Ignite-UX Quick Start Guide
Create an Ignite-UX Server and Cold-Install Clients

Table of Contents

About This Document

This document describes the most common procedure for setting up an Ignite-UX server, adding a client to the Ignite-UX server, and cold-installing HP-UX on that client.

Glossary terms are *italicized* when used for the first time in this manual.

Intended Audience

This document is intended for system and network administrators with minimal experience installing, configuring, and managing HP-UX. Administrators are expected to have knowledge of operating system concepts, but not in-depth knowledge of HP-UX or Ignite-UX. It is helpful to have knowledge of Transmission Control Protocol/Internet Protocol (TCP/IP) networking concepts and network configuration.

Typographic Conventions

This document uses the following typographical conventions:

#	A number sign represents the superuser prompt.
audit(5)	A manpage. The manpage name is *audit*, and it is located in Section 5.
`Command`	A command name or qualified command phrase.
`Computer output`	Text displayed by the computer.
Key	The name of a keyboard key. **Return** and **Enter** both refer to the same key.
Term	An important word or phrase defined in the glossary.
`User input`	Commands and other text that you type.
`Variable`	The name of a placeholder in a command, function, or other syntax display that you replace with an actual value.
CAUTION	A caution calls attention to important information that if not understood or followed will result in data loss, data corruption, or damage to hardware or software.

Related Information

The most current edition of this and the following documents are found at the HP Technical Documentation website at:

http://www.docs.hp.com/

Related Documents

- *Ignite-UX Administration Guide*
- *Ignite-UX Reference*
- *Ignite-UX Custom Configuration Files*
- *Successful System Cloning using Ignite-UX* White Paper
- *Successful System Recovery using Ignite-UX* White Paper
- *Installing and Updating Ignite-UX* White Paper
- *Ignite-UX Installation Booting* White Paper
- *Read Before Installing or Updating to HP-UX*
- *HP-UX Installation and Update Guide*
- *HP-UX Release Notes*
- *HP-UX Reference*

- *HP-UX System Administrator's Guide*
- *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*
- *Software Distributor Administration Guide*
- *HP-UX Patch Management*
- *nPartition Administrator's Guide*
- *Getting Started with Software Package Builder*
- *VERITAS File System 4.1 (HP OnlineJFS/JFS) and VERITAS Volume Manager 4.1 Installation Guide*

Some or all of these documents are available on the Instant Information media and in printed form.

Publishing History

The document printing date and part number indicate the document's current edition. The printing date will change when a new edition is printed. Minor changes might be made at reprint without changing the printing date. The document part number will change when extensive changes are made. Document updates might be issued between editions to correct errors or document product changes. To ensure you receive the updated or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details. You can find the latest version of this document on line at

http://www.docs.hp.com.

Manufacturing Part Number	Supported Operating Systems	Edition Number	Publication Date
5992–5230	HP-UX 11i v1, v2, and v3	4	September, 2008
5992–4815	HP-UX 11i v1, v2, and v3	3	June, 2008
5992–3879	HP-UX 11i v1, v2, and v3	2	March, 2008
5992-0678	HP-UX 11i v1, v2, and v3	1	September, 2007

HP Encourages Your Comments

HP encourages your comments concerning this document. We are committed to providing documentation that meets your needs. Send any errors found, suggestions for improvement, or compliments to:

http://www.docs.hp.com/en/feedback.html

Include the document title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document.

1 Setting up an Ignite-UX Server

This chapter describes setting up an *Ignite-UX server* to *cold install* HP-UX 11i v1, v2, and v3 on *client*s over the network. You must have superuser privileges to set up an Ignite-UX *server*. You can stop anywhere in this procedure and resume where you left off at a later time.

This document assumes the *network boot* clients are on the same *subnet* as the Ignite-UX server. This document also assumes the network DHCP and DNS servers are already set up. These network services are vital to Ignite-UX server operation. If the Ignite-UX server is intended to support these network functions on an isolated subnet, the user should consult documentation that indicates how to set them up. Network services should be set up before the Ignite-UX server is set up. See http://www.docs.hp.com for networking documentation.

Make Sure Your System Meets Ignite-UX Server Requirements

1. Make sure the version of HP-UX running on the Ignite-UX server system matches the HP-UX version on the operating environment (OE) DVD set you are getting the *Ignite-UX* software from. Use the `uname -r` command to query the HP-UX revision on the server system. The `uname` command will report the release identifier, which can be mapped to the HP-UX release as follows: B.11.31 is HP-UX 11i v3, B.11.23 is 11i v2, and B.11.11 is 11i v1.

    Procedure

    ```
    # uname -r
    B.11.23
    ```

    Common Errors

    ```
    sh:  typo: not found.
    ```
    Diagnosis: Mistyped "uname"
    Correction: Retype command.

    ```
    uname: illegal option – R
    usage: uname [-amnrsvil] [-S nodename]
    ```
    Diagnosis: Used a capital **R** instead of a lowercase **r**.
    Correction: Reissue the `uname` command with a lowercase **r**.

    Explore

    See *uname*(1) by issuing the command
    ```
    # man uname
    ```

    If you require a version of Ignite-UX that can be installed onto any supported version of HP-UX, please read the section about downloading Ignite-UX from the HP *Software Depot* website in the *Ignite-UX Administration Guide*, available at http://www.docs.hp.com/en/IUX/infolib.html.

2. Use the `bdf` command to make sure you have at least 2 GB of free disk space available in `/opt` to support installation of all three HP-UX releases.

    Procedure

    ```
    # bdf /opt
    ```

    Common Errors

Detection: The number of kbytes free on `/opt` is less than 2000000.

Diagnosis: Not enough space.

Correction: Extend the size of the *logical volume* with the `lvextend` command, and then extend the size of the *file system* within the logical volume with the `extendfs` command. Detailed instructions for this procedure are found in the HP-UX administration guides listed below, depending on your version of HP-UX.

For HP-UX 11i v3, see the *HP-UX System Administrator's Guide (volume 3): Logical Volume Management*. Within this guide, look for the chapter on administering LVM, and then the section on extending a file system.

For HP-UX 11i v2 and earlier versions, see *Managing Systems and Workgroups*. Within this guide, look for the chapter on managing disks and files, and then the section on extending the size of a file system within a logical volume.

Both administration guides are available at http://www.docs.hp.com.

Explore

See *bdf*(1M) by issuing the command

`# man bdf`

See *lvextend*(1M).

See *extendfs*(1M).

See *fsadm*(1M)

---

3. Use the `bdf` command to make sure you have enough disk space in `/var` to hold the OE *depot*s. You will need roughly 4.5 GB per DVD in the OE set.

Procedure

`# bdf /var`

Common Errors

Detection: The number of kbytes free on `/var` is less than 9 GB for a two-DVD OE set.

Diagnosis: Not enough space.

Correction: Extend the size of the logical volume with the `lvextend` command, and then the size of the file system within the logical volume with the `extendfs` command. Detailed instructions for this procedure are found in the HP-UX administration guides listed below, depending on your version of HP-UX.

For HP-UX 11i v3, see the *HP-UX System Administrator's Guide (volume 3): Logical Volume Management*. Within this guide, look for the chapter on administering LVM, and then the section on extending a file system.

For HP-UX 11i v2 and earlier versions, see *Managing Systems and Workgroups*. Within this guide, look for the chapter on managing disks and files, and then the section on extending the size of a file system within a logical volume.

Both administration guides are available at http://www.docs.hp.com

---

Explore

Consider making room in `/var/opt/ignite` for *recovery archive*s, *golden image*s, and software depots. Estimate approximately 4 GB per recovery and golden image *archive*. See the section on *Ignite-UX* server requirements in the *Ignite-UX Administration Guide* at http://docs.hp.com/en/IUX/infolib.html. For information on how to do this, see the HP-UX administration guides listed below, depending on your version of HP-UX.

For HP-UX 11i v3, see the *HP-UX System Administrator's Guide (volume 3): Logical Volume Management*. Within this guide, look for the chapter on administering LVM, and then the section on extending a file system.

For HP-UX 11i v2 and earlier versions, see *Managing Systems and Workgroups*. Within this guide, look for the chapter on managing disks and files, and then the section on extending the size of a file system within a logical volume.

Both administration guides are available at http://www.docs.hp.com

Consider creating a new file system for `/var/opt/ignite`. This could keep Ignite-UX from impacting other applications using `/var` if it fills `/var/opt/ignite` with depots and *archive*s. Detailed instructions for this procedure are found in the HP-UX administration guides listed below, depending on your version of HP-UX. If you do create a file system for `/var/opt/ignite`, then you will see it in the `bdf` listing and will be able to manage your disk space to a greater level of detail.

For HP-UX 11i v3, see the *HP-UX System Administrator's Guide (volume 3): Logical Volume Management*. Within this guide, look for the chapter on administering LVM, and then the section on creating a file system.

For HP-UX 11i v2 and earlier versions, see *Managing Systems and Workgroups*. Within this guide, look for the chapter on managing disks and files, and then the section on creating a file system.

Both administration guides are available at http://www.docs.hp.com

---

See *newfs*(1M).

See *lvcreate*(1M).

Install the Ignite-UX Software and the HP-UX OE Depot on the Server

1. Gain access to the DVD drive on your system. This document assumes the DVD-ROM device is called `/dev/dsk/c1t2d0` – substitute your actual device name throughout this document.

Procedure

a. Use the `ioscan` command to get the DVD-ROM device name, for example: `/dev/dsk/c1t2d0`. You are looking for `DVD` in the Description column of the `ioscan` output.

   # **ioscan -fnkC disk | more**

b. Create the device directory:

   # **mkdir /dvdrom**

c. Put the OE DVD in the drive and mount it onto the new directory as a *file system*. Note that you must unmount the DVD-ROM with the # `umount /dvdrom` command before you can extract it from the drive.

   # **mount /dev/dsk/c1t2d0 /dvdrom**

Common Errors

/dev/rdsk/c*n*t*n*d*n* is an invalid operand

Diagnosis: The `/dev/rdsk` device file was used instead of the `/dev/dsk` device file.

Correction: Reissue the `mount` command with the `/dev/dsk` device file.

/dev/dsk/c*n*t*n*d*n*: unrecognized file system

Diagnosis: The device file name was mistyped.

Correction: Check that the device file was entered correctly.

/dev/dsk/c*n*t*n*d*n*: I/O error

Diagnosis: The DVD isn't in the drive.

Correction: Insert the OE DVD into the drive.

---

mount: /dev/dsk/c*n*t*n*d*n* was either ignored or not found in /etc/fstab

Diagnosis: The mount directory, `/dvdrom`, was omitted from the `mount` command.

Correction: Reissue the `mount` command with the mount directory.

The `ioscan` command lists no devices.

Diagnosis: If the system is running HP-UX 11i v3, the system might have legacy mode disabled. To find out, issue the following command.

```
# insf -Lv
```

Correction: If legacy mode is disabled, issue the following command to get the DVD-ROM device name (add an "N" to the `ioscan` command options). Do not enable legacy mode without talking to the system administrator responsible for the Ignite-UX server.

```
# ioscan -fNnkC disk | more
```

Explore

You can navigate the output of the `more` command, including the `ioscan -C disk -f -n -k | more` command above, with the following shortcuts:

- **space** – Scroll down one page of the listing.
- **j** – Scroll down one line of the listing.
- **k** – Scroll up one line of the listing.
- **q** – Quit.

See *ioscan*(1M).

See *mkdir*(1).

See *mount*(2).

See *mount*(1M) by issuing the command

```
# man 1M mount
```

2. Make sure you are installing a later version of Ignite-UX on the system.

Procedure

a. Get the version of Ignite-UX currently installed on the server, if it is already installed:

```
# swlist Ignite-UX
```

b. Get the version of Ignite-UX from the OE DVD:

```
# swlist -s /dvdrom | grep Ignite-UX
```

Common Errors

ERROR: Software "Ignite-UX" was not found on host "*system_name*:/".

Diagnosis: Depending on the command you issued, Ignite-UX is not currently installed on the server or it's not on the DVD currently in the drive.

Correction: If Ignite-UX is not installed on the server, continue to the next step. If Ignite-UX is not on the DVD, replace the DVD with another in the media set. Remember to unmount the current DVD in order to extract it from the drive.

ERROR: The expected depot or root does not exist at "/dvdrom".

ERROR: There is currently no depot software on host "*hostname*" at location "/dvdrom". Make sure that an absolute pathname is specified for location (beginning with "/").

Diagnosis: The DVD is no longer mounted at /dvdrom or you have typed the wrong directory name.

Correction: Check for typos. You can use bdf to check the name of the DVD mount point. If the DVD is not mounted, mount it as described in the previous step.

Explore

For an overview on getting and installing Ignite-UX, see the *Ignite-UX Administration Guide* available at http://www.docs.hp.com/en/IUX/infolib.html. For detailed information, see the white paper *Installing and Updating Ignite-UX*, available at http://www.docs.hp.com/en/IUX/infolib.html.

3. Install the Ignite-UX software using `swinstall` if the Ignite-UX version on the DVD is later than any currently installed version of Ignite-UX and the HP-UX version on the OE media matches the HP-UX version on the Ignite-UX server.

Procedure

---

swinstall -s /dvdrom Ignite-UX

Common Errors

ERROR: Could not apply the software selection "Ignite-UX"; it is not available from depot or root "*server_name*/dvdrom".

Diagnosis: The DVD in the drive does not have Ignite-UX on it.

Correction: Unmount the DVD drive with this command:

umount /dvdrom

Put in another OE DVD and mount it as in step 1c. Then use the `swinstall` command again.

ERROR: "*server_name*/" 19 filesets have a version with a higher revision number already installed.

Diagnosis: A higher version of Ignite-UX is already installed on the server system.

Correction: Proceed to the next step.

Explore

You can list all the software *bundle*s on the DVD with

swlist -s /dvdrom

---

4. Unmount the DVD so you can extract it from the drive.

Procedure

---

umount /dvdrom

Common Errors

---

unmount /dvdrom: cannot unmount /dvdrom : Device busy

Diagnosis: A process is still using files on the DVD, or a process has its current working directory on the DVD.

Correction:

a. Run the `fuser` command to see what processes are using the DVD.

    # **fuser /dvdrom**
    /dvdrom: 8553c

b. To find out what commands are using the DVD device, run the following command for each process id (numbers only, in this case **8553**) shown by the `fuser` command.

    # **ps -e | grep -e 8553**
      root   8553 8552 1 Jul 10   pts/tb 0:00 -sh
      root   11087 8553 0 14:34:07   pts/tb 0:00 grep -e 8553

    In this case, the shell attempting to run `unmount` had /dvdrom as its current working directory, and changing to another directory would allow the DVD to be unmounted.

---

5. Create the HP-UX OE depot, named `core_media`, by running *make_depots* on each of the HP-UX OE DVDs. In this example we are using HP-UX 11i v2, but this process can easily be customized for any HP-UX release by substituting your release information for the HP-UX 11i v2 information. The `make_depots` command takes a long time to complete. When `make_depots` completes without errors, no messages are printed to the screen – all messages are printed to the `/var/opt/ignite/depots/Rel_B.11.23/swagent.log` file

(substitute your release directory if it's different from 11.23). If the `make_depots` command returns quickly with no errors, the depot already exists on the system.

Procedure

Run the `make_depots` command below for all DVDs in the OE set. Remember to substitute your device file name and the appropriate release directory (**Rel_B.11.*xx***) for your version of HP-UX.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 \
-d /var/opt/ignite/depots/Rel_B.11.23/core_media
```

Common Errors

ERROR: swcopy command failed

Diagnosis: Read the file `/var/opt/ignite/depots/Rel_B.11.23/core_media/swagent.log` to get a full report of what went wrong.

---

make_depots: error — cannot stat source depot /dev/dsk/c*n*t*n*d*n*

make_depots: notice — Ending make_depots due to fatal error

Diagnosis: The wrong device file was used.

Correction: Reissue the `make_depots` command with the correct device file.

Explore

You can watch the depot creation process by listing the file `/var/opt/ignite/depots/Rel_B.11.23/core_media/swagent.log` with the following command.

```
# tail -f /var/opt/ignite/depots/Rel_B.11.23/core_media/swagent.log
```

The depot will be put in the `/var/opt/ignite/depots/Rel_B.11.23` directory and will be named `core_media`.

This process is described fully in the section on *installation* configurations using *Software Distributor (SD-UX)* depots in the *Ignite-UX Custom Configuration Files* web-only document, available at http://docs.hp.com/en/IUX/infolib.html.

The depot we're creating is called `core_media` in order to distinguish it from other depots of the same HP-UX version. (All depots of the same version are kept in the appropriate `Rel_B.xx.xx` directory.) Consider naming depots with names that indicate what release of HP-UX the depot contains. This will make the depots easier to identify. For instance, if you are creating a depot for the December 2007 HP-UX 11i v2 Mission Critical OE release, you could name the depot `core_0712_mc`.

Create the HP-UX OE Configuration Information on the Ignite-UX Server

1. Create the *configuration file*, named `core_media_cfg`, to describe this HP-UX OE depot, named `core_media`. In this example we are using HP-UX 11i v2, but this process can easily be customized for any HP-UX release by substituting your release information for the HP-UX 11i v2 information.

   If you want more than one configuration available for a version of HP-UX, such as 11i v2 June, 2008 and 11i v2 December, 2007, then each configuration must have a unique name for the configuration file created with `make_config` in this step and the configuration clause created and modified by `manage_index` in Step 2.

   If you wish, you may safely complete the section "Configure the System as an Ignite-UX Server" (page 14) before this one.

Procedure

```
# /opt/ignite/bin/make_config -s /var/opt/ignite/depots/Rel_B.11.23/core_media \
  -c /var/opt/ignite/data/Rel_B.11.23/core_media_cfg
```

Common Errors

ERROR: Depot *depot_name* does not exist.

Diagnosis: The depot name was mistyped.

Correction: Check the *make_config* command line for typos.

Explore

List the `/var/opt/ignite/data/Rel_B.11.23` directory to see the `core_media_cfg` file just created with the `make_config` command.

Configuration files are typically named after the depot, with a `_cfg` appended.

This process is described fully in the section on creating the configuration file to describe the depot in the *Ignite-UX Custom Configuration Files* web-only document, available at http://docs.hp.com/en/IUX/infolib.html.

2. Add the configuration information to the Ignite-UX `/var/opt/ignite/INDEX` file. First, the default B.11.23 *configuration clause* is copied to a new clause called "B.11.23 From OE Media", and then the `core_media_cfg` file we created in step 1 is added to the "B.11.23 From OE Media" clause.

    If you want more than one configuration available for a version of HP-UX, such as 11i v2 June, 2008 and 11i v2 December, 2007, then each configuration must have a unique name for the configuration file created with `make_config` in Step 1 and the configuration clause created and modified by `manage_index` in this step.

Procedure

```
# /opt/ignite/bin/manage_index -n "HP-UX B.11.23 Default" \
  -c "B.11.23 From OE Media"
# /opt/ignite/bin/manage_index -a \
  -f /var/opt/ignite/data/Rel_B.11.23/core_media_cfg \
  -c "B.11.23 From OE Media"
```

Common Errors

NOTE: Cannot access index file /var/opt/ignite/INDEX: No such file or directory.

ERROR: Couldn't accomplish the requested operation.

Diagnosis: The `/var/opt/ignite/INDEX` file is missing or mistyped.

Correction: Check for typos. Otherwise, list the `/var/opt/ignite` directory to see if the *INDEX* file is there under another name. Check with a systems administrator responsible for the Ignite-UX server to find the correct `INDEX` file.

Explore

This process is described fully in the section on creating a minimalist *cfg clause* for installation in the *Ignite-UX Custom Configuration Files* web-only document, available at http://docs.hp.com/en/IUX/infolib.html.

View the description of the "B.11.23 From OE Media" configuration clause to see that it is the same as the default clause we copied, "HP-UX B.11.23 Default". Note that when no INDEX file is specified, the *manage_index* command defaults to `/var/opt/ignite/INDEX`.

`# manage_index -x -c "B.11.23 From OE Media"`

Change the description to something that makes sense to you.

`# manage_index -c "B.11.23 From OE Media" -y "B.11.23 0712 OE"`

See *manage_index*(1M).

Configure the System as an Ignite-UX Server

1. *NFS* export the directory `/var/opt/ignite/clients` so you can control the installation process from the server and store *configuration file*s and *manifest* information on the server. On successful completion of the *setup_server* command, the message `Program completed successfully.` will be displayed.

    If you wish, you may safely complete this section before "Create the HP-UX OE Configuration Information on the Ignite-UX Server" (page 12).

    Procedure

    ```
    # /opt/ignite/lbin/setup_server -n
    ```
    ---

2. Enable the `bootpd` *daemon*.

    Procedure

    ---
    a. Edit the `/etc/inetd.conf` file:
        ```
        # vi /etc/inetd.conf
        ```
    b. Remove the comment character (#) from the `bootpd` line:
        ```
        bootps dgram udp wait root /usr/lbin/bootpd bootpd
        ```
    c. Save the `/etc/inetd.conf` file and exit `vi`:
        ```
        :wq
        ```
    d. Make the `inetd` daemon reread the `/etc/inetd.conf` file:
        ```
        # inetd -c
        ```

    Explore

    An overview of how *network boot*ing works is available in the section on making configuration decisions for Ignite-UX servers in the *Ignite-UX Administration Guide,* and in the *Ignite-UX Installation Booting* white paper. Both documents can be found at http://docs.hp.com/en/IUX/infolib.html

    ---

NOTE: Your Ignite-UX server is now set up but is not enabled to install any systems. See Chapter 2 (page 15) to add clients to an Ignite-UX server and then install HP-UX on them.

2 Cold-installing a Client Across the Network

This chapter describes adding a client to an Ignite-UX server, and then installing HP-UX on that client from the Ignite-UX server over the network. You must have superuser privileges to cold-install a client. You can stop anywhere in this procedure and resume where you left off at later time.

This document assumes the network boot clients are on the same subnet as the Ignite-UX server.

Glossary terms are *italicized* when used for the first time in this manual.

Add a Network Entry for the Client to the IP Address File on the Server.

This process is machine-dependent; follow the procedure for Intel® Itanium®-based or PA-RISC-based, depending on your client system type.

Procedure for Itanium®-based machines

1. Collect client information. To allow a client to boot from the Ignite-UX server, you must add information about the client to the appropriate file on the Ignite-UX server. The following information is required:
    *   Hardware address (ha) – the client's *MAC address*.
    *   IP address (ip) – the client's assigned internet address.

    For more information on adding client information to the /etc/bootptab file, see the documentation within the /etc/bootptab file and the *HP-UX IP Address and Client Management Administrator's Guide: HP-UX 11i v2, HP-UX 11i v3*, specifically the section on adding client or relay information. HP-UX technical documentation can be found at http://docs.hp.com.

2. Edit the /etc/bootptab file (don't worry that it appears to be [Read-only]):

    ```
    # vi /etc/bootptab
    ```

3. Add an entry for your client. A typical bootptab file has a generic, default client specification defined, identified by tc=. In this example, ignite-defaults is that entry. If your bootptab has a different default specification, substitute it for ignite-defaults. The MAC address should be in hexadecimal, but without the leading "0x".

    The following is an example bootptab entry. For information on what each entry means, see *bootpd*(1M).

    ```
    ignite-defaults:\
        ht=ethernet:\
        hn:\
        dn=domain_name.com:\
        gw=10.1.1.1:\
        sm=255.0.0.0:\
        ds=10.1.1.2 10.1.1.3:\
        vm=rfc1048:\
        bf=/opt/ignite/boot/nbp.efi:

    iuxclient1:\
        tc=ignite-defaults:\
        ha=0018FE2F01B3:\
        ip=10.1.2.87:
    ```

4. Save the /etc/bootptab file and exit vi:

    ```
    :wq!
    ```

Procedure for PA-RISC-based machines

1. Edit the /etc/opt/ignite/instl_boottab file (don't worry that it appears to be [Read-only]):

    ```
    # vi /etc/opt/ignite/instl_boottab
    ```

2. Add an entry for your client. If a network entry already exists for your client, you may edit it so it looks like the entry below. The client's MAC address should be in hexadecimal, with a leading "0x".

    ```
    client_IP_address:client_MAC_address::reserve
    ```

3. Save the /etc/opt/ignite/instl_boottab file and exit vi:

    ```
    :wq!
    ```
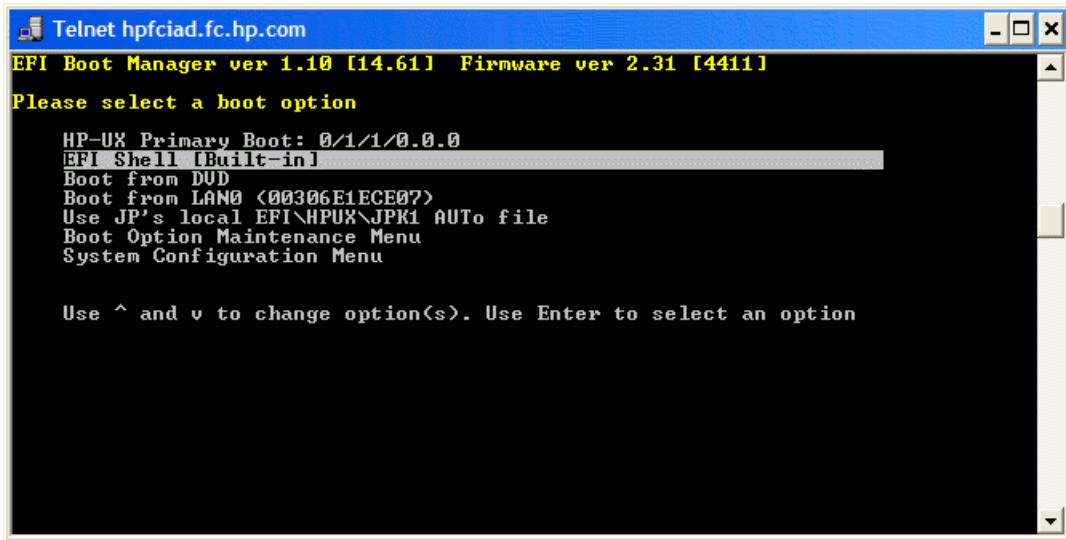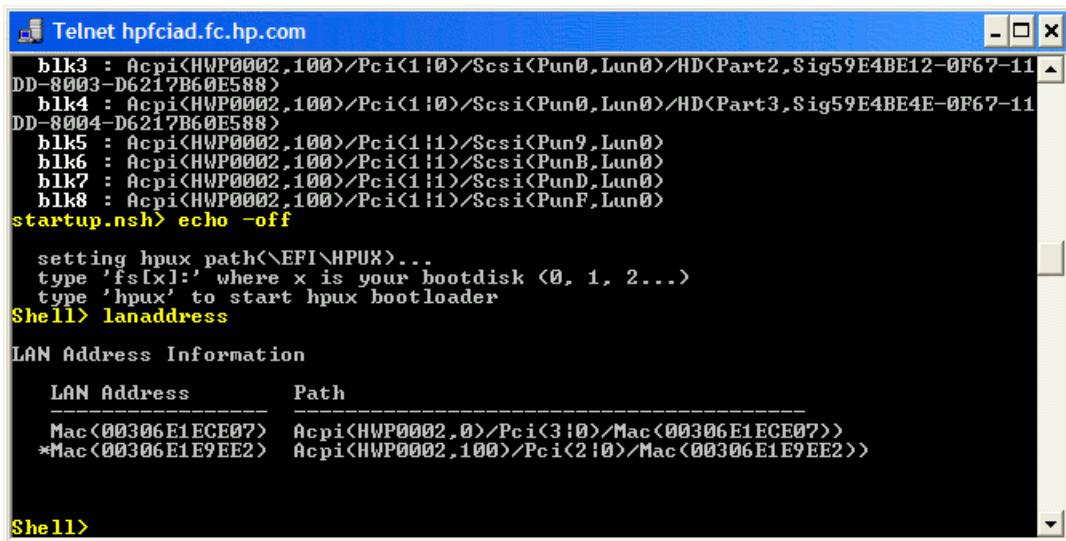
Explore

To get the *MAC address* for an Itanium-based system, select **EFI Shell** from the boot menu

and then use the `lanaddress` command.
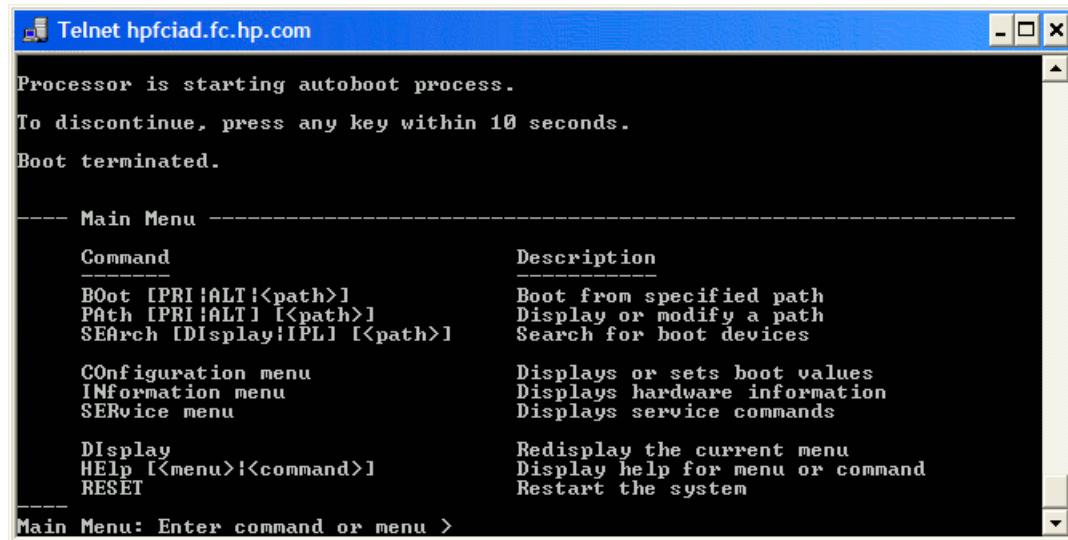
Use the `exit` command to return to the boot menu.

To get the MAC address for a PA-RISC system, interrupt the boot process at the `To discontinue, press any key within 10 seconds` prompt.

```
Telnet hpfciad.fc.hp.com                                              _ □ ×

Processor is starting autoboot process.

To discontinue, press any key within 10 seconds.

Boot terminated.


---- 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

    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 >
```

Enter the Information menu by typing **in**. Then enter **LanAddress**.

```
Telnet hpfciad.fc.hp.com                                              _ □ ×
---- Information Menu ---------------------------------------------------------

    Command                           Description
    -------                           -----------
    ALL                               Display all system information
    BootINfo                          Display boot-related information
    CAche                             Display cache information
    ChipRevisions                     Display revisions of major VLSI
    COprocessor                       Display coprocessor information
    FRU                               Display FRU information
    FwrVersion                        Display firmware version
    IO                                Display I/O interface information
    LanAddress                        Display Core LAN station address
    MEmory                            Display memory information
    PRocessor                         Display processor information
    WArnings                          Display selftest warning messages

    BOot [PRI|ALT|<path>]             Boot from specified path
    DIsplay                           Redisplay the current menu
    HElp [<command>]                  Display help for specified command
    RESET                             Restart the system
    MAin                              Return to Main Menu
----
Information Menu: Enter command > LanAddress

   LAN Station Address:  00306e-065541

Information Menu: Enter command >
```

If your client system is already running HP-UX, you can get the MAC address of the client by using the `lanscan` command. You may use any MAC address that is physically connected to the network. Note that the `lanscan` command reports the MAC address with a leading "0x", which must be removed before entering it in the `/etc/bootptab` file. The leading "0x" is required in the `/etc/opt/ignite/instl_boottab` file.

MAC addresses sometimes appear on computer system labels, packaging, and documentation shipped with systems.

The `/etc/opt/ignite/instl_boottab` file includes extensive descriptive comments.

Configuring an Ignite-UX server for *boot*ing clients is discussed in the section on making configuration decisions for Ignite-UX servers in the *Ignite-UX Administration Guide* found at http://www.docs.hp.com/en/IUX/infolib.html.

Boot the Client System from the Ignite-UX Server
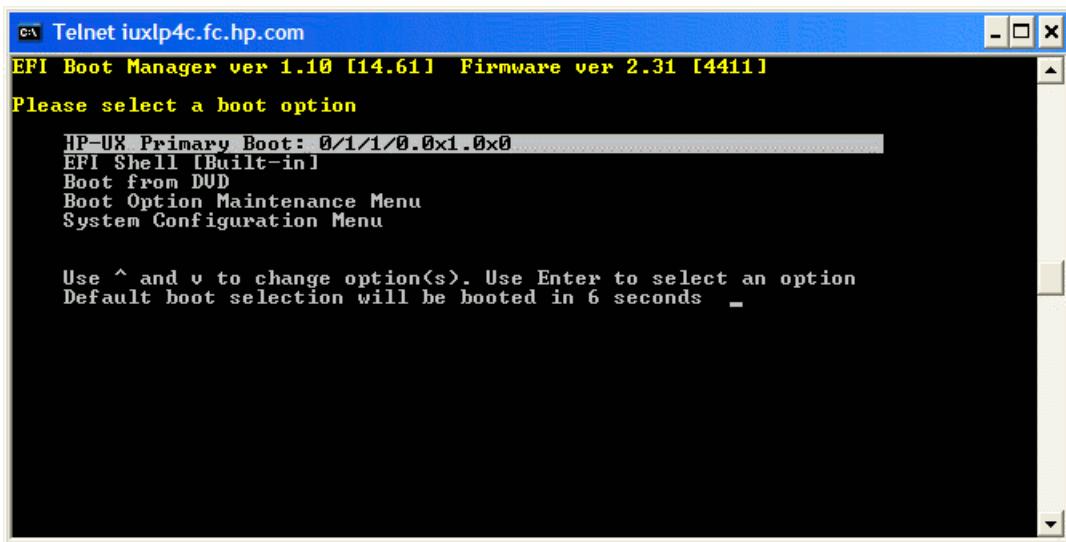
This process is machine-dependent; follow the procedure for Intel® Itanium®-based or PA-RISC-based, depending on your system type.
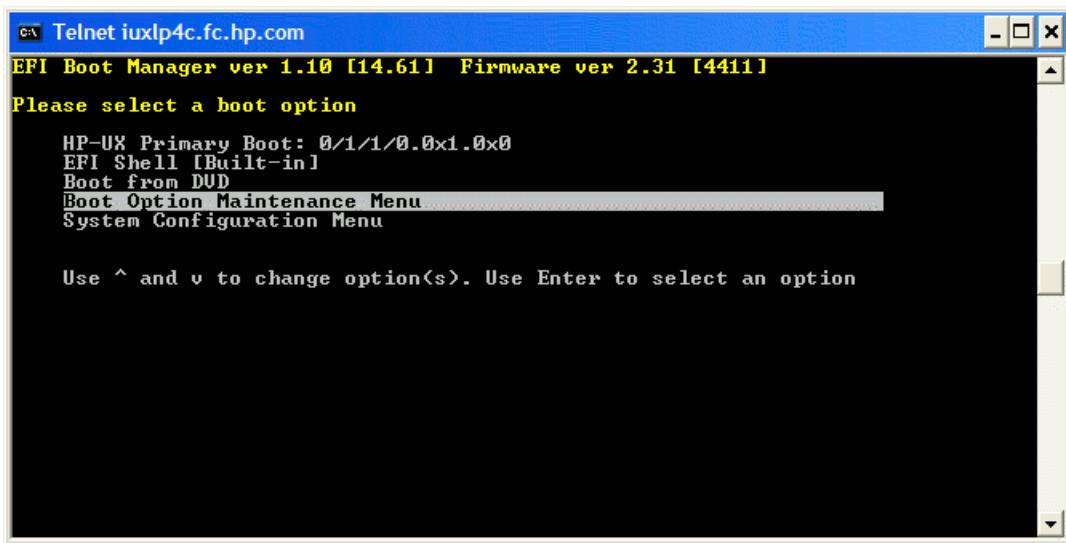
Procedure for Itanium®-based machines

1. *Reboot* the client system with the `reboot` command or cycle the power on the client system. Interrupt the reboot process by pressing the **down arrow** when prompted.

```
Telnet iuxlp4c.fc.hp.com                                    _ □ ✕
EFI Boot Manager ver 1.10 [14.61]  Firmware ver 2.31 [4411]

Please select a boot option

    HP-UX Primary Boot: 0/1/1/0.0x1.0x0
    EFI Shell [Built-in]
    Boot from DVD
    Boot Option Maintenance Menu
    System Configuration Menu

    Use ^ and v to change option(s). Use Enter to select an option
    Default boot selection will be booted in 6 seconds  _
```
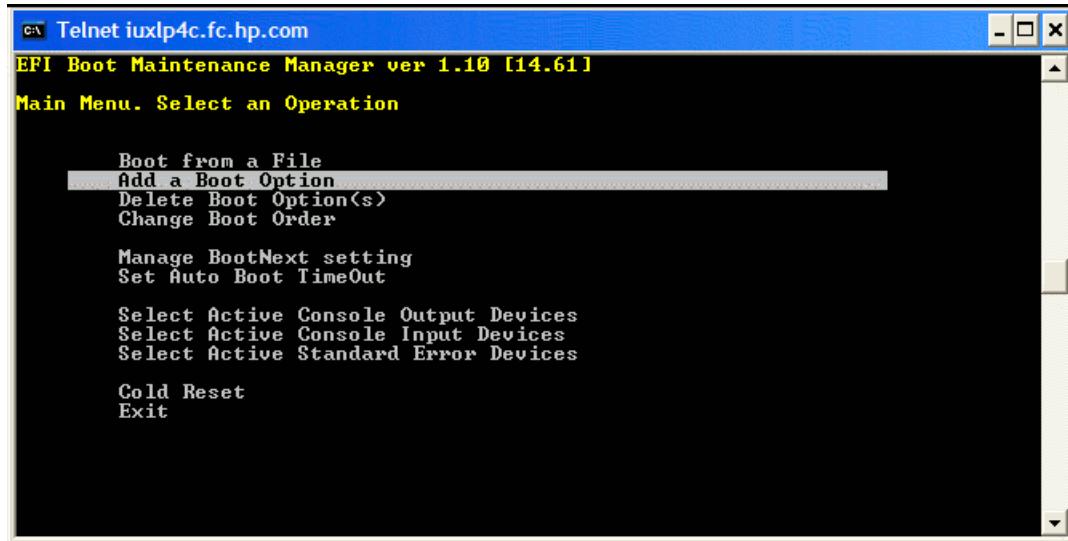
2. Select `Boot Option Maintenance Menu`.

```
Telnet iuxlp4c.fc.hp.com                                    _ □ ✕
EFI Boot Manager ver 1.10 [14.61]  Firmware ver 2.31 [4411]

Please select a boot option

    HP-UX Primary Boot: 0/1/1/0.0x1.0x0
    EFI Shell [Built-in]
    Boot from DVD
    Boot Option Maintenance Menu
    System Configuration Menu

    Use ^ and v to change option(s). Use Enter to select an option
```
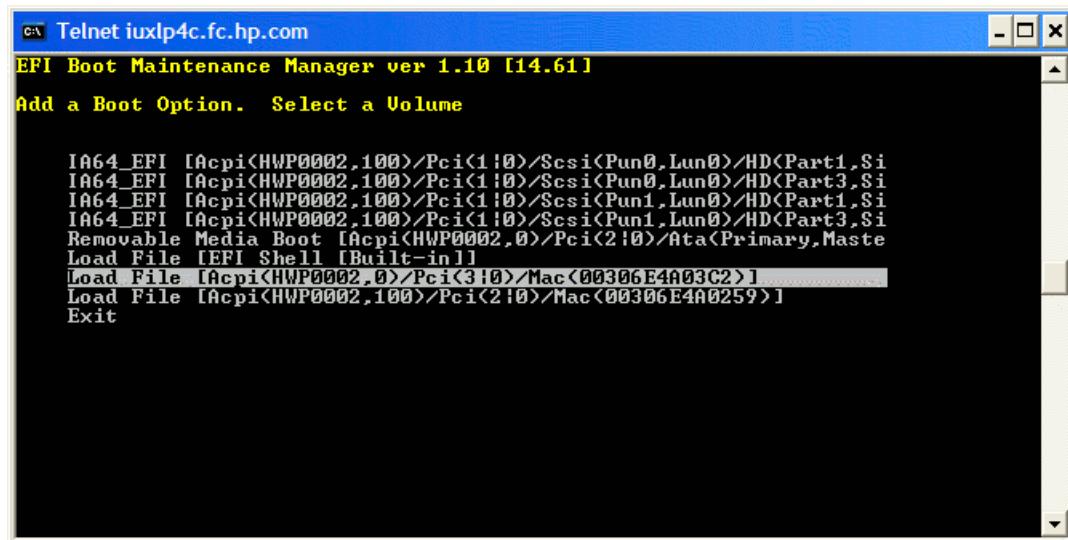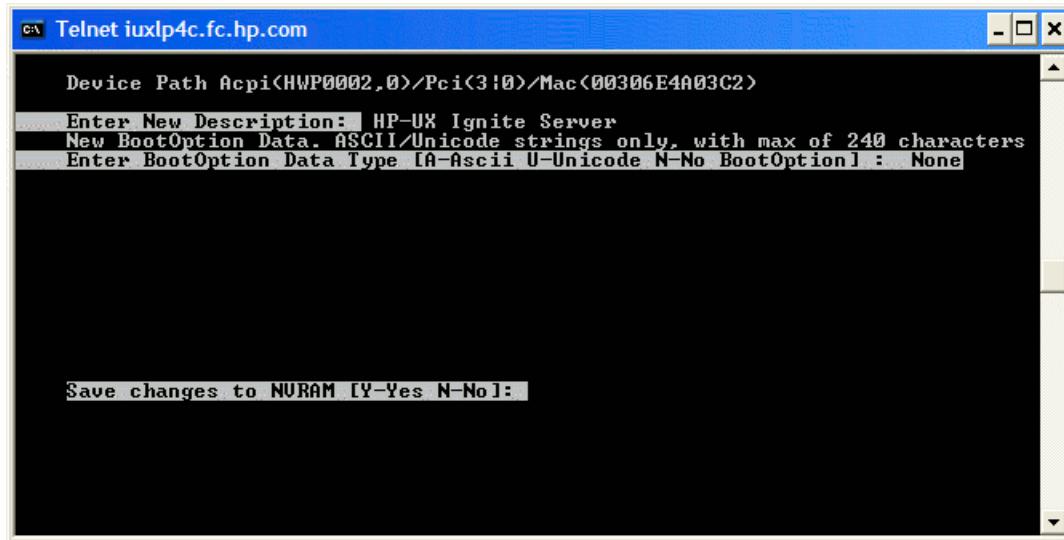
3. Select `Add a Boot Option`
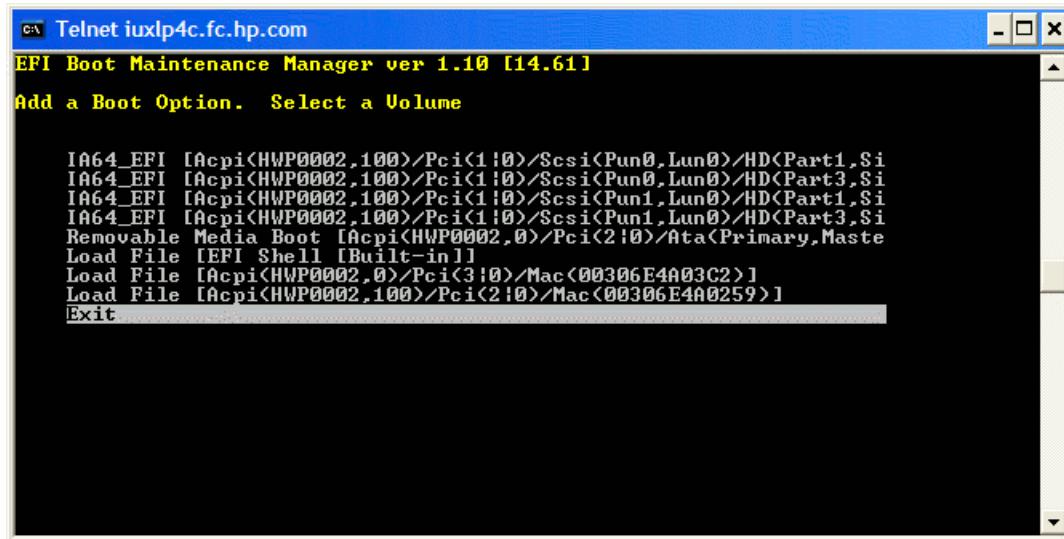
4. Select the network interface with the MAC address you entered in the `/etc/bootptab` file.

5. Enter a description of this boot option, **n** for the `No BootOption` data type, and **y** to the `Save changes to NVRAM` prompt.
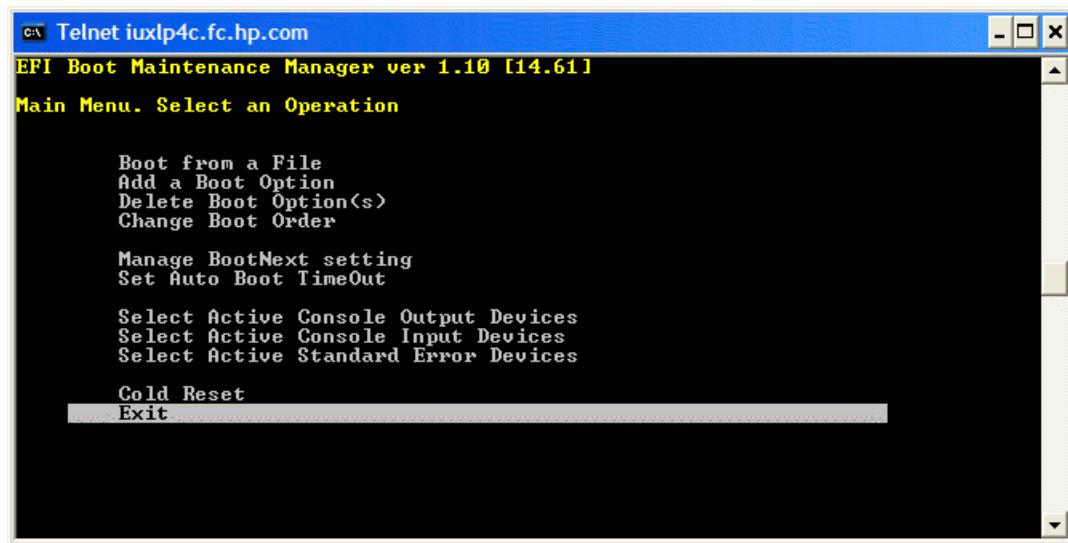
6. Exit the `Add a Boot Option` menu.
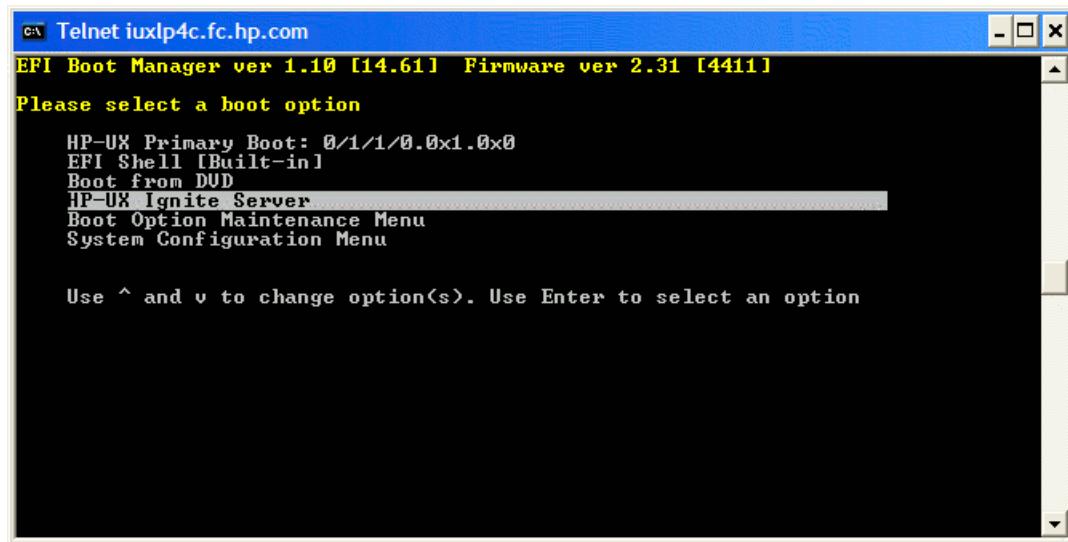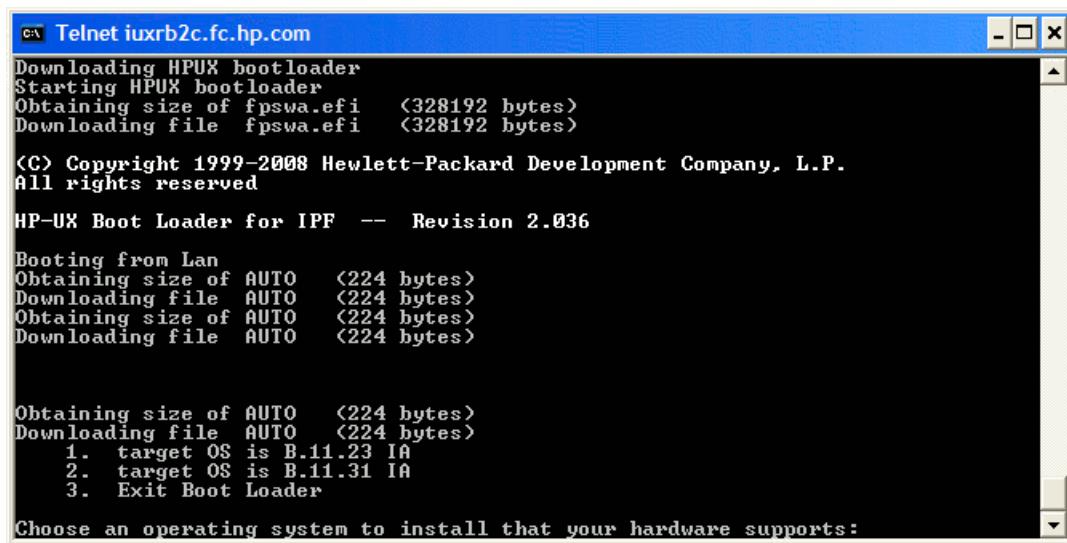
7. Exit the `Main Menu`.

8. Select your new boot option from the `Please select a boot option` menu.

9. When prompted, enter the version of HP-UX you would like to install. Choose the operating system that matches the OE you used when you set up the Ignite-UX server –"Create the HP-UX OE Configuration Information on the Ignite-UX Server" (page 12). Note that this is a timed response and will default to the first selection.

Common Errors

TFTP

PXE-E12: Could not detect network connection. Check cable.

Diagnosis: The boot option you created does not have the correct MAC address and so cannot connect to the internet.

Correction: Determine the appropriate MAC address using the procedure described in the section "Add a Network Entry for the Client to the IP Address File on the Server." (page 15) and then create a boot option with that MAC address.

TFTP

PXE-E16: Valid PXE offer not received.

Load of `boot option` failed: Not Found.

Diagnosis: Diagnosing this error can be difficult. The simplest problem causing this error is that the entry for this client in the server's `/etc/bootptab` file is not correct. A more complicated problem is that there are other *DHCP* servers on your network causing interference with your Ignite-UX server.

Correction: Check the client's entry in the `/etc/bootptab` file on the server to make sure it is correct. Otherwise, contact the systems administrator responsible for the Ignite-UX server.
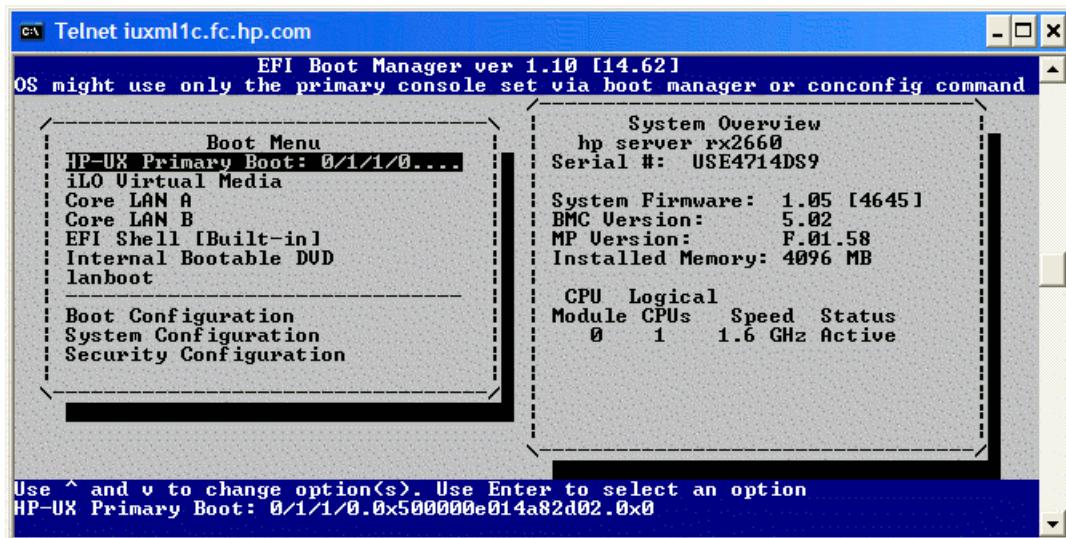
Explore

It's possible your system's EFI Boot Manager interface looks different from the screens above. The Legacy interface style is shown in the procedure above. On most systems you can change the interface style with the Boot Menu selection **System Configuration**. From there, select **Change Boot Manager User Interface** or **Set User Interface** depending on the current interface style. If you are currently using the Legacy style interface, you will have to select **Exit** to return to the Boot Manager menu.

Menu functionality is identical regardless of the interface style you choose.

The Enhanced interface is shown below.

Procedure for PA-RISC-based machines

1. Reboot the client system with the `reboot` command or by cycling the power, and then interrupt the reboot process when prompted.
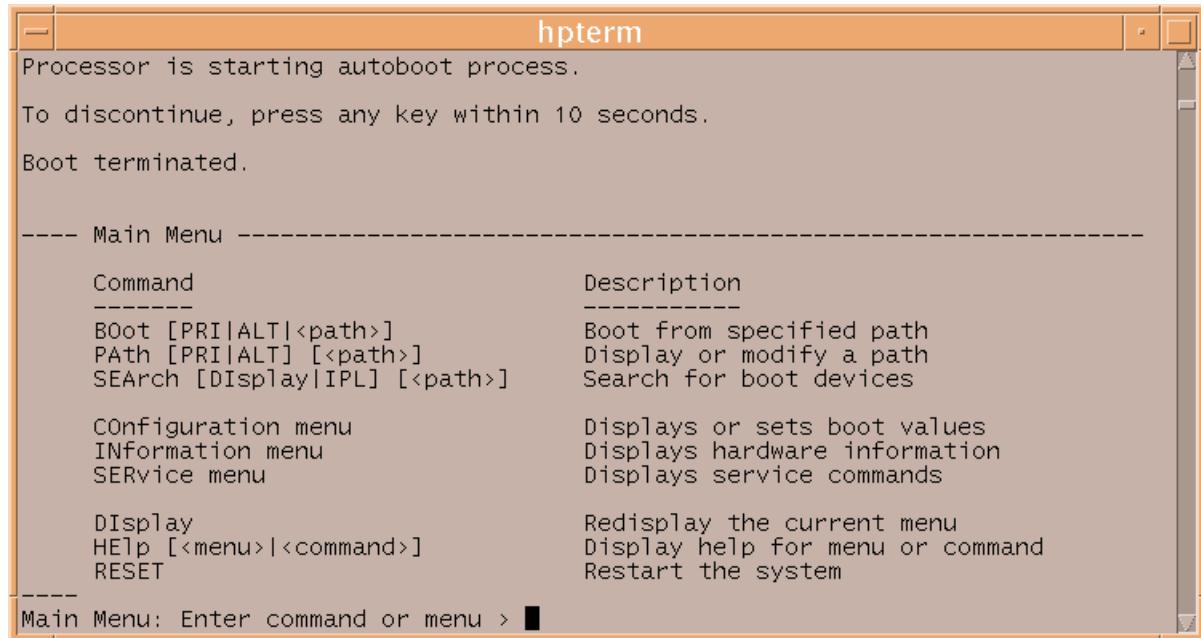
   ```
   # reboot
   ```

2. Interrupt the boot process by pressing any key at the prompt

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

3. From the firmware prompt, boot using the server's IP address:

   ```
   Main Menu: Enter command or menu >boot lan.server_IP_address install
   ```

```
hpterm
Processor is starting autoboot process.

To discontinue, press any key within 10 seconds.

Boot terminated.


---- 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

     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 > ▮
```

4. Answer **n** at the prompt `Interact with IPL (Y, N, or Cancel)?>`
5. Select the operating system to install from the displayed menu. Choose the operating system that matches the OE you used when you set up the Ignite-UX server –"Create the HP-UX OE Configuration Information on the Ignite-UX Server" (page 12). Be aware that the selection of the operating system times out — the client can not be kept waiting at this prompt.

Common Errors

```
Booting...
Failed to initialize.
ENTRY_INIT
Status = -7
```

Diagnosis: Used the wrong IP address.

Correction: Reissue boot command, making sure you use the server IP address.

Console Login:

Diagnosis: The opportunity to interrupt the boot process was missed.

Correction: Login as root and reboot again. Look closely for the prompt to stop the boot process.

Explore
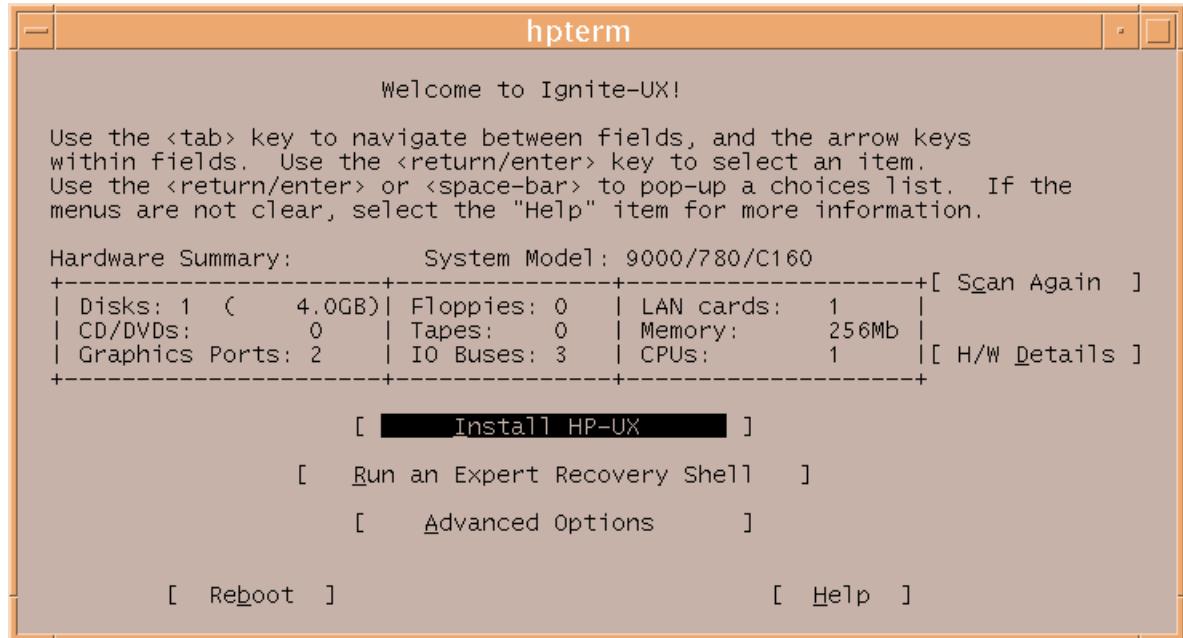
The **backspace** key repositions the cursor but does not erase characters at the PA-RISC prompt "Main Menu: Enter command or menu>". You have to type over unwanted characters. Pressing **return** ignores all characters to the right of the cursor.

Install HP-UX from the Server Using the Client Console

You will use the Ignite-UX *terminal user interface (TUI)* to install HP-UX. It will be displayed on the client console after the client successfully reboots.

Move between menu buttons with the **tab** key and select by pressing **enter**. Help is available from the majority of these screens.

1. Select **Install HP-UX** from the welcome screen by pressing **enter**.

```
┌─                            hpterm                            · □
│
│                      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/enter> 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: 9000/780/C160
│  +-------------------+---------------+--------------------+[ Scan Again ]
│  | Disks: 1  (    4.0GB)| Floppies: 0  | LAN cards:     1       |
│  | CD/DVDs:         0   | Tapes:    0  | Memory:     256Mb |
│  | Graphics Ports: 2    | IO Buses: 3  | CPUs:          1       |[ H/W Details ]
│  +-------------------+---------------+--------------------+
│
│              [ ████████ Install HP-UX █████████ ]
│
│           [   Run an Expert Recovery Shell    ]
│
│           [     Advanced Options       ]
│
│       [  Reboot  ]                          [  Help  ]
│
```

Common Errors

NOTE: The console firmware terminal type is currently set to "hp". If you are using any other type of terminal you will see "garbage" on the screen following this message.

If this is the case, you will need to either change the terminal type set in the firmware via GSP (if your GSP firmware version supports this feature), or change your terminal emulation to match the firmware. In either case you will need to restart if your terminal and firmware terminal type do not match.

Press the 'b' key if you want to reboot now.

Diagnosis: Your console is not set to the correct terminal type.

Correction: One solution is to run the client console from an `hpterm`. Launch it with this command:

`# hpterm -sb -sl 10000&`

You must reboot the client by pressing **b** after the NOTE above, or if you missed this opportunity, reboot by cycling the power. Continue from

---
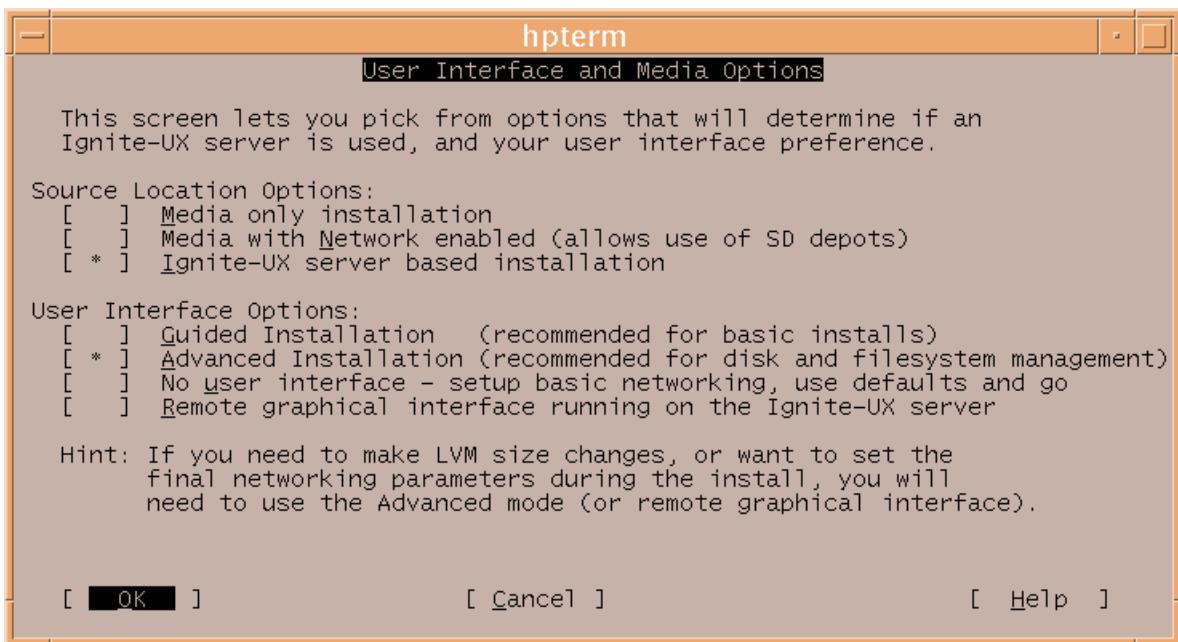
Explore
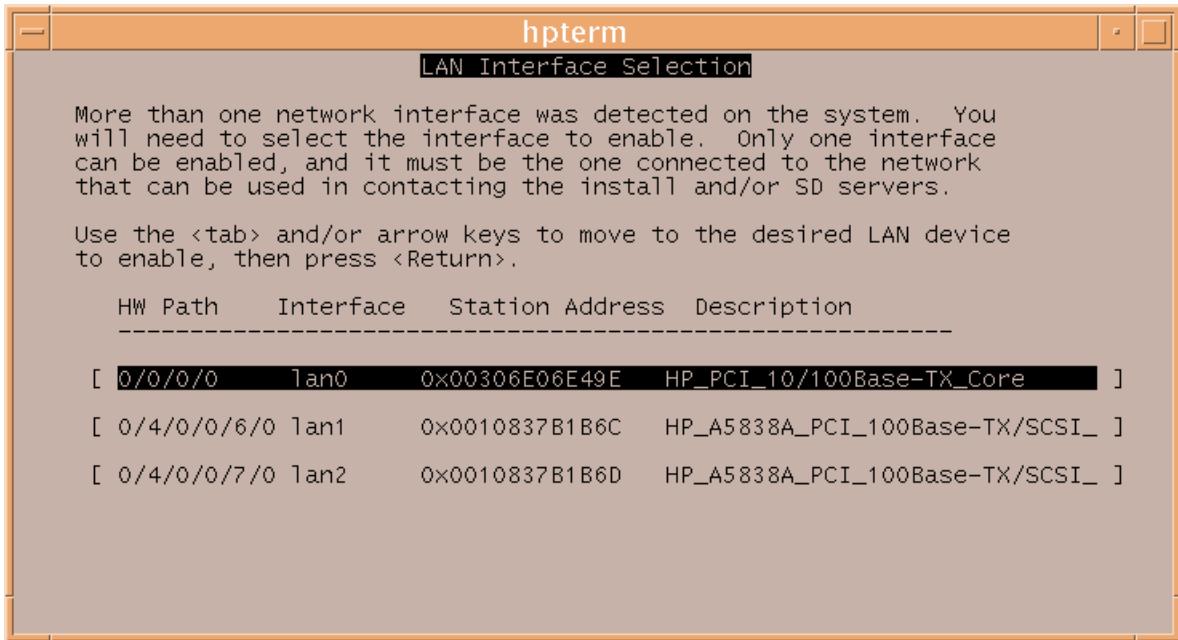
See *hpterm*(1X) by issuing the command

`# man hpterm`

---
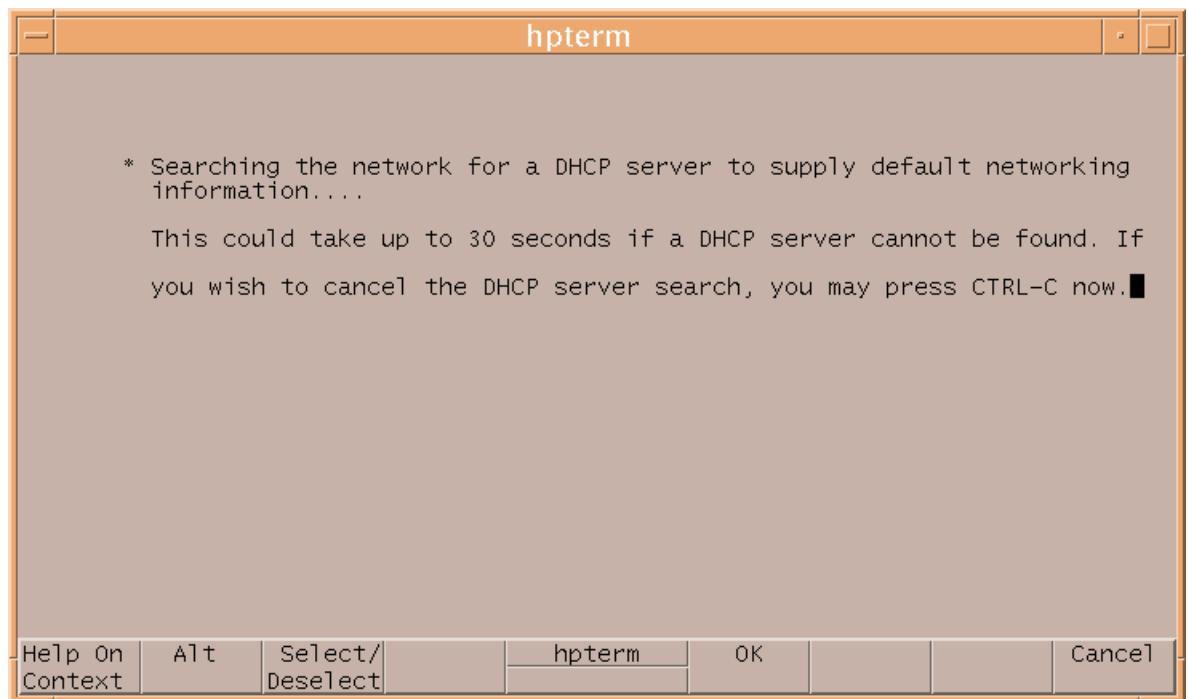
2. If the Source Location Options menu is displayed, leave it at the default selection: **Ignite-UX server based installation**. For the User Interface Options, select **Advanced Installation** by navigating to that line with **tab** and pressing **enter**, or by pressing **a**, then select **OK**.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ ─                              hpterm                              · □    │
│                      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) │
│      [   ]  No user interface - setup basic networking, use defaults and go │
│      [   ]  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  ]     │
└─────────────────────────────────────────────────────────────────────────┘
```

3. If there is more than one network interface on the client system, you will be prompted to select the correct one for connecting to the server system. Select the LAN interface you entered in the server's `/etc/bootptab` or `/etc/opt/ignite/instl_boottab` file.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ ─                              hpterm                              · □    │
│                        LAN Interface Selection                            │
│                                                                           │
│    More than one network interface was detected on the system.  You       │
│    will need to select the interface to enable.  Only one interface       │
│    can be enabled, and it must be the one connected to the network        │
│    that can be used in contacting the install and/or SD servers.          │
│                                                                           │
│    Use the <tab> and/or arrow keys to move to the desired LAN device      │
│    to enable, then press <Return>.                                        │
│                                                                           │
│       HW Path     Interface    Station Address   Description              │
│       ---------------------------------------------------------           │
│                                                                           │
│    [ 0/0/0/0      lan0      0x00306E06E49E    HP_PCI_10/100Base-TX_Core ]  │
│                                                                           │
│    [ 0/4/0/0/6/0 lan1      0x0010837B1B6C    HP_A5838A_PCI_100Base-TX/SCSI_ ] │
│                                                                           │
│    [ 0/4/0/0/7/0 lan2      0x0010837B1B6D    HP_A5838A_PCI_100Base-TX/SCSI_ ] │
│                                                                           │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

4. Ignite-UX then looks for networking information.

```
┌─────────────────────────────────────────────────────────────────────────┐
│  ─│                              hpterm                              │ ▫ □ │
│   ├───────────────────────────────────────────────────────────────┐     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │   * Searching the network for a DHCP server to supply default networking │
│   │     information....                                             │     │
│   │                                                                 │     │
│   │     This could take up to 30 seconds if a DHCP server cannot be found. If │
│   │                                                                 │     │
│   │     you wish to cancel the DHCP server search, you may press CTRL-C now.█ │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│   │                                                                 │     │
│  ─├──────┬────────┬──────────┬─────────────┬──────┬──────┬──────────┤     │
│   │Help On│  Alt   │ Select/  │   hpterm    │  OK  │      │  Cancel │─    │
│   │Context│        │ Deselect │             │      │      │         │     │
└───┴───────┴────────┴──────────┴─────────────┴──────┴──────┴──────────┴─────┘
```

5. If a DHCP server is found, the NETWORK CONFIGURATION screen will contain the client's hostname and IP address. If there is networking configuration available for the server, it will be filled-in as well. Make sure the NETWORK CONFIGURATION parameters are set so the client system can contact the server. Then select **OK**.

```
  —                              hpterm                            · ⊡
                        NETWORK CONFIGURATION

                                This system's hostname: _____

       Internet protocol address (eg. 15.2.56.1) of this host: _____

               Default gateway routing internet protocol address: _____

            The subnet mask (eg. 255.255.248.0 or 0xfffff800): _____

                    IP address of the Ignite-UX server system: ▮_____

          Is this networking information only temporary?  [ No  ]




        [    OK    ]                  [ Cancel ]                    [  Help  ]
 ─Help On │  Alt  │ Select/ │      hpterm      │   OK   │        │        │ Cancel ─
  Context │       │ Deselect│                  │        │        │        │
```

Common Errors

Failed to read "INDEX" file from the install server. Check that the install server's IP address is correct and the server has the "Ignite-UX" product loaded and is available via the tftp(1) service.

Press any key to return to the network configuration menu:
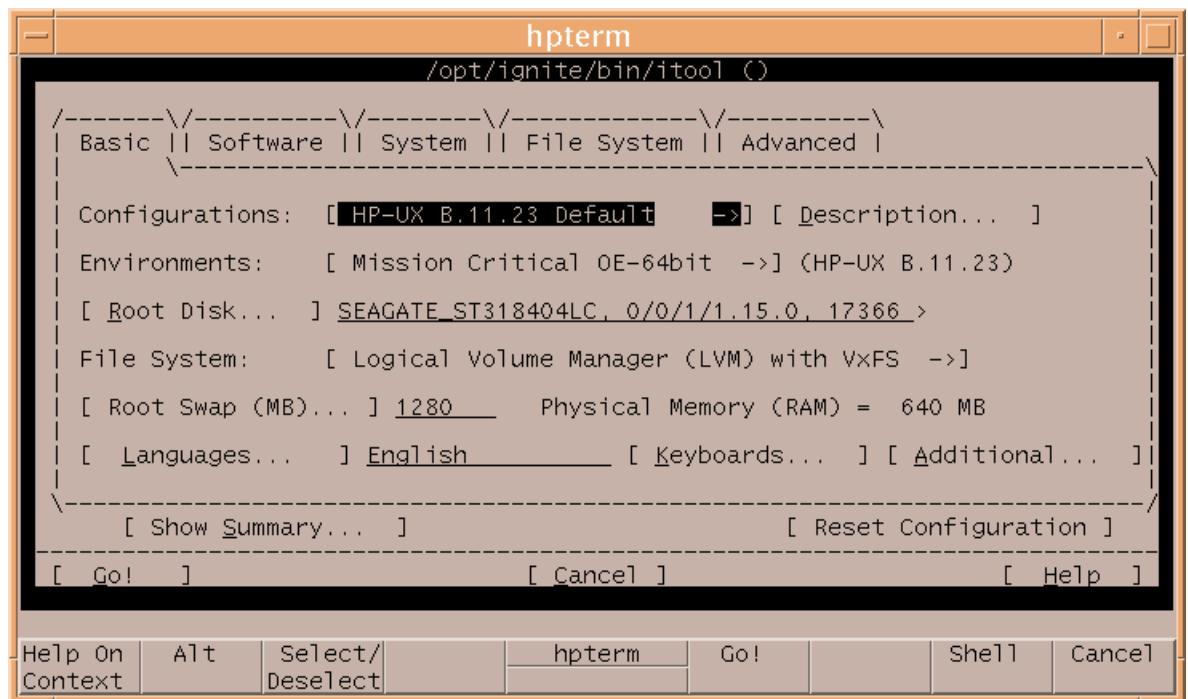
Diagnosis: The client can't find the Ignite-UX server.

Correction: One possibility is that the wrong LAN was selected from the "LAN Interface Selection" menu above. Press any key to return to the LAN Interface Selection menu and make sure the correct LAN is selected.

---

6. The Ignite-UX server will then be contacted for installation configuration information for the client. (A dialog box will be displayed on the server with information that this client has been found.) The client configuration information is then displayed in the TUI version of the client installation configuration interface, also referred to as *itool*.

    From the Configurations: data field, select the correct cfg clause. This is the cfg clause you created in step 2 of "Create the HP-UX OE Configuration Information on the Ignite-UX Server" (page 12), and was named "B.11.23 From OE Media" in the example.

```
┌─                          hpterm                          · □
│                   /opt/ignite/bin/itool ()
│ /-------\/----------\/--------\/------------\/----------\
│ | Basic || Software || System || File System || Advanced |
│        \---------------------------------------------------\
│ |                                                           |
│ | Configurations:  [ HP-UX B.11.23 Default    ->] [ Description...  ] |
│ |                                                           |
│ | Environments:   [ Mission Critical OE-64bit  ->] (HP-UX B.11.23) |
│ |                                                           |
│ | [ Root Disk...  ] SEAGATE_ST318404LC, 0/0/1/1.15.0, 17366 > |
│ |                                                           |
│ | File System:   [ Logical Volume Manager (LVM) with VxFS  ->] |
│ |                                                           |
│ | [ Root Swap (MB)... ] 1280    Physical Memory (RAM) = 640 MB |
│ |                                                           |
│ | [ Languages...  ] English_____ [ Keyboards... ] [ Additional... ]| |
│ \----------------------------------------------------------/
│      [ Show Summary... ]                    [ Reset Configuration ] |
│ -----------------------------------------------------------
│ [ Go! ]                   [ Cancel ]                    [ Help ]
│
├─────────────────────────────────────────────────────────────
│ Help On | Alt | Select/ |        hpterm      | Go! |     | Shell | Cancel |
│ Context |     | Deselect|                     |     |     |       |        |
```

Common Errors

Note:

The currently selected configuration does not contain any environments. You may want to select another configuration.

Diagnosis: The default configuration does not have an OE depot in it.

Correction: This does not affect the configuration you created. Select the cfg clause you created as described above.
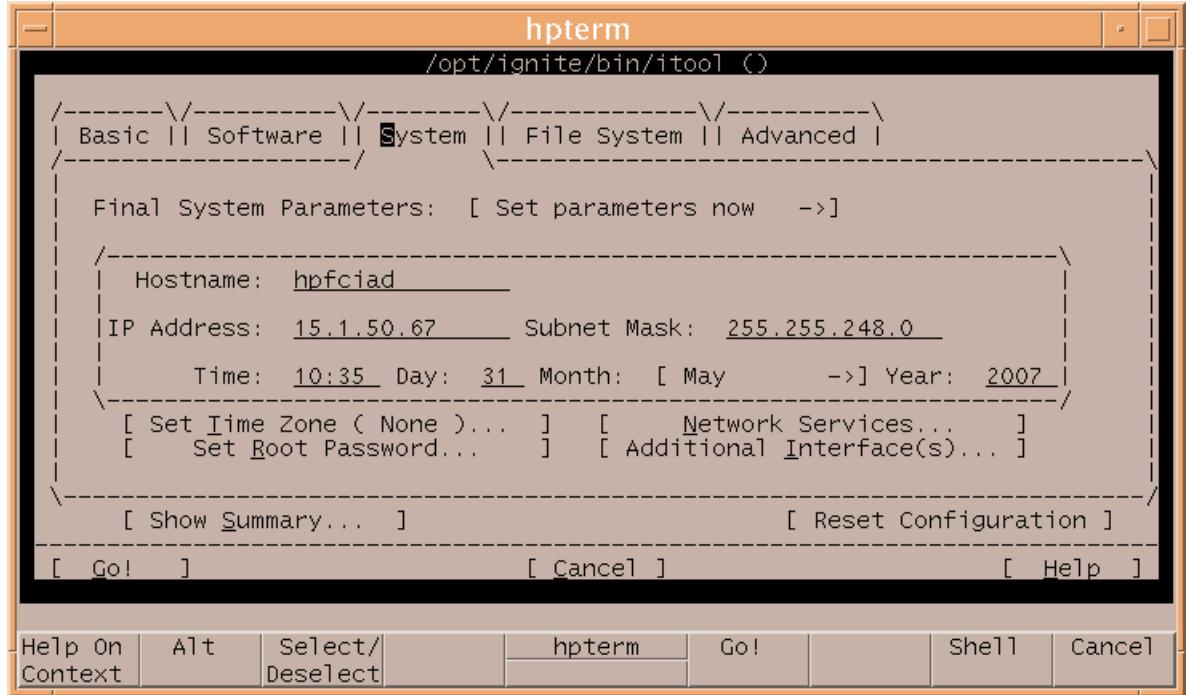
7. Configure your client's installation using the Ignite-UX itool TUI. Modify the fields of the configuration interface at your discretion. Navigate the TUI using the **tab** to move around and by pressing **enter** to make selections. You can use shortcut keys (indicated with an underline) to make a selection, but they do not work when the cursor is positioned at an input field. Using shortcuts can significantly reduce the time required to navigate the TUI itool.

   Not all fields in the configuration interface require attention. In fact, a quick installation can be launched by accepting the default configuration for your version of HP-UX and then clicking **Go!**.
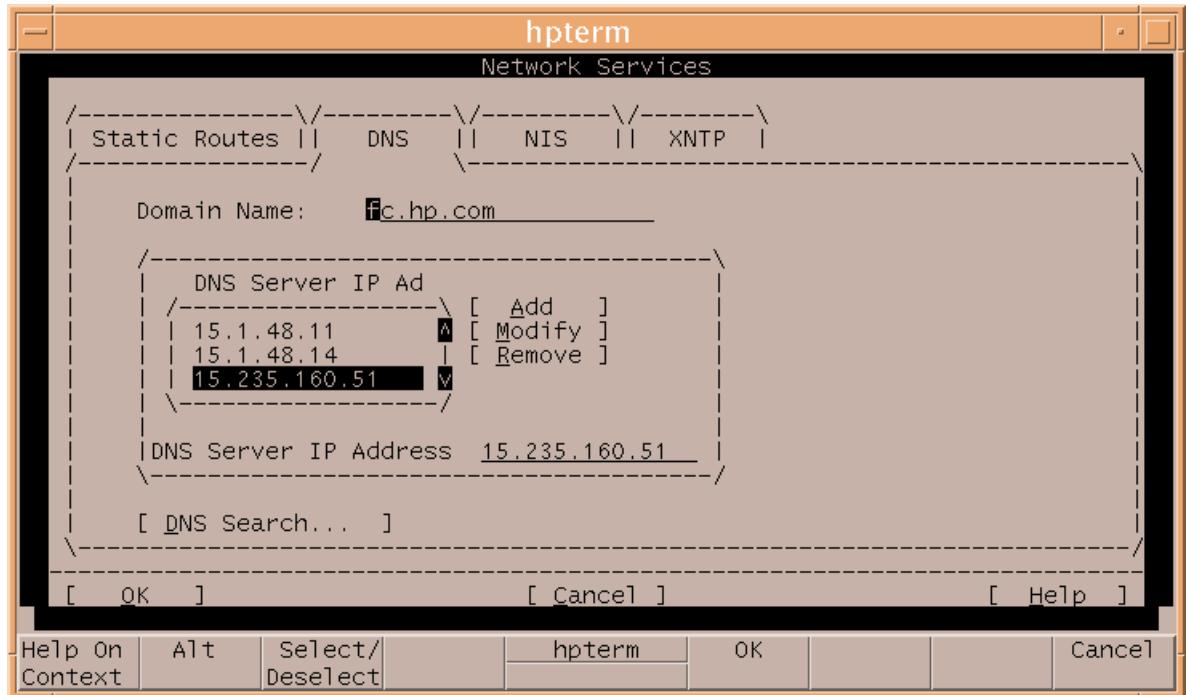
   At a minimum, you might want to define the root password, set the time zone, and set the *DNS* configuration information.

   a.   Navigate to the System tab.

b. Define the root password by selecting the **Set Root Password...** button.

c. Set the time zone by selecting the **Set Time Zone** button.

d. Set the DNS configuration information by selecting the **Network Services...** button on the System screen.

Then select the DNS tab from the Network Services screen.
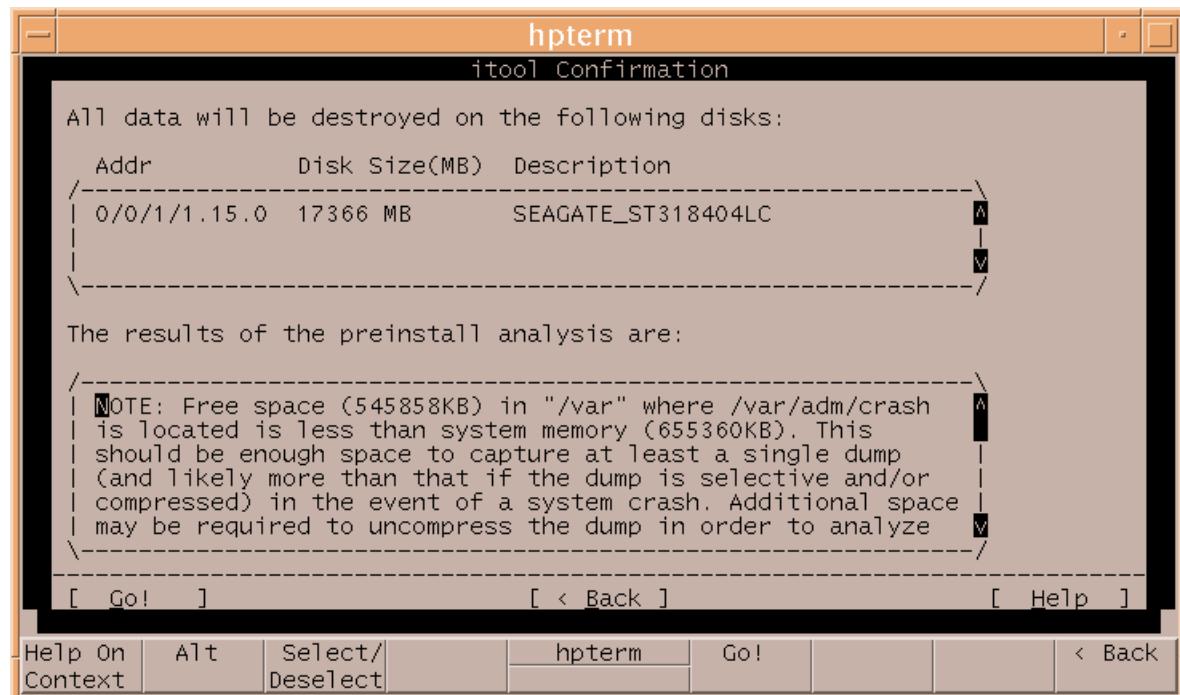
e. Once you select **OK** on the DNS tab, you will be returned to the itool. From there, select **Go!** to begin the cold install of the client.

> ⚠ **CAUTION:** A cold-install overwrites all data on the client disks selected for inclusion into any LVM *volume group* or *VxVM disk group*.

8. Make sure you read all the preinstall analysis information on the itool Confirmation screen. If you feel the cold install may proceed, select **Go!**.

```
 ┌─────────────────────────────────────────────────────────────────────────┐
 │                              hpterm                            ▪  □       │
 │                         itool Confirmation                                │
 │    All data will be destroyed on the following disks:                     │
 │                                                                           │
 │     Addr           Disk Size(MB)  Description                             │
 │    /───────────────────────────────────────────────────────────\         │
 │    | 0/0/1/1.15.0  17366 MB        SEAGATE_ST318404LC          |∧         │
 │    |                                                           | |        │
 │    |                                                           |∨         │
 │    \───────────────────────────────────────────────────────────/         │
 │                                                                           │
 │    The results of the preinstall analysis are:                            │
 │                                                                           │
 │    /───────────────────────────────────────────────────────────\         │
 │    | NOTE: Free space (545858KB) in "/var" where /var/adm/crash |∧        │
 │    | is located is less than system memory (655360KB). This     | |       │
 │    | should be enough space to capture at least a single dump   | |       │
 │    | (and likely more than that if the dump is selective and/or | |       │
 │    | compressed) in the event of a system crash. Additional space|        │
 │    | may be required to uncompress the dump in order to analyze |∨        │
 │    \───────────────────────────────────────────────────────────/         │
 │    ─────────────────────────────────────────────────────────────         │
 │    [  Go!   ]                    [ < Back ]                  [  Help  ]    │
 ├───────────────────────────────────────────────────────────────────────────┤
 │ Help On │ Alt  │ Select/  │        hpterm      │ Go! │        │  < Back  │  │
 │ Context │      │ Deselect │                    │     │        │          │  │
 └─────────────────────────────────────────────────────────────────────────┘
```

9. After selecting **Go!**, the cold install will proceed. Status information is displayed on the client console as the installation progresses.

The cold install of the client system is now complete.

Glossary

Glossary terms are *italicized* when used for the first time in this manual and when used anywhere in the glossary. This is a standard glossary for Ignite-UX documentation – not all terms defined here appear in this guide.

A

add_new_client
An *Ignite-UX* command that constructs a *client* directory on an *Ignite-UX server* without requiring the *client* to be booted from the *Ignite-UX server* first. See *add_new_client*(1M).

agile addressing
The ability to address a *LUN* with the same *DSF* regardless of the physical location of the *LUN* or the number of paths leading to it. Agile addressing is introduced in HP-UX 11i v3.

agile view
The representation of *LUNs* using *lunpath hardware paths*, *LUN hardware paths*, and *persistent DSFs*, introduced in HP-UX 11i v3.

always-installed
For HP-UX 11i v1 and 11i v2, the software and driver *bundles* required for HP-UX. They must be loaded as part of the operating system.

anonymous client
A *client* system that requests an IP address for booting when its *MAC address* is not associated with a specific IP address on the *server*. An anonymous client has its IP address allocated from a pool of IP addresses set aside for anonymous clients. See *registered client*.

ANSI tape label
See *standard label tape*.

archive
1. A file made with make_sys_image that contains files for *installation* or *recovery* for a system. The file format may be tar, cpio, or with HP-UX 11i v3, pax, and can be compressed. An archive does not include *file system* or *disk layout* information. Archives can be either *recovery archives* or *golden archives*. *Recovery archives* retain host-specific customizations from the system; *golden archives* have customizable files reset to the *newconfig* state. An archive may include the core HP-UX operating system, and may include application software, patches, and global customizations. 2. A file containing the contents of other files, created and maintained by programs such as pax, tar and cpio.

archive_impact
An *Ignite-UX* command that calculates the disk space required for an *archive* on a per top level directory basis by default. The results are written in *Ignite-UX configuration file* syntax to standard output. See *archive_impact*(1M).

AUTO
A file that defines default boot behavior. For PA-RISC systems, the AUTO file is in the *LIF volume*. For Itanium®-based systems, the AUTO file is located in the /opt/ignite/boot directory. See *hpux*(1M) and *hpux.efi*(1M).

auto_adm
An *Ignite-UX* command that allows you to manipulate AUTO file contents. See *auto_adm*(1M).

automated installation
Any installation done automatically, without manual interaction. This can be done at the command line with a bootsys command, or it can be scheduled to run at a particular time using the cron daemon.

B

Bastille
A security hardening/lockdown tool that can enhance the security of the HP-UX operating system. It provides customized lockdown on a system-by-system basis.

boot
To load the *kernel* and start the operating system that is referenced by the *kernel* that was loaded. See *boot*(1M).

boot console handler (BCH)
The firmware interface on a PA-RISC system. The Itanium-based equivalent is the *extensible firmware interface*.

boot content
[W|V|I]INSTALL, [W|V|I]INSTALLFS, INSTCMDS or *INSTCMDSIA, config files*, and other files to support *boot* and *Ignite-UX* functionality needed to switch to another *install* source.

boot helper media
Installation media with no *archive*. Meant for booting only. *Installation* is completed using an *Ignite-UX server*.

boot helper system
A system with minimal *Ignite-UX* core functionality on a local *subnet* that provides an *Ignite install kernel* to a *client* to assist it with booting from an *Ignite-UX server* on another *subnet*.

boot image	Boot content, including [W|V|I]INSTALL, [W|V|I]INSTALLFS, INSTCMDS or INSTCMDSIA, and other content needed to support boot, formatted for a specific media type such as CD, DVD, or tape.
bootsys	An *Ignite-UX* command that allows you to *reboot* and *install clients* that are currently running HP-UX. See *bootsys*(1M).
bundle	A package of software available from *Software Distributor*. Bundles are distributed within *depots* and contain *products* and *filesets*. *Ignite-UX* typically references software at the bundle level, as opposed to *product* or *product.fileset*.

C

CD boot image	A *boot image* formatted for a CD.
cfg clause	See *configuration clause*.
check_net_recovery	An *Ignite-UX* command that compares the files on a currently running system with a network *recovery archive* created by `make_net_recovery`. A report is generated showing those files that have been added, deleted, or changed since the *recovery archive* was created. See *check_net_recovery*(1M).
check_tape_recovery	
	An *Ignite-UX* command that compares the files on a currently running system with a tape *recovery archive* created by `make_tape_recovery`. A report is generated showing those files that have been added, deleted, or changed since the *recovery archive* was created. See *check_tape_recovery*(1M).
CINDEX	An *INDEX* file for individual clients, kept in the `/var/opt/ignite/`*client* directory on the *Ignite-UX server*. Used to *install recovery images* made with `make_net_recovery`.
client	A computer that uses an *Ignite-UX server* for *installation*, *recovery* services, or both.
cloning systems	To replicate one computer's software and configuration onto another. This can be accomplished to varying degrees using `make_sys_image` and `make_[tape|net]_recovery`.
cold install	Booting, loading HP-UX onto, and then starting a system. This process loads a new copy of HP-UX onto a system.
command line interface (CLI)	Text formatted commands and options entered at an HP-UX command line prompt or executed by a script.
common configuration	System software you want replicated onto other systems, such as: an operating system, patches, and application software.
compressed file	A file made smaller with compression software such as `gzip` or `compress` without losing any information. See *gzip*(1) and *compress*(1).
CONFIG	A file in the *LIF volume* that typically contains all the software configuration information and the default file system layout information. It includes default configuration information for the operating system release, user-defined configuration information, and information regarding *archives* and *depots*.
config file	See *configuration file*.
configuration clause	Defines a collection of related *configuration files* used to *install* or *recover* a system. You will find configuration clauses in the `/var/opt/ignite/INDEX` file for *installations*, and in the `/var/opt/ignite/clients/`*MAC_address*`/CINDEX` file for *recoveries*, on an *Ignite-UX server*.
configuration file	A file that contains information describing installation behavior, *archive* contents, or the contents of a *depot*. Configuration files are referenced by the *INDEX* and *CINDEX* files. See *instl_adm*(4).
copy_boot_tape	An *Ignite-UX* command that replicates a PA-RISC *recovery* tape made with *make_tape_recovery*. See *copy_boot_tape*(1M).
crippled config	See *custom limited config*.
custom installation	An *installation* tailored to your specific requirements, including: *kernel* parameters, the running of user-supplied scripts, host information, and networking information.
custom limited config	A *configuration file* that informs *Ignite* there is no corresponding *archive*. Used with *boot helper media*. Also called a *crippled config*.

D

daemon A process that runs in the background and is usually immune to termination instructions.

default-installed For HP-UX 11i v1 and 11i v2, software *bundles* that are installed as default with HP-UX. These *bundles* can be deselected before *installation*.

depot A repository of software products, organized so *Software Distributor* (SD-UX) commands can use it as a software source.

device identifier A user friendly, readable string, such as "LAB2CAB23LUN15", that is stored on a device. It remains viewable even if the device is moved physically. See *scsimgr*(1M).

DHCP Stands for Dynamic Host Configuration Protocol, and is a way of dynamically allocating IP addresses and other network topology information to *clients* for a specified lease time.

directed boot A *boot* request that is directed to a particular *Ignite-UX server* or *boot helper system*. A directed boot allows *boot* and *installation* from an *Ignite-UX server* on a different *subnet* without requiring a boot helper.

disk group The *VxVM* equivalent of an *LVM volume group*.

disk layout The way hard disks are formatted and information stored on them. There are two general methods of disk layout: physical-storage layout and logical-storage layout. *VxVM* and *LVM* use logical-storage layout, and use various layout techniques such as mirroring and striping.

disk layout version The version of the *VxFS* private data that is used for its *file system* layout. This term can be abbreviated to DLVx, where x is the disk layout version number. See *mkfs_vxfs*(1M).

DNS Stands for Domain Name Service, and provides mapping between hostnames and IP addresses.

DSF Stands for Device Special File. A file associated with an I/O device. DSFs are read and written to as ordinary files are, resulting in activation of the associated device.

DUMP A use designation typically for an *LVM logical volume* or a *VxVM* volume for system crash dump storage. See *crashconf*(1M).

DVD boot image A *boot image* formatted for a DVD.

E

EFI See *Extensible Firmware Interface*.

El Torito An extension to ISO9660 for creating bootable optical media.

essential The list of files and directories in /opt/ignite/recovery/mnr_essentials describing the default minimum contents of a *recovery archive*.

expert recovery An *Ignite-UX* mode of operation allowing expert users to repair a system with software damage without reinstalling HP-UX.

extensible firmware interface (EFI) The Intel® developed firmware environment on Itanium-based systems that acts as an interface between operating systems and platform firmware. The interface consists of platform related information, as well as *boot* and runtime service calls. The PA-RISC equivalent is the *boot console handler*.

F

file system A collection of files and supporting data structures residing directly on a mass storage device or on a virtual or logical disk. There are various file system implementations, such as HFS and VxFS.

fileset For *SD-UX*, a collection of files within a *product*. The *product* may be part of a *bundle*. See *sd*(5).

G

gateway The IP address of a system that routes forwarded traffic to a non-local network. A gateway IP address is usually associated with a router.

golden archive An *archive* with files set to the *newconfig* state. See *archive*.

golden image A combination of a *golden archive*, and a *configuration file* describing a system's *disk layout* and *file system*. Use as a *common configuration* to *install* systems.

graphical user interface (GUI)	A method of interacting with computers that employs metaphors such as windows and desktops and uses mouse-driven menus.
gzip	A command available with HP-UX that compresses and decompresses files in ".gz" format. See *gzip*(1).

H

HBA	Stands for Host Bus Adaptor. A physical I/O interface that provides I/O processing and connectivity between a server and a storage device.
hierarchical file system (HFS)	A particular implementation of a *file system*. See *mkfs_hfs*(1M).
HPUX	The HP-UX bootstrap loader. Loads the *kernel* and starts HP-UX. For *Ignite-UX*, the HP-UX bootstrap loader loads the *install kernel* (e.g. *IINSTALL*) and *install file system* (e.g. *IINSTALLFS*). The bootstrap loader may also load other *LIF* content it needs to operate. See *hpux*(1M).

I - J

Ignite	See *Ignite-UX*.
ignite	The ignite command name. See *ignite*(5).
Ignite-UX	An HP-UX administration toolset that allows simultaneous installation of HP-UX on multiple PA-RISC and Itanium-based clients, the creation and use of custom *installations*, the remote *recovery* of *clients*, and the creation of *recovery* media.
Ignite-UX server	A *server* from which *Ignite-UX* is used to *install* HP-UX on *client* systems.
IINSTALL	The *installation kernel* for Itanium-based systems.
IINSTALLFS	The associated *file system* for the *IINSTALL kernel*.
image	The current state of your computer, or portion of your computer. Often thought of as a "snapshot" of the state of the machine at any given moment.
INDEX	A file on the *Ignite-UX server* and in *LIF volumes* that groups references to *configuration files* in *configuration clauses* in order to define *installation* behavior.
initial system loader (ISL)	Implements the operating system independent portion of the bootstrap process on PA-RISC systems. It is loaded and executed after self-test and initialization have completed successfully. See *isl*(1M).
INSTALL	The *installation kernel* for 32-bit enabled PA-RISC systems.
install	Perform an *installation*.
install content	*Boot content* and other files needed to support *Ignite-UX* functionality during *install* and *recovery*.
install file system	See *IINSTALLFS*, *INSTALLFS*, *VINSTALLFS*, and *WINSTALLFS*.
install kernel	See *IINSTALL*, *INSTALL*, *VINSTALL*, and *WINSTALL*.
installation	Loading the operating system, other software, and configuration information onto a system.
installation media	Removable media such as tape, CD, and DVD for *stand alone installation* of a *client* system.
INSTALLFS	The associated *file system* for the *INSTALL kernel*.
INSTCMDS	A compressed tar *archive* of commands in the *LIF volume*, or on an *Ignite-UX server*, required for specifying the system configuration to install on a PA-RISC system.
INSTCMDSIA	A compressed tar *archive* of commands in the *LIF volume*, or on an *Ignite-UX server*, required for *disk layout* on an Itanium-based system.
instl_adm	An *Ignite-UX* command that checks syntax on *Ignite-UX configuration files* and manages the *configuration file* in an *installation file system* on an *Ignite-UX server*. See *instl_adm*(1M).
instl_bootd	A boot protocol *daemon* for *Ignite-UX clients* that responds to PA-RISC systems requesting *boot* services from the *Ignite-UX server*. See *instl_bootd*(1M).
instl_combine	An *Ignite-UX* command that combines a *CD boot image* or *DVD boot image* with *install content*. See *instl_combine*(1M).

instl_dbg	An *Ignite-UX* command that will parse and debug an *Ignite-UX client's configuration files*. See *instl_dbg*(1M).
ISL	See *initial system loader*.
ISO image	An ISO9660 formatted file that is to be written to a CD or DVD. Used for a bit-for-bit burn of a CD or DVD.
itool	The name of an internal IUX program that presents the *Ignite-UX client installation* configuration user interface. This interface has five tabs: **Basic**, **Software**, **System**, **File System**, and **Advanced**. It is used to customize all or part of the operating system *installation* on the *client* before an *installation* or *recovery*. This command is not invoked from the command line.
IUX	See *Ignite-UX*.

K

kernel	The HP-UX kernel is the executable code responsible for managing the computer's resources, such as: allocating memory, creating processes, and scheduling programs for execution. The kernel resides in RAM (random access memory) whenever HP-UX is running.

L

LANIC	See *MAC address*.
largefiles	An option available on certain *file systems* that allows file sizes greater than 2 gigabytes.
legacy DSF	A *DSF* with the hardware path information such as SCSI bus, target, and *LUN* embedded in the file's minor number and file name, such as /dev/dsk/c#t#d#. These are the only *DSFs* available in releases prior to HP-UX 11i v3.
legacy hardware path	The representation of a hardware path as it exists in releases prior to HP-UX 11i v3. It is composed of a series of bus-nexus addresses separated by slashes (/) leading to the *HBA*. After the *HBA*, additional address elements, such as domain, area, port, tartet, and *LUN*, are separated by periods (.). The string /0/2/1/0.1.4.0.0.2.7 is an example of a legacy hardware path.
legacy view	The representation of *legacy hardware paths* and *legacy DSFs* as in releases prior to HP-UX 11i v3.
LIF	See *Logical Interchange Format*.
LIF volume	Portions of content needed for *boot* and *install* combined into a LIF file. The LIF file is included in *boot content* and in *install content*.
link level address (LLA)	See *MAC address*.
logical interchange format	A simple file system implemented on HP computers able to run HP-UX to aid in media transportability. See *lif*(4).
logical volume	A virtual subdivision of a *volume group*. See *logical volume manager*.
logical volume manager (LVM)	A specific *volume manager* type created and managed by the HP LVM product. See *lvm*(7).
LUN	An identifier of a SCSI device. This refers to an end storage device such as a disk, tape, floppy, or CD. This is the unit itself and does not represent the path to the unit.
LUN hardware path	A hardware path for a SCSI *LUN* that virtualizes all paths to the *LUN*. The first path element is 64000, followed by a virtual bus instance and a logical unit number. Multipathed *LUNs* have a single LUN hardware path. The string 64000/0xfa00.0x22 is an example of a LUN hardware path. LUN hardware paths are part of the *agile view* introduced in HP-UX 11i v3.
lunpath hardware path	The representation of a hardware path for a mass storage device. It is identical in format to a *legacy hardware path* up to the *HBA*. After the *HBA*, additional addressing is represented in hexadecimal format. The string 0/2/1/0.0x50001fe1500170ac.0x4017000000000000 is an example of a lunpath hardware path. Lunpath hardware paths are part of the *agile view* introduced in HP-UX 11i v3.

M

MAC address Stands for Media Access Control. A network card's unique hardware number. Used to uniquely identify a network interface connected to a local area network.

make_[tape|net]_recovery

Collectively refers to the *make_tape_recovery* and *make_net_recovery Ignite-UX* commands.

make_boot_tape An *Ignite-UX* command that creates a bootable tape that contains just enough information for a system to *boot* and connect to an *Ignite-UX server*. See *make_boot_tape*(1M).

make_bundles An *Ignite-UX* command that creates a *bundle* container for products in a *depot*. See *make_bundles*(1M).

make_config An *Ignite-UX* command that constructs *Ignite-UX configuration files* for *Software Distributor depots*. See *make_config*(1M).

make_depots An *Ignite-UX* command that builds a *Software Distributor depot* for use by other *Ignite-UX* tools by copying *bundles* from a *Software Distributor* source. See *make_depots*(1M).

make_ipf_tape An *Ignite-UX* command that creates a bootable tape for an Itanium-based system. The tape will contain *boot* and *installation* components, but not a *recovery archive*. See *make_ipf_tape*(1M).

make_medialif An *Ignite-UX* command that creates a file containing a *LIF volume* that is used to *boot* PA-RISC systems. This file may then be copied to tape, CD, or DVD to create *installation media*. See *make_medialif*(1M).

make_net_recovery An *Ignite-UX* command that creates a *recovery archive* and system *config file*, and stores the resultant *recovery image* on a system on the network. See *make_net_recovery*(1M).

make_sys_image An *Ignite-UX* command that creates an *archive* of a system. See *make_sys_image*(1M).

make_tape_recovery An *Ignite-UX* command that creates a *recovery archive* and system *config file*, and stores the resultant *recovery image* on a local tape. See *make_tape_recovery*(1M).

manage_index An *Ignite-UX* command that is used to manipulate an *Ignite-UX INDEX* or *CINDEX* file. See *manage_index*(1M).

manifest Details of a *client's installation*. It is available in a file on the *client* and the *Ignite-UX server* after successful *installation*, and it may be displayed or regenerated with the *print_manifest* command. See *print_manifest*(1M).

media image The combined software source, *config files*, and *boot* information to be written to CD or DVD, used when preparing *installation media*. It is a single large file in the HP-UX operating system that is written to the medium and used for *installation* or *recovery*.

multipathing The detection, correlation, and coordinated usage of multiple hardware paths leading to the same LUN.

N

network boot When a system boots the HP-UX install kernel over the network from an Ignite-UX server.

newconfig The state of a file as it is stored in /usr/newconfig before it is moved into place and modified to be system specific. Files in a newconfig state contain no information about the personality of the system.

NFS Stands for Network File System. Allows a *client* to perform transparent file access over the network.

NIC address See *MAC address*.

NIS Stands for Network Information Service. It allows access from any system to any system with a single user identification and password.

NIS domain The group of systems sharing NIS configuration information.

O

offline diagnostic environment (ODE) Diagnostic utilities stored in the *boot* area or service partition able to run without the operating system.

optional	With 11i v3, software *bundles* that are not installed with HP-UX by default. You must select these *bundles* before *installation*. *Ignite-UX* is an example of an optional software *bundle*.

P

partition	A portion of a disk device that appears to *volume managers*, *file systems*, and other OS software as a disk device. Partitions allow different portions of a disk to hold content needed for *boot*, OS file systems, diagnostic tools, and other information.
pax	An HP-UX file archiving command that extracts, lists, and writes member files to an *archive*. *Ignite-UX* uses pax to produce tar, cpio, and pax formatted *archives*. See *pax*(1),*tar*(1), and *cpio*(1).
PDC	See *Processor Dependent Code*.
persistent DSF	A DSF conforming to the naming model introduced in HP-UX 11i v3 to support agile addressing. The device file name contains an instance number, such as /dev/disk/disk#, and the minor number has no hardware path information.
physical location	Device identifier that uses information such as cabinet, bay, and LUN ID to indicate where the device is actually located. Used to indicate a specific device independent of I/O path changes.
pkg_rec_depot	An *Ignite-UX* command that repackages the *Ignite-UX* product into a *depot* on an *Ignite-UX server* in order to distribute *Ignite-UX* software to *client* systems that use the *Ignite-UX server* for network *recovery*. See *pkg_rec_depot*(1M).
print_manifest	An *Ignite-UX* command that displays a *manifest* of the system it is run on. It can either display the original *manifest*, or gather information about the current system when it runs. See *print_manifest*(1M).
processor dependent code	The firmware that implements all processor-dependent functionality including initialization and self-test of the processor. Upon completion, it loads and transfers control to the *initial system loader*. Firmware behavior varies depending on the hardware series. See *pdc*(1M).
product	In SD-UX, a collection of *filesets*, individual *filesets*, or both.
PXE	Stands for preboot execution environment. A protocol built on top of *DHCP* on HP-UX Itanium-based systems used to request *boot* services from a *server* in order to load the operating system.

R

reboot	To stop all running code including the *kernel*, restart a computer, and *boot* the system. See *shutdown*(1M) and *reboot*(1M).
RECCMDS	A compressed tar *archive* of commands required for *expert recovery* on PA-RISC systems.
RECCMDSIA	A compressed tar *archive* of commands required for *expert recovery* on Itanium-based systems.
recommended	With 11i v3, software *bundles* that are recommended and should be installed with HP-UX because they fulfill required software dependencies, if any exist. You can deselect the *bundles* before *installation*.
recovery	See *system recovery*.
recovery archive	An *archive* that retains host specific customizations from the system. See *archive*.
recovery image	A system-specific snapshot of a system that contains hostname, IP address, networking information, all files and directories essential to bringing up a functional system, as well as optionally including specified data on a disk, *volume group*, file, or directory basis. It is created with make_[tape|net]_recovery.
recovery shell	See *expert recovery*.
registered client	A *client* system that has its *MAC address* registered with the *server* in order to always *boot* to the same assigned IP address. For PA-RISC systems, the *client's MAC address* is assigned to an IP address in the /etc/opt/ignite/instl_boottab or /etc/bootptab file. For Itanium-based systems, the default is to use the /etc/bootptab file.
required	With 11i v3, software and network driver *bundles* that are required and always installed with HP-UX. Software in this category cannot be deselected.

S

save_config An *Ignite-UX* command that creates a hardware *configuration file*. It extracts disk and *file system* information along with certain system and networking parameters for the current system, and writes it to a *configuration file*. See *save_config*(1M).

script hook Predefined mechanisms allowing user-defined scripts to run at specific points during the execution of the *installation*. Within the *Ignite-UX installation* procedure there are various script hooks: pre-config, pre-load, post-load, post-config, and final. See *instl_adm*(4) under "Command and Script Execution Hooks."

SCRIPTS A *configuration clause* of commands in the *LIF volume* containing scripts that can be selected in the *itool* under the **Advanced** tab.

SD-UX See *Software Distributor*.

selectable For 11i v1 and 11i v2, software *bundles* that are not installed by default with HP-UX. You must select these *bundles* to install them. *Ignite-UX* is an example of a selectable software *bundle*.

server A computer that provides software and services to *clients*.

setup_server An *Ignite-UX* command that performs administration tasks for an *Ignite-UX server* from a *command line interface*. The same functionality is available with the *Ignite-UX GUI*. See *setup_server*(1M).

Software Depot See *depot*.

Software Distributor (SD-UX) An HP-UX product that provides a set of tools for centralized HP-UX software management. SD-UX commands are included with the *installation* of the HP-UX operating system. SD-UX commands typically use the prefix "sw", such as in `swinstall` and `swverify`.

stand alone In terms of *Ignite-UX* (as opposed to any other usage) a *client* system that is not network booted, but may still use an *Ignite-UX server* for *installation* or *recovery*.

standard label tape A tape containing ANSI standard labeling. Ignite-UX uses *ansitape*(1) to create a standard label tape.

subnet A separate part of larger a network connected via network gateways.

SWAP A use designation typically for an *LVM logical volume* or a *VxVM volume* for paging. See *swapon*(1M).

SWAP+DUMP A use designation typically for an *LVM logical volume* or a *VxVM volume* that can be used for *DUMP* or *SWAP*.

SYSCMDS A compressed `tar` *archive* of commands in the *LIF volume* or on an *Ignite-UX server*, required for *installation* of PA-RISC systems.

SYSCMDSIA A compressed `tar` *archive* of commands in the *LIF volume* or on an *Ignite-UX server*, required for *installation* of Itanium-based systems.

system image See *image*.

system recovery The use of a *recovery image* to reestablish a system.

Symbols and numbers

0xLLA See *Link Level Address*

T

terminal user interface (TUI) A method of interacting with computers that employs a character-based display that works on non-graphical terminals. The TUI uses a keyboard for navigation, not a mouse.

two-step media recovery A method of using the *Ignite-UX* tape *recovery* tool when a system or I/O interface does not support firmware tape boot. The method involves step 1: booting from installation media such as DVD or CD, and then step 2: recovering from tape.

U

Unique LUN ID   A general term for a *LUN* identifier, which might specifically be a physical disk's WWID, a WWID assigned to a SAN virtual LUN, the uniq_name assigned to a LUN for which a WWID could not be obtained, or some other type of identifier unique to a LUN.

V

Veritas   A set of products from Symantec that include *VxVM* and *VxFS*.

VINSTALL   The *installation kernel* for V-class PA-RISC systems.

VINSTALLFS   The associated *file system* for the *VINSTALL kernel*.

vmunix   The default *kernel* filename, used during normal system operation. vmunix is built by the mk_kernel command, which *Ignite* calls during system installation. The *AUTO* file typically contains the entry "boot vmunix", which references /stand/vmunix on the selected boot device.

volume   1. A pool of data storage made up of one or more physical disks. These volumes are created and managed using tools from one of the volume managers, *VxVM* or *LVM*. See *volume manager*. 2. A tape, especially when ANSI labeled.

volume group   An arbitrary grouping of disks for use by *LVM*. See *volume manager*.

volume manager   A subsystem for managing disk space that allows one or more disks to be combined. It can provide increased size, improved reliability via data and path redundancy, greater configuration flexibility, and other features for managing *file system* space.

VxFS   A Veritas product from Symantec that is a *file system* implementation.

VxVM   A specific *volume manager* type that is a *Veritas* product from Symantec. See *volume manager*.

W - Z

[W|V|I]INSTALL   Refers to the *WINSTALL, VINSTALL, IINSTALL,* or *INSTALL installation kernel* depending on your system.

[W|V|I]INSTALLFS   Refers to the *WINSTALLFS, VINSTALLFS, IINSTALLFS,* or *INSTALLFS file system* depending on your system.

whole disk   A volume management selection that treats the entire disk as one volume. This selection does not use a volume manager product. For bootable disks, it is a practical selection only for Itanium-based systems.

WINSTALL   The *installation kernel* for 64-bit PA-RISC systems.

WINSTALLFS   The associated *file system* for the *WINSTALL kernel*.

XNTP   Stands in part for network time protocol. The xntpd *daemon* maintains system time in agreement with Internet standard time servers. This can be configured from the *itool* **System** tab under Network Services->XNTP.