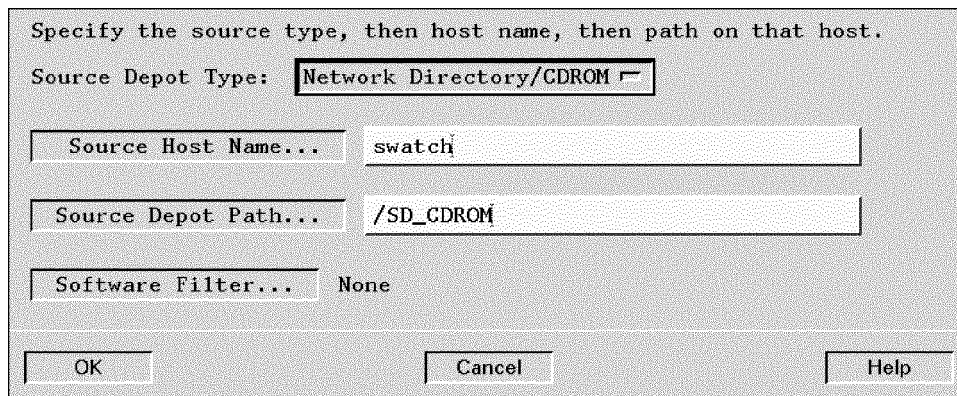
See the *HP-UX 11.0 Release Notes* and the *Application Interoperability White Paper* for more information.

Updating Interactively from the GUI

After invoking `swinstall` from the command line for an interactive update (for example: `swinstall -x os_name=HP-UX:32 -x os_release=B.11.0`), you will see the following screen:

Specify Source Screen

Figure 2-4



Specify the source type, then host name, then path on that host.

Source Depot Type: Network Directory/CDROM

Source Host Name... swatch

Source Depot Path... /SD_CDROM

Software Filter... None

OK Cancel Help

1. Clicking on the field beside Source Depot Type displays a choice of Local CDROM, Local Directory, Local Tape, or Network Directory/CDROM. The latter category will get a remote source for the update.
2. If the source depot/host name filled in is not the one you want, enter the correct one. Alternatively, you may use the IP address for a host.
3. If you click on Source Depot Path, you will get a listing of available depots on the source you have just specified. Select the correct depot. If the source is a tape device, you may need to type the device file name. The mount point for a CD-ROM should already exist as `/SD_CDROM`, if the system was cold-installed. For more detail, see the man page `swreg(1m)`.
4. If you wish to limit the listing, click on **Software Filter** to see the list of filter protocols available.
5. Click on **OK**.

You will see the Software Selection screen next.

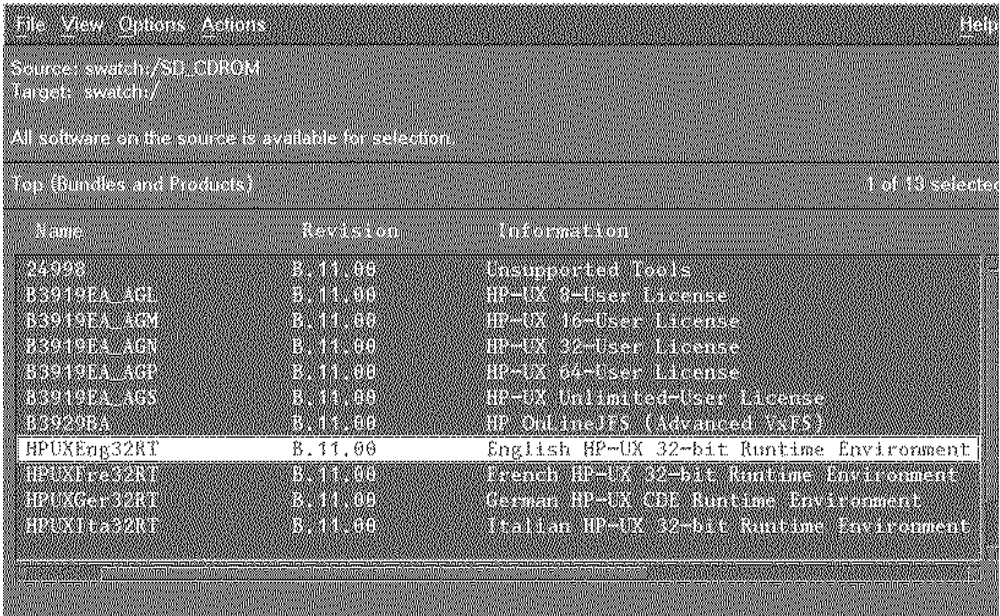
Updating an Existing Operating System and Software

Updating HP-UX Software

For More Information For information on the options for `swinstall`, and to change the degree of detail for its logging functions, see the manual *Managing HP-UX Software with SD-UX* and the man page for `swinstall(1M)`.

Software Selection
Screen

Figure 2-5



The screenshot shows a window titled "File View Options Actions Help". Below the title bar, it says "Source: swatch:/SD_CDRROM" and "Target: swatch:/". A message states "All software on the source is available for selection." Below this is a section titled "Top (Bundles and Products)" with a status "1 of 13 selected". A table follows with three columns: "Name", "Revision", and "Information".

Name	Revision	Information
24098	B.11.00	Unsupported Tools
B3919EA_AGL	B.11.00	HP-UX 9-User License
B3919EA_AGM	B.11.00	HP-UX 16-User License
B3919EA_AGN	B.11.00	HP-UX 32-User License
B3919EA_AGP	B.11.00	HP-UX 64-User License
B3919EA_AGS	B.11.00	HP-UX Unlimited-User License
B3929EA	B.11.00	HP OnlineJFS (Advanced VxFS)
HPUXEng32RT	B.11.00	English HP-UX 32-bit Runtime Environment
HPUXFr32RT	B.11.00	French HP-UX 32-bit Runtime Environment
HPUXGer32RT	B.11.00	German HP-UX CDE Runtime Environment
HPUXIta32RT	B.11.00	Italian HP-UX 32-bit Runtime Environment

1. On the Software Selection screen, highlight an item and click on the Actions menu item **Open Item** to see a listing of the contents of that bundle or product. Alternatively, you can successively double-click on the selected item to show the contents at the next level of detail.

The subproduct/fileset level of the Software Selection screen now also has an architecture column and filters for hardware compatibility (as has always been done at the bundle and product levels).

To see a general description of the selected software, click on **Show Description of Software** from the Actions menu. Click on the **OK** button when you have finished with the description screen.

If you want to match the general filesets and functionality you already have on your old system, choose **Match What Target Has...** from the action menu. A log file is available from the Analysis screen.

AND/OR

2. To choose specific bundles/products to add to the **Match What Target Has...** selection, highlight the additional item, and then choose **Mark for Install** from the Actions menu. (You can also use the right mouse button to mark for install).

NOTE

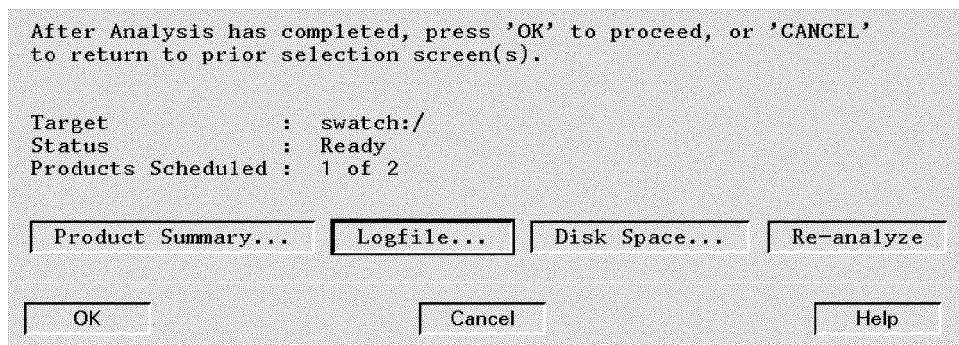
In doing system updates, the HP-UX 11.0 release has been enhanced to permit the target system to identify itself temporarily as having the architecture/revision of the desired OS. This permits the use of the merged depots without risking ambiguous selections.

For example, if a system has been installed as 11.0 /32- bit and the user wishes to update to the 64- bit version of HP-UX, the system “poses” as a 64- bit system for the purpose of compatibility- checking against the merged depot. This is controlled by the -x os_name and -x os_release options on the swinstall command line. These *must* be specified for OS updates to 11.0 and later.

3. To start the install process, choose **Install (analysis)...** from the Actions menu. You will see the following screen (superimposed):

Install Analysis Screen

Figure 2-6



Updating an Existing Operating System and Software

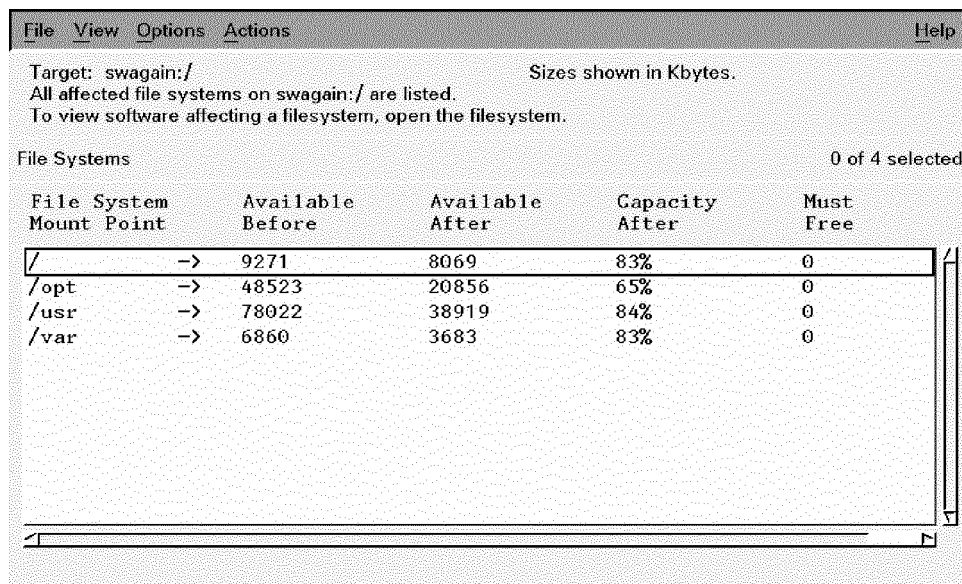
Updating HP-UX Software

- By clicking on the Logfile button, you can open the logfile to monitor the progress of the analysis. You will also see a listing of files already on the target system which will be reinstalled in new versions. The **Disk space...** button will become accessible after the analysis process is complete and you can view the results.
- Click on **OK** to proceed.

Time Note The analysis phase requires 5 to 10 minutes.

Disk Space Analysis Screen

Figure 2-7



The screenshot shows a terminal window titled "Disk Space Analysis". At the top, there is a menu bar with "File", "View", "Options", "Actions", and "Help". Below the menu bar, the text reads: "Target: swagain:/", "Sizes shown in Kbytes.", "All affected file systems on swagain:/ are listed.", and "To view software affecting a filesystem, open the filesystem." Below this, the text "File Systems" is followed by "0 of 4 selected". A table with five columns is displayed: "File System Mount Point", "Available Before", "Available After", "Capacity After", and "Must Free". The table contains four rows of data for the file systems /, /opt, /usr, and /var. The / row is highlighted with a blue background. A vertical scrollbar is visible on the right side of the table.

File System Mount Point	Available Before	Available After	Capacity After	Must Free
/	9271	8069	83%	0
/opt	48523	20856	65%	0
/usr	78022	38919	84%	0
/var	6860	3683	83%	0

1. The Disk Space Analysis gives you an estimate of available disk space vs. requirements for the new system. This screen may be saved or printed under the menu options **File --> Print**

If disk space is a concern, you may want to look at graphics and related products especially for possible deletion. For example, in case you are running an HP 9000 server with a character terminal console, you may not want to update graphics products.

NOTE	If you are updating from an HP-VUE bundle to a CDE bundle, the /usr file system will undergo significant expansion. This expansion may exceed the default file system size set by Cold Install for /usr. See Chapter 7, "Troubleshooting," for information on resetting file system size.
	2. Ensure that the /var "Available After" space is at least 20 MB. (The screen shown indicates only about 3.7 MB "Available After", which is insufficient and would require deletion of old log and tmp files in /var/adm and /var/tmp.) 3. Close the Disk Space confirmation window to see the analysis window. 4. When the disk analysis is satisfactory, choose OK on the Install Analysis screen to proceed with the update. 5. A confirmation screen will appear, to which you can respond Yes or No as to whether you want to continue with the installation.
NOTE	Up to this time, you can "back out" of any action by clicking on Cancel in order to return to previous screens, for example, in order to adjust the selection of filesets being updated.
	6. You will see a second confirmation screen warning you that a new kernel will be loaded (in case you are updating HP-UX or a kernel-related patch bundle), and this will necessitate a reboot. Respond Yes, if you wish to go ahead. 7. You will see an install status screen which monitors the current progress of the installation, including the time remaining. 8. If you want to keep track of the progress of messages and scripts being run during the load, you can keep a logfile window open during the process. Do this by clicking on the Logfile button, on the status screen.
Time Note	• A typical HP-UX update, if done from a network server, will require one to two hours. • At the end of an HP-UX update, press Done and you will see a confirmation message and reboot warning (with about 30 seconds delay until shut down).

Updating an Existing Operating System and Software

Updating HP-UX Software

- As the system reboots for the first time, the new filesets are being configured. You can, therefore, expect a first boot time of several minutes. Subsequent reboot processes will not take as long.

After Logging In

1. The login screen appears after the system has rebooted. Log in at this time.
2. Check the following log files for any messages, including warnings, relating to the update:

`/var/adm/sw/swinstall.log`

`/var/adm/sw/swagent.log`

NOTE

For an OS update, you will also need to install with the appropriate bundle on the HP-UX Extension Software which came with your HP-UX media. This provides CORE-related patches for the current version of HP-UX. (See “Using HP-UX Extension Software”, in this chapter, and the patch descriptions on the disc). The system will automatically reboot after updating with this bundle.

Migrating to CDE:

The first time you log in after completing an update from an HP VUE environment to a CDE environment, a VUEtoCDE migration dialog will pop up. You may want to migrate VUE customizations to CDE using this utility.

NOTE

If you choose to migrate customizations, *complete* the VUEtoCDE migration before uninstalling VUE. In any case, you will need to run the **Uninstall HP VUE** action from the System_Admin folder in the application manager. Failure to run **Uninstall HP VUE** could result in `swverify` warnings for VUE, CDE, ImagingSubsystem, ScreenCapture, AudioSubsystem, SharedPrint, and DigitalVideo products.

If you are updating from HP-UX 10.20, there will be `swverify` warnings regarding the group and ownership of `/etc/dt`, `/etc/dt/config`, and `/etc/dt/config/Xsession.d`. You can disregard these warning messages.

Updating Non-Interactively from Media or Network

For a generic, single-media update where no "customizing" is required, you will be using the `swinstall` tool non-interactively. You can use a general instruction to "match what the target has" in order to load the updated versions of the same filesets as you have on your current system.

1. If you are using an external CD-ROM, ensure that the drive is turned *on* and mounted. Insert the medium in the drive.
2. At a shell prompt, enter the following:

```
swinstall -x match_target=true \
  -x os_name=HP-UX:32 \      Needed for OS update to 11.0
  -x os_release=B.11.00 \    Needed for OS update to 11.0
  -x autoreboot=true \
  -s device_file
```

Enter

If you do not use `match_target=true` you can specify the bundle names after the `-s device_file` option, as, for example, `HPUXEng32RT`.

Specify the `device_file` for your CD-ROM drive, or network source. For example

```
/SD_CDROM/c1t2d0
or similar, for a CD-ROM
OR
```

```
hostname: /depot_path
for network sources
```

You will see warning messages in case filesets are found on the target system that are not on the source.

- In the example, you would change `HP-UX:32` to `HP-UX:64`, if you are installing 64-bit.
- For 32 --> 64 bit and 64 --> 32 bit transitions, do the following:
 - First update the SD-UX tools using `swgettools`. See "Updating SD-UX Before Installing/Updating Software".
 - Use `swinstall` as in the example, except that you would also use the following options:

Updating an Existing Operating System and Software
Updating HP-UX Software

```
-x reinstall=true \  
-x reinstall_files=true
```

NOTE

You will also need to repeat the above steps with the appropriate bundle on the HP-UX Extension Software. (See “Using HP-UX Extension Software” and the patch descriptions on the disc). The system will automatically reboot after updating with this bundle.

For the details of `swinstall` options, see *Managing HP-UX Software with SD-UX*.

Using HP-UX Extension Software

In addition to the tapes or CDs holding the operating system, the 11.0 release includes a CD labelled "HP-UX Extension Software". This CD is included as a means of delivering fixes for any problems that may be discovered after the release has been packaged for shipment.

Procedure

After you have installed or updated your system, read the Extension Software Information Sheet. Alternatively, read the *README FIRST* on the CD-ROM

Ensure that the drive is mounted:

```
/usr/sbin/mount
```

If there is no entry for the CD-ROM drive, mount it. For example:

```
/usr/sbin/mount /dev/dsk/c0t2d0 /your_cdrom_directory
```

Then print the *README FIRST* or use the "more" command to read it.

Installing Applications Software

If your applications software is already in a depot (SD packaged), it can be loaded with the Ignite-UX installation. If it is in a non-SD format, you can create a bundle by using the Ignite-UX tool `make_bundle` and install or update it on the target system. See Appendix C, “Ignite-UX System Administration,” for specific examples for doing this.

Applications software in SD format can also be loaded later using SD-UX. For the SD procedures for installing additional software from tape, CD-ROM or network depots, see “Updating HP-UX Software” or the manual *Managing HP-UX Software with SD-UX*.

Adding Additional Functionality

In case you need to add more bundles for the functionality of your new HP-UX, such as JFS or NFS filesets, use the “Match What Target Has” option described in this chapter, and then select additional bundles which you have purchased.

If you need further details, see the manual *Managing HP-UX Software with SD-UX*.

Installing Patches

See “Section 8: Loading HP-UX Patches Using Ignite-UX” in Appendix C, “Ignite-UX System Administration,” for detailed information on installing patches.

Networking Products on Additional Media

If you are using certain networking products or other Independent Software Units (ISUs) which are not present on the CORE HP-UX CD or tape, then you may need to follow modified update procedures. Some of the networking products affected include FDDI, Token-Ring and 100VG AnyLan, which are provided on the HP Applications CD-ROM or tape.

Since optional networking products are shipped on separate media from the CORE HP-UX, their drivers are removed from the kernel during the update process. This means that if you update using the CORE medium or a depot made from it, *the optional networking will not be available after reboot.*

If the networking which was removed provides access to the remote SD depot or CD-ROM drive, then, after reboot, any swinstall of applications, including networking will need to be performed from a local CD-ROM drive or tape drive or a local disk depot.

An alternative is to use SWCOPY to create a combined CORE and Applications depot and use that depot as your swinstall source. Since a combined depot or tape contains the new revisions of the networking products, their drivers will be reinstalled before reboot and so the networking they provide will be available after reboot.

If you have a custom update tape provided as part of you HP software support contract, then it is normally already combined and you do not need to create a combined depot, as long as the update tape, or any depot made from it, contains the HP-UX CORE software and the optional networking software which you need.

Installing the Optional OnlineJFS Product

HP OnlineJFS is the advanced optional bundle for the VxFS File System. You can use the capabilities of OnlineJFS to perform certain key administrative tasks on mounted VxFS file systems. Because you can perform these tasks on mounted file systems, users on the system can continue to perform their work uninterrupted.

These tasks include:

- Defragmenting a file system to regain performance.
- Resizing a file system.
- Creating a snapshot file system for backup purposes.

You can install it with swinstall in the following order:

1. Install the JournalFS product, if it is not already installed.
2. Install two HP OnlineJFS bundle filesets.
(AdvJournalFS.VXFS-ADV-KRN and
AdvJournalFS.VXFS-ADV-RUN).

During the install, `swinstall` will edit the `/stand/system` file, rebuild the kernel, and reboot the system to bring the new kernel libraries into memory.

For more information about installing and using VxFS and HP OnlineJFS, see the manual *HP-UX System Administration Tasks*, Chapter 4.

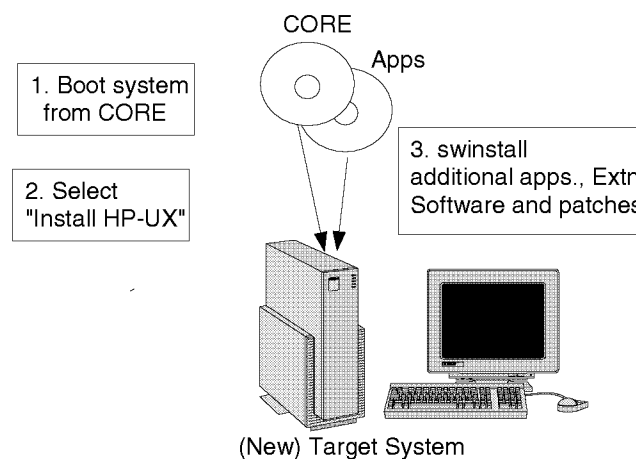
3 Installing From Media

Chapter Contents

- Installing from a Media Source.
- Booting the Target System.
- Guided Installation: Using the Task Wizard.
- Advanced Installation: Using Ignite-UX (TUI).

Installing from a Media Source

Figure 3-1



Preparing for a Media Install

Media Used in Installation:

Only the "CORE" HP-UX media will be required for the OS installation. Other media may need to be installed using the SD-UX tools unless they are available on a depot (see Chapter 2, "Updating an Existing Operating System and Software.")

- Tape: HP-UX Runtime (the "CORE" tape).
- Tape: HP Applications. (Includes Ignite-UX).

Installing From Media

Installing from a Media Source

- Tape: HP-UX Support (Includes diagnostics).
- Tape: HP-UX Extension Software. (Includes essential patches).
OR
- CD-ROM: HP-UX 10.x CORE
- CD-ROM: Applications. (Includes Ignite-UX).
- CD-ROM: Support. (Includes diagnostics).
- CD-ROM: HP-UX Extension Software (Includes essential patches).

Note: Only CD-ROM media will be used after HP-UX 10.20. "Original" customers receive only CD-ROM media; "Update" customers may receive CD-ROM or DDS-format tape.

Supported and Unsupported Systems

See "HP-UX Update Requirements" for a listing of currently supported workstations.

Booting the Target System

The details in the following section are provided for guidance in case you have a variety of HP systems with different boot-console interfacing.

1. Make sure any external devices connected to the target system are turned *on*.
2. Turn *on* the target computer or cycle power.
3. Insert the CORE media into the appropriate drive.
 - Workstations: At the message that says how to stop autoboot, press and hold **ESC**. *OR*
 - Servers: At the message that says how to stop autoboot, press and hold any key.

You will see the boot console menu. As boot procedures vary somewhat, depending on your hardware, the following pages give you detailed guidance on various types of systems.

There is an on-line help facility to guide you, in case you need to interact with the process. If you need help, type `help boot`. The following sections provide details on differing boot protocols.

Booting HP 9000 Workstations

After turning the system *on*, if you stop the boot process, the system will display a menu of boot commands. For workstations, you will see a help display similar to the following:

Installing From Media Booting the Target System

Newer Workstation Boot Help Menu:

Command	Description
Auto [boot search] [on off]	Display or set auto flag
Boot [pri alt scsi.addr] [isl]	Boot from primary, alternate or SCSI
Boot lan[.lan_addr] [install] [isl]	Boot from LAN
Chassis [on off]	Enable chassis codes
Diagnostic [on off]	Enable/disable diagnostic boot mode
Fastboot [on off]	Display or set fast boot flag
Help	Display the command menu
Information	Display system information
LanAddress	Display LAN station addresses
Monitor [type]	Select monitor type
Path [pri alt] [lan.id SCSI.addr]	Change boot path
Pim [hpmc toc lpmc]	Display PIM info
Search [ipl] [scsi lan [install]]	Display potential boot devices
Secure [on off]	Display or set security mode

When you see this screen, do the following:

1. Type search **Enter**.
2. If the device (tape or CD-ROM) is identified in the list shown by the search command, proceed with the following steps. Otherwise, check the device and cable connections and repeat the search.
3. Type the following:

```
boot scsi.x
```

 Use the SCSI address of the boot device for x.
4. If you see the following prompt, respond with "n".

```
Interact with IPL (y or n)?
```

 (The bottom selections may not appear unless you hold down **ESC**).

Older Workstation Boot Menu: *Older HP 9000 Workstations display a menu similar to the following:*

Figure 3-2

- ```

b) Boot from specified device
s) Search for bootable devices
a) Enter Boot Administration mode
x) Exit and continue boot sequence
?) Help

```

Select from menu:

When the actions menu shown above appears, do the following:

- Press **S Enter**, to start a search for bootable devices.

#### Older Workstation Search Results

```
=====
Searching for Devices with Bootable Media.
To terminate search, press and hold the ESCAPE key.
```

| Device Selection | Device Path | Device Type and Utilities       |
|------------------|-------------|---------------------------------|
| P0               | scsi.6.0    | HP 2213A<br>IPL                 |
| P1               | scsi.3.0    | HP HP35480A<br>IPL              |
| P2               | scsi.0.0    | TOSHIBA CD-ROM XM-3301TA<br>IPL |

Enter boot selection, (h)elp, or e(x)it:

```
=====
```

You will see a list of "Pn" selections, as above.

If your boot device does not appear in the search list, do the following:

1. Check the hardware.
2. Press **x Enter**.
3. Type **S Enter** to initiate another search.
4. At the prompt "Enter boot selection", enter the "Pn" device selection for the device containing your install media.

If you know the SCSI address of the device beforehand, you can skip the search and simply type the following at the "Select from menu" prompt:

b scsi.x

#### Time Note (Booting from Media)

Loading the Ignite-UX install utility from media on a workstation should take 3 to 5 minutes. After this you will be ready to go to "After Selecting Boot Paths (Workstation and Server)" for the procedure to interact with the rest of the utility to load the remainder of your system.

## Booting HP 9000 Servers

As noted previously, you can halt the server autoboot process and redirect the boot process to boot from the desired media device. To do so, press any key during the autoboot process to display a Main Menu similar to the following:

### Newer Server Boot Menu

```
----- Main Menu -----
 Command Description

 B0ot [PRI|ALT]<path> Boot from specified path
 PAtH [PRI|ALT] [<path>] Display or modify a path
 SEArch [Display|IPL] [<path>] Search for boot devices
 COnfiguration menu Displays or sets boot values
 INformation menu Displays hardware information
 SErvice menu Displays service commands
 DIsplay Redisplay the current menu
 HElp [<menu>|<command>] Display help for menu or command
 RESET Restart the system

Main Menu: Enter command or menu >
```

The capital letters in each command represent the minimum characters (mnemonics) you need to type in order to launch that command.

1. You will need to determine the boot device that contains the CORE tape or CD-ROM. It is common that the Alternate Boot Device is set to a boot device. If this is the case, you can simply use the following command:  
  
    bo alt
2. If you want to search for available boot devices, type: search (or the appropriate abbreviated command, as shown).

A typical output might look like the following

### Newer Server Search Results

```
=====
Searching for potential boot device.
This may take several minutes.
```

To discontinue, press any key.

| Path Number | Device Path   | Device Type              |
|-------------|---------------|--------------------------|
| -           | -             |                          |
| P0          | 56/52.0 (dec) | Seq. record access media |
| P1          | 56/52.3 (dec) | Seq. record access media |
| P2          | 56/52.4 (dec) | Random access media      |
| P3          | 56/52.6 (dec) | Random access media      |

Main Menu: Enter command or menu >

```
=====
For example, type "bo pn" where "pn" is the path number for the install
device shown in the search output. You can also specify the device by the
hardware path, such as "56/52.0", in place of the path number.
```

### Booting Server

For Models 8x7, 845, 835, 870, and other older HP 9000 Servers, you will see a boot display like the following:

**Figure 3-3**

```
=====

Console path = 56.0.0.0.0.0.0 (dec)
 38.0.0.0.0.0.0 (hex)

Primary boot path = 52.2.0.0.0.0.0 (dec)
 34.00000002.0.0.0.0.0 (hex)

Alternate boot path = 52.0.0.0.0.0.0 (dec)
 34.0.0.0.0.0.0 (hex)

64 MB of memory configured and tested.

Autoboot from primary path enabled.
To override, press any key within 10 seconds.

Boot from primary boot path (Y or N)?> n
Boot from alternate boot path (Y or N)?>
Enter boot path, command, or ?>
=====

1. Turn on the system.
```

## Installing From Media

### Booting the Target System

2. Press any key to stop the autoboot process, at the message to do so.
3. Insert the install media (tape or CD-ROM).
4. Determine the hardware path of the install device from your system administrator. (There is no search capability to determine this information on older HP 9000 Server models).
  - If the primary path shown on your screen is not the same as that for the install device, respond with "n" to the prompt "Boot from primary boot path". In this case, you will then be asked if you want to boot from the alternate path, which is typically set to the tape or CD-ROM device.
  - If the primary path shown on your screen matches that for the install device, respond with "y".
  - If neither the primary or alternate device paths correspond to that for the tape or CD-ROM device, then respond with "n" to both prompts. In this case, enter the hardware path of the device (for example, 52.3.0) at the prompt "Enter boot path, command, or ?>".
5. To the question "Interact with IPL (y or n)?", respond with "n".

### After Selecting Boot Paths (Workstation and Server)

- If you see the following question on your screen, type n:  
Interact with IPL (Y or N)?> n
- You can abort the installation at this point, if you wish, by turning the system *off* and starting over.
- When you have chosen the boot path and loaded the Ignite-UX utility, the system will display the Ignite-UX keyboard languages screen, if your target system has a PC-style keyboard. From this point on, you can respond to the requests for information on this and the following screens.

**Time Note:** Loading the Install Kernel should take 3 to 5 minutes.

## Booting the V-Class

To boot the system from the CORE media, follow the initial instructions on powering up the system and external drive (if used), as in “Booting the Target System”, in this chapter.

### The V2200 System Boot Console

Typically the V-Class boot console has the following display when powered up (this example is for a Model SPP2000). *To stop the system boot process and select the device with the install media, press any key within ten seconds after you see “System is HP9000 V2000 series”:*

```
OBP reboot
SPP2000, POST version 3.1.4.0, compiled 1997/06/27 10:38:45 LAB #0001
Node Id: 00000000
Monarch: PB0R
Probing CPUs.
Completing core SRAM initialization.
Initializing main memory.
 Probing memory: MB0L, MB1L, MB2R, MB3R, MB4L, MB5L, MB6R, MB7R
 Parallel memory initialization in progress
 PB0R MB0L
 PB0R MB4L
 PB0L MB1L
 PB1R MB2R
 PB1L MB3R
 PB0L MB5L
 PB1R MB6R
 PB1L MB7R
Nodemask=00000001
Booting OBP.
OBP Power-On Boot on [0:1]
```

Installing From Media  
Booting the Target System

```

PDC Firmware Version Information
PDC_ENTRY version 3.1.0.29
POST Revision: 3.1.4.0
OBP Fieldtest Release 3.1.0.29, compiled 97/06/19 16:33:50(2)
SPP_PDC version 1.1.7.2

Proc type Proc# Proc Rev Speed State Dcache Icache

HP,PA82000 0 4.0 200 MHz Active 2048 KB 2048 KB
HP,PA82000 1 4.0 200 MHz Active 2048 KB 2048 KB
HP,PA82000 2 4.0 200 MHz Active 2048 KB 2048 KB
HP,PA82000 9 4.0 200 MHz Active 2048 KB 2048 KB
HP,PA82000 10 4.0 200 MHz Active 2048 KB 2048 KB
HP,PA82000 11 4.0 200 MHz Active 2048 KB 2048 KB
2048 MB memory installed
Primary boot path = 5/2:0.2.0
Alternate boot path = 15/3
Console path = 15/1
Keyboard path = 15/1
[*** Manufacturing (or Debug) Permissions ON ***]
System is HP9000 V2000 series
Autoboot and Autosearch flags are both OFF or we are in HP core mode.
Processor is entering manual boot mode. ...
```

If the system is set to perform auto-boot, you will see the following:

Processor is starting the autoboot process.  
To discontinue, press any key within 10 seconds....

Press any key, at this point. You will see the following display:  
(The mnemonics that you would enter for commands are in capital letters.)

| Command                         | Description                                    |
|---------------------------------|------------------------------------------------|
| -----                           | -----                                          |
| AUto [B0ot SEArch ON OFF]       | Display or set the specified flag              |
| B0ot [PRI ALT <path> <args>]    | Boot from a specified path                     |
| BootTimer [time]                | Display or set boot delay time                 |
| CLEARPIM                        | Clear PIM storage                              |
| CPUconfig [<proc>] [ON OFF]     | Configure/Deconfigure Processor                |
| DEfault                         | Set the sytem to defined values                |
| DIplay                          | Display this menu                              |
| ForthMode                       | Switch to the Forth OBP interface              |
| IO                              | List the I/O devices in the system             |
| LS [<path> flash]               | List the boot or flash volume                  |
| OS [hpux sppux]                 | Display/Select Operating System                |
| PASSword                        | Set the Forth password                         |
| PAth [PRI ALT CON] [<path>]     | Display or modify a path                       |
| PDT [CLEAR DEBUG]               | Display/clear Non-Volatile PDT state           |
| PIM_info [cpu#] [HPMC TOC LPMC] | Display PIM of current or any CPU              |
| RESET [hard debug]              | Force a reset of the system                    |
| RESTRict [ON OFF]               | Display/Select restricted access to Forth mode |
| SCSI [INIT RATE] [bus slot val] | List/Set SCSI controller parms                 |
| SEArch [<path>]                 | Search for boot devices                        |
| SECure [ON OFF]                 | Display or set secure boot mode                |
| TIme [cn:yr:mo:dy:hr:mn[:ss]]   | Display or set the real-time clock             |
| VErsion                         | Display the firmware versions                  |
| Command:                        |                                                |

After the boot is stopped, to determine  
the boot path, enter the following at the command prompt:  
Command:pa  
You will see a display similar to the following. For example:

Installing From Media  
Booting the Target System

Primary boot path = 1/0:0.4.0  
Alternate boot path = 15/3  
Console path = 15/1  
Keyboard path = 15/1

### Booting from the Primary Path

If your boot device (CD-ROM) is mounted at the primary path, enter the following, at the command prompt, to boot from the primary boot path:

Command:bo pri

You will see information similar to the following displayed:

```
Device : /pci@fe,90000/symbios@0,0/sd@4,0:cntl
Directory : LIF
File : HPUX
Arguments : hpux
Loading : HPUX %xxxxxxx% bytes loaded.
```

```
101456 + 61440 + 864184 start 0xd01cc0
Boot: disc(1/0/0.4.0;0)/disc(1/0/0.4.0;0):INSTALL
7245824 + 1328048 + 706428 start 0x29168
HPUX: kernel load begins
```

...

The Install kernel proceeds to load from the Primary Path CD-ROM device.

## Searching for Other Bootable Devices

If your CD-ROM is mounted at other than the primary path, and you need to determine the path, enter “``sea” (search) at the command prompt to see a general listing of devices. The CD will be listed with its hardware path. For example:

Command: sea

Searching for Devices with Bootable Media.

| Device Selection | Device Path | Device Type                  |
|------------------|-------------|------------------------------|
| P0               | 5/2:0.2.0   | Disk : SEAGATE ST34371W 0484 |
| P1               | 5/2:0.3.0   | CD-ROM : TOSHIBA CD          |
| P2               | 1/2:0.9.0   | Disk : SEAGATE ST19171W 0019 |
| P3               | 1/0:0.4.0   | Disk : SEAGATE ST19171W 0019 |

Command:

For this example, you would enter the following to boot the CD-ROM:

boot p1

The Install kernel proceeds to load from the non-Primary CD-ROM device.

---

## Using the Ignite-UX Interface

The following sections will guide you in using the Ignite-UX graphical and terminal interfaces.

### Choosing a Language for Interaction

After booting from media, you will first see the following screen on systems that have a PS2 keyboard:

**Figure 3-4**      **Selecting a Keyboard Language**



```
1) PS2_DIN_Arabic
3) PS2_DIN_Bulgarian
5) PS2_DIN_Canadian_French
7) PS2_DIN_Danish
9) PS2_DIN_French
11) PS2_DIN_Greek
13) PS2_DIN_Hungarian
15) PS2_DIN_ITF_Euro_Spanish
17) PS2_DIN_ITF_French
19) PS2_DIN_ITF_Italian
21) PS2_DIN_ITF_Korean
23) PS2_DIN_ITF_Swedish
25) PS2_DIN_ITF_Swiss_German
27) PS2_DIN_ITF_UK_English
29) PS2_DIN_Italian
31) PS2_DIN_Korean
33) PS2_DIN_Polish
35) PS2_DIN_Russian
37) PS2_DIN_SerboCroatian
39) PS2_DIN_Swedish
41) PS2_DIN_Swiss_German2
43) PS2_DIN_Turkish
45) PS2_DIN_US_English
2) PS2_DIN_Belgian
4) PS2_DIN_Canada_TBITS-3
6) PS2_DIN_Czech
8) PS2_DIN_Euro_Spanish
10) PS2_DIN_German
12) PS2_DIN_Hebrew
14) PS2_DIN_ITF_Danish
16) PS2_DIN_ITF_Finnish
18) PS2_DIN_ITF_German
20) PS2_DIN_ITF_Japanese
22) PS2_DIN_ITF_Norwegian
24) PS2_DIN_ITF_Swiss_French
26) PS2_DIN_ITF_T_Chinese
28) PS2_DIN_ITF_US_English
30) PS2_DIN_JIS
32) PS2_DIN_Norwegian
34) PS2_DIN_Romanian
36) PS2_DIN_S_Chinese
38) PS2_DIN_Slovak
40) PS2_DIN_Swiss_French2
42) PS2_DIN_T_Chinese
44) PS2_DIN_UK_English

Enter the number of the language you want: █
```

- Enter the number of the keyboard language you are using. Then press **Enter**. This selection determines the key layout of the console keyboard.

## Welcome Screen

Figure 3-5

```
=====
 Welcome to Ignite-UX!

Use the <tab> key to navigate between fields, and the arrow keys
within fields. Use the <return/enter> key to select an item.
Use the <return> or <space-bar> to pop-up a choices list. If the
menus are not clear, select the "Help" item for more information.

Hardware Summary: System Model: 9000/712/80
+-----+-----+-----+-----+ [Scan Again]
| Disks: 4 (5.8GB) | Floppies: 1 | LAN cards: 2 | |
| CDs: 1 | Tapes: 0 | Memory: 32Mb | |
| Graphics Ports: 1 | IO Buses: 2 | | | [H/W Details]
+-----+-----+-----+-----+

 [Install HP-UX]
 [Run a Recovery Shell]
 [Advanced Options]

[Reboot] [Help]
=====
```

This Terminal User Interface (TUI) screen summarizes the information found by an initial scan of your target hardware.

- Tab to "H/W Details" and press **Enter** to get a detailed scan of your hardware. (You can also do the same thing by pressing **D** — see the "Shortcuts" note).
- Tab to "Install HP-UX" and press **Enter** to continue with configuring the installation.
- Tab to "Run a Recovery Shell" to manually run HP-UX commands, for example, in order to recover a system that has crashed. From the interactive shell, the `/sbin/loadfile` command can be used to load commands that you may need to recover the system. This function is for advanced users only.
- Tab to "Advanced Options" to get version information and to make changes in process controls.

NOTE

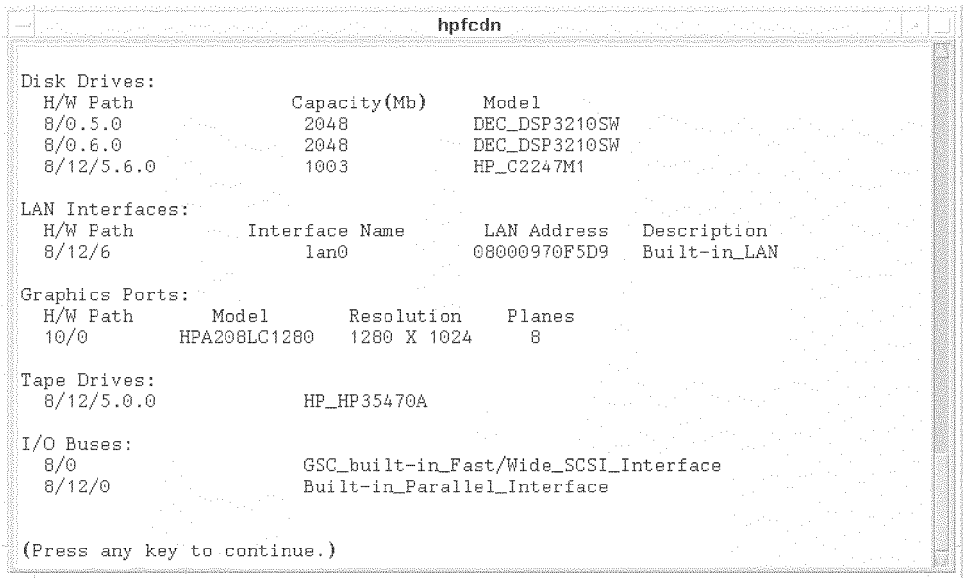
Shortcuts

Tips for using the TUI (character) interface:

- If you prefer to use the keyboard to manipulate the Install interface, you can do so by typing the *underlined* letter of an item (such as "**I**" for **I**nstall HP-UX).
- For general screen help, choose the Help button at the bottom of each screen. For context-sensitive help, press **f1** or **CTRL-f**.
- Use **CTRL-k** to get navigation key help.

If you selected "H/W Details" in the "Welcome" screen, you will see the following detailed scan of your target hardware:

Figure 3-6



Select Media or  
Network Installation

If you selected "Install HP-UX" in the "Welcome" screen, you will see the following:

Figure 3-7

```
=====
 User Interface and Media Options

This screen lets you pick from options that will determine if an
Ignite-UX server is used, and your user interface preference.

Source Location Options:
[*] Media only installation
[] Media with Network enabled (allows use of SD depots)
[] Ignite-UX server based installation

User Interface Options:
[*] Guided Installation (recommended for basic installs)
[] Advanced Installation (recommended for disk and filesystem management)
[] Remote graphical interface running on the Ignite-UX server

Hint: If you need to make LVM size changes, or want to set the
 final networking parameters during the install, you will
 need to use the Advanced mode (or remote graphical interface).

[OK] [Cancel] [Help]
=====
```

- Select the Source-Location of installation, by typing an "\*" in the box.
- Select among the User Interface options to designate where you intend to control the installation from. A Remote graphical interface assumes that you have an Ignite-UX server configured and available.

---

**NOTE**

If you only wish to access an SD depot over the network, then you should choose Media with Network enabled.... You will then be able to specify the SD depot later during the media install.

The third selection requiring a network server be configured and available.

- 
- Select Guided Installation. This has the following characteristics:
    - Instructions for each procedure.
    - "Mainstream" configuration.
    - Default disk layout (e.g., no detailed LVM formatting).

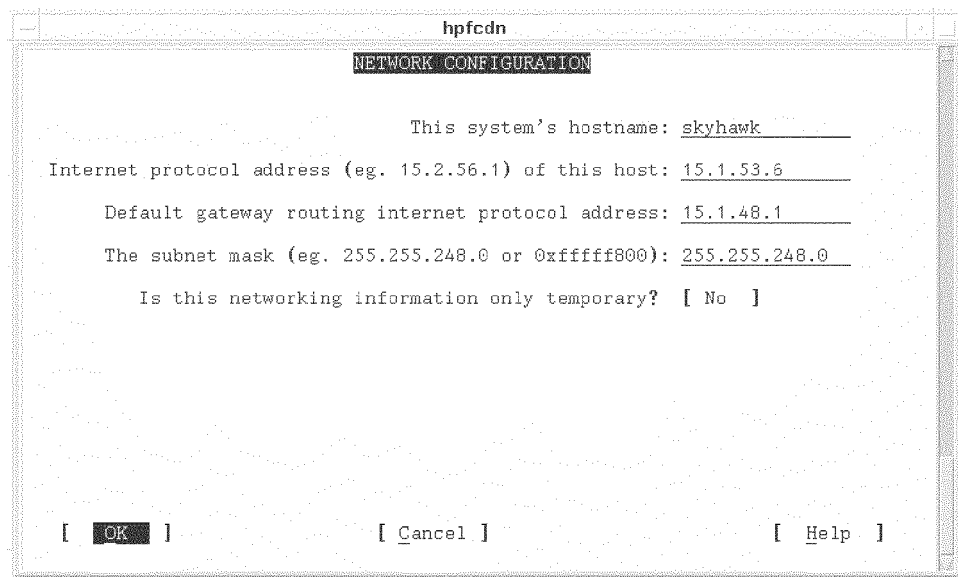
## Installing From Media

### Using the Ignite-UX Interface

- For a full Ignite-UX interface install (TUI mode), select Advanced Installation. You will see the interface shown in Figure 3-12, with the same functionality as is described in “Using the Ignite-UX Interface.”, but with TUI navigation. If you need to make adjustments to LVM parameters, select the Advanced Installation.

**Network Information** (You will not see this screen if you are doing a media-only installation).

**Figure 3-8** **netmedia**



The screenshot shows a terminal window titled 'hpfdn' with a 'NETWORK CONFIGURATION' header. It displays the following configuration details: 'This system's hostname: skyhawk', 'Internet protocol address (eg. 15.2.56.1) of this host: 15.1.53.6', 'Default gateway routing internet protocol address: 15.1.48.1', and 'The subnet mask (eg. 255.255.248.0 or 0xffff800): 255.255.248.0'. A prompt asks 'Is this networking information only temporary?' with '[ No ]' as the input. At the bottom, there are three buttons: '[ OK ]', '[ Cancel ]', and '[ Help ]'.

You can enter networking information on this screen. When you have entered the needed information, tab to OK and press **Enter**.

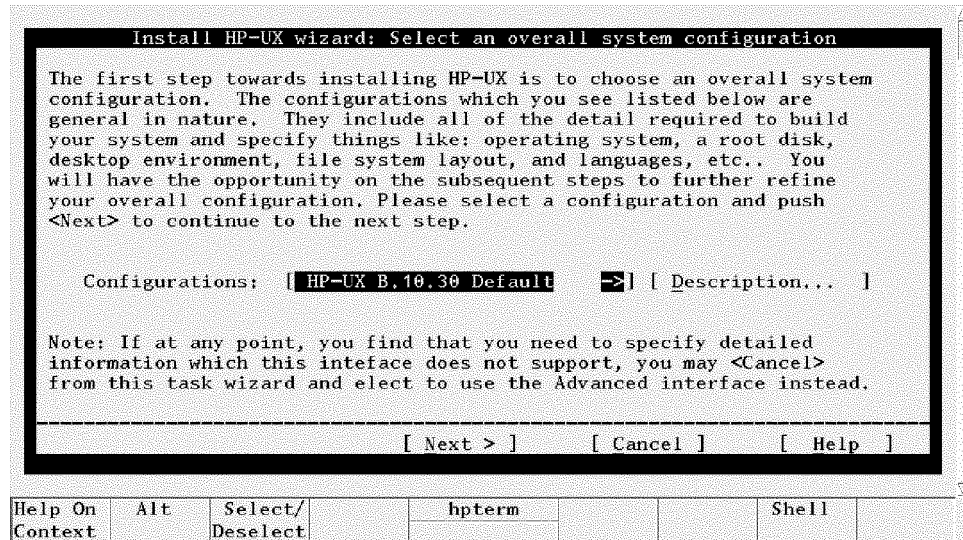
## Guided Installation

If you selected the Guided Installation from the User Interface Options menu, you will be using the Task Wizard illustrated here. The Task Wizard is intended to provide help for a first-time user of Ignite-UX by providing on-screen explanation and a limited number of steps to accomplish a basic installation.

Note that the Task Wizard is available only on a client-managed (standalone) installation, and is presented in character-mode (TUI).

## The Task Wizard Welcome Screen

Figure 3-9



## TUI Navigation and Shortcuts

In TUI mode, you will be able to use the keyboard to navigate. Press **CTRL-K** for detailed keyboard help at any time.

HP-family terminals display function key labels (also called softkey labels) at the bottom of the window. These labels vary depending on the type of window being displayed, but the functions of f1-f4 are consistent:

| Key | Meaning              |
|-----|----------------------|
| f1  | Help on Context      |
| f2  | Alt (a modifier key) |
| f3  | Select/Unselect      |
| f4  | Menubar on/off       |

To navigate in a typical TUI screen, you will be doing the following:

1. Highlight the field you want, using **Tab**, if necessary.
2. Press **Enter** to open a list in a selector field.
3. Use the up/down arrow keys to highlight a selection.

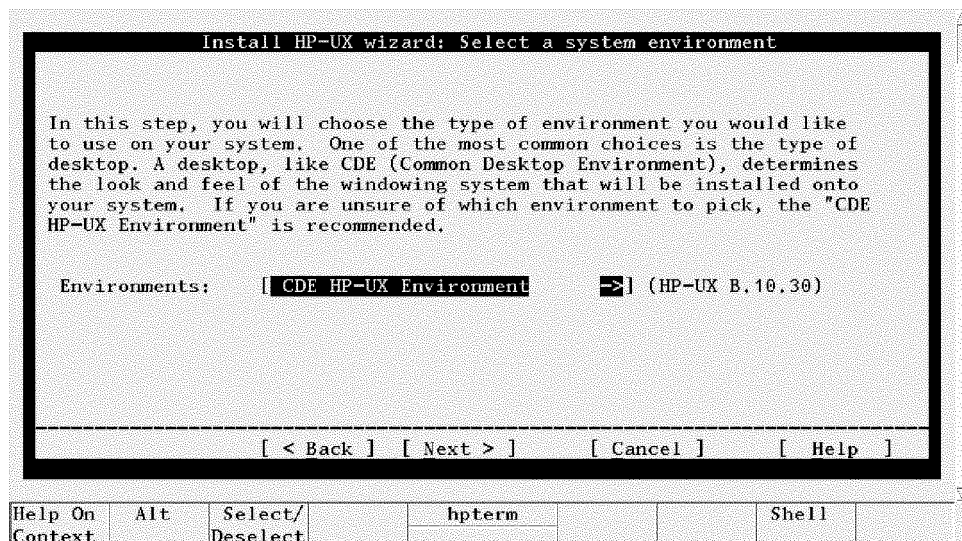
## Installing From Media

### Using the Ignite-UX Interface

4. Press **Enter** again to select the item.
5. Tab to the next field.
  - You may also have to take some action, such as select **OK** or **Modify** in order to activate your selection. You can use the local help for the screen (f1 or **Help**) to get specific information.
  - As a shortcut to specifying an action, you can type the *underlined* letter of an item (such as "C" for **C**ancel) to activate the item without highlighting it.

#### The Task Wizard: Selecting a System Configuration

Figure 3-10



#### Task Wizard Topics

This screen enables you to select a system environment, such as CDE ("Common Desktop Environment") to interact with on the target system. Select Next to continue to a following screen. Select Back to return to a previous screen. On the last screen, you will select Finish to execute the installation.

If you want to cancel out of the process at any time, select Cancel. You will see the choices in Figure 3-11.

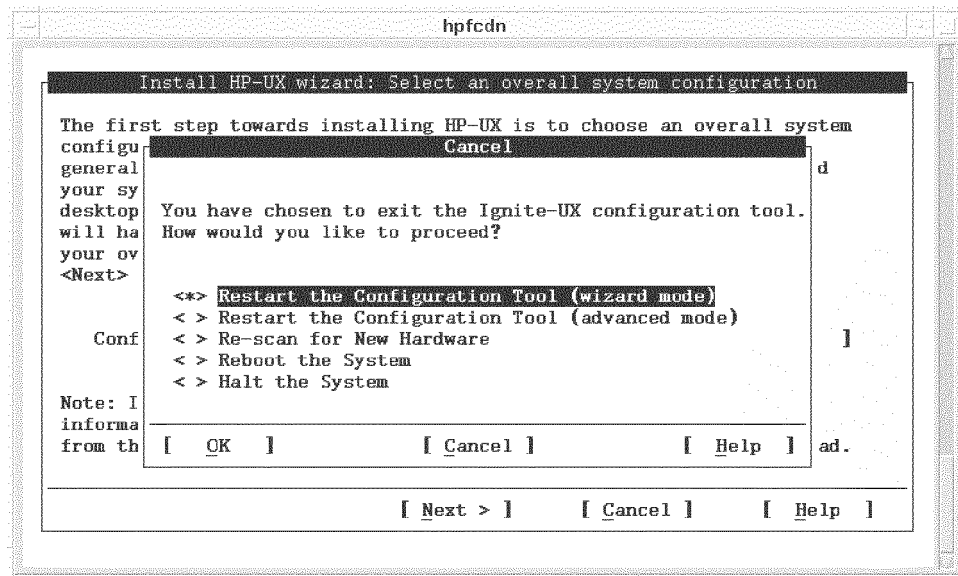
The rest of the wizard screens let you do the following tasks:

- Select a root disk.
- Specify the amount of root swap space.
- Select a file system type.
- Specify root volume group disks.
- Select a language(s).
- Select a user license.
- Select Additional Software.
- Pre-install disk information. (To allow you to exclude disks from the install.)
- Pre-install check information. (To allow you to review errors or warnings.)
- System Summary. (To allow you to see a summary of the install configuration prior to executing it.)

Installing From Media  
Using the Ignite-UX Interface

The Task Wizard:  
Exiting

Figure 3-11



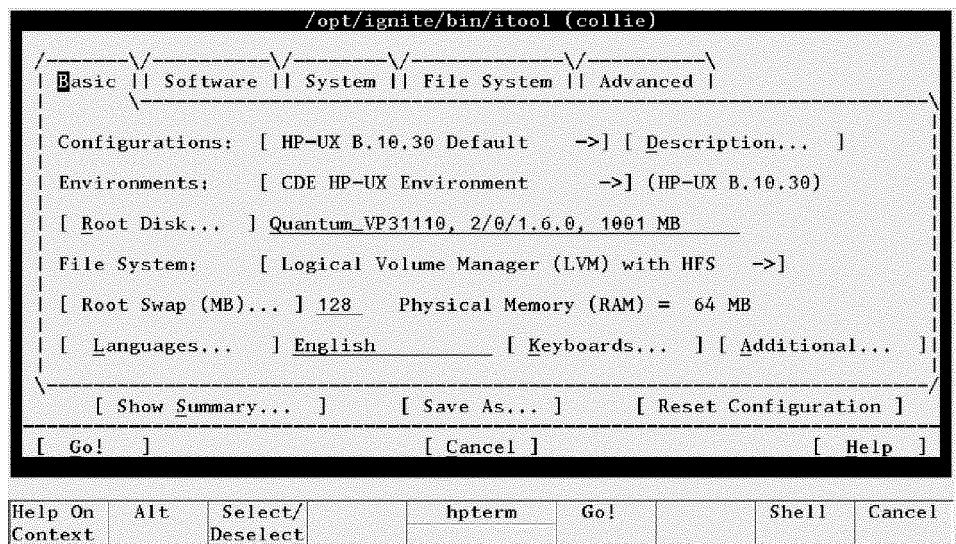
If you want to leave the Task Wizard mode at any time, select the **Cancel** button, or press **C**. You will have the choices illustrated in Figure 3-11.

You may want to leave the Task Wizard in order to do more advanced disk configuration or to add hardware, for example, in which case you can restart Ignite-UX in advanced mode in this screen.

## Advanced Media Installation (TUI)

If you choose to run an advanced interface for the media install, you will see the following on the system you are installing:

**Figure 3-12**



If you had been doing the individual installation from an Ignite-UX server, you would see a similar screen in GUI format, with full mouse functionality. The configuration which you can do on each of the tabs, in TUI and in GUI, is the same. Go to “Installing from the Server” for the step-by-step details of an advanced installation as illustrated in the GUI.

Installing From Media  
Using the Ignite-UX Interface

## 4 **Configuring an Ignite-UX Server**

---

## Chapter Contents

- Overview: the Ignite-UX Server.
- Ignite-UX Distribution Media.
- Hardware Requirements for the Ignite-UX Server.
- Network Requirements.
- Setting Up an Ignite-UX Server.
- Using Configuration Files.

---

### NOTE

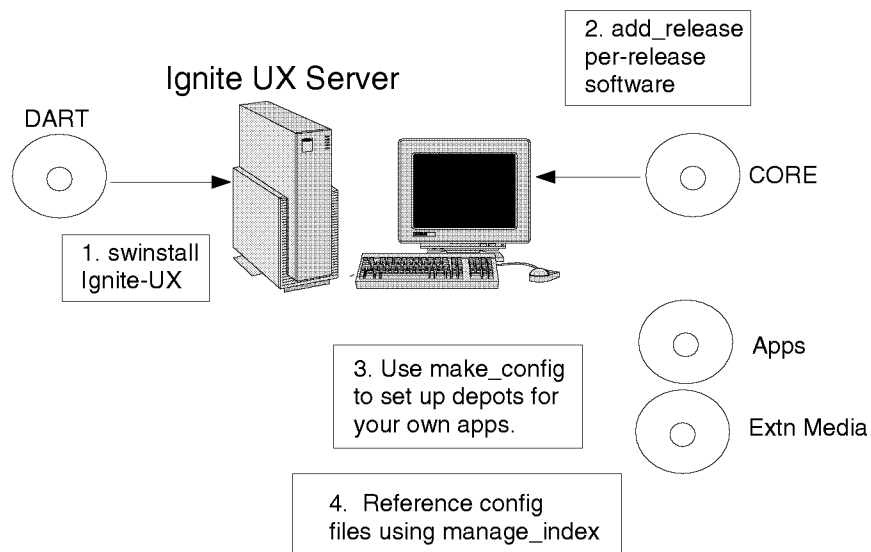
For online information about the Ignite-UX server, please see the `/opt/ignite/share/doc/` directory on your system, and the manpage *ignite(5)*.

---

---

## Installing Server Software

**Figure 4-1**



### Overview: the Ignite-UX Server

For multiple installations, you will generally be executing the installation from the server, although you can also choose to install from a client-target system, in TUI mode.

## Configuring an Ignite-UX Server

### Installing Server Software

The requirements for a server are outlined in “Hardware Requirements for the Ignite-UX Server and Clients”.

The steps for installing the server are outlined in “Setting Up an Ignite-UX Server”,

Installation of Ignite-UX will take care of most of the server configuration tasks. These include setting up IP addresses and hostnames, interface location, and client response behavior. These can also be done outside Ignite-UX by the `setup_server` tool (see `setup_server(1M)`) as a simple interface, or by using the Ignite-UX GUI.

The overall server setup tasks include the following:

1. Install HP-UX 10.x (if you have not already done so).
2. Install Ignite-UX tools and data.
3. Set up core software.
4. Add additional applications (optional).
5. Run `ignite` to complete the configuration (using the Server interface screen) and to start the install process.

## Ignite-UX Distribution

### Hardware Requirements for the Ignite-UX Server and Clients

*Note that HP-UX 10.30 is not supported on Class B, C, J, or Series 7xx systems. NFS Diskless functionality is not supported in HP-UX Release 10.30. Do not update your server to HP-UX Release 10.30 if you intend for that server to operate as a NFS Diskless server. You may find references within this documentation to NFS Diskless functionality. These references only apply to systems running HP-UX Release 10.20 or earlier.*

To install HP-UX 10.x you will need the following:

|          |                                                                                                                                                                                                      |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computer | An HP 9000 Series computer with PA 1.1 or later processor.<br><br>To check whether your system belongs to the old Series 800 designation, use the <code>uname -a</code> command on a running system. |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Memory        | <p>For any system installed using Ignite-UX, the required minimum is 32 MB. (Some older Series 800 models (PA1.0 processor), such as 8x5 are not supported.) Your HP sales engineer can assist in determining the proper amount of RAM.</p> <p>Information on RAM requirements is also available on the following web site:<br/><a href="http://www.hp.com:80/computing/mvp/memory.html">http://www.hp.com:80/computing/mvp/memory.html</a>.</p>                                                                                                                       |
| Source Device | <p>Make sure that your system has an appropriate source (CD-ROM, DDS drive, or LAN card). Ensure that tape drive heads are clean.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Disk Drive    | <p>A target system needs at least one hard-disk drive with at least the following capacities: (The Ignite-UX program performs an analysis of disk space needed prior to loading the software.)</p> <ul style="list-style-type: none"><li>• 2 GB or more for a generally usable system.</li><li>• Swap space allotment depends on the software loaded and can be adjusted in the Ignite-UX interface.</li><li>• File system minimums depend on software loaded. Ignite-UX computes standard file system sizes and automatically sets a minimum size for /var.</li></ul> |
| Other Devices | <p>Your system can also have any HP-supported device. If you have an unsupported device connected to your system, HP assumes no responsibility in making that device function properly.</p>                                                                                                                                                                                                                                                                                                                                                                            |

**For an Ignite-UX Server:**

In addition, an Ignite-UX server requires the following:

- A Series 700/800 system running HP-UX 10.01 or later.
- An X11 display server (workstation, X-terminal, PC running an X server, etc). This can be the same system as above.
  - A separate graphics display may be required, if a Series 800 Ignite-UX server is being used. OR
  - The display can be redirected to another X-windows system by setting the DISPLAY environment variable.

## Configuring an Ignite-UX Server

### Installing Server Software

For example, in the Korn Shell or Posix Shell, you would type the following, using your *system\_name*:

```
export DISPLAY=system_name:0.0
```

- Product media to load onto the server your Ignite-UX and any software depots you plan to distribute to target systems.
- Network access to the clients to be installed. Client and Server must be on the same subnet if you plan to do the initial boot of the client over the network. A "helper" system can be used to get between subnets. The `bootsys` command also works between subnets.

### Supported Peripherals

With the disk space provision above, all disk drives that are supported on HP 9000 platforms are supported for installation.

Disk arrays can be installed with HP-UX, but the installation tasks do not support configuring an array. See your array documentation for configuration information.

The HP-UX client-side installation tools support VT100 and Wyse 60 terminals, compatible emulations, and all HP terminals.

### Supported File System Types and Layouts

*The HP-UX 10.x file system layout is quite different from HP-UX 9.0x releases.* The 10.x file system is modeled after the UNIX™ SVR4 and OSF/1 systems. This layout provides such benefits as the separation of OS software from application software, and it also resembles the UNIX standard layout used by many other computer companies.

#### File System Types

HP-UX 10.x supports the following file system types:

- UFS/HFS or VxFS (Journaled File System) on local disk volumes.
- NFS.

#### Disk Layouts

The file system installed by Ignite-UX will be supported on the following disk layouts:

- "Whole disk" (single file system, single swap partition disk layouts).
- The Logical Volume Manager (LVM).

The Logical Volume Manager is offered on all HP 9000 platforms. Because it helps to organize file space across multiple physical disks, you are encouraged to adopt this method of disk management, if you are using multiple disks. See the manual *System Administration Tasks*, or the *lvm(7)* man page for details.

Series 700 Software Disk Striping is replaced by LVM disk striping for all HP-UX 10.x systems. LVM disk striping is supported by Ignite-UX.

SDS can be converted to LVM via the utility *sdstolvm*. If you *upgrade* to HP-UX 10.x from 9.x, as opposed to installing it, this conversion will be done for you automatically during the upgrade.

LVM disk striping can be set up on some volumes during the installation. However, striped volumes cannot be mirrored later on. Note that not all types of volumes may be striped. This is due to an unbalanced amount of disk space assigned to the root/boot/swap volumes on the root disk that must not be striped.

## Network Requirements.

If you are loading your server depots or client software from a remote system, your target system also will need the following:

- A network card. If the target system has multiple LAN cards, select the card that is configured onto the correct network using Ignite-UX → System Tab → Additional Interfaces.

Only one LAN card is used during the installation, configured on the client console or handled automatically by the *bootsys* utility.

Your server system will need to be configured. In addition you will need the following:

- The server system must be on the same network subnet as the target (client) system that will be installed. Or you will need a "helper" system on each subnet from which to boot clients.
- A functional network connection. If you have more than one LAN connection, be prepared to select the correct one with which to connect to the install server system.

*Note: You can only boot over the network from an Ethernet interface. FDDI is also supported, but for non-booting only.*

## Setting Up an Ignite-UX Server

Ignite-UX functions through a client-server system. Much of the server setup process will be performed for you in the Ignite-UX installation process, but there are also some separate steps you must take after installation. Tools are supplied to help you complete the server setup. The following steps outline setting up or updating the server:

1. Obtain access to a suitable system running HP-UX 10.x. For information on upgrading from a 9.x system to 10.x, please see the manual *Upgrading from HP-UX 9.x to 10.x*.
2. If required, update with Extension Media from CD-ROM (see Chapter 2, “Updating an Existing Operating System and Software.”)
3. Install the Ignite-UX tools and data from the HP-UX Applications tape or CD-ROM, using the `swinstall` utility.

If you are updating a 10.x system, this may require running `swgettools` first to update `swinstall`. (See Chapter 2, “Updating an Existing Operating System and Software.”)

The 11.0 bundle name is:

- B5725AA

Versions that are on the DART Applications media will be labeled B5724AA\_APZ (Series 700) or B5725AA\_APZ (Series 800).

4. The release-specific bundles within these each contain the filesets needed for installing a particular release to your clients. It is recommended that you load one or more of these release-specific bundles. They are designated as follows:

```
Ignite-UX-10-01
Ignite-UX-10-10
Ignite-UX-10-20
. . .
```

You may load one or more of the Ignite-UX-10-XX bundles onto your server depending on which releases of HP-UX you plan on installing onto clients. That is, you can choose to load a release-specific bundle, such as Ignite-UX-10-20, or an entire bundle, such as B5724AA\_APZ.

## Installing Ignite-UX Software

Each software bundle contains the Ignite-UX tools plus the data files required for support of the particular HP-UX release indicated by the bundle name.

The Ignite-UX product replaces the capability previously supplied by the NetInstall bundle that came with HP-UX releases 10.01, 10.10 and 10.20. (A system cannot be configured as a server for both NetInstall and Ignite-UX.) Loading any of the Ignite-UX software bundles will give an error until you remove the NetInstall bundle or touch the file `/tmp/okay_to_remove_net_install`.

Once the application CD-ROM containing Ignite-UX has been mounted, you may use the `swinstall` command to load the desired Ignite-UX bundles. For example, the command below would load the support needed for installing HP-UX 10.20 onto clients:

```
swinstall -s /cdrom Ignite-UX-10-20
```

- After the Ignite-UX bundle(s) has been loaded, unmount and remove the media, and mount the media/drive, if necessary, to load the CORE software.

## Set Up or Update CORE Software.

Ignite-UX allows many options for installing software on the target system. The most basic option is to install all software from SD depots located on the server. Following is the procedure for setting up the CORE software on the server.

Setting up the software for the OS installation can be done with the help of the `add_release` tool. This tool can also be used interactively to add new releases to the server and to remove old ones.

If you plan to use both SD sources and non-SD sources (`tar`, `cpio`, or `pax`), it will be necessary to consider each individually.

### 1. For SD OS software:

Run the `add_release` tool to load the software release(s) you wish to install on the target systems. The `add_release` tool will add a new software release to an Ignite-UX server by creating SD depots for that software. See the `add_release(1M)` man page for more details.

To run `add_release` to test what it would do, without actually modifying anything, you can specify the `-p` option (preview mode), as follows. For example:

```
/opt/ignite/bin/add_release -s /dev/dsk/c0t2d0 -p
```

Configuring an Ignite-UX Server  
Setting Up an Ignite-UX Server

To use a depot other than `/dev/dsk/c0t2d0` to read the software, you can specify the depot with the `-s` option.

For example, the following would apply if you already have an OS depot, or you have made modifications to it. Then you can use the `make_config` and `manage_index` commands to generate a configuration file. For example:

```
make_config -s server:/depot_700 \
 -c /var/opt/ignite/data/Rel_B.10.20/core_700

manage_index -a -f /var/opt/ignite/data/Rel_B.10.20/core_700
See the ignite(5) man page for further examples.
```

- 2. For non-SD OS software:

*If the source is not an SD depot (i.e., it is an archive image), then the `add_release` command is not applicable.*

You will need to create a unique config file that represents the non-SD operating system software. A sample of a config file that does a core archive can be found at the following location:

```
/opt/ignite/data/examples/core.cfg
```

After copying this file and making edits to it as instructed in the comments contained in the file, you can use the `manage_index` tool to insert a reference to this configuration in the following location:

```
/var/opt/ignite/INDEX
```

Add additional applications (optional)

If you have other software that you would like to pull during your install and want to have the software made available for selection in the Ignite-UX UI, run the `make_config` and `manage_index` tools on those depots. If the contents are not 700/800 specific, then the `-a[78]00` option should not be used.

NOTE

Do not attempt to use non-core-OS archives (i.e. layered applications) that contain files that get loaded in `/var/adm/sw/*` . Shipping files in this directory in this method may corrupt the software distributor database.

For SD application software

- 1. Run the following commands for each depot you plan to load SD software from during the installation. The `make_config` tool only handles SD software which is packaged in bundle form. (All

HP-supplied software is packaged in this form. See the *make\_bundles(1M)* manpage for information on making SD bundles in an SD depot.)

For example, to make compiler depot bundles available type the following:

```
/opt/ignite/bin/make_config -s hpfcxxx.hp.com:/depots/compiler -c \
/var/opt/ignite/data/Rel_B.10.20/compilers_cfg
```

```
/opt/ignite/bin/manage_index -a -f /var/opt/ignite/data/Rel_B.
10.20/compilers_cfg
```

2. The depot server name (in this example hpfcxxx.hp.com) should be replaced with the server you have the SD software on. Note that the depot server can be a different system from the Ignite-UX server.

---

**NOTE**

---

The `make_config` command will need to be re-run each time new software is added or modified in the depots.

The `make_config` tool constructs Ignite-UX config files which correspond to SD depots. When an SD depot is used as part of the Ignite-UX process, it must have a config file which describes the contents of the depot to Ignite-UX. This command can automatically construct such a config file, when it is given the name of an SD depot to operate on. This command should be run when adding or changing a depot which will be used by Ignite-UX.

The `manage_index` tool is used to manipulate the `/var/opt/ignite/INDEX` file. This utility is primarily called by other Ignite-UX tools but can also be called directly.

**For non-SD application software:**

If the source is not an SD depot, the `make_config` command is not applicable. You will need to create a unique config file that references the non-SD software. A sample of a config file that does a non-core archive can be found at the following location:

```
/opt/ignite/data/examples/noncore.cfg
```

1. Copy this file first to `/var/opt/ignite/data/Release/configx`. Then make the changes to the copy in that directory.
2. After copying and editing this file, you can use `manage_index` to insert a reference the copy of the configuration in the following location:

```
/var/opt/ignite/INDEX
```

## Starting the Ignite-UX Server

- Run `ignite` to complete the configuration and to start the server process. Type the following:

```
/opt/ignite/bin/ignite
```

This will start the Ignite-UX server.

### Complete the Configuration:

After you have Ignite-UX up and running, you will see the Welcome screen and then the Ignite-UX Server GUI. When you have booted the clients you will see client icons on the Server GUI. These can be manipulated as follows:

- Click once on a client icon to select it for further actions.
- Click twice on the client to get a Client Status screen.
- Click the *right* mouse button (Mouse Button Three) on the selected client icon to get an Actions screen similar to the pulldown Actions menu.

- Server Configuration: Server Options.

This allows the OS product configuration to be selected, along with the default printer configuration, client timeout allowance, and where the client interface will be booted from and displayed.

- Server Configuration: Session Options.

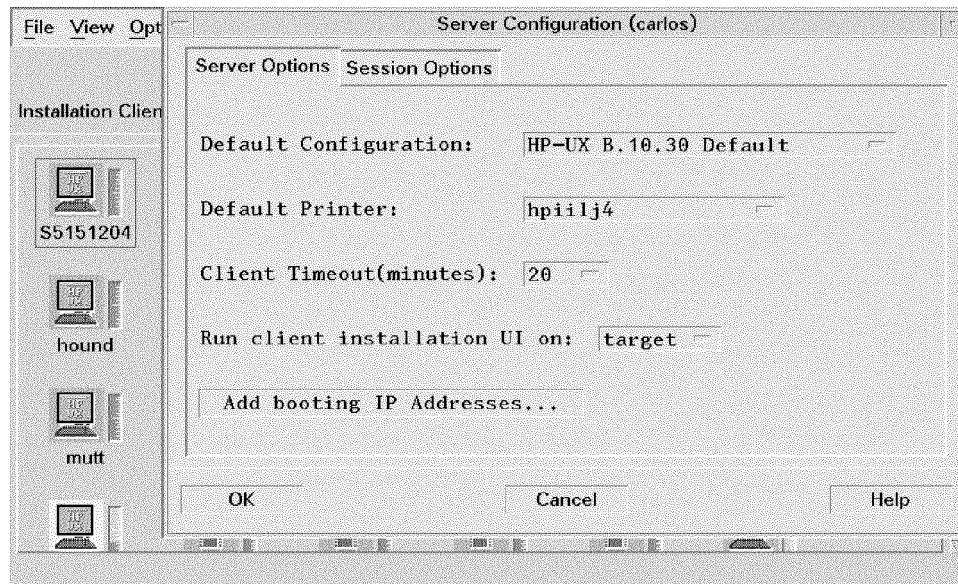
This configures general interaction behavior for the client sessions.

Details for these screens are on the following pages.

## Configuring Server Options

The fields in these tabs ("Server Options" and "Session Options") serve to identify and set up your installation server, and to configure the IP source address range to be used for initially booting the install clients (target systems) and the DHCP address range to be used for directing the client installation process. You will see the following screen after selecting: Options --> Server Configuration.

**Figure 4-2**



**The Server Options  
Tab**

- Select on Default Configurations, highlight the one you want to use from the list. When doing a client installation, this configuration will be installed on targets if no other is specified. (The default setting can be overridden on a per-client basis by Ignite-UX).
- Click on the selection list to display the available (configured) printers. Select the one you want to use.

If necessary, use the SAM → Printers and Plotters area to configure a new printer onto the system.

This will be the printer for printing the manifest or installation history. The printer address will be checked by Ignite-UX before a job is sent.

- Select the appropriate Client Timeout time, or "Off", to set the time limit for the client to be connected without responding. (This will set a limit on the time since the client install log has been written in. Fifteen to thirty minutes may be required at some points in the installation.) A warning note will be displayed if this time is exceeded.

Setting Client Timeout to "off" disables this notification.

## Configuring an Ignite-UX Server

### Setting Up an Ignite-UX Server

- Use the Interface selection list to designate where you want to see the client UI for this installation. If you have a server configured, you can have the choice of running the client installation interface from either the target (as a Terminal User Interface) or the Ignite-UX server (as a Graphical User Interface). If the client installation is to be non-interactive (no interface), select "None".

---

**NOTE**

The default location for the interface display is the Ignite-UX server, if the server is running.

- To use Add Booting IP Addresses..., see the following section.

**Adding Booting IP Addresses...**

If you clicked on Add Booting IP Addresses..., in Figure 4-2, you would get the following screen.

**Figure 4-3**

IP Address Ranges to use for the initial boot:

Booting Clients:  to

DHCP Address Ranges to use for remainder of the installation:

DHCP Class ID:  ☒ DHCP Addresses are temporary

DHCP Addresses:  to

OK Cancel Help

**Booting Clients**

This screen allows you to enter appropriate values to use for IP addresses for the initial boot of the target systems. The number of such addresses determines the number of simultaneous installations you can do.

First, ensure that these IP addresses are not assigned elsewhere. These IP addresses are used to initially boot the target systems. They are used until the system is assigned one of the DHCP-assigned boot addresses. One address is required for each simultaneous boot. Typically one to three are needed, depending on your usage.

This data can also be configured from a command line by using the tool *setup\_server(1M)* for this procedure. Or you can directly edit the *instl\_boottab* file; this is necessary in order to modify the listing of existing IP addresses.

See the *instl\_bootd(1M)* man page for further details.

**DHCP Address Range** First ensure that these IP addresses are not assigned elsewhere. These IP addresses are used during the OS download and application loading. The addresses are in use for most of the Ignite-UX download to a target machine. One address is required for each simultaneous download. You should set more, if the addresses are assigned permanently.

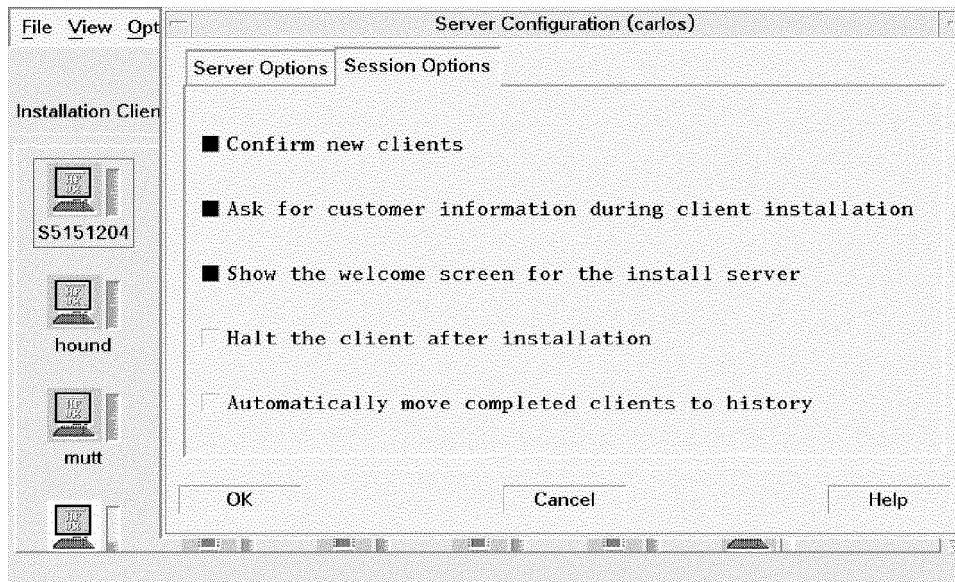
You would click the “Temporary” box in case you would like to manage a small group of temporary IP addresses, just for use in doing installations, and then reassign the clients new addresses when they are deployed.

The provision of DHCP capability is for the purpose of installation only and you may want to limit configurations so that they do not interfere with prior DHCP server functions.

Also see Appendix A, “Configuring for a DHCP Server,” for examples of usage. See the *setup\_server(1M)* and *instl\_adm(4)* man pages for more information on setting up DHCP functions, addresses and class IDs.

Server Session  
Options Tab

Figure 4-4



The Session Options tab displays a number of check boxes to configure client response behavior.

- **Confirm New Clients:**  
This check box, if set, results in the appearance of a dialog screen each time a new client is booted from the Ignite-UX server.
- **Ask for customer information during client installation:**  
If you do not want to see the form for "Customer Name", "System Serial #", and "Order Number" select the button to disable their display.
- **Show Welcome Screen for the Install Server:**  
Select the button to enable or disable the automatic display of the welcome screen for the install server.  
  
This welcome screen is a useful default if many new operators run the Ignite-UX server.
- **Halt the client after installation:**

Select this button to cause the client system to halt (rather than reboot) after installation.

- Automatically move completed clients to history:

Select this button to automatically add completed clients to the end of the history log, `/var/opt/ignite/clients/history/history.log`. It will also move their config and manifest files to history for future reference. The client icon will be removed from the Server screen. The client must be complete (fully installed) for this to take place.

*If the client systems are prepared and booted, you can skip to Chapter 5, “Installing from the Ignite-UX Server,” for the procedures for using the server with the client systems.*

#### Preparing the Clients for Installation

1. Boot the Series 700 or Series 800 client system that supports network boot by entering the appropriate command on the console for that client.

Note that, if a client with a known IP address is already running HP-UX, you can use the `bootsys(1m)` command from the Ignite-UX server to install it with specific configuration, without further interaction.

See the exact boot ROM commands for manual booting of your system in “Bootting Client Systems from the Network”.

If the client cannot find the server, check the following items:

- Client is on the same subnet as the server.
- Any `instl_bootd` errors in `/var/adm/syslog/syslog.log`.
- Your `/var/adm/inetd.sec` file to make sure that IP address `0.0.0.0` is not being disallowed.
- If `/etc/services` comes from NIS, make sure that the NIS server has `instl_boot*` entries.
- The daemon `rbootd` is running.

The icons for all clients booted from the Ignite-UX server should now appear on the Ignite-UX interface. If the server has not been set up completely, or if the client could not obtain enough networking parameters via DHCP, then the client may require interaction on the client console.

[Configuring an Ignite-UX Server](#)  
**Setting Up an Ignite-UX Server**

You can now proceed with using the Ignite-UX interface (“Installing from the Server”).

**For More Information** See Appendix B, “Using Configuration Files,” for the details of setting up configuration files for Ignite-UX.

For more details about server configuration and "golden disks", see the "Ignite-UX Startup Guide for System Administrators" and "Ignite-UX Cold Installations", both on your Ignite-UX server system in `/opt/ignite/share/docs/`.

# 5 **Installing from the Ignite-UX Server**

---

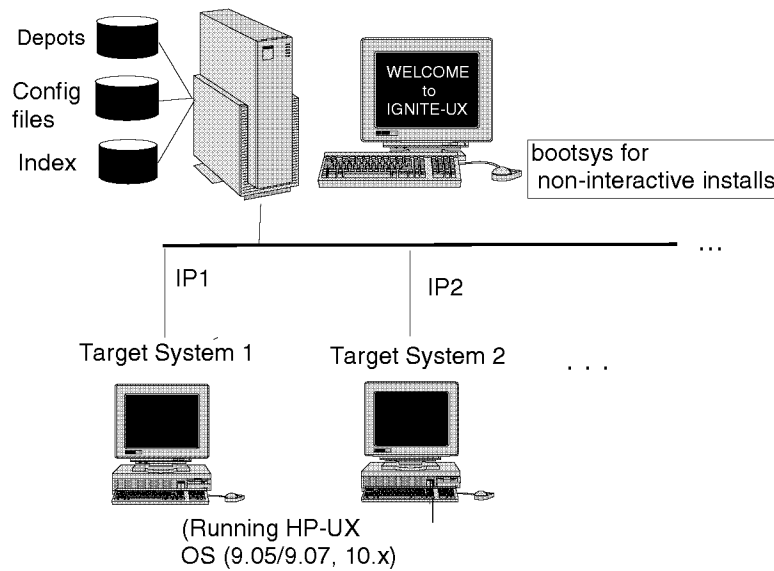
## Chapter Contents

- Booting Client Systems from the Network.
- Installing from the Server.
  - Selecting Server or Client Console Interaction.
  - Displaying the Client Systems.
- Configuring the Installation
  - Basic Tab.
  - Software Tab.
  - System Tab.
  - File System Tab.
  - Advanced Tab.
- Doing a Non-Interactive Remote Installation (bootsys).

---

## Network Source Installation

**Figure 5-1**



### Booting Client Systems from the Network

---

**NOTE**

Network boot applies to HP 9000 Workstations and HP 9000 Servers (K/D Class) only.

---

Installing from the Ignite-UX Server  
Network Source Installation

**Supported Workstations:**

At Release 11.0, the following 32-bit HP 9000 Workstations are supported:

Series 700: 712, 715/64, 715/80, 715/100, 715/100XC, 743, 744, 725/100

B-Class: B132L, B160L C-Class: C100, C110, C160, C160L, C180

J-Class: All J-Class systems

**Unsupported Workstations**

Workstations *not* supported are the following:

705, 710, 715/33, 715/50, 715/75, 720, 725/50, 725/75, 730, 735, 755

Workstations not supported due to required 100BaseT driver are the following:

B132L+, B180L C200, C240

---

**Supported Servers**

The 32-bit kernel can execute on any Server and Workstation supported on 11.0, except the V2200 Server. The 64-bit kernel executes only on certain servers. The V2200 requires the use of the 64-bit kernel. Not all PA8x00 CPU- equipped systems are supported for 64-bit operation, even though all PA8x00 CPUs are 64-bit capable.

At Release 11.0, the following HP 9000 Servers are supported:

- 32-Bit Only: D, E, G, H, and I-class, K-class (PA7x00), T500, and T520.
- 32/64-Bit: K-class (PA8x00), and T600,
- 64-Bit Only: V2200

Updating a cluster server to HP-UX 10.30 or later is not supported. NFS Diskless functionality is not supported in HP-UX Release 10.30 or later. Do not update your server to HP-UX Release 11.0 if you intend for that server to operate as an NFS Diskless server.

---

*The details in the following section are provided for guidance in case you have a variety of HP systems with different boot-console interfacing, and in case the client system is not currently running HP-UX.*

There is on-line help in the boot interface to guide you, in case you need to interact with the process. If you need help, type `help boot`.

If the client system is already running an OS, you may use this procedure or use the `boot sys` command as described in “Non-Interactive Installation Using `boot sys`”.

**Procedure**

1. Determine your network server address for the install. If necessary, see your system administrator for this information.
2. Turn *on* your target system.
3. When you see a message about stopping the boot search, quickly press and hold **ESC** to stop the boot selection process.

## Older Series 700

On older Series 700 machines, you will eventually see the following. (For HP 9000 Workstations, see the section “HP 9000 Workstations and Servers (K/D Class)”, in this chapter.)

**Figure 5-2**

```
b) Boot from specified device
s) Search for bootable devices
a) Enter Boot Administration mode
x) Exit and continue boot sequence
?) HelpSelect from menu:
```

Do one of the following:

- If your network has only one install server and your system is not configured as a diskless client, then type:  
`boot lan`  
*The boot may fail the first time because of an intentional delayed response by the install server. If it fails, try it again. If it fails more than three times, check for problems on the install server (see Chapter 7, “Troubleshooting.”) OR*
- If your network has multiple install servers, make sure you boot from the network server address specified by your system administrator.

**To Search for Servers:**

1. Type the following:  
`search lan Enter`
2. If your Ignite-UX server does not appear during the search, type “x” in order to exit.
  - If necessary, type the search command again:

## Installing from the Ignite-UX Server

### Network Source Installation

```
search lan
```

*Note that it will typically take two or three searches before the Ignite-UX server will be found, due to a built-in delayed response from the server system.*

- Identify your LAN server from the listing.
  - If three attempts result in no response from the desired server, see Chapter 7, "Troubleshooting."
3. If you know the Ethernet™ address of your server and can specify where to boot without going through the search process, type:

```
boot lan.080009-nnnnnn
```

where 080009-*nnnnnn* is the Ethernet address of the install server. (Some newer systems may not use the 080009 prefix.) This number can be found by running the *lanscan*(1M) command on the server.

- If your server is listed during the search, then you can boot the system by typing "p" and the index number of the server. For example:

```
p1
```

This will cause the boot to begin. *OR*

- Alternatively, you can exit this screen by typing "x **Enter**", and typing "boot p1" at the previous screen.

## HP 9000 Workstations and Servers (K/D Class)

After the power is turned on, you will see a graphical interface screen (Workstations) that displays instructions to press **ESC** to stop the boot process. (On Servers, the interface will be TUI.)

1. Press **ESC**, and you should see the following menu:

**Figure 5-3**

| Command                             | Description                          |
|-------------------------------------|--------------------------------------|
| -----                               |                                      |
| Auto [boot search] [on off]         | Display or set auto flag             |
| Boot [pri alt scsi.addr] [isl]      | Boot from primary, alternate or SCSI |
| Boot lan[.lan_addr] [install] [isl] | Boot from LAN                        |
| Chassis [on off]                    | Enable chassis codes                 |
| Diagnostic [on off]                 | Enable/disable diagnostic boot mode  |
| Fastboot [on off]                   | Display or set fast boot flag        |
| Help                                | Display the command menu             |
| Information                         | Display system information           |
| LanAddress                          | Display LAN station addresses        |
| Monitor [type]                      | Select monitor type                  |
| Path [pri alt] [lan.id SCSI.addr]   | Change boot path                     |
| Pim [hpmc toc lpmc]                 | Display PIM info                     |
| Search [ipl] [scsi lan [install]]   | Display potential boot device        |
| Secure [on off]                     | Display or set security mode         |
| -----                               |                                      |
| BOOT_ADMIN>                         |                                      |

- If your network only has one Ignite-UX server available, type the following:  
boot lan install
- Otherwise, to make sure you boot from the correct server, do one of the following:
  - Make the system search for servers and pick one. *OR*
  - Explicitly tell the system where to boot, as follows:
    - a. To search for servers type the following (Workstations only):  
search lan install
    - b. The list of servers will be displayed with IP addresses. You may need to run the command `nslookup` on another running system to determine which address corresponds to your Ignite-UX server, if this information isn't already available.
    - c. Once you know the IP address of your server (as provided by the search, or by the `nslookup` command), boot the system by typing the following:  
boot lan.nn.n.nn.n install  
For *nn.n.nn.n*, supply the IP address of your server.  
The system then begins to load the install kernel from the network server.

Installing from the Ignite-UX Server  
**Network Source Installation**

**Time Note (Booting  
from LAN)**

This should take 3 to 5 minutes.

---

## Installing from the Server

**Figure 5-4**



Selecting Server or  
Client Console  
Interaction.

If you have not already done so, start Ignite-UX by typing  
`/opt/ignite/bin/ignite`.

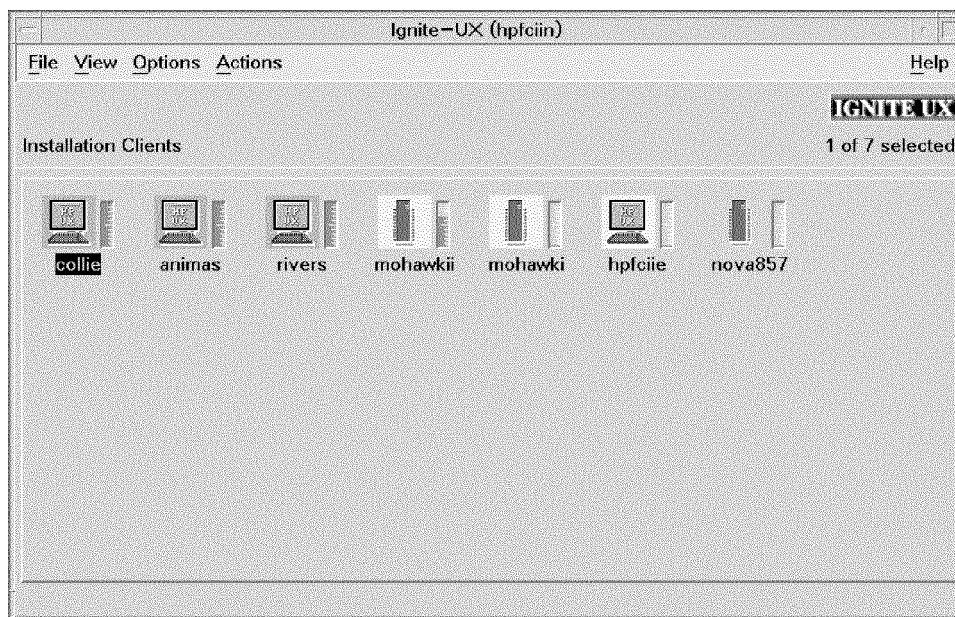
## Installing from the Ignite-UX Server

### Installing from the Server

If you are using Ignite-UX from the server, you will see the GUI and graphical navigation, as in the following procedures. If you are using it from a client, you will see a Terminal User Interface (TUI), but with equivalent keyboard navigation.

## Displaying the Client Systems

**Figure 5-5**



### The Ignite-UX Server Client Display

*Before any new clients are represented as icons on the server display, they must first be booted from the Ignite-UX server. If the client is already running an OS, this can be accomplished remotely via the server Action: Boot New Client. If the client is not yet running any OS, see the booting procedure in “Booting Client Systems from the Network”, in this chapter.*

After you see the clients displayed on the main Server screen:

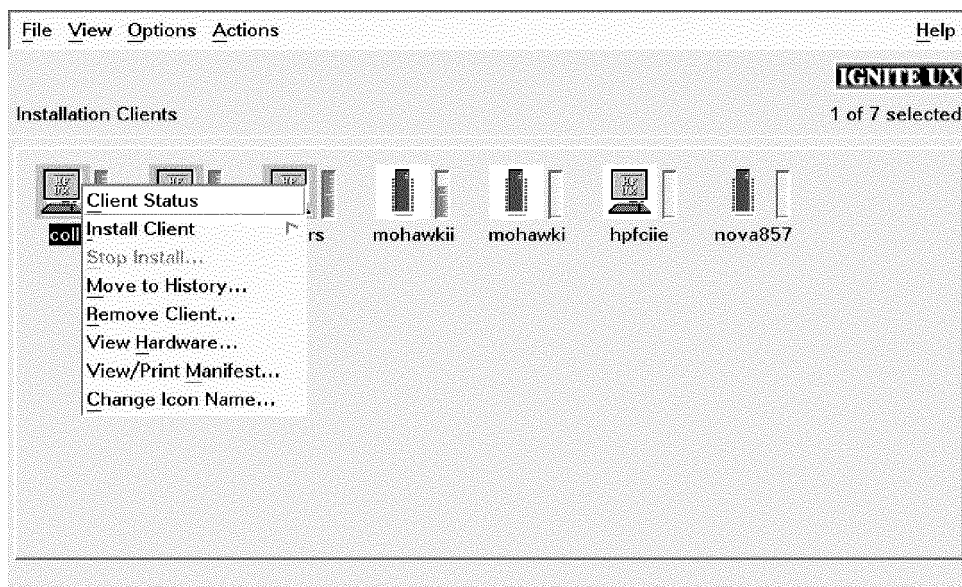
- Click once on the client to select it for further actions.
- Click twice on the client to get a Client Status screen.

- Click the *right* mouse button (Mouse Button Three) on the selected client icon to get an Actions screen similar to the pulldown Actions menu.

#### Displaying Client Actions

Clicking the right mouse button on a client icon opens a client actions menu:

**Figure 5-6**



- To install a client, click on Install Client → New Install.
- To repeat the previous install configuration on another client, click on Install client → Repeat Installation. A screen will appear which will display the configurations last installed.
- To stop the installation for the selected client, click on Stop Install. You will see a screen giving you the alternative of rebooting the client, or halting the client. In either case the installation will be stopped.
- **Move client to history** will save critical files for the client, add them to the history file, and remove the client icon. The client must be "complete" (fully installed) for the configuration to be moved to the history file.

- **Remove client** will simply delete the icon for the selected client. Data for that client is also removed.
- **View Hardware** allows you to see a display of the hardware associated with the selected client.
- **View/Print Manifest** allows you to see or print the manifest and/or Software Certificate. The manifest is also available in saved form on the client and server systems after the installation as the manifest files. On the client, the manifest is in `/var/opt/ignite/local/manifest`. On the server, it is in `/var/opt/ignite/clients/OxLLA/manifest`. See Figure 5-24 for an example.
- **Change Icon Name** brings up a form for renaming the icon for the selected client. This new name will also be reflected on the client console.

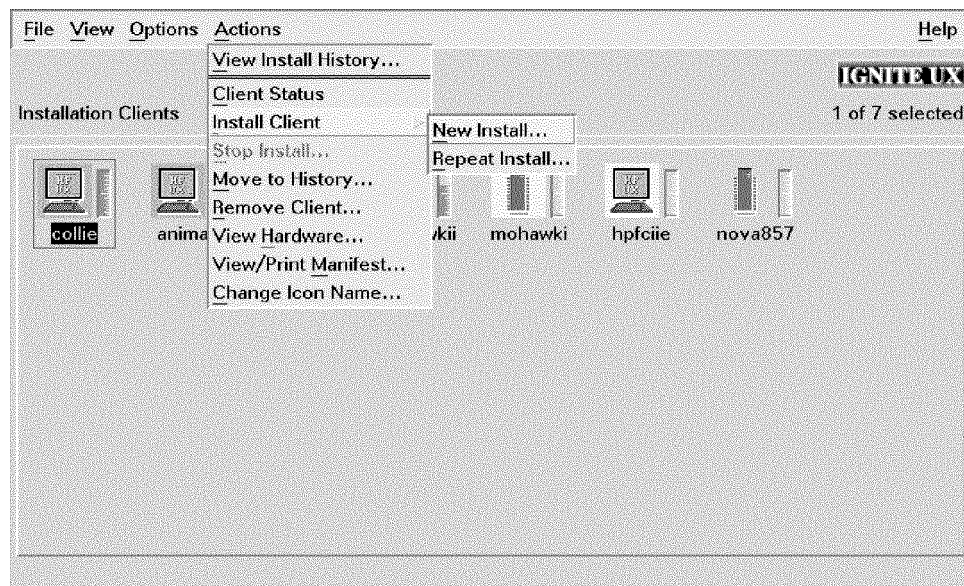
#### Sorting Client Listing by Properties

Clicking on **View → By properties** will create a listing of clients which can be sorted to make it easier to scan. This may make it easier to see "Complete" clients, which have finished installing, for example.

---

## Configuring the Installation

Figure 5-7



To begin the installation, first select a client icon. Then, from the Actions menu, choose **Install Client** → **New install**, or **Install Client** → **Repeat install**.

At the beginning of a new installation: if you have previously installed this client, you will be asked if you want to use the same install configuration data again.

- All configuration parameters from an installation are identified and saved as a config file in the following directory:  
`/var/opt/ignite/clients/0xLLA/`.
  - You can recall, repeat or modify that configuration with the Ignite-UX interface.
  - You can use config files in a non-interactive installation (using `bootsys`).

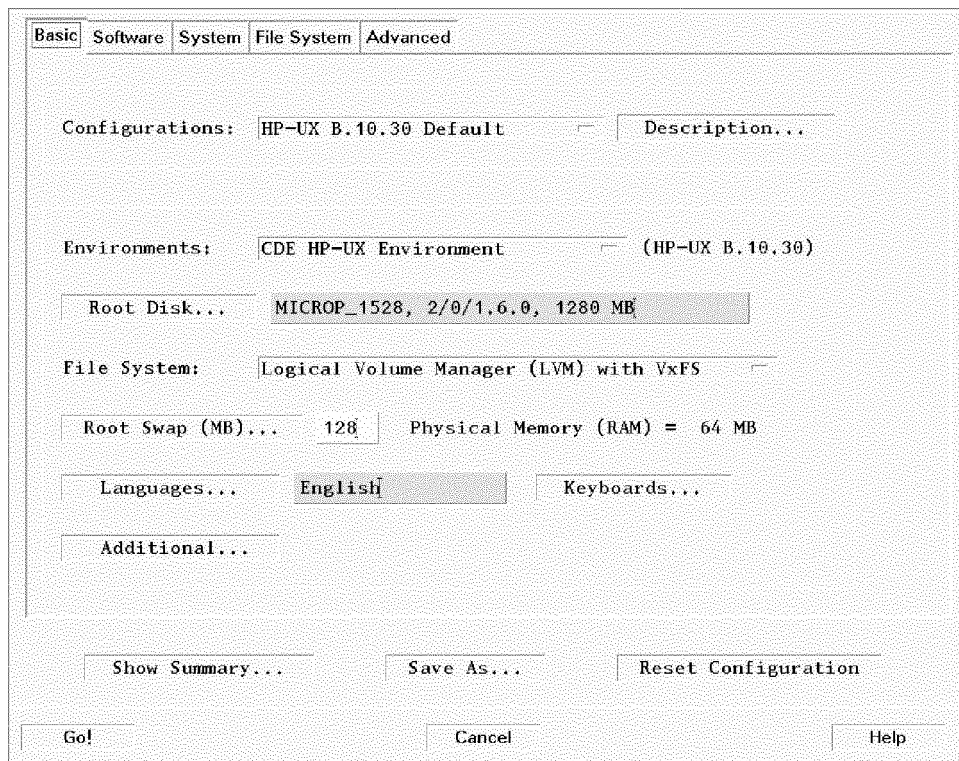
- You can choose a pre-set configuration in the "Repeat Install" selection list to repeat a previously installed configuration and execute it within Ignite-UX, without further intervention.

## Using the Ignite-UX Interface.

After you choose to install a system, you will see the following screen.

### The Basic Tab

Figure 5-8



#### NOTE

If you see the following message:

Settings from a previous installation session were found at startup. Do you wish to retain these settings for the current session?

Respond Yes if you wish to re-use some or all of the configuration that you used in the previous session.

Respond No if you want to use an entirely new configuration.

---

This screen shows all the basic information for setting up the file system and for loading the Operating System (OS) environment. It also allows you to configure languages, locale, and keyboard requirements. A **Save As...** button also appears, for saving configurations for later use.

## Configurations

Click on this selector to display a list of available OS configurations. Then select the one you want to use for this installation. The **Description...** button will display more information about each configuration.

Your configuration files are stored in a server location referenced by the `/var/opt/ignite/INDEX` file, usually `/var/opt/ignite/data/release_name/config.local`. If a client has been previously installed, Install-UX will tell you this and enable you to use the previous configuration (stored in the directory `/var/opt/ignite/clients/history/LLA`).

## OS Environment

Select the operating system environment from the choices available in the list. For HP-UX 11.0, this may include 64-bit or 32-bit byte format. The choices and defaults depend on the releases available on the server, and may include, for example, Common Desktop Environment (CDE) as the default.

## File System

Select one of the following:

- **"Whole Disk (not LVM)"** This may be the appropriate choice for single-disk systems.
- **"Logical Volume Manager (LVM) with HFS (High-Performance File System)"** This selection will format multi-disk systems to combine the disk space into a single, large disk pool, and then allocate volumes as needed. The root volume in this case and the swap must be on the same physical volume, and will be so configured by

## Installing from the Ignite-UX Server

### Configuring the Installation

Ignite-UX. "HFS" is the standard file system format. The File System tab will give you additional opportunities to configure the LVM volumes. In the File System tab, you can edit the sizes of LVM partitions, or use the values that Ignite-UX computes for you.

- **"Logical Volume Manager (LVM) with VxFS"** (Journaled File System) This will format multi-disk systems to combine the disk space into a single, large disk pool, and then allocate volumes as needed. "VxFS" is the same as the Journaled File System (JFS), and allows file system size to be changed after installation. With the optional HP OnlineJFS you can resize, defragment, or make a "snapshot" of a mounted file system.

See the "File System Tab" section for detailed information on File System configuration.

#### Root Disk

To change root disks, select this button, select another disk from the list of available disks, and select **OK** in that screen.

For example, a root disk is usually located at SCSI bus location 6.

#### Root Swap

The amount of root swap space depends on the applications being loaded. You can choose to use the default which Ignite-UX computes, based on available memory on the target system. Or you can select "Root Swap" and select from the choices that appear in the list. You can also edit the field directly and type in the amount of swap space you wish. The swap will be rounded to a multiple of 4 MB.

See the manual *System Administrator Tasks* for how to compute swap space.

## Languages

The languages available in your HP-UX system will be shown when you select this field. Select the item(s) you want, if it is other than the default. The dialogue screen allows you to select more than one language. Highlight the additional items by double-clicking on each. You can also drag the pointer down the screen to highlight a range of items; then press the mark/unmark button.

You can make any of the selections the system default language. This will become the system default language after it is installed.

#### Locale

Each language will have a corresponding locale (language variant).

A locale describes the system management of a language for doing the following:

- Messaging
- Representing numbers
- Displaying monetary values
- Telling time
- Generating characters
- Sorting text

HP-UX can have more than one installed language. The "default language" is the language environment represented on the target system at boot, unless you select another installed language using the HP-VUE or CDE login screen, reset the `LANG` environment variable, or use `geocustoms` (HP-UX 10.30 and after) to change it.

#### Default Language Choices

By clicking on **Default Language...** you have displayed the Default Language Choices. They are listed in two columns: Language and Locale. Each language may have more than one way of representing itself on the system. If this is the case, there will be multiple locale entries for the same language.

Languages may be activated is several ways:

- `ASK_AT_FIRST_BOOT` allows you to leave the language setting open (unset) until the client system is first booted. At that time, the language setting will be performed as part of the initial system configuration. (This applies only to HP-UX 10.30 and later).
- `SET_NULL_LOCALE` creates a NULL language environment, with the locale variables set to NULL by default. A null locale allows programs to execute without using localized message catalogs. This can increase system performance. All HP-UX messages appear in English if the locale is set to NULL.

#### Keyboards...

Select the type of keyboard to be used, from the adjacent field. Otherwise, you can use the default selection.

#### Additional...

This button brings up a screen allowing you to select among certain pre-configured use-models and variables from your current configuration files. The buttons which are available will be determined from the

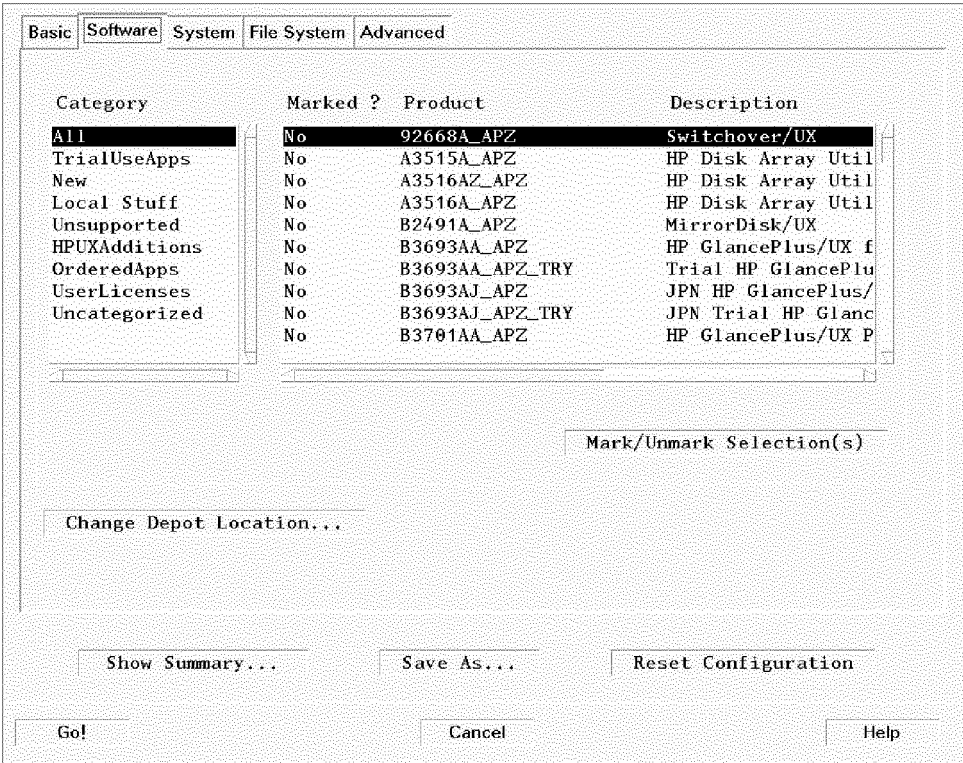
variables in your config file. When using LVM, you will see selections for easily setting up multiple disks, striping, and file system creation. For details on setting this up, see the *instl\_adm(4)* man page.

## Functions Available on all Tabs

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Save As...</b>          | In server mode, when you have finished your configuration for all tabs, you can save the configuration as a specific file. The saved configurations will then appear under the Configurations menu for use in future installations. This function is not available if you are running the Ignite-UX interface on the install client.                                                                                        |
| <b>Show Summary...</b>     | Select this button to display the current HP-UX, the basic disk layout, hardware inventory, and other software that will be installed.                                                                                                                                                                                                                                                                                      |
| <b>Reset Configuration</b> | Select this button to change the configuration settings for the currently-selected configuration back to the default settings. You can do this from any tab.                                                                                                                                                                                                                                                                |
| <b>Go!</b>                 | <p>Clicking on <b>Go!</b> initiates an installation. Since the <b>Go!</b> button is always available, it may be selected from any of the tabs. If you don't need to do any customization, select <b>Go!</b> now to begin the installation. Then see “Executing the Installation: Go!”, in this chapter.</p> <p>After clicking on <b>Go!</b>, you will still have the opportunity to cancel out of the install sequence.</p> |
| <b>Cancel</b>              | Select this button to exit Ignite-UX. You will see a screen which will ask whether you want to exit the Ignite-UX application.                                                                                                                                                                                                                                                                                              |
| <b>Help</b>                | <p>Help information is available on all screens, and you can get context-sensitive help for specific areas by pressing the <b>F1</b> function key.</p> <p>When you have finished with a tab-screen you can go forward or backward by selecting another tab. Or you can select <b>Go!</b> to start the installation at any time.</p>                                                                                         |

## The Software Tab

Figure 5-9



This tab allows you to choose licensing level and additional applications that you configured when you set up your server. To access a specific depot, you can also change depot locations.

**NOTE**

This display does not dynamically update from a newly-selected depot. When choosing a new depot, it must be identical in content to the current one. If it is not, you can use the `make_config` tool on the server to configure the new depot.

- **Category:** Select on a topical category to display the list of products available for that category.

- **Product List:** Double-click on a product in the list to select (highlight) it and to toggle its "marked" status ("Yes" or "No"). You can also use the **Mark/Unmark Selection(s)** button to toggle the "marked" status for a selected item.

---

**NOTE**

If patches are kept in a separate depot, by default they will be loaded after CORE software. The only problem might arise if there was more than one non-CORE software to be loaded, which might necessitate overtly specifying the load order for the patch(es) in a config file.

---

## The System Tab

You can choose not to set any system parameters for the system during this installation. During the first boot of the target system, a parameters screen will collect this information.

You will see a choice selection allowing you to set parameters now, or at first boot of the target system. If you choose to set these parameters now, you will see the following:

System Parameter  
Screen

Figure 5-10

The screenshot shows a window titled "System Parameter Screen" with a tabbed interface. The "System" tab is selected, showing fields for "Final System Parameters", "Hostname", "IP Address", "Subnet Mask", "Time", "Day", "Month", and "Year". Below these are buttons for "Set Time Zone (None)...", "Network Services...", "Set Root Password...", and "Additional Interface(s)...". At the bottom are buttons for "Show Summary...", "Save As...", "Reset Configuration", "Go!", "Cancel", and "Help".

**Hostname** Your system must have a unique system name (a "hostname"), which can be a simple name (such as c1eo).

A system name must fulfill the following conditions:

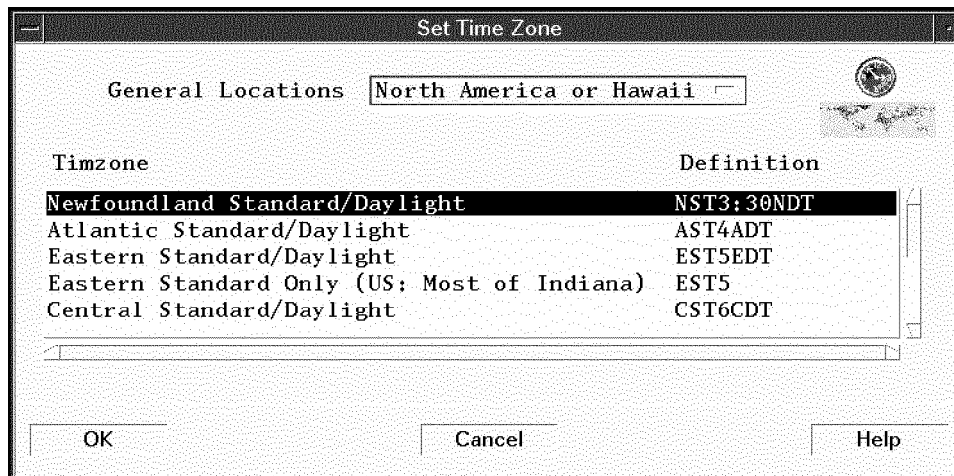
- It must contain no more than 8 characters
  - It must contain only letters, numbers, underscore (\_), or hyphen (-).
  - It must start with a letter.
- 
- Upper case letters are not recommended.
- 
- The first component of a host name should contain no more than eight characters, for compatibility with the `uname` command.

Installing from the Ignite-UX Server  
Configuring the Installation

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address                | <p>This field will be used to enter the IP address.</p> <p>IP addresses are of the form <i>nn.n.nn.nnn</i>. For example:</p> <p>15.1.48.140</p> <p>You can use the tool <code>nslookup hostname</code> to determine an existing IP address.</p>                                                                                                                                                                                                                                                                                                                         |
| Subnet Mask               | <p>This field will be used to set the subnet mask.</p> <p>The subnet mask will typically be provided by your network administrator, and is of the form <i>nnn.nnn.nnn.n</i> or a corresponding hex number. For example:</p> <p>255.255.248.0</p>                                                                                                                                                                                                                                                                                                                        |
| Time and Date Information | <p>If necessary, type in the information for the <b>Time</b>, <b>Day</b>, <b>Month</b>, and <b>Year</b> fields:</p> <ul style="list-style-type: none"><li>• <b>Time</b> (Use the 24-hour format: hh:mm).</li></ul> <p>Set Time, Date, Month and Year by entering the information in the fields, as needed. You can select the correct month by clicking on the button and selecting from the list, as needed.</p> <p>Select any of the other fields and type in the correct information, as needed. Edit by using the <b>Backspace</b> and <b>Delete-char</b> keys.</p> |

## Set Time Zone Screen

**Figure 5-11**

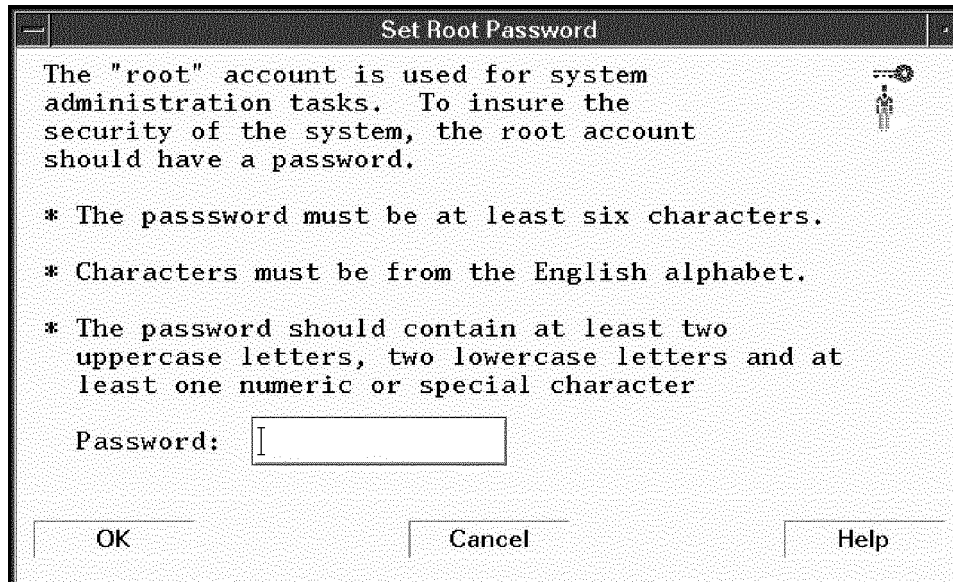


Select this button to bring up a display of time zone selections. You will see two selector lists: the first consists of general locations, and the second has corresponding time zones.

Select an item and select **OK** to make a choice.

## Set Root Password Screen

**Figure 5-12**



The "root" account is used for system administration tasks. To insure the security of the system, the root account should have a password.

You should observe the following requirements when setting a password:

- The password must be at least six characters long.
- Characters must be from the English alphabet.
- The password should contain at least two uppercase letters, two lowercase letters and at least one numeric or special character.

## Network Services

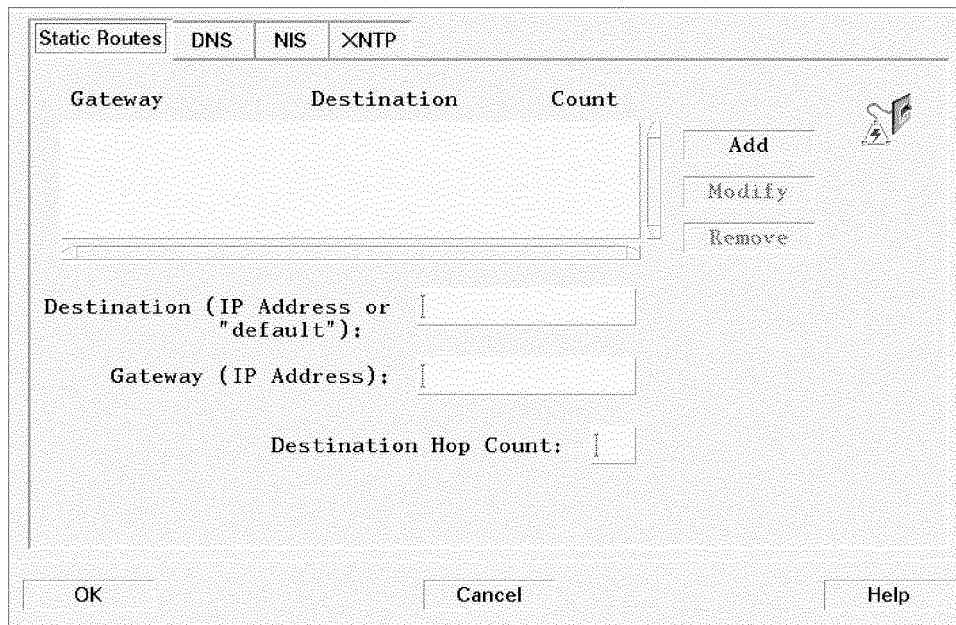
Select this button to bring up a set of tabs which will enable you to enter information on the following:

- **Static Routes**
- **DNS**
- **NIS**

- XNTP

#### Static Routes Screen

**Figure 5-13**

The image shows a 'Static Routes' dialog box with tabs for 'Static Routes', 'DNS', 'NIS', and 'XNTP'. The 'Static Routes' tab is active. It features a table with columns 'Gateway', 'Destination', and 'Count'. To the right of the table are 'Add', 'Modify', and 'Remove' buttons. Below the table are three input fields: 'Destination (IP Address or "default"):', 'Gateway (IP Address):', and 'Destination Hop Count:'. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

| Gateway | Destination | Count |
|---------|-------------|-------|
|---------|-------------|-------|

Destination (IP Address or "default"):

Gateway (IP Address):

Destination Hop Count:

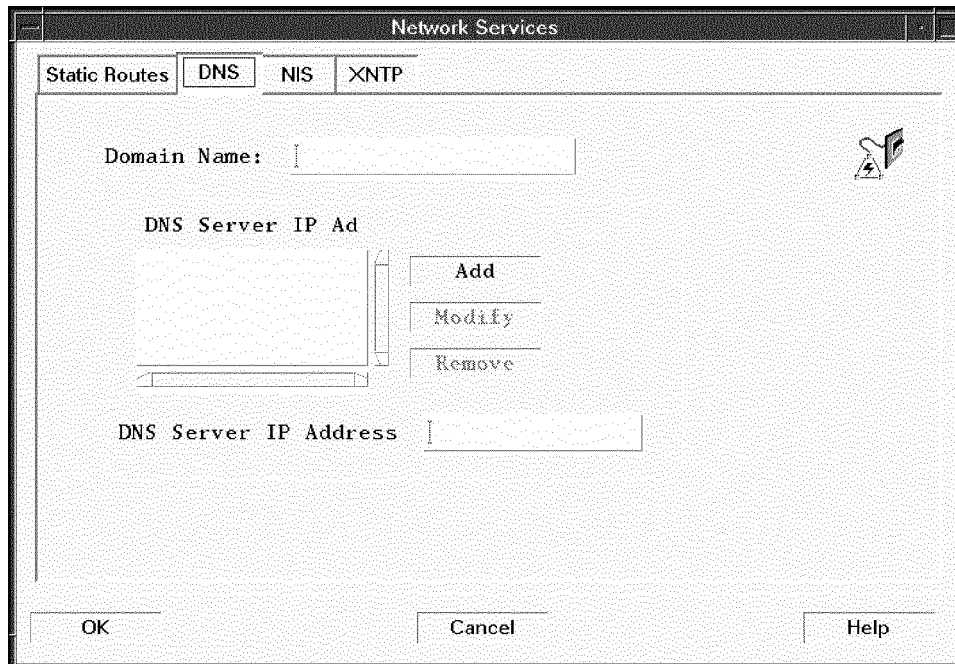
If your network is divided into subnets, you will probably need to specify a gateway system to reach other subnets:

- Destination: The field has the word "default" or the IP address of the destination network.
- Gateway: The IP address of the device connecting your network to the remote network, or your own IP, if wildcard routing is used.
- Hop Count If your gateway IP is not your system's own IP, this is usually set to "1". If your gateway IP is the same as your system's, then the Hop Count is "0".

For more information, see the *routing(7)* man page.

## DNS Screen

**Figure 5-14**



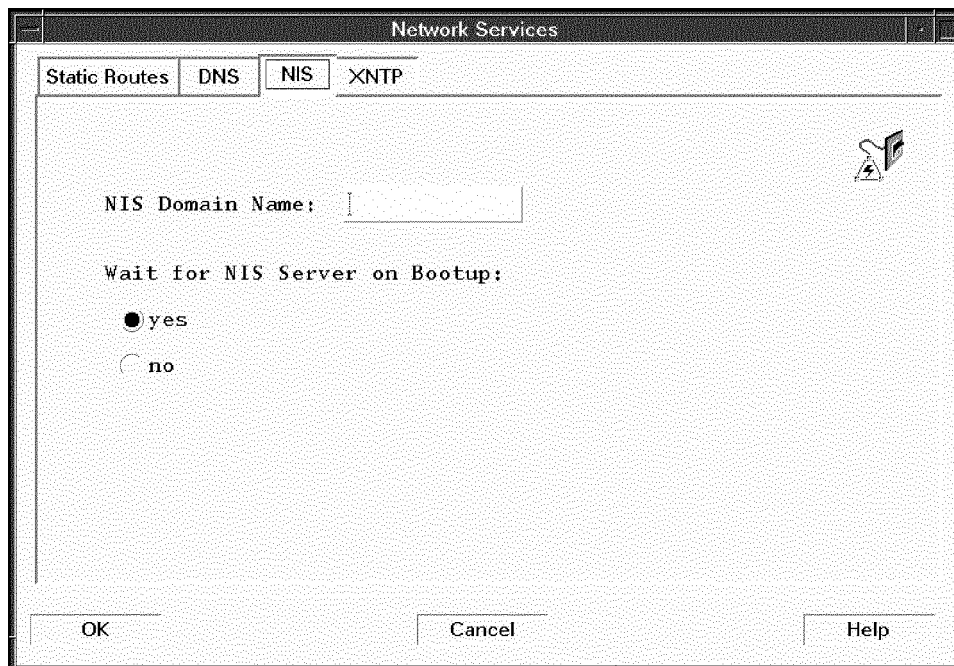
On this screen, you can configure the Domain Name (an extension to the host name, such as `fc.hp.com`) and the IP address of the Domain Name Server. The listing of current Servers is displayed, if they are predefined in the Ignite-UX server.

The IP address of the Domain Name Server is given in a form such as `15.13.115.168`. Use the command `nslookup` on a running system to find this information.

- Select **Add**, after you have added a DNS server. Use **Modify** if you are changing an existing entry.

## NIS Screen

Figure 5-15



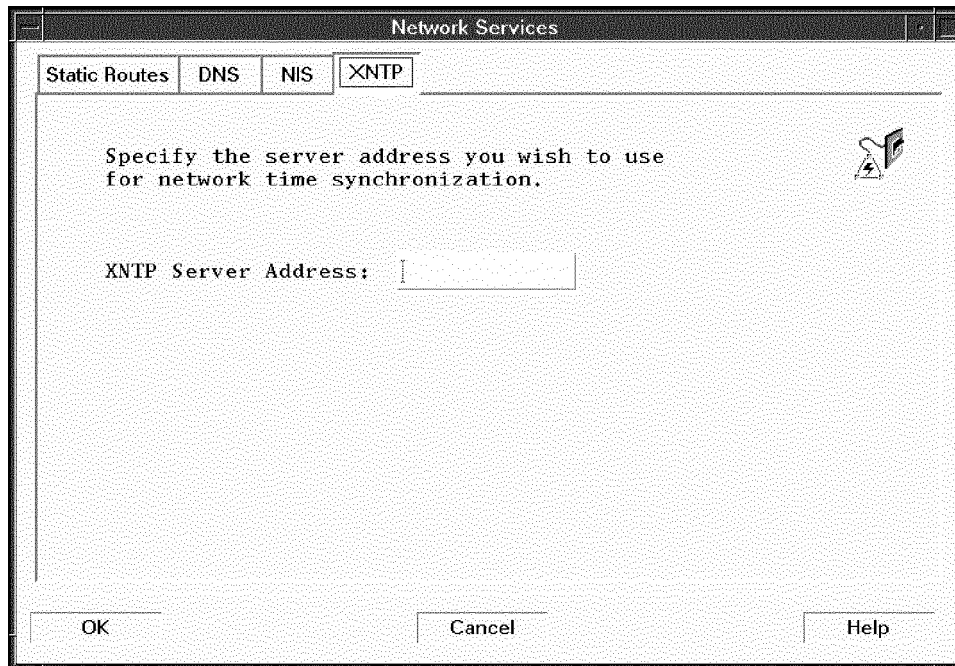
Typically, the (non-server) hosts in a network are NIS clients. Whenever a process on an NIS client requests configuration information, it calls NIS instead of looking in its local configuration files. The set of maps shared by the servers and clients is called the **NIS domain**.

For more information on NIS, see the *domainname(1M)* man page, or the manual *Installing and Administering NIS Services*.

**Wait for NIS Server on Bootup** Click on **yes** or **no**, depending on your configuration for NIS.

## XNTP Screen

**Figure 5-16**



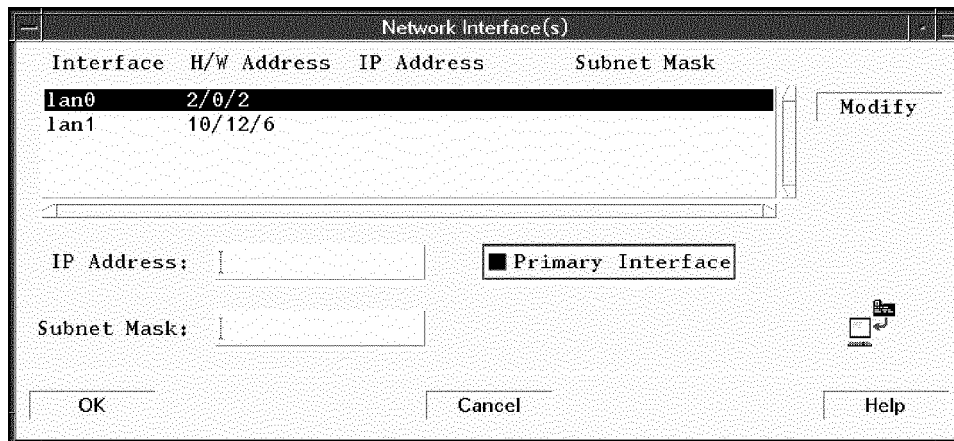
The `xntpd` daemon maintains system time, in agreement with Internet standard time servers. It does all computations in fixed point arithmetic and clock adjustment code is carried out with high precision.

For more information on `xntp`, see the `xntpd(1M)` man page.

### Additional (Network) Interfaces

Use this button to bring up the following screen for entering information identifying additional LAN interface cards in the target system.

**Figure 5-17**



This screen enables you to configure different network interface card(s). You can enter or change IP and Subnet information, as needed, and designate the Primary Interface.

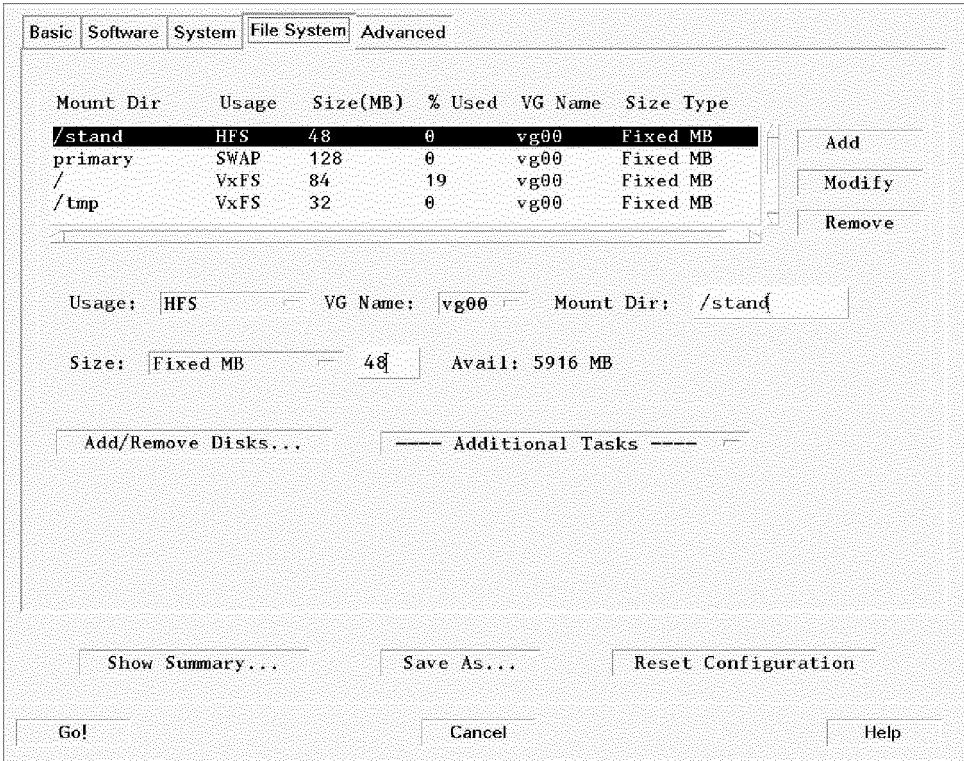
**NOTE**

If the target system has more than one interface, the LAN card designated as Primary will be the one that is associated with the host name of the system in `/etc/hosts`.

- Select an interface card from the selection list.
- Enter or modify the IP Address, as needed.
- Enter or modify the Subnet Mask, as needed.
- Activate Primary Interface, depending on the status you want for this interface.
- Select **Modify** when you have finished with changes for each interface.

## File System Tab

Figure 5-18



This tab enables you to do a variety of file-system and disk-configuration tasks and will differ in appearance, depending on whether you previously selected LVM or whole disk, on the Basic tab. This illustration is what you would see if you had picked LVM on the Basic tab.

### Adding and Changing File System Configuration

- To add or change any configurations on the display of file systems,
1. Enter the information in an appropriate field below the display
  2. Select one of the buttons to the right
  3. To see more information on the file system display, use the horizontal scroll bar or resize the screen.
  4. The "Available" indication shows how much space is unallocated in the volume group of the highlighted volume.

For LVM:

- One of the logical volumes must be root (/).
- A swap volume is required.
- Directory names must have valid HP-UX names (e.g., /usr, /database, etc.).

The buttons which activate changes are:

- **Add**
- **Modify**
- **Remove**

Generally, changes are not put into effect until you select one of these. If you make a change and then leave the tab without using one of these buttons, your changes may not be applied.

#### Usage

Select this field to display a selection list of file system usage types. If you want to change file system type or usage for the selected item, select an item in this list. The usages are as follows:

- **None:** If you want to protect the data on a disk or file system and "reserve" it from being overwritten during the installation process, select this list, and select "unused" by clicking on this item. Then select the **Modify** button.
- **HFS:** Select this item to create a High-Performance File System.
- **SWAP:** Select this item to create swap.
- **SWAP-Dump:** Select this item to create an area for both swap and system dump.
- **VxFS:** Select this item to create a Journaled File System. This is an extent-based, journaled file system featuring high-reliability, fast recovery time and on-line administration.
- **Unused:** This means the logical volume will be created, but not used.

#### VG Name (Volume Group Name)

Click on the field to open a selection list. You can choose a volume group name from the list.

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE</b>      | <p>Renaming or changing the FS structure of a disk causes the old file system on that disk to be lost (a warning message will remind you of this).</p> <ul style="list-style-type: none"><li>• If you want to add a new/unused disk and give it a different volume group name or create a new volume group, select the Add/Remove field and follow the procedure.</li><li>• If you want to reconfigure the volume group in general, including renaming it, select Additional Tasks → Volume Group Parameters, where you can fill in a custom VG Name, and change other disk parameters.</li><li>• Select OK when you are finished with the sub-screens for any of these tasks. You will be returned to the File System tab.</li></ul>                                                                                                                                                                                                                                        |
| <b>Mount Dir</b> | <p>For the root disk, you should use the standard HP-UX (10.0x) mount directory designations ("/", "/usr", "/stand", "/var", "/opt", etc.) You can also specify your own mount points such as "/special" or "/apps".</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Size</b>      | <p>For setting up each selected file system (as shown in the Mount Dir display), the following choices are available:</p> <ol style="list-style-type: none"><li>1. First select an item in the directory display for the file system you want to change. The current selection will show in the Mount Dir field.</li><li>2. The sizing method (such as "Fixed Size") currently used for that particular file system will appear in the Size field. To change the Sizing Method:<ol style="list-style-type: none"><li>a. Make sure the file system you want to change is selected in the directory display list.</li><li>b. Select the sizing method field to open the list of sizing methods.</li><li>c. Select one of the items (such as "<b>Size Fixed MB</b>"). It will then remain displayed in that field.</li><li>d. Select the <b>Modify</b> button to execute the change on the selected file system.</li></ol></li></ol> <p>The types of sizing are as follows:</p> |

|                |                                                                                                                                                                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fixed size:    | The selected (highlighted) file system is set to this size.                                                                                                                                                                                                             |
| All Remaining: | The selected file system automatically takes over all remaining file system space on the disk or volume group.                                                                                                                                                          |
| Free Size:     | Use this selection when you know how much free space you wish the volume to have after the system is installed. The size of the volume will be the specified amount plus the amount the selected software requires.                                                     |
| Free Percent:  | This category is similar to free size, but expressed in percent. It is used if you know how full you wish the volume to be, in percentage of the volume size. If you indicate "20%", then the volume would be 80% full after the installation of the selected software. |
| Size Range:    | Select this category in the list to set a maximum size for the file system (the minimum is determined by the software impact on the volume).                                                                                                                            |

#### Add/Remove Disks

This opens a display which allows you to do the following:

- Add a new disk and configure its file system type and volume group designation, if any.
- Remove a disk from current usage on the target system by designating it as "Unused".
- Determine your current disk usage.

To change a disk usage status:

- Select a disk in the display list.
- Select the "**Usage**" selection list to set a new usage. If you select "**LVM**", a **Vol Grp: . . .** button appears.
- Select the "**Vol Grp:**" button to see the Volume Group Choices or type in a new volume group name in the entry field.
- Select the **Modify** button, to execute any changes.

## Additional Tasks

This button enables you to configure advanced information in the following categories, as needed: Click on the field to see the following menu items:

- Disk Parameters.
- File System Parameters.
- Logical Volume Parameters.
- Volume Group Parameters.

Clicking on one of these will open a screen which will enable you to change advanced parameters. The button will retain the label of the area you are currently working in.

*Note: the choices on this screen will differ depending on the file system choices you made on the Basic tab.*

### Advanced Disk Parameters Screen

**Figure 5-19**

The screenshot displays the 'Advanced Disk Parameters Screen'. At the top, there is a table with the following columns: Address, Product ID, Size, Tracks/Cylinder, and Disk RPM. The table contains two rows of data, both of which are highlighted. To the right of the table is a 'Modify' button. Below the table, there are three input fields: 'Trks/Cyl:' with a value of 'default', 'Disk RPM:' with a value of 'default', and 'Media Init:' with a value of 'No'. At the bottom of the screen, there are three buttons: 'OK', 'Cancel', and 'Help'.

| Address | Product ID | Size | Tracks/Cylinder | Disk RPM |
|---------|------------|------|-----------------|----------|
| 8/4.5.0 | SEAGATE_ST | 2033 | default         | default  |
| 8/4.8.0 | SEAGATE_ST | 2033 | default         | default  |

Modify

Trks/Cyl:  Disk RPM:

Media Init:

OK Cancel Help

1. Highlight a disk in the selection list to select it.
2. Configure the **Trks/Cyl** and **Disk RPM** by direct editing, as needed.

3. Indicate whether Media Init is required, by clicking on the selection box and selecting a choice, as needed.
4. Select **Modify** to configure changes.
5. Select **OK**, to leave Advanced Disk Parameters and return to the File System tab.

- Tracks per Cylinder**
- Select a disk by clicking on its entry in the list displayed.
  - Edit the **Trks/Cyl** field as needed, using the backspace and left/right arrow keys.
  - Select the **Modify** button, to execute any changes.
  - Select **OK**, to leave this screen and return to the File System tab.

- Disk RPM**
- Select a disk by clicking on its entry in the list displayed.
  - Edit the **Disk RPM** field as needed, using the backspace and left/right arrow keys.
  - Select the **Modify** button, to execute any changes.
  - Select **OK**, to leave this screen and return to the File System tab.

- Media Init**
- Select a disk by clicking on its entry in the list displayed.
  - Select the **MediaInit** button to open the selection list.
  - Select **"Yes"** or **"No"**. If this is set to **"Yes"**, you will also see the Interleave field.
  - Select the **Modify** button, to execute any changes.
  - Select **OK**, to leave this screen and return to the File System tab.

For more information, refer to the man pages for the following:

- *mkfs\_vxfs(1M)*.
- *mkfs\_hfs(1M)*.
- *mediainit(1)*.

**Intrlv** This field is available if **Mediainit** is set to **"Yes"**.

Installing from the Ignite-UX Server  
Configuring the Installation

The interleave factor, “interleave”, refers to the relationship between sequential logical records and sequential physical records on the disk. It defines the number of physical records that lie between the beginning points of two consecutively numbered logical records. The choice of interleave factor can have a substantial impact on disk performance.

For more information, consult the manual for your disk hardware.

Also see the *mediainit(1)* man page.

Advanced File System  
Parameters Screen

Figure 5-20

| Mount Directory | Size (MB) | Address   | Rot Delay | Blk Siz |
|-----------------|-----------|-----------|-----------|---------|
| /stand          | 48 MB     | 2/0/1.6.0 | default   | default |
| primary         | 128 MB    | 2/0/1.6.0 | default   | default |

Modify

Rotational Delay (mSecs): default

Frag. Size (bytes): default

Blk. Size (bytes): default

Minimum Free (%): default

Density (blocks/inode): default

Cylinders/group: default

File Length: LONG

OK Cancel Help

These parameters apply only to HFS file systems. You can use the default values computed by Ignite-UX, or change them, as needed.

When you have finished with this area, select OK to return to the File System tab.

**For More Information** To get more details about the following, refer to the *mkfs\_hfs(1M)* and *mkfs(1M)* man pages.

- Rotational Delay
- Fragment Size
- Block Size

- Minfree
- Disk Density
- Cylinder/Group

Advanced Logical  
Volume Layout Screen

Figure 5-21

| Mount Dir | LVol Name | Usage | Size(MB) | VG Name | Disk Map |
|-----------|-----------|-------|----------|---------|----------|
| /         |           | VxFS  | 84       | vg00    | 1        |
| primary   |           | SWAP  | 192      | vg00    | 1        |
| /stand    |           | HFS   | 48       | vg00    | 1        |
| /usr      |           | VxFS  | 340      | vg00    | Any      |

Cont Alloc: ☐ Yes ☒ No    Stripes:     Stripe Size:

B-block Relo: ☐ Yes ☒ No    LVol Name:     Disk Mapping:

OK    Cancel    Help

Use this screen to do detailed configuring of LVM, as needed, in the following areas:

Cont Alloc  
(Continuous  
Allocation):

See the manpage *lvcreate(1M)*, for more information.

B-block Relo  
(Bad-Block  
Relocation):

See the manpage *lvcreate(1M)*, for more information.

Stripes

If two or more disks are in the volume group, then you may enable data striping over multiple disks for performance purposes.

Stripe Size

Configure this in case you have at least two disks in a volume group and want to reconfigure the default values computed by Ignite-UX. Ignite-UX uses the file system block size as the default.

- Type in the stripe size you intend to use.

For more details, see the manpage *lvcreate*(1M).

**LVol Name (Logical Volume Name):**

- Type in the name you want for the selected volume.
- For more details, see the manpage *lvcreate*(1M).

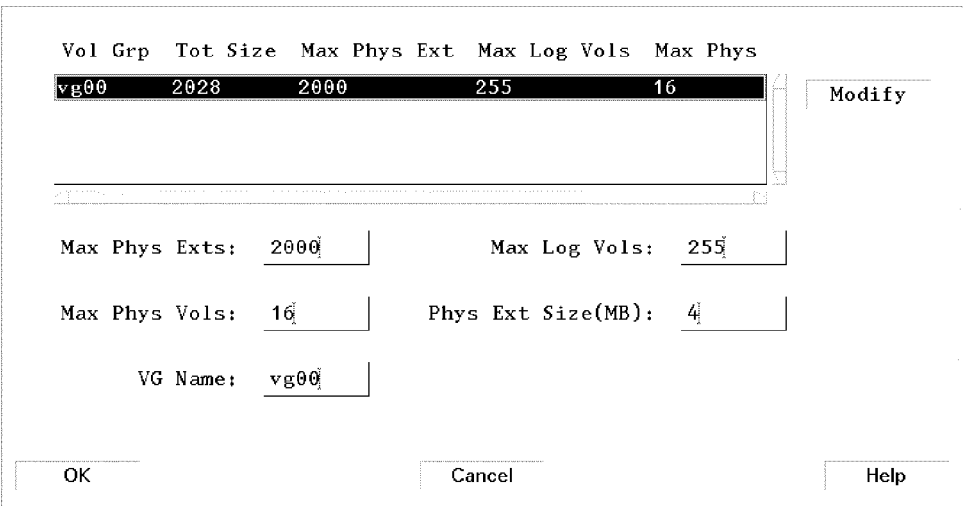
**Logical Volume to Disk Mapping**

This button displays a screen which allows you to restrict the disk drives on which the volume data will reside. Normally, the data will be allocated over these disks sequentially.

See the manpage *lvextend*(1M), for more details.

**Advanced Volume Group Parameters Screen**

**Figure 5-22**



The screenshot shows a terminal window titled "Advanced Volume Group Parameters Screen". At the top, there is a table with the following data:

| Vol Grp | Tot Size | Max Phys Ext | Max Log Vols | Max Phys |
|---------|----------|--------------|--------------|----------|
| vg00    | 2028     | 2000         | 255          | 16       |

To the right of the table is a "Modify" button. Below the table, there are several input fields for configuration:

- Max Phys Exts: 2000
- Max Log Vols: 255
- Max Phys Vols: 16
- Phys Ext Size(MB): 4
- VG Name: vg00

At the bottom of the screen are three buttons: "OK", "Cancel", and "Help".

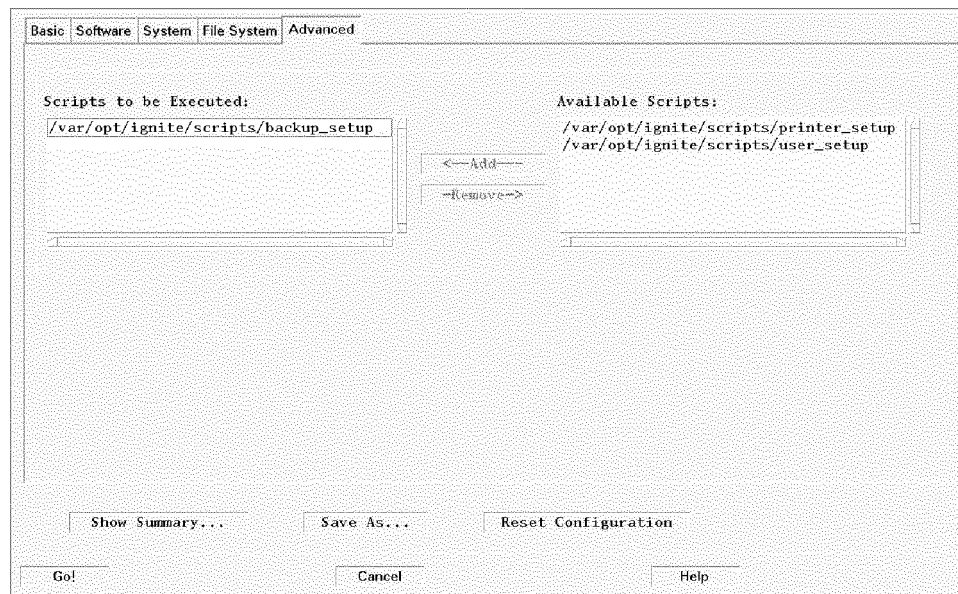
Use this screen to do detailed configuring of LVM, as needed, in the following areas. See the manpage *vgcreate*(1M), for additional information.

- Max Phys Exts (Maximum Physical Extents).
- Max Phys Vols (Maximum Physical Volumes).
- VG Name (Volume Group Name). This allows for renaming the existing volume group names.
- Max Log Vols (Maximum Logical Volumes).

- Physical Ext Size (MB) (Physical Extent Size in Megabytes).

## Advanced Tab

Figure 5-23



### Transfer Lists

In this screen you can activate any HP or custom scripts which you might want to run as part of your installation. Note that the scripts listed are those with a "scripts" keyword in the INDEX file.

The file `/var/opt/ignite/config.local` is a place holder for such files as you may want to generate for post-install, for example.

For more details, see the `instl_adm(4)` man page.

### Adding a Script

To add an item to "Scripts to be Executed":

1. Select the item from "Scripts Available" to select it.
2. Select **Add** to add it to the list "Scripts to be Executed."

### Removing a Script

To remove an item from "Scripts to be Executed:"

1. Select the item in "Scripts to be Executed".
2. Select **Remove** to remove it.

The item will be deactivated, but will continue to be available in the "Scripts Available" list.

---

## Executing the Installation: Go!

Select GO! in any Ignite-UX tab to initiate the installation. You do not need to examine all tabs, if you simply want to do a generic installation.

1. You will then see a confirmation screen listing the disks that will be written on during the process of installation, and a log of any warnings or errors. *This screen will allow you to Cancel before the load begins and return to the current tab you were working in.*
- If you do not wish to proceed with the installation at this time, press **Cancel**.
  - The pre-install analysis display screen is scrollable. Be sure to inspect this information and check to see that the disk(s) described in the display list is the one you intend to install on.
  - Any errors which are listed must be corrected before you proceed.

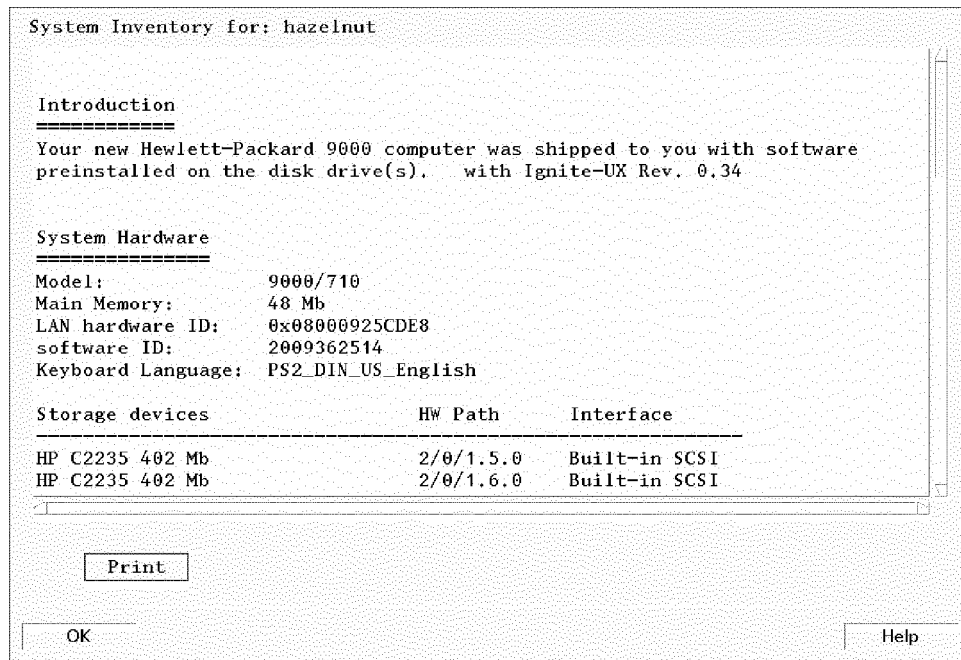
As the installation proceeds, you will see a log including the warnings and errors which may need to be addressed before proceeding.

When the installation is complete, you can print a manifest, and either save the client data in a history directory or remove the client and its data from the server.

## Viewing and Printing a Manifest

The following screen can be accessed from the Ignite-UX server screen, by selecting on a client icon, and then clicking on **Actions → View Manifest**, or via the client actions menu (right-click on client icon).

**Figure 5-24**



The manifest screen provides customer order information for the selected target system. Ignite-UX can display and print the manifest of a newly-installed system from the Server screen, with the action **View/Print Manifest**.

You can view or print the manifest when a target client is "Complete", as indicated by the Client Status screen. The online information is scrollable.

The manifest contains the following information:

- Customer information, if this has been entered on the individual client configuration screen.
- Hardware connected to the system.
- Storage Devices.
- Installed Software.
- Disk layout.
- File System layout.

- Swap Configuration
- Kernel Configuration.
- System Information.

The manifest file is saved on the server as `/var/opt/ignite/clients/LLA/manifest/manifest`. It is on the target client system as `/var/opt/ignite/local/manifest/manifest`.

Using the Ignite-UX interface or the command line, the `/opt/ignite/bin/print_manifest` utility prints these files in ASCII to stdout, using the format instructions from the manifest template file

If the client data is moved to history, that data includes both the client's manifest and config file. Both these files can be recalled at a later time.

## Non-Interactive Installation Using bootsys

The `bootsys` command can be used to start a system installation on one or more clients without the need to interact on the console of the client system. It can be invoked either from a command shell, or from the Ignite-UX GUI server screen action: **Boot New Client**. The only requirements are that each client must be currently booted under HP-UX version 9.0 or later, and each client must be accessible on the network. Each will also need to have enough disk space in the `/stand` directory to hold the two files: `/opt/ignite/boot/INSTALL` and `/opt/ignite/boot/INSTALLFS`.

`bootsys` copies the Ignite-UX kernel and RAM file system to each client and then sets the system AUTO file in the LIF area of the root disk to automatically boot from this kernel at the next system reboot.

### Examples:

The following sample command line will boot the client system from the server and wait for install instructions from the Ignite-UX GUI:

```
bootsys -w system_name
```

Note that, if you have already run an install session from the server, issuing `bootsys` will result in an automatic installation without further intervention.

To automatically install `system1` using a different IP address than what is currently assigned and without waiting for server interaction, you would type a line similar to the following:

```
bootsys -a system1:1.2.3.45
```

[Installing from the Ignite-UX Server](#)

**[Executing the Installation: Go!](#)**

See Appendix C, “Ignite-UX System Administration,” and the manpage entry for the *bootsys(1m)* command for more examples and information.

# **6 HP-UX System Recovery**

## Chapter Contents

- Overview.
- System Recovery: Creating a Bootable Recovery Tape: `make_recovery`.
- Creating a Bootable Install Tape: `make_medialif`.
- "Expert" Recovery Using Core Media Tools.

## Overview

HP-UX provides two recovery methods as part of the standard product. Which method you use will depend on the situation.

### “Expert” Recovery

The first method, “expert recovery” (formerly called Support Media Recovery), allows you to recover a slightly damaged root disk or root volume group. With this method, you boot a special recovery system from core HP media. Once the recovery system has been booted, it allows you to do the following:

- Put a known good kernel in place.
- Fix the LIF volume on the disk.
- Copy some essential files and commands into place.

Note that expert recovery does not require that you do any preparation before you use it. The media used is supplied by HP; it is not customized to your site. Of course, this also means that any customizations you have are not reflected in the files you recover via expert recovery. Expert recovery is meant to give you enough capabilities to get your system back up again. At that point, you need to use your normal restore tool to recover your system to the state it was in before the problem occurred.

### System Recovery

The second method, “system recovery”, allows you to quickly recover from a failed disk (root disk or disk in the root volume group). The failure can be either a hardware failure or a catastrophic software failure.

System recovery does require some work on your part before the problem occurs. On a regular basis, you need to run the `make_recovery` tool on each of your systems. This tool creates a bootable recovery (install) tape which is customized for your machine. The tape contains your system's configuration information (disk layout, etc) as well as an archive of the files on your root disk or root volume group. (You can exert some control over which files are saved as part of the archive.)

When you have a failure, follow these steps:

## HP-UX System Recovery

### Overview

1. Replace the failed disk (if necessary) - boot from your customized recovery tape.
2. Wait for the recovery to complete.
3. Once the system comes back up, you may need to recover the latest copies of files from the last system backup

---

## System Recovery: Creating a Bootable Recovery Tape

---

### NOTE

The `copyutil` tool is only supported as a diagnostic tool for HP-UX 10.x or later, and should not be used for recovery. Instead, you should use one of the tools described in this chapter.

Note also that `make_recovery` (and booting from tape) is not yet supported on current HP V- class systems.

---

The `make_recovery` command creates a system recovery tape. This tape can be used to boot and recover a system which has become unbootable due to corruption of the root disk or volume group. As a "customized" installation medium, it makes use of the installation technology provided by Ignite-UX.

A system can be booted and installed from the tape without user intervention for configuration, customization, software selection, hostname, or IP address.

The system recovery tape consists of a boot image, followed by an archive of system files that comprise a minimum core OS. The minimum core OS consists of `/stand`, `/sbin`, `/dev`, `/etc`, and subsets of `/usr`, `/opt` and `/var` that are required during the install process. The devices or volume groups that correspond to the file systems/directories `/`, `/dev`, `/etc`, `/sbin`, `/stand`, and `/usr` are considered core devices or volume groups. These devices or volume groups are recreated during the recovery process. All non-OS data on them would be removed and restored during the recovery process, if they were specifically appended to the recovery tape. If `/usr`, `/opt` or `/var` are mounted elsewhere, they would not be re-installed during the recovery process, and are fully preserved.

The `make_recovery` command provides a mechanism for you to specify your own non-system files in the archive by using the `/var/adm/makrec.append` file. These specifications are limited to files or directories that belong to file systems in the core devices or volume groups.

The `make_recovery` command also provides a mechanism for you to exclude selected files from the archive via the `-p` and `-r` options. For backing-up and recovering non-core file systems which are not on the core device or volume groups, you would use normal backup utilities.

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE</b>                                 | <p>The system recovery tape is only as good as the last time it was created. The tape should be re-created if new software, hardware, or patches have been added. You can use the <code>check_recovery</code> to determine whether the system has changed enough that the tape needs to be re-created.</p>                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Logging</b>                              | <p>Progress and errors are logged to the file <code>/var/opt/ignite/logs/mkrec.log*</code>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recovery Example for Minimal OS</b>      | <p>The following operations are done as <code>root</code>.</p> <p>To create a minimal operating system recovery tape at <code>/dev/rmt/0mn</code>, containing only the OS elements required to boot the system, do the following:</p> <ol style="list-style-type: none"> <li>1. Load a writeable tape in the default DDS drive for your system.</li> <li>2. Enter the following: <pre># make_recovery</pre> <p>A tape will be created without further interaction.</p> <p>System recovery from this tape would involve booting from the tape to recover the minimum Core OS. Then you would follow up with data recovery of user files from the usual backup media.</p> </li> </ol> |
| <b>Default Recovery of Entire Root Disk</b> | <p>To create a System Recovery tape, at the default device <code>/dev/rmt/0m</code>, and includes the entire root disk in the archive, you would do the following:</p> <ol style="list-style-type: none"> <li>1. Load a writeable tape in the default DDS device for your system.</li> <li>2. Enter the following: <pre># make_recovery -A</pre> <p>A tape will be created without further interaction.</p> </li> </ol>                                                                                                                                                                                                                                                             |
| <b>Duplicating a System</b>                 | <p>To duplicate a system, you can create a system recovery tape by doing the following:</p> <ol style="list-style-type: none"> <li>1. Load a writeable tape in the default DDS device for your system.</li> <li>2. Enter the following: <pre># make_recovery</pre> <p>A tape will be created without further interaction.</p> <p>You can boot this tape on your new system.</p> </li> </ol>                                                                                                                                                                                                                                                                                         |

To duplicate the recovered system disk or volume group, do the following:

1. Mount the system recovery tape on the tape drive.
2. Boot the system.
3. Interrupt the boot sequence to redirect it to the tape drive.
4. Cancel the non-interactive installation by hitting any key when given the opportunity.
5. Provide necessary configuration information such as disks, hostname, IP address, timezone, root password, and DNS server.
6. Allow the install process to complete.

**For More Examples  
and Information**

See the man page *make\_recovery(1M)* for details on using the options, and the syntax for doing so.

## Creating a Bootable Install Tape

The *make\_medialif* command creates a bootable LIF image which can be copied to either a DDS tape or a writable CD to create an Ignite-UX install medium.

**Examples**

Some typical examples of the use of *make\_medialif* are the following:

- To create a boot LIF image using the config file */home/root/myconfig* and then place it in */home/root/uxinstlf*, enter the following:

```
make_medialif -f /home/root/myconfig -l /home/root/uxinstlf
```
- To create a bootable DDS medium that will allow the installation of a configuration defined on an Ignite-UX server, for example, the "HP-UX B.10.20 Default" configuration, and using the same tape drive as before, do the following:

```
make_medialif -c "HP-UX B.10.20 Default" -l \
/home/root/uxinstlf

mt -t /dev/rmt/c0t3d0DDS1n rew

dd if=/home/root/uxinstlf of=/dev/rmt/c0t3d0DDS1n obs=2k

mt -t /dev/rmt/c0t3d0DDS1n rew
```

## HP-UX System Recovery

### System Recovery: Creating a Bootable Recovery Tape

Note that the install will proceed according to how the variables `run_ui` and `control_from_server` are set in the `INSTALLFS` and in the config files.

Creating a fully self-contained tape that does not require the use of an Ignite-UX server involves copying a depot or system archive to the tape and specifying a config file representing the archive or depot.

#### Recovery Procedure

To recover a failed system disk or volume group, you would do the following:

1. Mount the System Recovery tape on the tape drive
2. Boot the system
3. Interrupt the boot sequence to redirect it to the tape drive
4. Indicate no interaction with ISL.
5. Allow the system to complete the process.

---

#### NOTE

If the recovery process encounters a configuration change/error, it goes into the interactive mode, and displays the Ignite-UX welcome screen with the following options:

```
[Install HP-UX]
[Run a Recovery Shell]
[Advanced Options]
[Reboot] [Help]
```

At this point, select the **Install HP-UX** option. (You are installing from the customized media). Select **Advanced Installation** (recommended for disk and filesystem management) Change your configurations and continue. Selecting disks should be done with care, as any existing data on the disks will then be lost.

---

The system recovery tape can also be used to duplicate software on your system onto another system, with some manual configurations after the software has been installed.

#### For More Examples and Information

See the man page *make\_medialif*(1M) for details on using the options, and the syntax for doing so.

---

## “Expert” Recovery Using the Core Media

If your system should become so compromised or corrupt that it will not boot at the login prompt, or the system boots, but critical files are corrupted, adversely affecting overall system performance, it may be useful to restore system elements with core recovery media.

Before you attempt to recover an HP-UX system, you should have the following information about your system disk available. *Note that much of this information, including file system types, can be obtained by accessing your online system manifest, either via Ignite-UX, or by reading the hardcopy that came with your system:*

- Revision of the HP-UX system which you are attempting to recover.

---

### CAUTION

You should only attempt to recover HP-UX systems that match the version number of the recovery tools you are using, in the current case, HP-UX 11.0. For example, you can use HP-UX 10.30 CORE media to attempt to recover a 10.20 file system. Data corruption could occur if you attempt to recover a 9.0 file system with the current recovery tools.

- The address of the root filesystem on the disk (i.e., what filesystem you will be checking/repairing using `fsck`).
- The address of the bootlif path of that disk.
- What the autofile in the bootlif should contain.
- Whether you have an LVM or non-LVM system.

The more you know about the system disk and its partitioning scheme, *before you encounter major damage or corruption*, the easier it will be for you to recover.

The procedures which follow assume that both `fsck` and `mount` can be run successfully on the system disk; otherwise, the following procedures are not applicable.

## Automated Recovery Procedures

There are four possible expert recovery situations, each of which has its associated recovery procedure:

- If, after a system problem, you can't get the system to the ISL> prompt from the system disk, you will want to rebuild the bootlif on the system disk, and install all critical files required to boot on the root filesystem.
- If you can get the system to the ISL> prompt, but cannot boot vmunix, the system disk is corrupted; you will want to install *only* the critical files required to boot on the root filesystem.
- If you can't get to the ISL> prompt, but you know that the root file system is good, you will want to rebuild the bootlif on the system disk.
- If you believe your kernel is corrupted, you will want to replace only the kernel on the root filesystem.

The following subsections describe these procedures in detail.

## Rebuilding the boot lif and Installing Critical Files

Following is an example of the detailed procedure for rebuilding the bootlif of the system disk, and for installing all the critical files necessary to boot from the root filesystem:

1. Have the Core CD-ROM for the appropriate HP-UX ready.
2. Reset the System Processor Unit (SPU) using the reset button, or keyswitch, as appropriate.

The console will display boot path information. If Autoboot is enabled, the system console will eventually display the following or similar messages:

```
Autoboot from primary path enabled
To override, press any key within 10 seconds.
```

3. Press any key before the 10 seconds elapse. The system console will display the following prompt:

```
Boot from primary boot path (Y or N)?>
```

4. Enter n at the prompt.

The console will then display the following:

Boot from alternate boot path (Y or N)?>

5. If the alternate boot path specifies the address of the CD device where the Core CD is mounted, enter y at the prompt.

If the alternate boot path does not specify the address of the CD device where the HP-UX Core media is mounted, enter n at the prompt. If n is entered at the prompt, the following message will be displayed on the system console:

Enter boot Path or ?>

6. Enter the address of the CD device where the HP-UX Core media is mounted.

The system console will display the following:

Interact with IPL (Y or N)>

7. Enter n at the prompt.

After several minutes (approximately), and after displaying several screens of status information, the following will be displayed:

Welcome to the HP-UX installation/recovery process!

Use the <tab> and/or arrow keys to navigate through the following menus, and use the <return> key to select an item. If the menu items are not clear, select the "Help" item for more information.

```
[Install HP-UX]
[Run a Recovery Shell]
[Cancel and Reboot]
[Advanced Options]
```

```
[Help]
```

8. Select Run a Recovery Shell, the screen clears, and the following message will be displayed:

Would you like to start up networking at this time? [n]

9. Unless you need networking to ftp to other systems, enter n and the following will be displayed:

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

- \* Loading in a shell...
- \* Loading in the recovery system commands...

...

HP-UX SYSTEM RECOVERY CORE MEDIA

WARNING: YOU ARE SUPERUSER !!

NOTE: Commands residing in the RAM-based file system are unsupported 'mini' commands. These commands are only intended for recovery purposes.

Loading commands needed for recovery!

Press <return> to continue.

10. Press **return** and the following status message is displayed:

Loading commands needed for recovery!

Then the following menu will be displayed:

HP-UX CORE MEDIA RECOVERY

MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the core media. Once a tool is loaded, it may be run from the shell. Some tools require other files to be present in order to successfully execute.

Select one of the above:

11. To load a file or files, enter `l` at the prompt; something similar to the following will be displayed:

| Filesystem       | kbytes | used | avail | %cap | iused | ifree | iused | Mounted | on |
|------------------|--------|------|-------|------|-------|-------|-------|---------|----|
| /                | 2011   | 1459 | 552   | 73%  | 137   | 343   | 29%   | ?       |    |
| /duplicated_root | 2011   | 1418 | 593   | 71%  | 49    | 431   | 10%   | ?       |    |

Enter the filename(s) to load:

12. Enter the name(s) of the damaged/corrupted file(s) you wish to load.  
For example:

`sh vi date grep`

The following example lists two files (`ex` and `egrep`) which must be loaded before the files `vi` and `grep` can be loaded. It also lists a file (`date`) which is not in the load list.

NOTE :

Since `./usr/bin/vi` is linked to `./usr/bin/ex`  
'./usr/bin/ex' must precede './usr/bin/vi' in the load list.

The file 'date' is NOT in the LOADCMS archive.  
<Press return to continue>

NOTE :

Since `./usr/bin/grep` is linked to `./usr/bin/egrep`  
'./usr/bin/egrep' must precede './usr/bin/grep' in the load list.

\*\*\*\*\* THE REQUESTED FILE(S): \*\*\*\*\*

`./sbin/sh ./usr/bin/vi ./usr/bin/grep`

Is the above load list correct? [n]

13. This load list is incorrect, because `./usr/bin/ex` does not precede `./usr/bin/vi` in the list of requested files. So you would enter `n`.  
The following is displayed:

Nothing will be loaded!

<Press return to return to Main Menu>

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

14. Press **return** and the Main Menu appears:

```
HP-UX CORE MEDIA RECOVERY
```

```
MAIN MENU
```

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the core media. Once a tool is loaded, it may be run from the shell. Some tools require other files to be present in order to successfully execute.

Select one of the above:

15. This time you will select s to search for a file you wish to load. You will see the following display:

Either enter the filename(s) to be searched for,  
or 'all' for a total listing.

16. Enter the following:

```
vi awk /sbin/sh date
```

You will receive the following response:

```
./usr/bin/vi linked to ./usr/bin/ex
./sbin/awk
./usr/bin/awk
./sbin/sh
**** The file 'date' was not found in the LOADCMDS archive. *

```

<Press return to continue>

17. Press **return** and the Main Menu is displayed again:

```
HP-UX CORE MEDIA RECOVERY
```

```
MAIN MENU
```

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

Select one of the above:

18. To begin the actual system recovery, select r. The HP-UX Recovery MENU is then displayed:

HP-UX Recovery MENU

Select one of the following:

- a. Rebuild the bootlif (ISL, HP-UX, and the AUTO file) and install all files required to boot and recover HP-UX on a root file system.
- b. Do not rebuild the bootlif but install files required to boot and recover HP-UX on the root file system.
- c. Rebuild only the bootlif.
- d. Replace only the kernel on the root file system.
- m. Return to 'HP-UX Recovery Media Main Menu'.
- x. Exit to the shell.

Use this menu to select the level of recovery desired.

Selection:

19. Select a to install both the bootlif and critical files; the following menu is then displayed:

DEVICE FILE VERIFICATION MENU

This menu is used to specify the path of the root file system.

When the information is correct, select 'a'.

INFORMATION to verify:

Device file used for '/'(ROOT) is c1t6d0

The path to disk is 56/52.6.0

Select one of the following:

- a. The above information is correct.
- b. WRONG!! The device file used for '/'(ROOT) is incorrect.
- m. Return to the 'HP-UX Recovery MENU.'
- x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g., c0t1d0s1lvm).

Selection:

HP-UX System Recovery  
“Expert” Recovery Using the Core Media

20. Assuming the root device file is incorrect, select b. You will be prompted to enter the correct device filename:

Enter the device file associated with the '/'(ROOT)  
file system. (example: c1t6d0):

---

**NOTE**

---

On a system with hard-sectored disks, the prompt and response might look like the following:

For example:

```
Enter the device file associated with the '/'(ROOT) file system
(example: c0t1d0s1lvm) : c0t0d0s13
/dev/rdisk/c0t0d0s13 not a special file
```

<Press return to continue>

```
Enter the address associated with the '/'(ROOT) file system
(example: 4.0.1) : 4.0.0
```

NOTE: if your '/'(ROOT) is not part of a sectioned disk layout  
enter a 'w' for whole disk layout  
or  
enter a 'l' for an LVM disk layout  
instead of a section number.

```
Enter the section associated with the '/'(ROOT) file system
(example: 13) : 13
making rdsk/c0t0d0s13 c 214 0x000000d
making dsk/c0t0d0s13 b 26 0x000000d
```

21.If you were to enter c1t1d0 as the root device filename, you would see the following display:

DEVICE FILE VERIFICATION  
MENU

This menu is used to specify the path of the root file system when the information is correct, select 'a'.

INFORMATION to verify:  
Device file used for '/'(ROOT) is c1t1d0  
The path to disk is 56/52.1.0

Select one of the following:  
a. The above information is correct.  
b. WRONG!! The device file used for '/'(ROOT) is incorrect.  
  
m. Return to the 'HP-UX Recovery MENU.'  
x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

Selection:

22.Select a, since c1t1d0 is the correct root device filename; the following menu will be displayed:

BOOTLIF PATH VERIFICATION  
MENU

This menu must be used to determine the path to the bootlif (ISL, HPUX and the AUTO file).  
When the information is correct, select 'a'.

INFORMATION to verify:  
Path to the bootlif is 56/52.1.0

Select one of the following:  
a. The above information is correct.  
b. WRONG!! The path to bootlif is incorrect.  
  
m. Return to the 'HP-UX Recovery MENU.'  
x. Exit to the shell.

Selection:

HP-UX System Recovery  
"Expert" Recovery Using the Core Media

23. Assuming that the bootlif path is correct, enter a; the following menu is displayed:

```
FILE SYSTEM CHECK
MENU
```

The file system check '/sbin/fs/hfs/fsck -y /dev/rdisk/c1t1d0' will now be run.

Select one of the following:

- a. Run fsck -y .
- b. Prompt for the fsck run string on c1t1d0.
- m. Return to the 'HP-UX Recovery MENU.'

Selection:

24. Select a to run fsck -y to check your file system for corruption; you will see a display similar to the following:

```
** /dev/rdisk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icon, 149423 used, 1563824 free(928 frags, 195362 blocks)
```

Mounting c1t1d0 to the HP-UX Recovery Media /ROOT directory...

<Press return to continue>

25. Assuming your file system is not corrupted, and you wish to continue with the system recovery, press **return** to mount your root file system under the /ROOT directory; something similar to the following will be displayed:

```
***** Downloading files to the target disk *****
x ./sbin/lvchange, 528384 bytes, 1032 tape blocks
./sbin/lvcreate linked to ./sbin/lvchange
./sbin/lvdisplay linked to ./sbin/lvchange
...
```

```
Filesystem kbytes used avail %cap iused ifree iused Mounted on
/ROOT 1713247 149426 1392496 10% 6261 275339 2% ?
```

Should the existing kernel be  
'left', 'overwritten', or 'moved'?[overwritten]

26. To overwrite the existing kernel with your new file system, enter **overwritten** or **over** at the prompt; the following will be displayed:

downloading INSTALL to /stand/vmunix

\*\*\*\* Creating device files on the target disk \*\*\*\*

\*\*\*\*\* Renaming the following files: \*\*\*\*\*

'/.profile' has been renamed '/.profileBK'

\*\*\*\*\* Installing bootlif \*\*\*\*\*

mkboot -b /dev/rmt/1m -i ISL -i HPUX /dev/rdisk/c1t1d0

mkboot -a hpux (56/52.1.0;0)/stand/vmunix /dev/rdisk/c1t1d0

---

**NOTE**

If you are recovering a system with hard-sectored disks, you will see a message similar to the following, instead of the one above:

\*\*\*\*\* Installing bootlif \*\*\*\*\*

mkboot -b 15.16.128.126 -H -i ISL -i HPUX /dev/rdisk/c0t0d0

mkboot -a hpux (4.0.0;13)/stand/vmunix /dev/rdisk/c0t0d0

The following options are used:

- -H is used with hard-sectored disks.
- -l is used with LVM disks.
- -W is used with whole disk configuration.

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

#### RECOVERY COMPLETION MENU

Use this menu after the recovery process has installed all requested files on your system.

Select one of the following:

- a. REBOOT the system and continue with recovery.
- b. Return to the Main Menu.

Selection:

27. Once you find yourself at the Recovery Completion menu, complete the recovery process by selecting a. You will see messages similar to the following:

NOTE: System rebooting ...

```
-
PDC - Processor Dependent Code - Version 1.3
(c) Copyright 1990-1993, Hewlett-Packard Company, All rights reserved.
-
16 MB of memory configured and tested.
Primary boot path: 56/52.5 (dec)
Alternate boot path: 56/52.3 (dec)
```

Manufacturing permissions ON

- Main Menu

| Command                      | Description                      |
|------------------------------|----------------------------------|
| BOot [PRI ALT  <path>]       | Boot from specified path         |
| PAth [PRI ALT ][ <path>]     | Display or modify a path         |
| SEArch [Display IPL][<path>] | Search for boot devices          |
| COntfiguration menu          | Displays or sets boot values     |
| INformation menu             | Displays hardware information    |
| SErvice menu                 | Displays service commands        |
| MFG menu                     | Displays manufacturing commands  |
| Display                      | Redisplay the current menu       |
| HElp [<menu> <command>]      | Display help for menu or command |
| RESET                        | Restart the system               |

- Main Menu: Enter command or menu item.

28. Enter `bo pri` at the prompt to boot from the primary boot path. The following will then be displayed:

Interact with IPL (Y or N)?>

29. Enter `n` for unattended boot. Several screens of status information will be displayed, followed by this warning:

THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!  
DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!

Type the following command from the shell prompt for more information about completing the recovery process:

```
cat /RECOVERY.DOC
```

30. To obtain more information on the recovery process, type the following at the prompt:

```
cat /RECOVERY.DOC
```

You will see the following information displayed:

- 1) Restore valid copies of the following files (either from backup or from the *filename.BK* files created during the recovery process).

```
/etc/fstab, /etc/inittab, /stand/ioconfig,
/etc/ioconfig, /etc/passwd, /sbin/pre_init_rc,
/.profile, and /etc/profile
```

NOTE: The backup archive may be extracted using '/sbin/frecovery' or '/sbin/pax' (for backups made with 'tar' or 'cpio').  
If using '/sbin/pax', linking it to 'tar' or 'cpio' will force 'pax' to emulate the respective command line interface.

- 2) Replace /stand/vmunix from backup, since the present kernel is probably missing desired drivers.

- 3) If you have an lvm root, refer to the /LVM.RECOVER text file.

31. If you have an LVM system, and want more information on recovery procedures, type the following:

```
cat /LVM.RECOVER
```

---

**NOTE**

If a card has been added to, or removed from, your system since the original installation was completed, there is a chance that the device file for the root disk has changed. Consequently, before you run the LVM script `./lvmrec.scrpt` (Step 2, below), you should first recover /stand/ioconfig from backup, and reboot.

---

You will see the following:

HP-UX System Recovery  
"Expert" Recovery Using the Core Media

INSTRUCTIONS to complete your LVM recovery:

The system must now be up now in "maintenance mode".

NOTE: In order for the following steps to lead to a successful lvm recovery the LVM label information must be valid.  
If the bootlif was updated from the RAM-based recovery system, then "mkboot -l" has already been run to repair this label.

step 1. If the autofile was altered to force the system to boot in maintenance mode, use "mkboot -a" to remove the "-lm" option.

Example:

```
to change "hpux -lm (52.6.0;0)/stand/vmunix"
to "hpux (52.6.0;0)/stand/vmunix"

use
mkboot -a "hpux (52.6.0;0)/stand/vmunix" /dev/rdsk/<device file>
```

---

**NOTE** Use lsssf /dev/rdsk/\* to match the device file with the boot address.

---

step 2. Run '/lvmrec.scrpt' to repair the following LVM configuration information:

- a. LVM records (lvmrec)
- b. BDRA (Boot Data Reserve Area)
- c. LABEL information

Requirement: The following files must reside on disk before the script can complete:

- a. /etc/lvmtab
- b. /etc/fstab
- c. /etc/lvmconf/<rootvg>.conf
- d. all device files specified in /etc/fstab

To run '/lvmrec.scrpt' provide the device filename used to access the bootlif as an argument to the script.

Example:

```
/lvmrec.scrpt c0t6d0
```

In this example 'c0t6d0' is the device file used to access the bootlif.

step 3. Once '/lvmrec.scrpt' completes, issue the command "reboot" and bring the system fully up.

The recovery of the root LVM is complete. If the '/lvmrec.scrpt' issued the following warning:

```
***** I M P O R T A N T *****
"
"Root logical volume has been repaired, but....."
"you need to reboot the system and repair the Swap"
"logical volume using the following LVM command: "
" lvlnboot -A n -s /dev/<root lv>/<swap lv> "
"because Recovery has no way to find out what is "
"the Swap logical volume information at this point"
"

```

The Swap and Dump logical volumes will need to be re-configured. The BDRA contains the "root", "swap" and "dump" logical volume information. '/lvmrec.scrpt' only fixes the root logical volume information in the BDRA. The "swap" and "dump" areas can be updated via the "lvlnboot" command.

Example:

```
lvlnboot -s /dev/<vg00>/lv02
lvlnboot -d /dev/<vg00>/lv03
```

In this example 'lv02' and 'lv03' are the "swap" and "dump" logical volumes respectively.

step 4. Perform any further data recovery deemed necessary.

\*\*\* NOTE \*\*\*

If the same volume group contains more than one corrupted bootdisk, Repeat the above steps for each disk that needs to be repaired.

*This completes the process for rebuilding the bootlif and installing critical files.*

## Installing Critical Root Files Only

Following is an example of the detailed procedure for installing all the critical files necessary to boot on the target root filesystem:

Boot the CORE media, following the steps in <Undefined Cross-Reference>. You will see some status messages, and then a menu:

Welcome to the HP-UX installation process!

Use the <tab> and/or arrow keys to navigate through the following menus, and use the <return> key to select an item. If the menu items are not clear, select the "Help" item for more information.

```
[Install HP-UX]
[Run a Recovery Shell]
[Cancel and Reboot]
[Advanced Options]
```

```
[Help]
```

1. Select Run a Recovery Shell, the screen clears, and the following question appears:

would you like to start up networking at this time? [n]

2. If you have no need to access the net, enter n and the following will be displayed:

```
* Loading in a shell...
* Loading in the recovery system commands...
```

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(c) Copyright 1979 The Regents of the University of Colorado,  
a body corporate  
(c) Copyright 1979, 1980, 1983 The Regents of the  
University of California  
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HP-UX SYSTEM RECOVERY CORE MEDIA

WARNING: YOU ARE SUPERUSER !!

NOTE: Commands residing in the RAM-based file system are unsupported 'mini' commands. These commands are only intended for recovery purposes.

Loading commands needed for recovery!

WARNING: If ANYTHING is changed on a root (/) that is mirrored, 'maintenance mode' (HPUX -lm) boot MUST be done in order to force the mirrored disk to be updated!

Press <return> to continue.

3. Press **return** and the following status message is displayed:

Loading commands needed for recovery!

Then the following menu will be displayed:

HP-UX CORE MEDIA RECOVERY

MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the core media. Once a tool is loaded, it may be run from the shell. Some tools require other files to be present in order to successfully execute.

Select one of the above:

4. To begin the actual system recovery, select r. The HP-UX Recovery MENU is then displayed:

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

#### HP-UX Recovery MENU

Select one of the following:

- a. Rebuild the bootlif (ISL, HP-UX, and the AUTO file) and install all files required to boot and recover HP-UX on a target root file system.
- b. Do not rebuild the bootlif but install files required to boot and recover HP-UX on the root file system.
- c. Rebuild only the bootlif.
- d. Replace only the kernel on the root file system.
- m. Return to 'HP-UX Recovery Media Main Menu'.
- x. Exit to the shell.

Use this menu to select the level of recovery desired.

Selection:

- 5. Select b to install critical files only; the following menu is then displayed:

#### DEVICE FILE VERIFICATION MENU

This menu is used to specify the path of the root file system.  
When the information is correct, select 'a'.

INFORMATION to verify:

Device file used for '/'(ROOT) is c1t6d0  
The path to disk is 56/52.6.0

Select one of the following:

- a. The above information is correct.
- b. WRONG!! The device file used for '/'(ROOT) is incorrect.
- m. Return to the 'HP-UX Recovery MENU.'
- x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g., c0t1d0s1lvm).

Selection:

- 6. Assuming the root device file is incorrect, select b; you will be prompted to enter the correct device filename:

Enter the device file associated with the '/'(ROOT) file system  
(example: c1t6d0):

---

#### NOTE

On a system with hard-sectored disks, the prompt and response might look like the following:

Enter the device file associated with the '/'(ROOT) file system  
(example: c0t1d0s1lvm ) : c0t0d0s13  
/dev/rdsk/c0t0d0s13 not a special file

<Press return to continue>

Enter the address associated with the '/'(ROOT) file system  
(example: 4.0.1) : 4.0.0

NOTE: if your '/'(ROOT) is not part of a sectioned disk layout  
enter a 'w' for whole disk layout  
or  
enter a 'l' for an LVM disk layout  
instead of a section number.

Enter the section associated with the '/'(ROOT) file system  
(example: 13 ): 13  
making rdsk/c0t0d0s13 c 214 0x000000d  
making dsk/c0t0d0s13 b 26 0x000000d

7. If you were to enter, for example, c1t1d0 as the root device filename, you would see the following display:

DEVICE FILE VERIFICATION  
MENU

This menu is used to specify the path of the root file system.  
When the information is correct, select 'a'.

INFORMATION to verify:  
Device file used for '/'(ROOT) is c1t1d0  
The path to disk is 56/52.1.0

Select one of the following:  
a. The above information is correct.  
b. WRONG!! The device file used for '/'(ROOT) is incorrect.  
  
m. Return to the 'HP-UX Recovery MENU.'  
x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g., c0t1d0s1lvm).

Selection:

8. Select a, since c1t1d0 is the correct root device filename; the following menu will be displayed:

HP-UX System Recovery  
"Expert" Recovery Using the Core Media

FILE SYSTEM CHECK  
MENU

The file system check '/sbin/fs/hfs/fsck -y /dev/rdisk/c1t1d0'  
will now be run.

Select one of the following:

- a. Run fsck -y .
- b. Prompt for the fsck run string on c1t1d0.
- m. Return to the 'HP-UX Recovery MENU.'

Selection:

9. Select a to run fsck -y to check your file system for corruption. You  
will see a display similar to the following:

```
** /dev/rdisk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icon, 149423 used, 1563824 free (928 frags, 195362 blocks)
```

Mounting c1t1d0 to the CORE media /ROOT directory...

<Press return to continue>

10. Assuming your file system is not corrupted, and you wish to continue  
with the system recovery, press **return** to mount your root file system  
under the CORE media /ROOT directory; something similar to the  
following will be displayed:

\*\*\*\*\* Downloading files to the target disk \*\*\*\*\*

```
x ./sbin/lvchange, 528384 bytes, 1032 tape blocks
./sbin/lvcreate linked to ./sbin/lvchange
./sbin/lvdisplay linked to ./sbin/lvchange
./sbin/lvextend linked to ./sbin/lvchange
```

...

| Filesystem | kbytes  | used   | avail   | %cap | iused | ifree  | iused | Mounted on |
|------------|---------|--------|---------|------|-------|--------|-------|------------|
| /ROOT      | 1713247 | 149426 | 1392496 | 10%  | 6261  | 275339 | 2%    | ?          |

Should the existing kernel be  
'left', 'overwritten', or 'moved'?[overwritten]

11. To overwrite the existing kernel with your new file system, enter  
overwritten or over at the prompt. The following will be displayed:

downloading INSTALL to /stand/vmunix

\*\*\*\* Creating device files on the target disk \*\*\*\*

\*\*\*\*\* Renaming the following files: \*\*\*\*\*

'/.profile' has been renamed '/.profileBK'

RECOVERY COMPLETION  
MENU

Use this menu after the recovery process has installed all requested  
files on your system.

Select one of the following:

- a. REBOOT the target system and continue with recovery.
- b. Return to the CORE Media Main Menu.

Selection:

12. Once you find yourself at the Recovery Completion menu, complete  
the recovery process by selecting a. You will see messages similar to  
the following:

NOTE: System rebooting...

PDC - Processor Dependent Code - Version 1.3  
(c) Copyright 1990-1993, Hewlett-Packard Company,  
All rights reserved

16 MB of memory configured and tested.  
Primary boot path: 56/52.5 (dec)  
Alternate boot path: 56/52.3 (dec)

Manufacturing permissions ON

- Main Menu -

| Command                       | Description              |
|-------------------------------|--------------------------|
| B0ot [PRI ALT <path>]         | Boot from specified path |
| PAth [PRI ALT] [<path>]       | Display or modify a path |
| SEArch [DIsplay IPL] [<path>] | Search for boot devices  |

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

|                         |                                  |
|-------------------------|----------------------------------|
| COnfiguration menu      | Displays or sets boot values     |
| INformation menu        | Displays hardware information    |
| SERvice menu            | Displays service commands        |
| MFG menu                | Displays manufacturing commands  |
| Display                 | Redisplay the current menu       |
| HElp [<menu> <command>] | Display help for menu or command |
| RESET                   | Restart the system               |

-  
Main Menu: Enter command or menu >

13. Enter `bo pri` at the prompt to boot from the primary boot path; the following will then be displayed:

Interact with IPL (Y or N)?>

14. Enter `n` for unattended boot; several screens of status information will be displayed, followed by this warning:

```
THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!
DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!
```

Type the following command from the shell prompt for more information about completing the recovery process:

```
cat /RECOVERY.DOC
```

15. To obtain more information on the recovery process, type the following at the prompt:

```
cat /RECOVERY.DOC
```

You will see the following information displayed:

- 1) Restore valid copies of the following files (either from backup or from the <filename>BK files created during the recovery process).

```
/etc/fstab, /etc/inittab, /stand/ioconfig,
/etc/ioconfig, /etc/passwd, /sbin/pre_init_rc,
/.profile, and /etc/profile
```

NOTE: The backup archive may be extracted using `/sbin/frecover` or `/sbin/pax` (for backups made with `'tar'` or `'cpio'`). If using `/sbin/pax`, linking it to `'tar'` or `'cpio'` will force `'pax'` to emulate the respective command line interface.

- 2) Replace `/stand/vmunix` from backup, since the present kernel is probably missing desired drivers.
- 3) If you have an lvm root, refer to `/LVM.RECOVER`.

16. If you have an LVM system, and want more information on recovery procedures, type the following:

```
cat /LVM.RECOVER
```

The file contains the following information:

If a card has been added to, or removed from, your system since the original installation was completed, there is a chance that the device file for the root disk has changed. Consequently, before you run the LVM script `./lvmrec.scrpt` (Step 2, below), you should first recover `/stand/ioconfig` from backup and reboot.

INSTRUCTIONS to complete your LVM recovery:

The system must now be up now in "maintenance mode".

NOTE: In order for the following steps to lead to a successful lvm recovery the LVM label information must be valid. If the bootlif was updated from the RAM-based recovery system, then "mkboot -l" has already been run to repair this label.

step 1. If the autofile was altered to force the system to boot in maintenance mode, use "mkboot -a" to remove the "-lm" option.

Example:

```
to change "hpux -lm (52.6.0;0)/stand/vmunix"
to "hpux (52.6.0;0)/stand/vmunix"

use
mkboot -a "hpux (52.6.0;0)/stand/vmunix" /dev/rdisk/<device file>
```

---

**NOTE** Use `lssf /dev/rdisk/*` to match device file with boot address.

---

step 2. Run `'/lvmrec.scrpt'` to repair the following LVM configuration information:

- a. LVM records (lvmrec)
- b. BDRA (Boot Data Reserve Area)
- c. LABEL information

Requirement: The following files must reside on disk before the script can complete:

- a. `/etc/lvmtab`
- b. `/etc/fstab`
- c. `/etc/lvmconf/<rootvg>.conf`
- d. all device files specified in `/etc/fstab`

To run `'/lvmrec.scrpt'` provide the device filename used to access the bootlif as an argument to the script.

Example:

```
/lvmrec.scrpt c0t6d0
```

## HP-UX System Recovery

### "Expert" Recovery Using the Core Media

In this example 'c0t6d0' is the device file used to access the bootlif.

step 3. Once '/lvmrec.script' completes, issue the command "reboot" and bring the system fully up.

The recovery of the root LVM is complete. If the '/lvmrec.script' issued the following warning:

```
***** I M P O R T A N T *****
"
"Root logical volume has been repaired, but....."
"you need to reboot the system and repair the Swap"
"logical volume using the following LVM command: "
" lvinboot -A n -s /dev/<root lv>/<swap lvol> "
"because Recovery has no way to find out what is "
"the Swap logical volume information at this point"
"

```

The Swap and Dump logical volumes will need to be re-configured.

The BDRA contains the "root", "swap" and "dump" logical volume information. '/lvmrec.script' only fixes the root logical volume information in the BDRA. The "swap" and "dump" areas can be updated via the "lvinboot" command.

Example:

```
lvinboot -s /dev/<vg00>/lvol2
lvinboot -d /dev/<vg00>/lvol3
```

In this example 'lvol2' and 'lvol3' are the "swap" and "dump" logical volumes respectively.

step 4. Perform any further data recovery deemed necessary.

\*\*\* NOTE \*\*\*

If the same volume group contains more than one corrupted boot disk, repeat the above steps for each disk that needs to be repaired.

*This completes the process for installing critical files only.*

## Rebuilding the "bootlif" Only

Boot the CORE media, following the steps in <Undefined Cross-Reference>. You will see some status messages, and then a menu:

Welcome to the HP-UX installation process!

Use the <tab> and/or arrow keys to navigate through the following menus,  
and use the <return> key to select an item. If the menu items are not  
clear, select the "Help" item for more information.

```
[Install HP-UX]

[Run a Recovery Shell]

[Cancel and Reboot]

[Advanced Options]

[Help]
```

1. Select Run a Recovery Shell, the screen clears, and the following will be displayed:

Would you like to start up networking at this time? [n]

2. Enter n and the following will be displayed:

```
* Loading in a shell...
* Loading in the recovery system commands...
```

```
(c) Copyright 1983, 1984, 1985, 1986 Hewlett-Packard Co.
(c) Copyright 1979 The Regents of the University of Colorado,
 a body corporate
(c) Copyright 1979, 1980, 1983 The Regents of the
 University of California
(c) Copyright 1980, 1984 AT&T Technologies. All Rights Reserved.
```

HP-UX SYSTEM RECOVERY CORE MEDIA

WARNING: YOU ARE SUPERUSER !!

NOTE: Commands residing in the RAM-based file system are unsupported 'mini'  
commands. These commands are only intended for recovery purposes.

Loading commands needed for recovery!

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

WARNING: If ANYTHING is changed on a root(/) that is mirrored a 'maintenance mode'(HPUX -lm) boot MUST be done in order to force the mirrored disk to be updated!!

Press <return> to continue.

3. Press **Return** and the following status message is displayed:

Loading commands needed for recovery!

After a similar boot steps to the previous, the following message appears

HP-UX CORE MEDIA RECOVERY

MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

Select one of the above:

4. To begin the actual system recovery, select r. The HP-UX Recovery MENU is then displayed:

HP-UX Recovery MENU

Select one of the following:

- a. Rebuild the bootlif (ISL, HPUX, and the AUTO file) and install all files required to boot and recover HP-UX on a target root file system.
- b. Do not rebuild the bootlif but install files required to boot and recover HP-UX on the root file system.
- c. Rebuild only the bootlif.
- d. Replace only the kernel on the root file system.
- m. Return to 'CORE Media Main Menu'.
- x. Exit to the shell.

Use this menu to select the level of recovery desired.

Selection:

5. Select c to rebuild the bootlif. The following menu is displayed:

BOOTLIF PATH VERIFICATION  
MENU

This menu must be used to determine the path to the bootl  
if (ISL, HP-UX  
and the AUTO file).  
When the information is correct, select 'a'.

INFORMATION to verify:  
Path to the bootlif is 56/52.1.0

Select one of the following:  
a. The above information is correct.  
b. WRONG!! The path to bootlif is incorrect.  
  
m. Return to the 'HP-UX Recovery MENU.'  
x. Exit to the shell.

Selection:

6. Assuming that the bootlif path is correct, enter a; the following menu is displayed:

BOOT STRING VERIFICATION  
MENU

This menu must be used to verify the system's boot string.  
When the information is correct, select 'a'.

INFORMATION to verify:  
The system's boot string should be:  
'hpux -lm (56/52.5.0)/stand/vmunix'

Select one of the following:  
a. The above information is correct.  
b. WRONG!! Prompt the user for the system's boot string.  
  
m. Return to the 'HP-UX Recovery MENU.'  
x. Exit to the shell.

NOTE: For an LVM '/'(ROOT) the '-lm' option MUST be specified  
(example: 'hpux -lm (2.3.4)/stand/vmunix' )

Selection:

7. Assuming the boot string is incorrect, enter b at the prompt. You will see a message similar to the following:  
  
AUTO FILE should be *(replacing 'hpux (56/52.5.0)/stand/vmunix')*:  
  
8. Enter the correct information (for example, hpux); you will then see the BOOT STRING VERIFICATION MENU displayed again:

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

#### BOOT STRING VERIFICATION MENU

This menu must be used to verify the system's boot string.  
When the information is correct, select 'a'.

INFORMATION to verify:  
The system's boot string should be:  
'hpux'

Select one of the following:

- The above information is correct.
- WRONG!! Prompt the user for the system's boot string.
- Return to the 'HP-UX Recovery MENU.'
- Exit to the shell.

NOTE: For an LVM '/'(ROOT) the '-lm' option MUST be specified  
(example: 'hpux -lm (2.3.4)/stand/vmunix' )

Selection:

---

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| <b>NOTE</b> | Use the -lm option to enter LVM administration mode only when recovering an LVM system. |
|-------------|-----------------------------------------------------------------------------------------|

---

9. Assuming the information is now correct, enter a at the prompt, and you will see one of the following two displays:

- For an LVM system, you will see something like the following:

```
***** Installing bootlif *****
```

```
mkboot -b /dev/rmt/1m -i ISL -i HPUX /dev/rdisk/c1t1d0
```

```
mkboot -a hpux (56/52.5.0;0)/stand/vmunix /dev/rdisk/c1t1d0
```

- If you are recovering a system with hard-sectored disks, you will see a message similar to the following, instead of the one above:

```
***** Installing bootlif *****
```

```
mkboot -b 15.16.128.126 -H -i ISL -i HPUX /dev/rdisk/c0t0d0
```

```
mkboot -a hpux (4.0.0;13)/stand/vmunix /dev/rdisk/c0t0d0
```

- H is used with hard-sectored disks.
- l is used with LVM disks.
- W is used to specify the whole disk.

#### RECOVERY COMPLETION MENU

Use this menu after the recovery process has installed all requested files on your system.

Select one of the following:

- a. REBOOT the target system and continue with recovery.
- b. Return to the CORWE Media Main Menu.

Selection:

10. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting a, rebooting your system.

*This completes the process for rebuilding the bootlif only.*

## Replacing the Kernel Only

Boot the CORE media, following the steps in <Undefined Cross-Reference>. You will see some status messages, and then a menu:

Welcome to the HP-UX installation process!

Use the <tab> and/or arrow keys to navigate through the following menus, and use the <return> key to select an item. If the menu items are not clear, select the "Help" item for more information.

```
[Install HP-UX]
 [Run a Recovery Shell]
 [Cancel and Reboot]
 [Advanced Options]
 [Help]
```

1. Select Run a Recovery Shell, the screen clears, and the following will be displayed:

Would you like to start up networking at this time? [n]

2. Enter n and the following will be displayed:

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

```
* Loading in a shell...
* Loading in the recovery system commands...

...
```

HP-UX SYSTEM RECOVERY CORE MEDIA

WARNING: YOU ARE SUPERUSER !!

NOTE: Commands residing in the RAM-based file system are unsupported 'mini' commands. These commands are only intended for recovery purposes.

Loading commands needed for recovery!

WARNING: If ANYTHING is changed on a root(/) that is mirrored a 'maintenance mode'(HPUX -lm) boot MUST be done in order to force the mirrored disk to be updated!!

Press <return> to continue.

3. Press **return** and the following status message is displayed:

Loading commands needed for recovery!

4. You will see the following menu:

HP-UX CORE MEDIA RECOVERY

MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- r. Recover an unbootable HP-UX system
- x. Exit to shell
- c. Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the CORE media. Once a tool is loaded, it may be run from the shell. Some tools require other files to be present in order to successfully execute.

Select one of the above:

5. To begin the actual system recovery, select r. You will see the HP-UX Recovery menu:

HP-UX Recovery MENU

Select one of the following:

- a. Rebuild the bootlif (ISL, HP-UX, and the AUTO file) and install all files required to boot and recover HP-UX on a target root file system.
- b. Do not rebuild the bootlif but install files required to boot and recover HP-UX on the root file system.
- c. Rebuild only the bootlif.
- d. Replace only the kernel on the root file system.
- m. Return to 'CORE media Main Menu'.
- x. Exit to the shell.

Use this menu to select the level of recovery desired.

Selection:

6. Select d to replace only the kernel on the root filesystem. The following menu is then displayed:

DEVICE FILE VERIFICATION  
MENU

This menu is used to specify the path of the root file system.  
When the information is correct, select 'a'.

INFORMATION to verify:

Device file used for '/'(ROOT) is c1t6d0  
The path to disk is 56/52.6.0

Select one of the following:

- a. The above information is correct.
- b. WRONG!! The device file used for '/'(ROOT) is incorrect.
- m. Return to the 'HP-UX Recovery MENU'.
- x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g., c0t1d0s1lvm).

Selection:

7. Assuming the root device file is incorrect, select b; you will be prompted to enter the correct device filename:

Enter the device file associated with the '/'(ROOT) file system  
(example: c1t6d0):

---

**NOTE**

On a system with hard-sectored disks, the prompt and response might look like the following:

## HP-UX System Recovery

### “Expert” Recovery Using the Core Media

Enter the device file associated with the '/'(ROOT) file system  
(For example: c0t1d0s1lvm) : *device\_file*  
/dev/rdsk/*device\_file* not a special file

<Press return to continue>

Enter the address associated with the '/'(ROOT) file system  
(For example: 4.0.1) : *address*

NOTE: if your '/'(ROOT) is not part of a sectioned disk layout  
enter a 'w' for whole disk layout  
or  
enter a 'l' for an LVM disk layout  
instead of a section number.

Enter the section associated with the '/'(ROOT) file system  
(For example: 13) : 13  
making rdsk/c0t0d0s13 c 214 0x00000d  
making dsk/c0t0d0s13 b 26 0x00000d

8. If you were to enter c1t1d0 as the root device filename, you would see the following display:

#### DEVICE FILE VERIFICATION MENU

This menu is used to specify the path of the root file system.  
When the information is correct, select 'a'.

INFORMATION to verify:  
Device file used for '/'(ROOT) is c1t1d0  
The path to disk is 56/52.1.0

Select one of the following:

- a. The above information is correct.
- b. WRONG!! The device file used for '/'(ROOT) is incorrect.
- m. Return to the 'HP-UX Recovery MENU.'
- x. Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g., c0t1d0s1lvm).

Selection:

9. Select a, since c1t1d0 is the correct root device filename; the following menu will be displayed:

FILE SYSTEM CHECK  
MENU

The file system check '/sbin/fs/hfs/fsck -y /dev/rdisk/c1t1d0'  
will now be run.

Select one of the following:

- a. Run fsck -y .
- b. Prompt for the fsck run string on c1t1d0.
- m. Return to the 'HP-UX Recovery MENU.'

Selection:

10. Select a to run fsck -y to check your file system for corruption; you  
will see a display similar to the following:

```
** /dev/rdisk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icon, 149423 used, 1563824 free (928 frags, 195362 blocks)
```

Mounting c1t1d0 to the CORE media /ROOT directory...

| Filesystem | kbytes | used   | avail | %cap | iused | ifree | iused | Mounted on |
|------------|--------|--------|-------|------|-------|-------|-------|------------|
| /ROOT      | 434773 | 352461 | 38834 | 90%  | 15241 | 54647 | 22%   | ?          |

Should the existing kernel be  
'left', 'overwritten', or 'moved'?[moved]over

11. To move the existing kernel with your new file system, enter move at  
the prompt. The following will be displayed:

downloading INSTALL to /stand/vmunix

RECOVERY COMPLETION  
MENU

Use this menu after the recovery process has installed all requested  
files on your system.

Select one of the following:

- a. REBOOT the target system and continue with recovery.
- b. Return to the CORE media Main Menu.

Selection:

12. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting a, REBOOT the target system....

*This completes the process for replacing the kernel only.*

# 7 Troubleshooting

## Chapter Contents

- Likely Problem Areas
  - Running add\_release
  - Running swinstall
  - Booting a Client
  - Setting Up the Ignite-UX Cluster
  - Running the make\_depots command
- Adjusting File System Size
- Large Systems

---

## Likely Problem Areas

As an install progresses, you will see messages relating to the progress being entered into the log file. Usually these messages are related to normal behavior. ERROR and WARNING messages have the following significance:

|         |                                                                                                                    |
|---------|--------------------------------------------------------------------------------------------------------------------|
| ERROR   | This indicates a serious problem, usually requiring action from the user in order to proceed with an installation. |
| WARNING | This indicates something out of the ordinary, but <i>not</i> fatal. The warning <i>may</i> require action.         |

In case you see a message, or experience unusual behavior, you can use the following tables as prioritized lists of likely problems and their solutions. They are grouped by the following topics, with the problems you are most likely to encounter near the beginning of each section.

## Using Config Tools

**Table 7-1**      **Running add\_release**

| Message(s) or Behavior                                               | Possible Cause                                                                                                                                                                                                   | Fix                                                                                                                                                                                                   |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Couldn't mount cdrom device at:<br><i>device_file</i>                | This error could occur if: <ul style="list-style-type: none"><li>the user entered the wrong device file</li><li>the cdrom is not loaded and ready</li><li>the device file is not correct for the cdrom</li></ul> | Try to mount the cdrom manually by executing the following:<br><br><pre>mount -Fcdfs -oro \ cdrom_block_device_file \ mount_point_dir</pre><br>Verify that the device file is correct by running sam. |
| ERROR: Failed to register the cdrom depot at:<br><i>tmp_dir_name</i> | This error could occur if: the CD-ROM media in the CD-ROM drive is not a depot CD-ROM.                                                                                                                           | Verify that the CD-ROM is a valid SD depot by executing the following:<br><br><pre>swreg -l depot \ cdrom_mount_block_device_file</pre><br><pre>swlist -s \ cdrom_mount_point_dir</pre>               |
| Remove command failed:<br><i>remove_command_executed</i>             | This error occurs when you have specified removal of an obsolete release and the command to do the removal failed.                                                                                               | Refer to the log file for the command used to remove the release. Typically the <code>remove_release</code> command is used. Its messages are written to <code>stderr</code> .                        |

| Message(s) or Behavior                                          | Possible Cause                                                                                                                                                      | Fix                                                                                                                                                               |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Load command failed:<br><i>load_command</i>                     | This error occurs if the command used to load software has failed during the load. Such failure can be due to a problem with the media or the source specification. | Refer to the log file for the command used to load software. If <code>make_depots</code> is used its log file is under <code>/var/opt/ignite/logs</code> .        |
| Problem executing command: <i>command</i>                       | This error occurs if the command used to configure the software which has just been loaded fails.                                                                   | Refer to the log file for the command used to configure software. If <code>make_config</code> is used, its log file is under <code>/var/opt/ignite/logs</code> .  |
| Problem executing command to set default:<br><i>default_cmd</i> | This error occurs if the command used to set the default release fails. Typically this command is <code>manage_index</code> .                                       | Refer to the log file for the command used to configure software. If <code>manage_index</code> is used, its log file is under <code>/var/opt/ignite/logs</code> . |

**Table 7-2**      **Other Problems Related to add\_release**

| <b>Message(s) or Behavior</b>                                                   | <b>Possible Cause</b>                                    | <b>Fix</b>                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| You do not see the releases you expect to see as available to load.             | This could happen if you specify the wrong -u parameter. | For -u the following parameters should be used:<br><br>-u re<br><br>This should be used by HP Authorized distributors to load DART software and OS releases provided to them by HP as part of the Instant Ignition program.<br><br>-u mo<br><br>This should be used by HP manufacturing organizations to load DART software and OS releases provided to them by HP as part of the Instant Ignition program. |
| You do not see the releases you expect to see as available to load (continued). |                                                          | no -u<br><br>If -u is not specified then non-specific generic software can be loaded. This is any software that is not provided by HP as part of the Instant Ignition program.                                                                                                                                                                                                                              |
| The screen enhancements are not working properly:                               | This can be caused by problems with dtterm.              | Run the program from an hpterm window.                                                                                                                                                                                                                                                                                                                                                                      |

---

## During Installation and Configuration of Ignite-UX Tools and Data

**Table 7-3**      **Running swinstall**

| Message(s) or Behavior                                                                                                              | Possible Cause                       | Fix                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| swinstall cannot read the tape. For example you may see the following:<br><br>Source connection failed for "ignitesvr:/dev/rmt/0m". | Wrong device file                    | Use the Actions menu in the SAM Peripheral Devices/Tape Devices area to show the device files for the tape drive.   |
| Failure reading the contents of the tape.                                                                                           | No device file present for the tape. | Use the Actions menu in the SAM Peripheral Devices/Tape Devices area to create the device files for the tape drive. |

| Message(s) or Behavior                            | Possible Cause                | Fix                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Failure reading the contents of the tape (cont.). | Bad/wrong tape.               | <p>Verify label on tape. Check the contents. SD tapes are in "tar" format. You can check whether the tape is a "tar" tape by typing the following command:</p> <pre>tar tvf device_file   more Enter</pre> <p>For example, if the tape device is /dev/rmt/0m, you would type:</p> <pre>tar tvf /dev/rmt/0m \   more Enter</pre> <p>You should see a "tar" format table of contents. If you do not see this, then the tape is corrupt.</p> |
| Failure reading the contents of the tape (cont.). | Dirty head in DDS tape drive. | Use a DDS tape cleaning cartridge to clean the tape head.                                                                                                                                                                                                                                                                                                                                                                                 |

**Table 7-4                      Booting a Client**

| Message(s) or Behavior                                                     | Possible Cause                                                                                                                                                                                                                                                                                                                                                                                                  | Fix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Using "boot lan.080009-xxxxxx" s700 won't boot from known good IUX server. | <ul style="list-style-type: none"> <li>• Not enough temporary IP addresses for booting.</li> <li>• rbootd is not running on the server.</li> <li>• server lan is something other than ethernet, e.g., FDDI,X.25,token-ring, and s700 is older generation 715,735,755. Older s700's will not be able to boot from ROM because rbootd doesn't function over non-ethernet lan. (See <i>rbootd(1M)</i>).</li> </ul> | <ul style="list-style-type: none"> <li>• Allocate more addresses in <code>/etc/opt/ignite/install_boottab</code> or wait for an address to become available.</li> <li>• Start rbootd by hand: <code>/usr/sbin/rbootd</code>.</li> <li>• Do one of the following: <ul style="list-style-type: none"> <li>• Start install from bootable media (CD-ROM,tape) and enable networking from there.</li> <li>• If s700 contains 9.x or 10.x bootable disk, boot from that disk and run <code>bootsys -w s700 hostname</code> on the IUX server.</li> </ul> </li> </ul> |

**Table 7-5**      **Setting Up the Ignite-UX Cluster**

| <b>Message(s) or Behavior</b>                                                                               | <b>Possible Cause</b>                                                                                                                                                                                                                                                                                                | <b>Fix</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ERROR: This machine is not an NFS server (no nfsd running).<br/>The -n option will not be processed.</p> | <p>NFS is not set up. The IUX server must be an NFS server if you wish to control the installation process from the IUX server or if you wish to make sure that config files and manifest information end up on the server. If the IUX server is an NFS server, /var/opt/ignite/clients will be exported as r/w.</p> | <p>Make the IUX server an NFS server.</p> <ul style="list-style-type: none"> <li>• Be sure the NFS software is on the system, for example:<br/>swlist -l product   grep NFS giving the following: NFS B.10.[123]0 ONC/NFS;\ Network-File System, Information Services, Utilities</li> <li>• Either use SAM to enable the system as an NFS server, or edit the file /etc/rc.config.d/nfsconf and set the variables NFS_SERVER=1 and START_MOUNTD=1. Then reboot the system.</li> </ul> |

| Message(s) or Behavior                                                                                                                                                                                     | Possible Cause                                                                                                                                                                                                                                                                                                                   | Fix                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Bad IP addresses specified for either the temp IP or DHCP: ERROR: Illegal IP (IP address given) passed to -I. OR ERROR: Bad range passed to -I. 1st IP address given is greater than 2nd IP address given. | <p>The checks done on this IP address are the following:</p> <p>Given a format like ###.###.###.### (for example, 151.12.54.205), ensure the following:</p> <ul style="list-style-type: none"> <li>• There are indeed four dot-separated sets of numbers.</li> <li>• Each of the dot-separated sets is less than 255.</li> </ul> | Check the IP address syntax. If a range is given, the first IP address given must be less than the second IP address given. |

Running the make\_depots command

| Message(s) or Behavior                                                                                                                               | Possible Cause                                                            | Fix                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------|
| make_depots: warning - -r option \ ignored with -d absolute path name<br><br>make_depots: warning - -m option \ ignored with -d absolute path name   | Using either -r or -m option with -d absolute path name.                  | Remove -r and/or -m option.                                     |
| make_depots: warning - -r and -o \ arguments that differ not recommended                                                                             | Arguments to -r and -o are different.                                     | Make arguments the same.                                        |
| make_depots: warning - \ trailing slashes stripped from /////                                                                                        | Argument to -d option has trailing slashes.                               | Remove the trailing slashes.                                    |
| make_depots: \ both -d and -r options missing                                                                                                        | There is neither a -d nor -r option.                                      | Add either a -d or -r option.                                   |
| make_depots: unknown -a argument XXX                                                                                                                 | XXX is an unknown argument for -a option.                                 | Argument must be either 700 or 800.                             |
| make_depots: -r option missing \ with -d relative path name                                                                                          | There is no -r option when using the -d option with a relative path name. | Add a -r option or use an absolute path name for the -d option. |
| make_depots: bad argument for -r. \ Must match B.[0-9][0-9].[0-9][0-9]<br><br>make_depots: bad argument for -o. \ Must match B.[0-9][0-9].[0-9][0-9] | The argument for either -r or -o is badly formed.                         | Change the argument to match the pattern, e.g. B.10.20.         |
| make_depots: error - \ cannot stat source depot XXX                                                                                                  | The -d argument XXX does not exist.                                       | Change -d argument to point to something that actually exists.  |

| Message(s) or Behavior                                     | Possible Cause                                                                                                                      | Fix                             |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| make_depots: error - \<br>unknown source depot type<br>XXX | The -s argument is<br>not identifiable as<br>either a depot (local<br>or remote) or a<br>character or block<br>special device file. | Specify a real source<br>depot. |

| Message(s) or Behavior                                                                                                                                                                                                                                 | Possible Cause                                           | Fix                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| make_depots: \ malloc of XXX failed<br>make_depots: \ strdup of XXX failed<br>make_depots: \ tmpnam of XXX failed<br>make_depots: \ fopen of XXX failed<br>make_depots: \ fprintf to XXX failed<br>make_depots: internal swcopy option buffer overflow | The make_depots command failed due to lack of resources. | Kill other applications running on the system to free up memory. Add more memory and/or swap space. |
| make_depots: \ internal failure in regcomp call<br>make_depots: \ internal failure in regexexec call<br>make_depots: \ build_bundle_list failed                                                                                                        |                                                          | Contact HP support.                                                                                 |
| make_depots: cannot create temporary \ directory XXX to mount CD ROM<br>make_depots: cannot mount \ XXX as CDFS, errno = YY                                                                                                                            | Insufficient permissions to perform mkdir and mount.     | Make sure you are running as root.                                                                  |
| make_depots: swcopy command failed                                                                                                                                                                                                                     | A swcopy command failed.                                 | Examine<br>/var/adm/sw/swcopy.log<br>and<br>/var/adm/sw/swagent.log<br>for more information.        |

---

## Adjusting File System Size

The absolute minimum /usr file-system sizes needed to update to HP-UX 11.0 are:

- For 32-bit: 300 MB.
- For 64-bit: 324 MB.

If the required file-system size for the bundle you copy to a depot exceeds that file system limit set by your disk installation, you will get an error condition during the copy process. You can use `lvextend` and `extendfs` in this situation to create a larger file system.

You might have a problem updating your system(s) if the /usr or /var volume is too small.

If you try an update, `swcopy` will determine how much disk space is required. If there isn't sufficient space, `swcopy` will report an error like this:

```
ERROR: The used disk space on filesystem "/var" is estimated
to increase by 57977 Kbytes.
This operation will exceed the minimum free space for this
volume. You should free up at least 10854 Kbytes to avoid
installing beyond this threshold of available
user disk space.
```

In this example, you would need to increase the file system size of /var by 10 MB, which actually needs to be rounded up to 12 MB.

The following are the steps required for increasing the size limit of /var:

1. Determine if any space is available by entering the following:

```
/sbin/vgdisplay
```

You should see a display like the following:

```
 - Volume groups -
VG Name /dev/vg00
VG Write Access read/write
VG Status available
Max LV 255
Cur LV 8
Open LV 8
Max PV 16
Cur PV 1
Act PV 1
Max PE per PV 2000
VGDA 2
```

## Troubleshooting

### Adjusting File System Size

|                  |     |
|------------------|-----|
| PE Size (Mbytes) | 4   |
| Total PE         | 249 |
| Alloc PE         | 170 |
| Free PE          | 79  |
| Total PVG        | 0   |

The "Free PE" indicates the number of 4 MB extents available, in this case this is 79 (equivalent to 316 MB).

2. Enter the following:

```
/sbin/shutdown
```

Change to single user state. This will allow /var to be unmounted.

3. Enter the following:

```
/sbin/mount
```

You will see a display similar to the following:

```
/ on /dev/vg00/lvol1 defaults on Sat Mar 8 23:19:19 1997
/var on /dev/vg00/lvol7 defaults on Sat Mar 8 23:19:28 1997
```

4. Determine which logical volume maps to /var. In this example, it is /dev/vg00/lvol7.

5. Execute the following command:

```
/sbin/umount /var
```

This is required for the next step, since `extendfs` can only work on unmounted volumes.

6. Extend the size of the logical volume by entering the following:

```
/sbin/lvextend -L new_size_in_MB /dev/vg00/lvol7
```

This extends the size of the logical volume.

For example,

```
/sbin/lvextend -L 332 /dev/vg00/lvol7
```

This will make this volume 332 MB.

7. Execute the following command:

```
/sbin/extendfs /dev/vg00/rlvol7
```

This extends the file system size to the logical volume size.

8. Finally, execute the following commands:

```
/sbin/mount /var
```

9. Go back to the regular init state: `init 3` or `init 4`. Or you can reboot.

---

## Large Systems

*If you are running a system with a large number of file systems, note the following possible problem areas:*

1. On a large system such as a T500 with a very large number of disk drives (such as 50 or more), you may see messages such as the following, during the system analysis phase of cold install.  
  
Out of inode- can't link or find disk  
or  
Write failed, file system is full.  
or  
File system full.
2. To reduce the likelihood of this problem occurring, before you do the installation you should *turn off any disks you don't plan to use for the installation process and start over.*
3. After the system is cold-installed, you may wish to add back all the file systems that existed under the previous installation, either manually or using SAM. However, for a large number of file systems (for example, over a hundred), some tables in the kernel may be too small to allow correct booting. This is because the newly-installed kernel contains default values for kernel tables sizes, and does not allow for special configurations made to the kernel installed previously.

For example, the first boot after adding the file systems may result in error messages displayed to the console, such as the following:

```
inode: table is full
proc: table is full
file: table is full
```

Additionally, the boot may fail in various ways. For example, you may be have to do file system repair manually.

- If this is not possible, the kernel may need to be re-configured before booting. The following settings should allow the kernel to be booted, but may not be optimal for the system:
  - ninode = 2048 (default is 476)
  - nproc = 1024 (default is 276)
  - nfile = 2048 (default is 790)
- Alternatively, you may wish to re-configure the kernel in one of the following ways:

Troubleshooting  
Large Systems

- By raising `maxusers` to a large value, such as 200.
- By selecting an appropriate bundle of SAM-tuned parameters from the SAM Kernel Configuration Actions menu.

You should determine the correct configuration for your system.

Note that this problem does not appear to affect the Upgrade process (updating from HP-UX 9.0x), since during Upgrade, the new kernel parameters are derived from the previous kernel.

# **A                      Configuring for a DHCP Server**

## Appendix Contents

- Using DHCP Services: Overview.
- Setting Up a DHCP Server.
- Details on the DHCP Services.
- Enabling DHCP on a System Not Initially Configured with DHCP.
- Examples of DHCP Usage.
- Using `bootptab` as an Alternative to DHCP.
- Background Information on DHCP Design.

---

## **Introduction**

The HP-UX 10.20 version of HP-UX and Ignite-UX supports retrieving network information via the Dynamic Host Configuration Protocol (DHCP). This appendix gives the details of setting up DHCP.

The Ignite-UX GUI allows for setting up DHCP for use during system installation. This Appendix is for the user who wishes to use DHCP for ongoing IP address management, as well as for system installation.

## Using DHCP Services: Overview

DHCP provides the following features:

- Allows for dynamically allocating IP addresses and hostnames.
- Automatically supplies most of the networking defaults that are requested during a system installation or first time boot.
- Provides for on-going IP address maintenance via a concept of an "IP address lease". Having a lease on an IP address means that if the system "goes away" for a specified period of time without renewing the lease, then that IP address can be given to a different system that request a new IP address lease.
- Assists in reestablishing valid network parameters when a system has been moved from one DHCP-managed network to another.

The environment where DHCP works best is where the following conditions and restrictions exist:

- When a range of currently unused IP addresses can be allocated for use during new system bring-up.
- When the IP address-to-hostname mapping can be made ahead of time (before the system to use it is installed). And this mapping can be configured in the name services database before installing a system.
- When the IP address and hostname that get assigned to a system are not important. A system will keep the same IP address and hostname for as long as it renews the lease. However the original assignment is arbitrary.
- When the person installing the systems does not desire to choose a hostname for the system, but rather accepts the one already registered for the IP address supplied by DHCP. This will ensure that the system will be recognized immediately by its hostname.
- When existing systems that did not use DHCP before will continue not to use it. Or, if they did, they would be willing to accept an arbitrary hostname and IP address. This is the same as with a new system. There currently is no tool available for pre-loading the DHCP database with existing IP addresses and identifying the systems they belong to. A tool to do this may be available in a future release.

An alternative to using DHCP is to create `/etc/bootptab` entries for each specific client on the network. This allows for specific IP address mappings and greater control. For more detail, please see the section in this Appendix , “Using bootptab as an Alternative to DHCP,” at the end of this chapter.

## Setting Up a DHCP Server

Once you have decided that using DHCP will provide a benefit, you will need to follow the steps below to set up a DHCP server. *Note that only one DHCP server per network subnet is required.* On the server system:

1. Allocate a set of currently unused IP addresses (preferably a contiguous block of addresses). For example:  
15.1.48.50 - 15.1.48.80
2. Pre-assign and register hostnames to the IP address allocated above. Using the `-h` option to the `dhcptools(1M)` command may be useful. For example, the following line:

```
dhcptools -h fip=15.1.48.50 no=30 sm=255.255.255.0 hn=devlab#
#
```

This command will create a file `/tmp/dhcphosts` that can be incorporated into your `/etc/hosts` or DNS/NIS database.

3. Designate a system to act as the DHCP server for your network. This should be a system that is "always" available to it's clients.
4. Use the SAM application to configure the DHCP services on this server. To do this:
  - a. Start the interactive SAM application by typing `sam`. (Note, you may need to set your `DISPLAY` variable to use the graphical version)
  - b. Double-click on the icon Networking and Communications.
  - c. Double-click on the icon Bootable Devices.
  - d. Double-click on the icon DHCP Device Groups Booting From this Server.

You should now see a screen that lists any DHCP groups already defined (there may not be any if DHCP is not already configured).

- e. To add the new group of IP addresses which you allocated in Step 1, click on the Action menu item and choose Add DHCP Group.

This should bring up a form with parameters to fill in.

- f. Now you will need to fill in the information on this screen. Some information may require additional research if you are not familiar with the terms or with your network.

|                               |                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group<br>Name:                | This can be any name that isn't already defined as a DHCP group. For example: group1                                                                                                                                                                                                                                                               |
| Subnet<br>Address:            | This is the portion of an IP address that is not masked off by the subnet mask (see below). If you don't want to figure this out, then just enter one of the IP addresses in the range you picked along with the correct subnet mask and SAM will take care of the calculation. For example: 15.1.48.50                                            |
| Subnet<br>Mask:               | This depends on the "class" of your network, and basically determines how an IP address is separated into a network number and a host specific number. Press F1 in this field for more information. For example: 255.255.255.0                                                                                                                     |
| Subnet<br>Address<br>Pool:    | Press this button to select the range of IP addresses that you allocated in Step 1. A new screen will be displayed where you can enter the Start and End address. If there are addresses within the range that you picked that you do not want allocated via DHCP, you can use the Reserved Addresses button to specify those (or ranges of them). |
| Allow Any<br>Device<br>Class: | The SAM default is to allow any type of DHCP device to use the group of IP address you are configuring. This may be undesirable if you use a different method (or a different DHCP server or group) for managing systems such as PCs running Win95™ or NT™.                                                                                        |

Configuring for a DHCP Server  
Setting Up a DHCP Server

If you want this range of addresses to be used only by HP-UX systems, then unselect this button, and enter the text: "HewlettPackard.HP-UX" in the text field provided.

When using Ignite-UX to set up DHCP, it will set a class specific to the server, and will set the `dhcp_class_id` string to match. For more detail, see the *instl\_adm(4)* man page.

Automatic  
Allocation  
to Bootp  
Clients:

Leave this option disabled. Enabling it will cause problems for bootp devices such as printers and terminals which rely only on their preconfigured server to respond to their boot request.

Accept  
New  
Clients:

Leave this option enabled.

Address  
Lease  
Time:

The lease time should be set sufficiently long so that if a client system is temporarily out of service (*off*) for a time, its lease will not expire too soon.

Infinite leases will never expire and disable the IP-address reclamation features of DHCP. For example: 2 weeks.

Boot file  
name:

You can leave this field blank.

Additional  
Params.

There are many parameters that can be specified in this screen for such things as the default routers, time server, DNS server, and NIS domain. You can specify as much or as little as you like in this area.

Callback

Routines:           None is necessary.

- g. Once the parameters are all filled in, then press OK on the Add DHCP Group screen. SAM will then make the modifications to the `/etc/dhcptab` file.
  - h. You will now want to use the Action menu to Enable boot Server (if it is not already enabled).
5. Now, new systems that are installed with HP-UX 10.20 (or newer) or booted with a pre-installed 10.20 (or newer) version of HP-UX should contact this server to get an IP address lease and other network information provided by the server.

#### Details of the DHCP Services

- When doing a cold install of the HP-UX Operating system (version 10.20 or newer):

The installation tools will broadcast out on the network for any available DHCP servers. The first server to respond will be chosen to provide the default network information that the user is presented with.

In the network parameters screen during a Cold Install, you see the question: "Is this networking information only temporary?". The "yes" or "no" answer to this implies the following:

- "no": Answering "no" (the default) means that if the IP address and hostname were leased from an DHCP server, then that lease will be retained after the install is done, so that the first boot of the system will attempt to renew the same lease.
- "yes": Answering "yes" implies that the IP address and hostname lease should be returned to the server after the installation is complete. In this case, the first system boot will try to get a new lease. This is most useful when the system is being installed on a network that is different from its final destination.

(This answer to the question can also be set in the configuration file with `instl_adm(1M)` using the keyword `is_netwk_info_temporary`).

When automating system installations, the DHCP services allows systems to get networking information without the need to make a mapping in the Ignite-UX configuration files. (See `instl_adm(1m)` and `instl_adm(4)`).

## Configuring for a DHCP Server

### Setting Up a DHCP Server

- When a system boots for the first time (either after a Cold Install, or the first boot of a pre-loaded (Instant Ignition) system):

The `auto_parms` tool, that lets you configure the system identity and basic configuration parameters, will invoke the `dhcpcd`, which will broadcast out to find a DHCP server. The server, in turn, provides a default set of networking parameters.

In both cold install and a first boot of a pre-loaded system, if the user chooses not to use the IP address given by the DHCP server, the tool will inform the DHCP server that it can release the lease on it and give it to someone else.

- At each system boot:

If a client system was initially set up using an IP address that was leased by a DHCP server, that client will check to ensure that the lease is still valid at each boot. In addition, the system will start a daemon process (`dhcpcd -m`) that will maintain and renew that lease while the system is running.

If a system cannot contact the DHCP server from which it originally got the IP address lease, it will try to contact other DHCP servers in order to determine if it has been moved to a different network. If this is the case, the system will write a message to the `auto_parms` log file (`/etc/auto_parms.log`) indicating that it has detected a move to a new subnet and that it is attempting to request a new lease. If the new lease request is successful, new networking configuration values supplied by the DHCP server will automatically be applied.

#### Enabling DHCP on a System Not Initially Configured with DHCP

If a system has been set up without using DHCP, but you would like to start using it, the following steps may be taken.

---

#### NOTE

---

The system's hostname and IP address may change based on what the DHCP server assigns to it the first time it boots.

There are two methods for enabling DHCP on a system that is not currently using it:

1. The first method is to use SAM.
  - a. As `root`, run `sam`.
  - b. Double-click Networking and Communications.
  - c. Double-click Network Interface Cards.

- d. Highlight the card you wish to enable DHCP on, go to the Actions pull-down menu and select Configure.
- e. Single click the Enable DHCP button.

---

**NOTE**

---

If Enable DHCP appears grayed-out, you will need to use the alternate method for enabling DHCP described below.

- f. Single click OK and exit SAM.

Your system will now begin using DHCP after the next reboot. Please note that all of the current networking parameters will be overridden with new values supplied by the DHCP server. *If for some reason the system cannot contact a DHCP server during the next reboot, it will continue to use its current networking parameters.*

If you suspect that your system had problem contacting the DHCP server, you can examine the `auto_parms` log file (`/etc/auto_parms.log`) to determine if the lease request was successful.

- 2. The second method for enabling DHCP over a particular network interface is use a text editor (such as `vi` or `emacs`) to edit the `/etc/rc.config.d/netconf` file. In the header of this file, you will find some brief instructions regarding a variable named `DHCP_ENABLE`. This variable is tied by an index number to an individual network interface. For example, in the following block:

```
INTERFACE_NAME[0]=lan0
IP_ADDRESS[0]=15.1.50.76
SUBNET_MASK[0]=255.255.248.0
BROADCAST_ADDRESS[0]=" "
DHCP_ENABLE[0]=1
```

Here, the variables are instructing the system to use the `lan0` interface when attempting to contact a DHCP server. Similarly, if the lease request is successful, the above `IP_ADDRESS` variable would be updated to reflect the new value supplied by the DHCP server.

If the `DHCP_ENABLE` variable was set to `0` or if the variable did not exist, no DHCP operations would be attempted over the corresponding network interface.

As noted in the first method of enabling DHCP, if the variable `DHCP_ENABLE` does not exist for a particular interface, the SAM tool will display a grayed out DHCP enable button.

## Configuring for a DHCP Server

### Setting Up a DHCP Server

In this case, you will need to add the variable definition to a specific interface variable block. As an example, you would need to add `DHCP_ENABLE[2]=1` to the following interface variable block in order to enable DHCP on the `lan1` interface:

```
INTERFACE_NAME[2]=lan1
IP_ADDRESS[2]=15.1.50.89
SUBNET_MASK[2]=255.255.248.0
BROADCAST_ADDRESS[2]=""
```

The contents of `/etc/rc.config.d/netconf` for this definition block should now look like the following:

```
INTERFACE_NAME[2]=lan1
IP_ADDRESS[2]=15.1.50.89
SUBNET_MASK[2]=255.255.248.0
BROADCAST_ADDRESS[2]=""
DHCP_ENABLE[2]=1
```

Correspondingly, you could disable DHCP over a particular interface by setting the variable to "0".

Again, as in the first method, the system will only begin using DHCP after the next reboot.

## Examples of DHCP Usage

To enable a DHCP server to respond only to specific clients, use the `instl_adm(1M)` tool to configure specific `dhcp_class_id`'s.

### DHCP Examples

For example, your situation might fall into one of the following four categories:

1. The network has a DHCP server that manages the whole network, and the clients doing installations will be using the addresses from this server permanently. Then the Ignite-UX server setup should be:
  - Don't set up DHCP on Ignite-UX server In this case, enter the following in `INSTALLFS`, (using `instl_adm`):

```
is_network_info_temporary=false
```
2. The network has a DHCP server, but the user would like to manage a small group of temporary IP addresses, just for use in doing installations, and the clients will get reassigned new addresses when deployed.
  - a. Set up DHCP on Ignite-UX server

- b. Use a unique *dhcp\_class\_id* in both the *dhcptab* and the 8K config file. This *dhpc\_class\_id* could have the server's hostname init. In this case, enter the following in *INSTALLFS*:

*is\_network\_info\_temporary=true*

- c. And enter your class i.d. as the following in the *dhcptab* and *INSTALLFS*:

*dhcp\_class\_id*

3. The user would like to setup the Ignite-UX server as a "departmental" DHCP server, in which case the IP address leases are permanent, but they will be isolated to the department's DHCP server.

- a. Set up DHCP on the Ignite-UX server.

- b. Enter the following:

*Is\_network\_info\_temporary=false*

- c. And enter your class i.d. as the following in the *dhcptab* and *INSTALLFS*:

*dhcp\_class\_id*

Use a unique *dhcp\_class\_id* in both the *dhcptab* and the *INSTALLFS* file. This *dhcp\_class\_id* could have the server's hostname in it.

4. You want to start using DHCP with this server managing the whole network.

- Refer to the preceding sections and */usr/sbin/sam*, and its manpage (*sam(1M)*) for this procedure.

If you want to set up the Ignite-UX system to be a DHCP server, the default setting will give you Item 2. Otherwise, you can toggle the *is\_network\_info\_temporary* keyword to select Item 3.

For more information, see the *setup\_server(1M)* and *bootpd(1M)* man pages.

## Using bootptab as an Alternative to DHCP

If you want to have more control over the allocation of IP addresses and their mappings to your clients, you can configure entries in */etc/bootptab* for each client. Because BOOTP is a subset of DHCP, the client's request for a DHCP server will be satisfied with the BOOTP response.

## Configuring for a DHCP Server

### Setting Up a DHCP Server

If you also specify a boot-file (bf) of `/opt/ignite/boot/boot_lif` in the bootptab entries, then you do not need any additional entries in `/etc/opt/ignite/inst_boottab`. In this case, you would then boot the clients using `boot lan` instead of `boot lan install`. Only clients known in `/etc/bootptab` would be able to boot if you do not use `instl_boottab`.

A minimal example `/etc/bootptab` entry would be like the entry below (with your own hostname, IP address, hardware address, and subnet mask). Other networking information may also be specified here, or can be specified via `instl_adm`. The IP address of the IUX server must be specified with the `instl_adm -t` option.

```
sysname:\
 hn:\
 vm=rfc1048:\
 ht=ether:\
 ha=080009352575:\
 ip=15.1.51.82:\
 sm=255.255.248.0:\
 bf=/opt/ignite/boot/boot_lif
```

#### Background Information on DHCP Design

The DHCP protocol is implemented as extensions to the BOOTP protocol, and in fact the HP-UX DHCP server daemon and the BOOTP daemon are the same (*bootpd*(1M)). This daemon reads two configuration files: `/etc/bootptab` and `/etc/dhcpdb`.

The mapping of systems to IP addresses and lease time information is kept in the DHCP database file `/etc/dhcpdb`. Some amount of management of this database is provided by the *dhcptools*(1M) command.

On the client side, a command called `/usr/sbin/dhpcclient` is used to contact the server to get an IP address lease. This command has the ability to broadcast out onto the network prior to the network interface being enabled.

The *dhpcclient* also serves as a daemon process that sleeps until the time that it needs to renew the IP address lease, at which time it will re-contact the server where it got the original lease in order to extend it.

The *dhpcclient* command is not intended to be run by users directly, and is called by other tools during system bootup and installation.

#### For More Information

Refer to the *auto\_parms*(1M) man page and the *dhcpdb2conf*(1M) man page for more information regarding the networking parameters which DHCP can supply.

More information on DHCP in general can be found in the following locations:

- Man pages:

*bootpd(1m)*  
*dhcptools(1M)*  
*auto\_parms(1M)*  
*dhcpdb2conf(1M)*

- Worldwide Web information site:

<http://web.syr.edu/~jmwobus/comfaqs/dhcp.faq.html>

Configuring for a DHCP Server  
**Setting Up a DHCP Server**

## **B            Using Configuration Files**

## **Appendix Contents**

- Types of Config Files.
- Combining Config Files via INDEX Entries.

## Introduction

The Ignite-UX central data store is called a config file. A config file can be thought of as a recipe for how to construct a target system. The config file is expressed in a language designed for this purpose. The language is fully defined in the `instl_adm(4)` manual page. The syntax is human-readable; config files may be created directly by a user or via the Ignite-UX graphical user interface. The config file language is much like many programming languages in that it supports the use of variables and conditional expressions.

Most of the important elements which make up an installed system can be described in the config file, as follows:

- Disk and file system layout.
- Software to be installed.
- The target system hardware identity and network configuration.
- Kernel modifications (additional drivers or tunable parameter settings).
- User-defined scripts which will run at various points in the installation process to further customize the target machine.

## Types of Config Files

For maintenance convenience, the configuration information is split into several different config files. These config files fall into the following basic classes:

- Default disk and file system layout.

Because the capabilities of each operating system release differ somewhat, HP supplies a different set of defaults for each release. These are located in `/opt/ignite/data/Rel_release/config`, where release is the result of the `uname -r` command. For example, `/opt/ignite/data/Rel_B.10.20/config` contains the default disk layouts for the HP-UX 10.20 release.

- Software description of a single SD depot.

Config files which describe software available from SD depots can be automatically generated via an Ignite-UX tool called *make\_config(1m)*. This tool produces one config file per SD depot. Software description config files are located in `/var/opt/ignite/data/Rel_release/*`.

- Software description of an archive.

Config files can be hand built to allow access to non-SD archives (templates are provided with the Ignite-UX product in `/opt/ignite/data/examples/` to give you a good starting point). Archives may be in either tar or cpio format. Archive software description config files are also located in `/var/opt/ignite/data/Rel_release/*`.

- Local configuration overrides that apply globally.

It is often convenient to specify defaults which will be applied to every machine installed from a particular server. For example, you might want to specify the same NIS domain for all machines. Such overrides should be placed in the `/var/opt/ignite/config.local` file.

- Boot control parameters and networking information

It is possible to specify defaults for attributes like the IP address of the Ignite-UX server and whether to run a UI to install a new target. These can be specified in the first 8 KB of the install file system (`/opt/ignite/boot/INSTALLFS`). This information is added or deleted with the `instl_adm(1m)` command.

- Client-specific configuration files.

Each client which is to be installed has a configuration file which is peculiar to it located at `/var/opt/ignite/clients/0xLLA/config`, where LLA is the link-level address of the client. This file is typically created as a result of running the user interface to specify the target machine configuration.

This file usually refers to other config files mentioned above. It also contains specific directives to override what may have been defined in the other files. For example, you may wish to customize the disk layout beyond what the defaults in `/opt/ignite/data/Rel_release/config` allow. The customizations end up in `/var/opt/ignite/clients/0xLLA/config`.

- Named configurations created by saving a configuration via the UI

You can create your own default configurations via the UI and save them for future use. For example, you might have a large number of users with similar machines who all run CAD tools. You could build a configuration which matches what they need and save it in a configuration called "CAD System". When you need to install a new system of this type, you can select "CAD System" from the UI and you're done (or you could customize it further using "CAD System" as a starting point). Saved configurations are located in `/var/opt/ignite/saved_cfgs/*`.

## Other Customized Building Blocks

You can also build your own config files to specify a particular building block you are interested in, and then combine them in arbitrary ways. These building block config files should be located in `/var/opt/ignite/data/Rel_{release}/*`.

## Combining Config Files Via INDEX Entries

The grouping of config files into useful configurations is accomplished in the INDEX file (/var/opt/ignite/ INDEX). This file contains a list of valid configurations, each of which is made up of one or more config files. The list of these configurations is presented in the UI as the basic starting point. For example, the INDEX file might contain the following:

```
cfg "HP-UX B.10.20 Default" {
 description "This selection supplies the default
system configuration that HP
supplies for the B.10.20
release."

 "/opt/ignite/data/Rel_B.10.20/config"
 "/var/opt/ignite/data/Rel_B.10.20/core_700_cfg"
 "/var/opt/ignite/data/Rel_B.10.20/core_800_cfg"
 "/var/opt/ignite/data/Rel_B.10.20/apps_700_cfg"
 "/var/opt/ignite/data/Rel_B.10.20/apps_800_cfg"
 "/var/opt/ignite/data/Rel_B.10.20/patches_700_cfg"
 "/var/opt/ignite/data/Rel_B.10.20/patches_800_cfg"
 "/var/opt/ignite/config.local"
}

cfg "CAD System - 10.10" {
 description "This selection is the typical CAD system insta
llation
for HP-UX B.10.10"
 "/opt/ignite/data/Rel_B.10.10/config"
 "/var/opt/ignite/data/Rel_B.10.10/core_700_archive_cfg"
 "/var/opt/ignite/data/Rel_B.10.10/apps_700_cfg"
 "/var/opt/ignite/data/Rel_B.10.10/patches_700_cfg"
 "/var/opt/ignite/config.local"
} = TRUE
```

With this INDEX file, the UI would present two different configurations: "HP-UX B.10.20 Default" and "CAD System - 10.10". The "CAD System - 10.10" configuration is the default (it is marked TRUE). Once you choose one of these base configurations, you can do further customizations with the UI if necessary, or just accept the defaults the configuration provided and do the install immediately.

If you selected "CAD System - 10.10", you would get the combination of the five config files listed for that clause. The order of the config files is significant; attributes specified in a later config file can override the same attributes specified in an earlier config file. There are also two config files which are implicitly used every time. Any information stored

in the first 8 KB of /opt/ignite/boot/INSTALLFS is implicitly appended to each configuration. The client-specific configuration file (/var/opt/ignite/clients/0x{LLA}/config) is implicitly added as the last config file for each configuration.

A default cfg clause for each release is shipped as part of the Ignite-UX product. Additional cfg clauses are added when the following apply:

- You save a named configuration from the graphical user interface via the Save As button.
- You wish to create a configuration by modifying the INDEX file directly

## Examples of Config files

This section shows a few sample config files to give you an idea of their look and capabilities. It does not pretend to fully cover the subject. See the *instl\_adm*(4) manual page for a complete description.

The following example shows how a disk might be defined. Here, the disk is located at hardware address 2/0/1.6.0 and does not use LVM. The disk contains the "/" file system and a swap area. The swap area takes up 64 MB, and the file system takes up whatever space is left over:

```
partitioned_disk {
 physical_volume disk[2/0/1.6.0] {
 }
 fs_partition {
 mount_point = "/"
 usage=HFS
 size=remaining
 file_length=long
 }
 swap_partition {
 usage=SWAP
 size=64Mb
 }
}
```

In this example, two disks are put together to form a single LVM volume group. Two file systems are defined; both are striped across both disks. The first file system ("/apps1") is sized by calculating the amount of space required by the software which is to be loaded, and then adding a 30% free space cushion. The second file system ("/apps2") gets all of the remaining space on the disks.

```
volume_group "appsvol" {
 physical_volume disk[2/0/1.5.0] {
 }
}
```

```

physical_volume disk[2/0/1.4.0] {
}
logical_volume "apps1" {
 mount_point= "/apps1"
 usage=VxFS
 size=30%free
 minfree=5
 stripes=2
}
logical_volume "apps2" {
 mount_point= "/apps2"
 usage=VxFS
 size=remaining
 minfree=5
 stripes=2
}
}

```

This example defines a few of the network parameters which will be assigned to the machine after it has been installed:

```

final system_name = "acorn1"
final ip_addr["lan0"] = "15.99.45.123"
final netmask["lan0"] = "255.255.248.0"
final nis_domain = "nis1"
final route_gateway[0] = "15.99.45.1"

```

This example defines a single SD depot from which software can be installed. Two different pieces of software are defined for the SD depot. Each can be selected independently for installation. The impacts lines tell Ignite-UX how much space this software requires in a given directory. This information is used to size the file systems correctly. Another interesting construct is `sw_category`. This allows you to group the software so that the user interface can present it in chunks which make sense to you. Since this example references an SD depot, it would have been created by the `make_config` command:

```

sw_source "ee_apps_depot" {
 description = "Electrical Engineering Application"
 source_format = SD
 source_type = "NET"
 sd_server = "15.23.45.6"
 sd_depot_dir = "/var/opt/ignite/depots/Rel_B.10.20/ee_apps"
}
sw_category "Applications" {
 description = "User Applications"
}
sw_sel "EE CAD Package" {
 sw_source = "ee_apps_depot"
 sw_category = "Applications"
 sd_software_list = "EECad,r=1.2,a=HP-UX_B.10.20_700"
 impacts = "/var" 90524Kb
 impacts = "/sbin" 1248Kb
}
sw_sel "EE Routing Package" {
 sw_source = "ee_apps_depot"
}

```

Using Configuration Files  
**Combining Config Files Via INDEX Entries**

```
sw_category = "Applications"
sd_software_list = "EERoute, r=2.4, a=HP-UX_B.10.20_700"
impacts = "/usr" 12568Kb
impacts = "/var" 26788Kb
}
```

Using Configuration Files

**Combining Config Files Via INDEX Entries**

# C

## **Ignite-UX System Administration**

## Appendix Contents

- Section 1: Installation of Ignite-UX Server Software.
- Section 2: The Install Archive.
- Section 3: Automatic Installation.
- Section 4: Customization.
- Section 5: Post-Install Scripts.
- Section 6: Using Ignite-UX Across Gateways.
- Section 7: Steps to Create A “Golden System”.
- Section 8: Loading HP-UX Patches Using Ignite-UX.
- Section 9: Setting Install Parameters Dynamically.
- Section 10: Installing NetScape® as a Post-Configuration Step.

*This Appendix outlines the general System Administration procedures for Ignite-UX which you will be using for many types of installations. It also gives details and examples of practical applications.*

---

## Section 1: Installation of Ignite-UX Server Software

---

### NOTE

Ignite-UX is a replacement for the Net-Install product. If your server contains the Net-Install bundle (HP-UX-Install product), Ignite-UX will require that the NetInstall bundle be removed (using `swremove`), or that you touch the file `/tmp/okay_to_remove_net_install` before loading Ignite-UX, in which case loading Ignite-UX will automatically remove the NetInstall software.

---

## Ignite-UX Server System Requirements:

### HP-UX Version:

It is recommended that the Ignite-UX server be running at least HP-UX 10.20. It is supported on any HP-UX 10.x version of the operating system. Only 10.10 and later versions of HP-UX are supported as a DHCP server which Ignite-UX takes advantage of.

### Disk Space:

Ignite-UX will be loaded under the directory `/opt/ignite`. The data files Ignite-UX creates will be placed under `/var/opt/ignite`. Ignite-UX installation will require ~75 MB of disk space. You will probably need additional space available under `/var/opt/ignite` for archive and software depot storage.

### NFS Server:

The Ignite-UX server requires NFS to be configured and working. The Ignite-UX installation will add lines to the `/etc/exports` file, and run `exportfs`.

### tftp:

Ignite-UX will transfer some of its files using tftp. The minimum directories needed by tftp are set up in the `/etc/inetd.conf` file. Others may need to be added if you place configuration scripts in non-standard locations.

## Load the Ignite-UX software

You should load one or more Ignite-UX release versions. They are organized as bundles corresponding to the release that you

wish to load on your target systems. For example, if you wish to load HP-UX 10.20 onto systems you should load the Ignite-UX-10-20 bundle. You can multiple releases if desired. To load this software use the `swinstall` command.

For example to load Ignite-UX to load HP-UX 10.20 execute the following command:

```
swinstall -s /dev/rmt/0m Ignite-UX-10-20
```

This assumes you are load Ignite-UX from a tape drive that is referenced by the device file at `/dev/rmt/0m`.

## Edit Default Search Path

In your login scripts, add `/opt/ignite/bin` to your default search path:

```
export PATH=${PATH}:/opt/ignite/bin
```

## Initial Ignite-UX Server Configuration

The majority of the Ignite-UX server configuration is performed by the product installation post-process procedures, but there are a few site-specific configuration steps you will need to perform. These are centered around the specification of available IP addresses and hostnames.

You can note that the Ignite-UX installation has added 2 services to your `/etc/inetd.conf` file; `tftp`, and `instl_boots`.

### Step 1) Run the Ignite-UX user interface

Enter the following:

```
/opt/ignite/bin/ignite
```

---

**NOTE**

You will get a warning screen stating no clients exists. In this situation, this is normal since you really do not have any clients waiting.

If you get the following error message:

```
ERROR: This machine is not an NFS server (no nfsd running). The -n
option will not be processed.
```

you did not follow the installation instructions properly. The Ignite-UX server must be an NFS server. Exit Ignite-UX, and make the Ignite-UX server an NFS server before continuing. You can do this by using “sam”, or by editing `/etc/rc.config.d/nfsconf` and setting `NFS_SERVER=1` and rebooting. If you do not get the above error, you can note that Ignite-UX has modified your `/etc/exports` file to include the `/var/opt/ignite/clients` directory.

This directory is exported to allow remote “root” users to write to the client’s directory. This is required for proper Ignite-UX operations. You may need to export additional directories; for example, if you use NFS to transfer an archive, it must be NFS accessible.

## Step 2) Perform Ignite-UX Server Configuration

**Step 2.1) Select “Options->Server Configuration”.** This will show the Server Configuration Menu with two tabs: “Server Options” and “Session Options”. Under the “Server Options” tab, do the following:

Modify (if needed) the Server Options to match the following:

Default Configuration: *Set to the OS revision you wish to be the default.*

Default Printer: *<select a default printer to be used by IUX>*

Client Timeout: 40 *[this is the number of minutes delay due to network, or client failures before the IUX server will inform the administrator of a problem]*

Run client installation UI on: server *“Server= run the GUI for all installations on the server” or “ target = run the TUI on the target system” or none+ don’t run a UI”.*

**Step 2.2) Select “Add booting IP Address”.** During the install process, the clients need to do a network boot from the Ignite-UX server. In order to do this, the clients need to be given a temporary IP address.

Under “Booting Clients”, provide an initial range of available IP addresses. The following example will allow Ignite-UX to perform 20 simultaneous installations. This IP address is only used when booting over the network during the initial transfer of the kernel to the client. You may only need 1 or 2 addresses depending on how many systems do network boots at the same time. (See `instl_bootd(1M)`). If you need to changes these addresses later, you will need to edit the `/etc/opt/ignite/instl_boottab` file directly.

15.2.73.1 15.2.73.20

Step 2.2.2) Permanent IP addresses are distributed via DHCP Services.

DHCP Address ranges to use for remainder of installation.

Unless you are familiar with DHCP services, for this exercise, do not modify the DHCP Class ID, or the DHCP Addresses are temporary field.

Provide a range of available “permanent” IP address. These can only be supplied once here in Ignite-UX. After the initial definition, further modification will need to be performed using SAM “Networking and Communications->Bootable Devices” area.

**Step 2.3) Configure Ignite-UX Session Options.** Under “Options->Server Configurations->Sessions Options” you can see various options for your server.

- **Confirm new clients**

If this is selected, the option will put a dialog popup window on your server whenever a new client is requesting to be installed by your server.

- **Ask for customer information during client installation**

If selected this will allow you to enter the customer name, serial number, and order number for each client. This information will appear on the system manifest report.

- **Show the welcome screen for the install server**

. If selected, a welcome screen with information on getting started and Ignite-UX concepts will appear every time the ignite program is started.

- **Halt the client after installation**

If selected this will cause the client to halt after the installation completes.

- **Automatically move completed clients to history**

If selected, the server will move information related to the install of each client to the history area. Any further information about the client would need to be obtained from the install history.

You may wish to de-select the “**Ask for customer information**” checkbox, as this installation information is more geared to HP and HP distributor-partner manufacturing.

### Step 3) Starting the Installation Process

There is nothing that needs to be done to the target system to allow it to use Ignite-UX.

If the target system is currently running any version of HP-UX 9.x, 10.x, or later, the target system can be remotely controlled by the Ignite-UX server. The Ignite-UX `bootsys` command can be used to perform a target system shutdown, and re-set the target networking parameters after the OS installation.

If the target system is not currently running HP-UX, then a manual network boot will need to be performed on the target. Reboot the target, press **ESC** to interrupt the boot process, and then perform the network boot from the Ignite-UX server:

```
> boot lan.15.2.72.150 install
```

where the above IP address is the IP address of the Ignite-UX server.

Note that this process and command may be slightly different on your target system, depending on the age of your hardware. You'll need to be familiar with your system boot commands.

## Section 2: The Install Archive

This section will cover the following topics:

- Creating an OS Archive (golden image).
- Configuring Ignite-UX to recognize the OS archive.
- Using Ignite-UX “ignite” tools to install to a target.

In this test scenario, we will create a “golden image”, or OS archive, which is a snapshot of a known good installation which we want to copy to other systems. The system we will copy is referred to as the “golden system”. The OS archive is a tar or cpio archive which will be distributed to other client machines.

We will explain how an OS archive is created, and placed under Ignite-UX control. We will then add applications and patch bundles specific to that OS archive. Note that Ignite-UX does not require us to create an OS archive to install a new client OS; we have chosen this mechanism because it's quicker to install an image than to go through the swinstall process. The OS archive method can decrease new OS installations to under 30 minutes.

The configuration file structure used by Ignite-UX is well documented in the `instl_adm(4)` man page. In the next pages we'll be modifying a number of config files, but the key one, which is read first to determine what software is available, is the `/var/opt/ignite/INDEX` file. This file will point to additional files which will further specify options and configurations.

### Step 1: Creating an OS Archive

Once you have a golden system with the base OS, Ignite-UX has a facility to create an OS archive. Note, it is up to the administrator to define exactly what constitutes a golden system. Some administrators will choose to place patches, applications, kernel configurations, etc. on the golden system, others will only place the core OS. In our example, we only place the core OS. In general, for speed, you will want to place all of your common applications, patches and tools onto the golden system.

Ignite-UX is capable of installing systems from SD depots as well as archives. You may want to use this capability when setting up your “golden system” since you will need to have a system installed somehow before you can get an image. See a later section for details.

The `make_sys_image` command is provided to assist in creating the OS archive. Refer to the `make_sys_image(1m)` man page for details. The command is located under `/opt/ignite/data/scripts`.

---

**NOTE**

`/var/tmp` is the default location where `make_sys_image` stores the archive image. You can also have it save the image to a remote server that allows remote access from this client. Which ever method you choose, you will need to have sufficient disk space to hold the image. The amount of disk space will be approximately 1/2 the amount of data contained on your golden system (assuming about 50% compression ratio provided by gzip).

---

#### Step 1.1

Copy `/opt/ignite/data/scripts/make_sys_image` to `/tmp` on the golden system, and make sure it is executable.

---

**NOTE**

While `make_sys_image` is running, the system should not be in use. Device files are removed, and the host and/or networking information on the system are reset. After the command is complete these files are put back with the exception of most log files.

---

#### Step 1.2

On the golden system run `/tmp/make_sys_image [options]`.

By default, this will create a gzip-formatted archive in `/var/tmp` with the name “hostname.gz” default, and all specific host information, device files, log files, and network information will be removed.

Optionally, if you do not have enough disk space, or you would like for the archive to be created on a remote server, you may use the following options:

```
/tmp/make_sys_image -d <directory_to_place_archive> \ -s
<ip_address_of_system_to_place_archive>
```

For example,

```
/tmp/make_sys_image -d /var/opt/ignite/archives/Rel_B.11.00 \
-s 15.2.72.150
```

#### Step 1.3:

On the Ignite-UX server, create an archives directory to store the golden image. It is best to keep the naming conventions Rel\_B.11.00 (or whatever your release is). This directory will need to be NFS exported if you'll be using NFS to transfer the archive to the target.

```
mkdir /var/opt/ignite/archives
mkdir /var/opt/ignite/archives/Rel_B.11.00
```

Step 1.4:

Move the OS archive to  
/var/opt/ignite/archives/Rel\_B.11.00/hpfcnm2.gz (if  
hpfcnm2 was the hostname).

## Step 2: Configuring Ignite-UX Server to Recognize the OS Archive

In Ignite-UX, there are no tools to assist in the creation of configuration files for an OS archive. An example configuration file is supplied with Ignite-UX, and its modification is fairly straightforward.

Step 2.1:

Use /opt/ignite/data/examples/core.cfg to create the OS archive configuration file.

Step 2.1.1:

Use the example config file to create a new one for the OS archive

```
cp /opt/ignite/data/examples/core.cfg \
/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg
```

The /var/opt/ignite/data/Rel\_B.11.00/core\_700\_archive\_cfg filename is arbitrary. You can store configuration files anywhere on the system you chose. Ignite-UX manages the names and locations via the INDEX file discussed in Step 2.2. The only restriction on the location of config files and scripts is that they be accessible via tftp.

Step 2.1.2:

Modify the core\_700\_archive\_cfg to set up the OS Archive for NFS transfer

Key Changes are as follows:

- In the "sw\_source" clause, change the following:  
nfs\_source =  
"15.2.72.150:/var/opt/ignite/archives/Rel\_B.11.00"

(This points to directory where the archive lives, must be NFS exported)

- In the “init sw\_sel” clause, change the following:  
    `description = "Archive HP-UX 11.00 CDE"`  
    (This will now appear in the Environments section of the Ignite-UX user-interface as a menu choice).
- `archive_path = "hpfcnjm2.gz"`  
    (This points to the actual file in combination with the `nfs_source` line).
- Also in the “init sw\_sel” clause, add the “impacts” lines by executing the `archive_impacts` command and include the results in the file, replacing the example impacts lines. By default, this assumes we created a tar archive that was gzip’d.

```
/opt/ignite/lbin/archive_impact -t -g <archive_file>
```

Below is the complete “sw\_sel” clause. We deleted some of the extra clauses in the example for simplicity.

```
init sw_sel "golden image" {
 description = "Archive HP-UX 11.00 CDE"
 sw_source = "core archive"
 sw_category = "HPUXEnvironments"
 archive_type = gzip tar
 # For NFS, the path to the archive is relative to the mount
 # point specified in the sw_source: archive_path =
 "hpfcnm2.gz"
 # ftp/remsh sources can use a full path:
 # archive_path = "/pub/IUXarchives/B.11.00_700_CDE.gz"
 impacts = "/" 23Kb
 impacts = "/.dt" 35Kb
 impacts = "/TT_DB" 18Kb
 impacts = "/etc" 1375Kb
 impacts = "/export" 1Kb
 impacts = "/opt" 74079Kb
 impacts = "/sbin" 13449Kb
 impacts = "/stand" 1Kb
 impacts = "/tmp" 1Kb
 impacts = "/usr" 225459Kb
 impacts = "/var" 5736Kb
} = TRUE
```

Step 2.2:

Add the new configuration file to Ignite-UX.

Edit the /var/opt/ignite/INDEX file. Here we will install a new "Configuration" to Ignite-UX. In our case we added a new "cfg" clause as follows:

```
cfg "HP-UX B.11.00 archive" {
description "some description of this archive..."
"/opt/ignite/data/Rel_B.11.00/config"
"/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg"
"/var/opt/ignite/config.local" }
```

The line of most interest is the one containing the "core\_700\_archive\_cfg", which is the config file we added in Step 2.1. The "config" and "config.local" are standard configurations.

Note that “/var/opt/ignite/config.local” should be last. The last config file has the highest priority to override values in prior config files.

The file “/opt/ignite/data/Rel\_B.11.00/config” supplies the disk and file-system layout defaults, plus other control information required by Ignite-UX. It must be first in every cfg clause.

Each “cfg” clause appears as an available configuration to Ignite-UX. Therefore, the string “HP-UX B.11.00 archive” will now appear as a valid configuration.

### Step 2.3

Ensure NFS file system is exported correctly.

In the above “sw\_source” clause, we specified the location of the OS archive to be a file on an NFS server. You need to ensure target systems have access to this directory.

Make sure the NFS configuration is correct. Use the “exportfs -v” command to view the current status and ensure the directory containing the archive is correctly exported. Ignite-UX will automatically try to export /var/opt/ignite/clients for its use. In our example /var/opt/ignite/archives/Rel\_B.11.00 must also be exported because that is where we placed the OS archive.

Here's our /etc/exports file:

```
/var/opt/ignite/clients -anon=2
/var/opt/ignite/archives/Rel_B.11.00 -ro
```

If these are not correct, use SAM to set them up correctly.

## Step 3: Reboot and Gain Control of Target System

Since the Ignite-UX server knows about your new OS archive, you can now use Ignite-UX to load the OS archive onto a target system. To do this, you need to get the target system to inform Ignite-UX that it is ready to install a new OS. There are two methods for doing this.

Method 1): If the system is currently running HP-UX 9.X or HP-UX 10.X: From the Ignite-UX server, use the bootsys command to reboot the target for which you wish to install the new OS. The target system can be booted in a mode in which it can be controlled by the Ignite-UX user interface.

```
/opt/ignite/bin/bootsys -w -v <system_name>
```

This will cause the target system to boot a copy of the Ignite-UX kernel and file system that bootsys copies to the target. An icon representing the system will appear in the Ignite-UX user interface on the server when the system has completed boot. (This may take several minutes.) Only booted clients will appear as icons.

If the server cannot resolve the system name, you can specify to bootsys the system\_name and ip-address using following syntax:

```
/opt/ignite/bin/bootsys -w -v <system_name:ip-address>
```

Method 2):

If this is a new system (or running pre-9.X HP-UX): Manually reboot the system. Interrupt the boot process and select the Ignite-UX server as the lan boot source. This command will be slightly different depending on the H/W you are installing on. As an example, to install to a 712, type the following after you are in the boot admin mode:

```
> boot lan.15.2.72.150 install
```

Older S700's that use the RMP (rbootd) protocol instead of BOOTP require that you use the Ethernet address of the server, and not specify the "install" keyword:

```
> boot lan.080009-123456
```

(Replace the above IP/Ethernet addresses with the correct value for your Ignite-UX server).

## Step 4: Install the OS Archive on the Target

In this section, we will use the Ignite-UX user interface to customize an OS install. In Section 3, we will discuss how this can be done with no user/administrator interaction.

Run the Ignite-UX user interface by executing the following as root:

```
/opt/ignite/bin/ignite
```

When the target has rebooted (using the bootsys command or manual reboot), and is ready for installation, it will appear as an icon, labeled either as its original hostname (if rebooted using bootsys), or by the hostname supplied by DHCP, or at the console.

Step 4.1:

Highlight the icon of the system you wish to install.

Step 4.2:

Select “Actions->Install Client->New Install”

You should now see the Ignite-UX screen with five tabs across the top. (If you see the “System Hardware Inventory” screen simply select OK to bypass this screen).

Step 4.3:

In the Basic tab (default):

Under “Configurations:” select “HP-UX B.11.00 archive”.

Ensure the Root Disk, Root Swap and other fields are correct for your installation. Note that any disks you select here will be formatted! If you have a disk with existing user information you don’t want to modify, add it manually after Ignite-UX has installed the OS.

Step 4.4:

In the Software tab:

Because there is only an archive at this point, the screen is blank. We’ll add a patch and application depot later.

Step 4.5:

In the System tab:

In “Final System Parameters:” select “Set Parameters Now”. Fill in the blanks with the correct data.

Also Select the “Set Time Zone”, “Network Services” and optionally the “Set Root Password” and fill these in as well.

Step 4.6:

In the File System tab:

Verify the correct disk usage. You can also add disks at this point or modify the disk and file system parameters.

---

**WARNING**

---

**A newfs will be performed on all selected disks!**

Step 4.7:

In the Advanced tab:

Nothing will be specified here at this time. Later we’ll add post-process scripts to execute.

Step 4.8:

When finished entering data, select “Go!”

A configuration dialog will appear. Make sure the data is correct, and select “Go!” again.

Step 4.9:

Displaying target installation status

If you double-click on the icon of the target system in the Ignite-UX server GUI during execution, a status screen will be displayed showing the install progress.

---

**NOTE**

A Note on the GUI:

Ignite-UX determines the state of a target by reading the files in the `/var/opt/ignite/clients/<LLA>` directory. Seeing an icon in the GUI does not mean that the target actually exists -- only that its config and control files exist in the Ignite-UX directories. We can use this behavior to our advantage to reinstall systems. This means that if you're reinstalling a system that Ignite-UX has already installed, you may need to re-execute the `bootsys` command (or boot the client from the Ignite-UX server).

---

## Step 5. Finished

In less than 30 minutes, the target system should have the new OS installed, a new kernel built, the system rebooted and ready for use. Status of the target system will be shown on its icon, and in the (double-click) status screen.

## Section 3: Automatic Installation

Setting up your Ignite-UX server so that the default configuration is correct for any given system will save you time and allow you to easily automate installations. This section discusses setting up the defaults the way you like them, as well as setting up a configuration for a specific target system.

Ignite-UX can install HP-UX on a target system with no additional configuration information (the default configuration as specified in the `/var/opt/ignite/INDEX` file will be used). You can, however, select from other configurations listed in the `INDEX` file on the `bootsys` command line.

### Starting an Automatic Installation

Execute the following command:

```
bootsys -a -v [-i configuration] [-f] <target_hostname>
```

The `-a` option specifies an automatic install. The `-f` option forces Ignite-UX to disregard prior configuration info. The `-i` option can be supplied to select an alternate configuration. If not set, the default is used. See `bootsys(1M)` for details on how to select a configuration and to force its use. The default is set in the “server options” menu in the UI, or can be set manually with the “`= TRUE`” statement after a “`cfg`” clause in the `/var/opt/ignite/INDEX` file.

Ignite-UX will contact the target system and extract its hostname, IP address and default gateway. The default configuration is installed. Post install, Ignite-UX will reset the hostname, IP address and gateway to their original values. (Note: `remsh` access to the target is required. If not available, `bootsys` will prompt the user for the root password on the target.)

This is the quickest way to install a system. The drawback is that you will receive the default config, which may have incomplete networking information unless you are using a previously “saved” configuration, or you specify the defaults in the `/var/opt/ignite/config.local` file as shown later.

## Using a “Saved” configuration:

When using the ignite GUI on the server, during an install session when you are finished with specifying the configuration for particular target, you may choose to save the result as a named configuration. This will save any changes that you made during the session. You can then either specify the configuration as the default, and/or just use the name you give it to the bootsys command using the -i option.

## Specifying defaults in the config.local file:

The /var/opt/ignite/config.local file is normally included in every cfg clause in the INDEX file. This provides a convenient location to store default parameters that are the same for all configurations. Typically this will be networking, default software selections, kernel modifications.

It may be easiest to cut and paste information written to the files /var/opt/ignite/clients/\*/config by the user interface. However there is much more that can be done here that the GUI does not provide access to. The instl\_adm(4) man page gives all the details. Below is an example of what a config.local file could look like. The sw\_sel's will depend on what you have defined in config files on the server.

```
dns_domain="fc.hp.com"
dns_nameserver[0] = "15.2.72.2"
nis_domain="udl"
wait_for_nis_server=FALSE
root_password="r1w2xSrUGUvi2"
timezone="MST7MDT"
ntpdate_server="15.1.48.11"
init sw_sel "Misc_Patches"=TRUE
init sw_sel "B3919DA_AGP"=TRUE
mod_kernel += "maxuprc 100"
mod_kernel += "dbc_max_pct 80"
```

Always run `instl_adm -T` after making manual edits to verify that the syntax is correct.

“Setting Install Parameters Dynamically” shows how default information may be specified dynamically depending on the target system’s configuration.

### Defaults that must be specified with `instl_adm(1M)`:

There are some network parameters that need to be known by the target clients when they first boot. The command `bootsys` (or `DHCP/BOOTP`) can supply the hostname and IP address; however, the netmask and gateway need to be supplied in the ram-filesystem (`INSTALLFS`). This can be done by using the `instl_adm(1m)` command. The `instl_adm` command has options to set netmask, gateway, IUX/tftp server, etc. Or you can dump the current settings to a file and edit it, then load the settings back. Just loading Ignite-UX sets some of the parameters.

For example, you may want to set the keyboard language so that it never prompts you for it when booting from the console. The file you store using `instl_adm -f` may look something like the following:

```
instl_adm defaults: server="15.2.72.150"
route_gateway[0]="15.2.70.1"
route_destination[0]="default"
netmask[]="255.255.248.0"
end instl_adm defaults.
kbdlang="PS2_DIN_US_English"
```

### Using the per-target client config file:

Until now, we have discussed specifying default parameters that all target systems may use. If you would like to specify a specific configuration for an individual target system, you may use the following procedure.

When Ignite-UX begins an install session, it scans the directory `/var/opt/ignite/clients` for a directory matching the LLA of the target system. As an example, if the LLA of the target is `0x08000992E346`, Ignite-UX looks in `/var/opt/ignite/clients/0x08000992E346` for a file named "config". Ignite-UX keeps the last configuration installed to the respective system in this file so it can perform a repeat install.

If found, the configuration data in this file is used to overwrite the default values. This file has the highest precedence over all other config files listed in the INDEX file

---

**WARNING**

---

**Ignite-UX will write over this file at the end of the install, so keep an original copy elsewhere.**

## Ignite-UX System Administration

### Section 3: Automatic Installation

The easiest way to create the “config” file is to use one already built by IUX. If you’ve previously installed a system (it’s best to use one from a similar system to your target,) you can find a config file in the `/var/opt/ignite/clients/history/<LLA>` directories. Use this as the basis for your new file. Copy it to the following:

```
/var/opt/ignite/clients/<LLA>/config
```

Edit its contents to correspond to your new system.

Here is an example config file:

```
cfg "HP-UX B.11.00 archive"=TRUE
_hp_cfg_detail_level="ipvs"
#
Variable assignments
init _hp_disk_layout="Whole disk (not LVM) with HFS"
init _hp_pri_swap=68304K
 init _hp_root_disk="2/0/1.5.0"
 init _hp_sec_swap=0K
init _hp_root_grp_disks=1
init _hp_root_grp_striped="NO"
init_hp_locale="SET_NULL_LOCALE"
init_hp_keyboard="PS2_DIN_US_English"
init _hp_default_final_lan_dev="lan0"
init _hp_boot_dev_path="2/0/1.6.0"
#
Software Selections
init sw_sel "golden image"=TRUE
 init sw_sel "English"=TRUE
#
System/Networking Parameters
hp_custom_sys+={"Current System Parameters", "Original
Defaults"}
init _hp_custom_sys="Current System Parameters"
_hp_custom_sys help_text "Final System/Networking Parameters"
(_hp_custom_sys=="Current System Parameters")
{
 final system_name="hpfcnjm2" final ip_addr["lan0"]="15.2.75.14"
```

```
final netmask["lan0"]="255.255.248.0"
final dns_domain="fc.hp.com"
final dns_nameserver[0]="15.2.72.254" TIMEZONE="MST7MDT"
is_net_info_temporary=TRUE
}
end "Current System Parameters"
```

Typically, you would want to change the networking parameters to the correct values. For example:

```
final system_name="system11"
final ip_addr["lan0"]="15.2.75.193"
```

The values specified should be self explanatory, and should be edited to the desired new values. It is also possible to add kernel parameters to this file. This is covered in "Setting Install Parameters Dynamically".

1. To perform an automatic install with a config file, first determine the LLA of the target machine, either through the boot\_admin commands (at bootup) or with the lanscan(1M) command. Then create the following directory (assuming the LLA is 0x08000992E346) and copy in your config file:

```
mkdir /var/opt/ignite/clients/0x08000992E346
cp config
/var/opt/ignite/clients/0x08000992E346/config
```

2. Since these files will be accessed using NFS, make sure they have the correct permissions.

```
chown bin:bin /var/opt/ignite/clients/0x08000992E346
chown bin:bin
/var/opt/ignite/clients/0x08000992E346/config
```

3. Execute the command:

```
bootsys -a -v [-i configuration] <target_hostname>
```

The Ignite-UX user interface does not need to be running. IUX will install the default configuration (or the configuration specified with the -i option) and will include the specific changes provided in the config file.

4. Install progress can be monitored by examining the following file:

```
/var/opt/ignite/clients/0x08000992E346/install.log
```

The target system should boot into the IUX install process and complete the install automatically. Errors will be reported on the client screen and in the install.log file.

## NOTES

If you are attempting to install 10.x onto a system running an HP-UX 9.0x version, you may run into the following problem:

`bootsys` works by copying the Ignite-UX kernel (INSTALL) and RAM file system (INSTALLFS) to each client and then setting the system's AUTO file in the LIF area of the root disk to automatically boot from this kernel at the next system reboot.

For 9.X clients, `bootsys` requires that the primary boot path be set to the disk that the system is currently booted from and that the auto-boot flag be turned on. For 10.X clients, `bootsys` will set the primary boot path and auto-boot flag (using the `setboot` command) to the disk it is currently booted from.

To set the "pri path" on 9.X systems (if needed), do the following:

Perform an attended boot (hit when instructed at bootup) and execute the following (assuming you want the pri path set to the SCSI disk at address 3.0):

```
boot_admin> path pri scsi.3.0
boot_admin> auto boot on
```

This may vary slightly depending on the vintage of the system. The help system of the boot-ROM interface should explain the syntax to use.

## Section 4: Customization

This section will focus on ways to customize the default configuration, either by adding additional info to the default config (dynamic parameters) or by adding additional software selections to be loaded after the archive.

We'll be adding the following:

- SD Bundles
- Kernel parameters
- Additional install parameters, e.g. swap and networking info

### Adding an SD Bundle to the Archive Environment

Ignite-UX allows you to add patch bundles to your configuration. These bundles can be forced to load at install time, or can be selectable by the user. This allows the system admin to install the base Operating System very quickly with an Ignite-UX archive, and still have the flexibility to install additional software components selectively, based on machine type or use (for example: server vs client).

In the following example we'll explore adding a bundle which consists of patches, which would be a typical application. You must begin with a patch bundle, not just a patch depot. You can verify the existence of bundles with the following command:

```
swlist -l bundle -d @ /yourdepot
```

“Setting Install Parameters Dynamically” lists the procedure used to create a patch bundle from an existing depot of individual patches.

(You might need to call `swreg -l depot /yourdepot` to register this depot, depending on how it originated.)

1. Assuming a S700 patch bundle in the `/var/opt/ignite/PB` depot, run the following Ignite-UX command to create a config file that Ignite-UX can use:

```
make_config -s /var/opt/ignite/PB -a 700 -c \
/var/opt/ignite/data/Rel_B.11.00/patch_bundle_cfg
```

This creates the `patch_bundle_cfg` file which IUX needs to manage the install from the depot.

2. Add the new config file name (the argument to `-c` above) to the `/var/opt/ignite/INDEX` file so that it appears in our “HP-UX B.11.00 archive” configuration. We created this configuration in Section 2.

```
cfg "HP-UX B.11.00 archive" {
 description "The ARCHIVE B.11.00 release with patches."
 "/opt/ignite/data/Rel_B.11.00/config"
 "/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg"
 "/var/opt/ignite/data/Rel_B.11.00/patch_bundle_cfg"
 "/var/opt/ignite/config.local" }
```

The patch bundle will now show up in the software tab of the UI install screen, but will not be marked for install (It will be optional).

3. To force install of the patch bundle:

In the `sw_sel` clause for the patch bundle in the file

`/var/opt/ignite/data/Rel_B.11.00/patch_bundle_cfg`

(you created this file with the `make_config` command), add the following line:

```
load_with_any = "golden image"
```

“golden image” is the name used in the `sw_sel` clause in the file `/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg` for our archive 11.00 UX system. The `load_with_any` line will cause this software selection to always be loaded with the “golden image” archive.

4. Check the syntax of your edits by using the command:

```
instl_adm -T
```

## Modifying Kernel Parameters with IUX

Ignite-UX uses the same mechanism for kernel parameters as it does for selectable software: create a config file which describes the changes; then make that file visible to Ignite-UX by adding it to a existing “cfg” clause in the INDEX file.

The following example will create a software selection called “My\_Kernel\_Mods”. It will set the following two kernel parameters: `nproc` and `maxuprc`, and these will be force loaded whenever the “golden image” archive is installed.

1. In the new file /var/opt/ignite/data/Rel\_B.11.00/kernel\_cfg add the following: (Note that, in lieu of “HPUXAdditions”, you could designate your own category).

```
HARDWARE_MODEL ~ "9000/7.*"
{
 sw_sel "My_Kernel_Mods"
 {
 description = "Kernel parameters only"
 sw_source = "cmds"
 sw_category = "HPUXAdditions"
 mod_kernel += "nproc 2000"
 mod_kernel += "maxuprc 127"
 load_with_any = "golden image"
 }
}
```

2. Add the name of this file into a “cfg” in the INDEX file (in this example the “HP-UX B.11.00 archive”):

```
cfg "HP-UX B.11.00 archive" {
description "The ARCHIVE B.11.00 release with patches."
"/opt/ignite/data/Rel_B.11.00/config"
"/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg"
"/var/opt/ignite/data/Rel_B.11.00/patch_bundle_cfg"
"/var/opt/ignite/data/Rel_B.11.00/kernel_cfg"
"/var/opt/ignite/config.local"
}
```

These changes will result in “My\_Kernel\_Mods” being loaded whenever the “HP-UX B.11.00 archive” is installed. Note that we’ve added the line:

```
load_with_any = "golden image"
```

### **An additional example, using multiple, selectable kernel configs**

You can have multiple, pre-defined kernel configs available at install time. This allows clients to be installed with optional parameters if necessary.

In this example, there is a set of parameters we want all systems to have, “Basic\_Kernel\_Mods”. These are force loaded. There is also an optional set, “Advanced\_Kernel\_Mods”, which can be selected in the UI or in a config file at install time.

The contents of the /var/opt/ignite/data/Rel\_B.11.00/kernel\_cfg file is now:

```
HARDWARE_MODEL ~ "9000/7.*" {
 # basic required kernel parameters
 sw_sel "Basic_Kernel_Mods" {
 description = "Basic Kernel parameters only"
 sw_source = "cmds"
 sw_category = "HPUXAdditions"
 mod_kernel += "nproc (20+12*MAXUSERS)"
 mod_kernel += "maxuprc 127"
 load_with_any = "golden image"
 }
 #optional kernel parameters
 sw_sel "Advanced_Kernel_Mods"
 { description = "Advanced Kernel parameters"
 sw_source = "cmds"
 sw_category = "HPUXAdditions"
 mod_kernel += "maxdsiz 0x0A000000"
 }
 mod_kernel += "maxtsiz 0x06000000"
}
} # end of hardware-specific section
```

## Kernel Parameters Tied to Client Hardware

Because we’ve specified our kernel mods within a HARDWARE\_MODEL clause, it’s possible to set kernel parameters based on the H/W configuration of the client. As an example, suppose the first line of the kernel\_cfg file is changed to the following:

```
HARDWARE_MODEL = "9000/715"
```

Then the values in this clause will only be used if the machine is a Model 715. This allows the system administrator to tailor the kernels of servers differently from clients, for example.

## Additional Install Parameters

There are a large number of additional parameters which can be set when we install a system. These are listed in the *instl\_adm(4)* man page.

As a simple example, we may want to set the swap space of all machines we install using the “golden image” archive to 100 MB. The “golden image” is defined in the following file

`/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg.`

1. Add the following to the end of the `core_700_archive_cfg` file:

```
init _hp_pri_swap=100MB
```

If the primary swap size is not further specified in a config file, new systems will be installed with a default value of 100MB of swap space. If there is a swap value set in the “config” file in the `/var/opt/ignite/clients/<LLA>` directory, it will take precedence.

As a further example, we’ll set the final DNS domain name and IP address of the DNS nameserver of systems installed using the “golden image”.

2. Add the following line to the end of the `core_700_archive_cfg` file:

```
final dns_domain = "mydomain.mycompany.com" final
dns_nameserver[0]="1.2.3.4"
```

## Section 5: Post Install Scripts

Any number of tasks may be performed on the target system after the OS is installed by providing a script to be run on the target system. This section touches on some common examples, but scripts can easily be written to mount additional disk drives, add additional software, modify configurations based on system use, etc.

There are a number of points in the install process in which you can force scripts or commands to be run. Check the `instl_adm(4)` man page under the “Command and Script Execution Hooks” section for specifics. One point to note is that the `post_config_script` will run after all software has been loaded and the system has been booted with its final kernel, but BEFORE any of the normal `/etc/rc` startup scripts have been run. Basic networking is enabled in this environment.

### 1. Procedure for adding a post-installation script

Step 1: Create a script.

Create a script to perform the desired task. When Ignite-UX runs this script as a post-configuration, it will be run on the target system.

Step 2: Add the script to your configuration file.

Ignite-UX post-configuration scripts are defined using the “`post_config_script`” variable. For example, you can place the following line into your `core_700_archive_cfg` config file:

```
post_config_script += \
"/var/opt/ignite/scripts/install_default_printer"
```

The above will define the “`install_default_printer`” script to be run as a post installation process on the target system. Note, the line should stand alone, placed OUTSIDE of any clause (i.e. a `sw_sel` clause). By default, the script will always be run on the targets. You can change the behavior using the ignite user-interface in the “advanced” tab.

If you want to make a script available under all configurations, you can add it to the `/var/opt/ignite/INDEX` file. Add the following to the end of this file:

```
scripts { "/var/opt/ignite/scripts/install_default_printer" }
```

It will then show up in the Advanced tab for all configurations.

---

**NOTE**

---

Scripts are accessed by Ignite-UX via tftp. Make sure the directory the script resides in is available to tftp by examining and/or changing the /etc/inetd.conf file.

## 2. Managing Network Printers

One task an administrator generally needs to perform after a new OS installation is setting up printers. Here is one method you can use to automate this process.

Write a script which performs the HP-UX commands for adding a printer. Attached below is a script for adding a remote printer named “printbob”, and turning on the lp scheduler. We found that the easiest method for creating the sequence of commands for the script was to use SAM. We turned on SAM logging for “commands-only”, performed the tasks desired, and then extracted those commands from the SAM log file.

Here is our script for adding “printbob” to all systems:

```
#!/sbin/sh
Post process IUX script to add a local default printer
Performing task “Add Remote Printer”: Adding “printbob”
#
/usr/sbin/lpadmin -pprintbob -ormhpfcmgw.fc.hp.com -orptsslj
-mrmodel \ -v/dev/null -orc -ocmrmodel -osmrmodel
/usr/sbin/lpadmin -dprintbob
/usr/sbin/accept printbob
/usr/bin/enable printbob
Turn on lp scheduler
#
lpsched -v
```

## Section 6: Using Ignite-UX Across Gateways

A system that is running 9.x or 10.x can use the Ignite-UX server across a gateway if the target system is booted via the `bootsys` command. If the system is booted manually, it will need a helper system to help it boot across a gateway, and enabling the target system to perform a “boot lan.<ip\_address> install” to the local boot helper system. This section describes how to configure the boot helper system.

To boot HP-UX across a gateway, you need a system on the local subnet to provide the target with a minimum core kernel. The helper system can run either HP-UX 9.x or 10.x. The setup is much simpler if the helper system is running 10.x.

### How to Set Up a 10.x System as a Boot Helper

Step 1: Install the Ignite-UX minimum core functionality onto the helper system:

```
swinstall -s /dev/rmt/0m Ignite-UX.BOOT-KERNEL
```

Step 2: On the helper, run the following command to point the `INSTALLFS` at the correct Ignite-UX server:

```
/opt/ignite/bin/instl_adm -t <IUX_server_IP>
```

Verify that `INSTALLFS` is referencing the correct Ignite-UX server, and gateway for your subnet:

```
/opt/ignite/bin/instl_adm -d
```

Step 3: Specify temporary IP address for the helper

On the helper, in the `/etc/opt/ignite/instl_boottab` file, add the IP addresses that clients can use to boot. The remote subnet needs to have temporary IP addresses to use during an initial bootup. These are located in the `/etc/opt/ignite/instl_boottab` file, and were provided during our initial IUX server installation. But, the remote gateway systems cannot use these, so the boot helper system must supply its own. Therefore create an `/etc/opt/ignite/instl_boottab` file on the boot helper system containing lines of the following format. (See `/etc/opt/ignite/instl_boottab` on the IUX server for more details): For example:

```
15.1.53.180
15.1.53.181
15.1.53.182
```

Step 4: Reboot the target system, interrupt the boot sequence by pressing <esc>, and type the following:

```
> boot lan.<helper_IP_address> install
```

## How to Set Up a 9.0x System as a Boot Helper

Essentially, the 9.05 helper machine, on the same subnet as the install target machine(s), hosts the files necessary for network boot of the target. Once the target has booted, it can run the remainder of the installation across a gateway. The boot files, in addition to providing the installation kernel and program, also direct the target to the proper server machine on the other side of the gateway.

There are two major steps that need to be done: the 9.0X helper machine has to be modified somewhat to host the 10.X install files, and the boot files have to be modified on the 10.X install server and copied over to the 9.0X helper. It is not possible to copy the boot files to the helper first and modify them under 9.0X.

On the (9.0X) helper, do the following:

1. `mkdir -p /opt/ignite/boot`

2. Edit `/etc/inetd.conf`: 1. Add the following line

```
/opt/ignite
```

to the `tftp` spec. Don't forget to add `\` to the line before it for continuation.

2. Modify the `instl_boots` spec to be the following (add the `-b` option):

```
instl_boots dgram udp wait root /etc/instl_bootd instl_bootd -b\
/opt/ignite/boot/boot_lif
```

3. Run `/etc/inetd -c` to reread the config.

4. Make sure `/usr/adm/instl_boottab` on the helper has some booting IP addresses available/specified.

5. After the install server steps below are finished, you will copy over the install boot-up files from the server to `/opt/ignite/boot`. These files will direct the target machine to the install server (across the gateway) for the remainder of the install.

On the install server (on one side of the gateway):

1. `cd /opt/ignite/boot` You can make the changes to the actual boot files in this directory, or copy `INSTALLFS` to another file and make changes to that file by adding a `-F` option spec to the `instl_adm` calls below. The rest of this section assumes you just use the “real” version. These changes aren’t very extensive, so this should be acceptable.

2. Run: `instl_adm > fs_cfg`

3. Run: `cp fs_cfg fs_cfg.orig` This will save a copy of the current settings, in case you need to restore them later. There already should be a file “`fs_cfg.def`” which may also be useful as a backup

4. Edit `fs_cfg`:

1. Make sure the “`server`” spec is set to point to this machine.

2. Make sure the “`is_net_info_temporary`” spec is set to “`false`”:

```
is_net_info_temporary=false
```

3. Set proper “`route_gateway`” spec for the *\*target\** machine. In other words, it should be the gateway that the target machine needs to get across to this server. **\*\*This will be different than what would currently be in there\*\***. For example, there should be two lines in the file like:

```
route_gateway[0]="15.2.48.1"
route_destination[0]="default"
```

4. Add the lines (examples):

```
ip_addr="15.2.43.1"
netmask="255.255.248.0"
system_name="a_name"
```

The effect of the “`is_net_info_temporary=false`” spec and the `ip_addr`, `netmask`, and `system_name` specs is to use this information for the install (thus avoiding DHCP) AND leave it in `/tmp/install.vars` on the target system after installation. `Set_parms` will then run and pick up this info as defaults. If `is_net_info_temporary` is set to true, the network information will be lost.

The `ip_addr` and `system_name` do not need to be (but can be) the final values, just valid temporary values.

You could also set “final” net info (actually cause I-UX to put it in the rc startup files) by adding additional “final” specifications for `system_name`, `ip_address`, etc. Remember, setting a “final”

system\_name will cause set\_parms not to run, so all other needed system info (timezone, routes, etc.) should probably be set along with system\_name.

5. Run: `instl_adm -f fs_cfg`

This applies the changes to the INSTALLFS file.

6. Copy /opt/ignite/boot/\* files to the 9.05 boot helper's /opt/ignite/boot directory.

---

**NOTE**

---

Any further changes MUST be done on the server system and copied over to the helper system. The 9.0X instl\_adm command does have the 10.X functionality.

To perform an installation to a different machine, repeat steps 4, 5, and 6. For a subsequent runs, only the file "INSTALLFS" needs to be copied over to the boot helper machine in step 6.

## To Perform the Install on the Target:

Boot up the target machine to the boot admin menu, and type a line similar to the following (for example):

```
boot lan.15.1.50.57 install
```

where "15.1.50.57" is replaced by the IP address of the HELPER machine. If there's only 1 install server available on the subnet, then just typing "boot lan install" should work. The exact string to type is somewhat machine dependent.

At that point, the install should proceed, controlled from the server by default.

---

## Section 7: Steps to Create a “Golden System”

Section 2 discusses creating an archive-image of your golden system. We'll cover the steps for creating the golden system itself here. In general, the golden system is simply a system which has been configured with all the software and customizations which will need to be distributed to a group of target systems.

Most large HP-UX sites already have the equivalent of a golden system, which is maintained by the IS certification or QA department. This system is configured with customer modifications on top of a base HP-UX system. Critical patches which all users need are installed onto the OS. Local, common software that all users use are also layered on the OS, and the resulting system is tested to ensure proper operation in the customer's environment.

These systems represent a prototype or starting point for all users. The steps needed for install customizations are normally captured and are well known. They make good candidates for a golden image archive using the steps outlined in Section 2. If a golden system already exists, the remainder of this section can be ignored.

Creating a golden system from scratch normally involves the following steps:

1. Installing the HP-UX OS from media.
2. Installing critical patches onto the OS.
3. Loading optional HP software.
4. Loading optional third-party software.
5. Customizing the system.

### Step 1: IUX setup of HP-UX OS from media

This can be performed without Ignite-UX by using the normal install from media steps. Alternately, Ignite-UX can install the OS for you. In this example, we'll use Ignite-UX and a network depot as the source of our software. We'll first copy an SD depot of 11.00 onto the Ignite-UX server.

On the IUX server, set up the core software to be distributed:

```
make_depots -r B.11.00 -a 700 -s \
hpfc1c:/release/S700_11.00/B3782EA
/opt/ignite/bin/make_config -r B.11.00
```

The `make_depots` command will copy the release B.11.00 software at the SD depot pointed to by the “-s” option (this pathname will depend on the setup of the SD depot you are accessing) onto the local Ignite-UX server. (You can also run `make_config` and point it to the remote depot directly.)

The `make_config` command will then add this software as a configuration available for Ignite-UX installations.

Step 1.1: Installing HP-UX onto the target “golden system”.

First, boot the target from the Ignite-UX server. If the target is currently running HP-UX, use the following:

```
bootsys -v -w -f -i "HP-UX B.11.00 Default" <target_hostname>
```

If the target is not currently running HP-UX, use the following:

```
boot lan install
```

Use the normal Ignite-UX target install steps as laid out in Section 2.

Step 4. Select the configuration you’ve just set up, “HP-UX B.11.00 Default”.

## Step 2: Loading critical patches onto the OS

At this point you should have a target system with the basic 11.00 release. If you have patches which you wish to distribute to all users, install them now. This is normally done using the standard SD tools.

Step 2.1: As an example, install patch PHSS\_8375. If you’ve downloaded and unshar’d a patch, you will have a depot file. For example, after downloading PHSS\_8375 and unsharing it, you would be left with files “PHSS\_8375.depot” and “PHSS\_8375.text”. To install the patch non-interactively, run the following:

```
swinstall -x autoreboot=true -x match_target=true -s \
```

```
./PHSS_8375.depot
```

These instructions can also be found in the file

```
“PHSS_8375.text”.
```

### **Step 3: Load Optional Software**

Load any optional HP and third-party software you want to make available to ALL users. Keep in mind that we are creating a golden system, and anything put on this will be distributed to all systems installed using the golden image. You'll need to keep in mind licensing restrictions, as well.

HP software (such as compilers) are normally loaded using SD from media or a network SD depot. Third-party software installation varies depending on the vendor.

### **Step 4: Customize the system**

Perform any customizations that you want to distribute to all users. These might include things like customized CDE login screens, base /etc/passwd files, additional phone tools and man pages, or corporate wide default DNS and NIS setup. It would not include machine, work group or site specific changes, such as gateways, user accounts, or machine-specific networking. These will be taken care of by Ignite-UX later.

### **Step 5: The Golden System is Done**

Use the steps outlined in Section 2 to create the OS Install Archive (“golden image”) from this system, and configure Ignite-UX to use it.

---

## Section 8: Loading HP-UX Patches Using Ignite-UX

Ignite-UX can use an existing Software Distributor (SD) depot to distribute additional software. This depot can be managed separately from Ignite-UX. In this example we'll create a patch depot containing HP-UX Patches, create a single patch bundle of the contents of the depot, and then add this bundle to an existing Ignite-UX configuration. Note that Ignite-UX currently will only work with SD software configured in bundles.

### Steps for loading the patches:

---

#### NOTE

#### Removing Prior Patch Information

*If a 10.x system you intend to update is already patched, do the following:*

In order to remove all prior patch information from the IPD on 10.x systems prior to updating to HP-UX 11.0, do the following:

1. Make a backup copy of the IPD (in /var/adm/sw/products) by entering the following:

```
find /var/adm/sw/products | cpio -pdmv /tmp
```

2. Enter the swmodify command

```
swmodify -u PH[CKNS][OLES]_\. * PH[CKNS][OLES]_\. *
```

3. Remove the patch directory by entering the following:

```
rm -rf /var/adm/sw/patch
```

The first selection in item 2, "PH[CKNS][OLES]\_\. \\*" tells swmodify to remove all fileset information for the patch products.

The second selection in item 2, "PH[CKNS][OLES]\_\. \\*" removes the product information, once the fileset information is gone.

The swmodify command will not allow you to remove a product from the IPD if any filesets exist in the IPD. The backslashes are necessary to inhibit the shell from expanding the wildcard characters. This allows swmodify to match all the software selections for patches. You should not have any real products or filesets on your system that match this regular expression.

### Creating a Patch Depot 1. Create a Patch Depot:

Obtain the set of patches you want to place and manage in an SD depot.  
For example:

```
PHCO_7891 PHCO_9348 PHKL_9361 PHSS_7726 PHSS_8966 PHSS_9400
PHCO_8353 PHKL_8376 PHKL_9569 PHSS_8667 PHSS_9201
```

HP patches as delivered by the Response Center or the HP Web site are shar files consisting of a product depot and README file.

### 2. Unshar the patches:

```
for i in PH*
do
sh $i
done
```

### 3. Combine all these separate depots into one depot.

To do this, use the swcopy command. First, create the directory to store the patches:

```
mkdir /var/opt/ignite/Patches
```

### 4. Now take the patch depots and copy them into the target depot:

```
for i in PH*.depot
do
swcopy -s ${PWD}/${i} * @ /var/opt/ignite/Patches
done
```

### 5. Verify the contents of the depot:

```
swlist -d @ /var/opt/ignite/Patches
```

Assuming the above example list of patches, you would see the following:

```
Initializing...
Contacting target "interop1"...
#
Target: interop1:/var/opt/ignite/Patches
#
#
No Bundle(s) on interop1:/var/opt/ignite/Patches
Product(s):
```

```
#
PHCO_7891 B.10.00.00.AA allows mount to turnon hfs-specific opts
PHCO_8353 B.10.00.00.AA cumulative awk(1) patch
PHCO_9348 B.10.00.00.AA cron(1M) and at(1) patch
PHKL_8376 B.10.00.00.AA Fix vmtrace bug.
PHKL_9361 B.10.00.00.AA Fix panic caused by MP race
PHKL_9569 B.10.00.00.AA NFS and VxFS (JFS) cumulative patch
PHSS_7726 B.10.00.00.AA CDE Dtterm August 96 patch
PHSS_8667 B.10.00.00.AA CDE Runtime Nov96 Patch
PHSS_8966 B.10.00.00.AA LIBCL cumulative patch
PHSS_9201 B.10.00.00.AA fix for aC++ dld.sl
PHSS_9400 B.10.00.00.AA ld(1) cumulative patch
```

In the above output, `swlist` states that the depot has “No Bundles”. HP-UX Patches are SD “products”, but Ignite-UX can only manage SD “Bundles”.

6. Convert the individual patches into a single bundle using the `/opt/ignite/bin/make_bundles` command. Run

the script and create a bundle in the Patches depot:

```
make_bundles -B -n Misc_Patches -t "HP-UX 11.00 Patches" \
/var/opt/ignite/Patches
```

7. Rerun `swlist` on this depot to verify the Bundle has been created:

```
swlist -d @ /var/opt/ignite/Patches
```

(Output of `swlist` command assuming the example patches)

```
Initializing...
Contacting target "interop1"...
#
Target: interop1:/var/opt/ignite/Patches
#
#
Bundle(s):
#
Misc_Patches HP-UX 11.00 Patches
```

The default behavior of `swlist` is to now show only the higher level software bundles. Individual patches in the bundle can still be viewed by using `swlist` options. The following will show the patch “products” contained in the bundle:

```
swlist -l product -d @ /var/opt/ignite/Patches
```

---

**NOTE**


---

If you need to add additional patches to the depot in the future, simply unshare the patches as described above, `swcopy` them into the Patches depot, and rerun the “make\_bundles” command. This will repackage the depot.

If you would like to remove a Patch from the depot, simply use the `swremove` command. You can either run `swremove` and use its friendlier user-interface, or run `swremove` in command line mode. The following will remove the PHKL\_8376 patch from the bundle:

```
swremove -d Misc_Patches.PHKL_8376 @ /var/opt/ignite/Patches
```

8. If you inadvertently create a Bundle of a Bundle (for example, if you add an HP product you want distributed with the patch depot) use `swremove` interactively to examine and delete the extra bundle.

9. Create a config file for the newly-created “Misc\_Patches” bundle. Follow the steps outlined in the “Adding a SD Bundle to the Archive environment” part of Section 4. Use “/var/opt/ignite/Patches” for your source depot and specify a new configuration file:

```
make_config -s /var/opt/ignite/Patches -a 700 \
-c /var/opt/ignite/data/Rel_B.11.00/misc_patch_bundle_cfg
```

10. Modify the /var/opt/ignite/INDEX file to include the new bundle in our “HP-UX B.11.00 archive” configuration:

```
cfg "HP-UX B.11.00 archive" {
description "The ARCHIVE B.11.00 release with patches."
"/opt/ignite/data/Rel_B.11.00/config"
"/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg"
"/var/opt/ignite/data/Rel_B.11.00/patch_bundle_cfg"
"/var/opt/ignite/data/Rel_B.11.00/misc_patch_bundle_cfg"
"/var/opt/ignite/config.local" }
```

11. To force the installation of the new “Misc\_Patches” Bundle with the “golden image” archive, add the following line to the `sw_sel` clause for the patch bundle in the file

```
"/var/opt/ignite/data/Rel_B.11.00/misc_patch_bundle_cfg":
load_with_any = "golden image"
```

We created this file with the `make_config` command file previously.

---

**NOTE**

Most software distributed by HP, for example applications on DART CD-ROMs, are already bundles and will not need (and should not be) bundled again!

---

---

## Section 9: Setting Install Parameters Dynamically

Ignite-UX can make intelligent decisions about install parameters when it runs, based on information it reads from the target system. Instead of forcing static values for, say, swap size or kernel parameters, the best values for these can be determined based on the characteristics of the target machine.

This can make configurations set up by the System Administrator more general purpose and limit the need for multiple, slightly differing configurations to handle minor system differences.

These decisions are specified in a C-like language and grammar unique to Ignite-UX. The variables and syntax are documented in the `instl_adm(4)` man page.

1. As an example, we'll set the primary swap size of the target system root disk dynamically at install time based on the size of the disk, and on the size of the target system RAM. The algorithm will set swap to 125 MB if the disk is large (> 500 MB) and if the amount of system RAM is greater than 64 MB. If we have a small disk we'll make the swap very small to maximize the amount of space available for HP-UX.

You could add the following lines to the end of the file `/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg` or to `/var/opt/ignite/config.local` if you would like this to be the default for all configurations.

```
default to very minimal swap of 25MB
unless the disk is larger than 500 MB
and we have more than 64MB ram
(disk[_hp_root_disk].size > 500MB & memory > 64MB)
{
 init _hp_pri_swap=125MB
}
else
{
 init _hp_pri_swap=25MB
}
```

This could also be added to the “config” file created for automatic installs (see Section 4). Note that if the “\_hp\_pri\_swap” parameter is set later in the order of files searched in the “cfg” definition, this setting will be overwritten. The order the files are evaluated is documented in the `instl_adm(4)` man page. Also be aware that the config file used for automatic installs is overwritten as part of the install process. Again, see Section 4 for details.

2. In this example, we’ll force the load of a patch bundle if we determine the target machine matches the regular expression “71\*”, such as a 710 or 712.

Add the following lines to the end of the file:

```
/var/opt/ignite/data/Rel_B.11.00/core_700_archive_cfg
check for H/W model 71x
and add the Misc_Patches bundle if true
(hardware_model ~ "9000/71*") {
 init "Misc_Patches" = true
}
```

3. This example will run a previously created post install script and increase a tunable kernel parameter if we determine our target machine is a Model 755. If not, it sets a default value for the kernel parameter:

```
post_config_script += "/var/opt/ignite/scripts/755special"
HARDWARE_MODEL == "9000/755" {
 post_config_script += "/var/opt/ignite/scripts/755special"
 mod_kernel += "maxuprc 300"
}
else
{
 mod_kernel += "maxuprc 100"
}
```

4. In this example we’ll load an entirely different configuration based on the size of the system RAM and disk. For this to have effect, it must go into the `INSTALLFS` file by using the `instl_adm` command as described in Section 3

```
For a system with only one disk and small memory, select
the "small system configuration"
(num_disks == 1 & memory < 64MB)
```

```
{ cfg "small system configuration" = true
}
```

To check the syntax of all configuration files that are listed in the /var/opt/ignite/INDEX file you can use the command:

```
instl_adm -T
```

If you want to check the syntax of a file that is not yet in the INDEX file, you can use the command:

```
instl_adm -T -f <file>
```

---

## Section 10: Installing NetScape® as a Post-Configuration Step

Here is a little more complicated example of using Ignite-UX post installation scripts to load software on new installs. Netscape is one of those tools which seems to have a new navigator every six months. Due to the frequency of the changes, this tool may not make sense to include on the “golden system”. Here is an example of adding Netscape Navigator tool.

This example shows one way of accomplishing the task using a `post_config_script`. Another way would be to create a software selection (`sw_sel`) that would reference the tar archive, and then a `post_config_script` (or `post_config_cmd`) associated with the `sw_sel` that would be run only if the selection was picked for loading. Using a `sw_sel` would have the advantage of making it appear in the UI as just another software selection, and would have the `sw_impact` statements to ensure sufficient file system space. For more examples, see the files in `/opt/ignite/data/examples`.

---

### WARNING

**It is up to the individual administrators to ensure the Netscape Navigator product is appropriately licensed prior to its installation.**

---

#### Step 1) Get Netscape Navigator

Netscape Navigator is typically pulled from one of the Netscape ftp server sites. The pulled files are gzip compressed tar images with an encoded name similar to:

```
netscape-v30-export.hppa1.1-hp-hpux.tar.gz
```

#### Step 2) Special Considerations for Netscape

In order to run Navigator, each user needs the correct network preferences. Unfortunately, these preferences cannot be defaulted, and must exist in every users `$HOME/.netscape` directory. To get around this limitation, we have supplied a “run-netscape” script. Instead of running “netscape”, the user can run a link to “run-netscape” which will install the default preferences at first invocation.

\* Attached below we have supplied a sample “run-netscape”. \* You will also need to create a default configuration file. Merely take an existing one and remove all user and host specific information.

Step 2) Write an install and customization script

Attached below is a script we used for installing Netscape in our environment. You will note that the script does the following:

- Remote copies from a server to the local target netscape, a default-preferences file, and the special run-netscape script.
- Unpacks netscape.
- Makes /usr/local/bin/netscape a link to “run-netscape” to ensure user defaults will be installed.
- Performs the special netscape customization.
- Cleans up.

We named and placed our script under the following:

```
/var/opt/ignite/scripts/install_netscape
```

Step 3) Add the install script to Ignite-UX customization

Add a line similar to the following to one of your config files (not in a clause):

```
post_config_script += "/var/opt/ignite/scripts/install_netscape"
```

For details of adding a post configuration script, see Section 5 in this appendix. This script will need to be accessible using tftp.

Example post install script for Netscape

```
!/usr/bin/ksh
#
Post Ignite-UX installation script used to install Netscape
version 3.0.
This installation assumes HP-UX 11.00 because it depends on gzip
already loaded on the system.
#
PATH=${PATH}:/usr/sbin:/sbin:/usr/contrib/bin
IUX_SERVER=interop1.fc.hp.com
IUX_ARCHIVE_DIR=/var/opt/ignite/archives/Netscape
NETSCAPE_GZIP=netscape-v30-export.hppa1.1-hp-hpux.tar.gz
NETSCAPE_INSTALL_DIR=/opt/Netscape NETSCAPE_RUN_DIR=/usr/local
```

```

echo "* Loading Netscape"
mkdir ${NETSCAPE_INSTALL_DIR} cd ${NETSCAPE_INSTALL_DIR}
rcp ${IUX_SERVER}:${IUX_ARCHIVE_DIR}/${NETSCAPE_GZIP}
${NETSCAPE_GZIP} rcp ${IUX_SERVER}:${IUX_ARCHIVE_DIR}/run-netscape
. rcp ${IUX_SERVER}:${IUX_ARCHIVE_DIR}/default-preferences .
gzip -dc ${NETSCAPE_GZIP} | tar -xvf -
echo "* Finished loading Netscape"

Configure netscape runtime # echo "* Configuring Netscape"
chmod 755 ${NETSCAPE_INSTALL_DIR}/run-netscape ln -s
${NETSCAPE_INSTALL_DIR}/run-netscape
${NETSCAPE_RUN_DIR}/bin/netscape

Install java_30 # mkdir ${NETSCAPE_RUN_DIR}/lib/netscape ln -s
${NETSCAPE_INSTALL_DIR}/java_30
${NETSCAPE_RUN_DIR}/lib/netscape/java_30

Install plugins library # mkdir
${NETSCAPE_RUN_DIR}/lib/netscape/plugins ln -s
${NETSCAPE_INSTALL_DIR}/libnullplugin.so
${NETSCAPE_RUN_DIR}/lib/netscape/plugins/libnullplugin.so

mkdir ${NETSCAPE_RUN_DIR}/lib/netscape/mime.types mkdir
${NETSCAPE_RUN_DIR}/lib/netscape/mailcap

rm -f ${NETSCAPE_GZIP}

echo "* Finished configuring Netscape"

Example run time script for Netscape
#!/bin/sh

Put this script in /usr/local/bin/netscape

set -e

Set this to the location of the real Netscape executable
REAL_NETSCAPE=/opt/Netscape/netscape

Set this to the location of the default preferences file.
DEF_PREFS=/opt/Netscape/default-preferences

if [! -e $HOME/.netscape/preferences]; then echo '(installing
default Netscape preferences...)' mkdir $HOME/.netscape

cp -p $DEF_PREFS $HOME/.netscape/preferences echo '(done)' fi

The "-name" option is to avoid confusing the users' X resources.
exec $REAL_NETSCAPE -name netscape $*

```



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## Index

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