

Installation and Update Guide HP-UX 11i Version 2

**HP Integrity Servers, HP Workstations,
and HP 9000 Servers**



i n v e n t

Manufacturing Part Number : 5990-8144

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes PHP, freely available from the PHP Group (<http://www.php.net>).

This product includes software developed by the OpenLDAP Project (<http://www.openldap.org>).

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About This Document

This guide describes installing HP-UX 11i Version 2 (B.11.23) (called cold-installing) and updating from the following paths:

- HP-UX 11i Version 1 (B.11.11) PA-RISC to HP-UX 11i Version 2.0 (B.11.23) PA-RISC
- HP-UX 11i Version 1.6 (B.11.22) Intel® Itanium® to HP-UX 11i Version 2 (B.11.23) Intel® Itanium®
- HP-UX 11i Version 2 (B.11.23) Intel® Itanium® to HP-UX 11i Version 2 (B.11.23) Intel® Itanium®

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 may be made at reprint without changing the printing date. The document part number will change when extensive changes are made. Document updates may be issued between editions to correct errors or document product changes.

The latest version of this document can be found online at the HP Technical Documentation Web site:

<http://docs.hp.com/>

Intended Audience

This document is intended for system administrators responsible for installing, configuring, and managing HP-UX 11i v2 on HP Integrity Servers, HP Workstations, and HP 9000 Servers. Administrators are expected to have knowledge of operating system concepts, commands, and configuration.

This document is not a tutorial.

Publishing History

To ensure that you receive the latest edition, you should subscribe to the appropriate product support service. Contact your HP sales representative for details.

Table 1 **Publishing History Details**

Document Manufacturing Part Number	Operating Systems Supported	Supported Product Versions	Publication Date
5990-8144	HP-UX 11i v2	B.11.23	September 2004
5990-6728	HP-UX 11i v2	B.11.23	March 2004
5187-2725	HP-UX 11i v2	B.11.23	October 2003

Document Organization

The *HP-UX 11i Version 2 Installation and Update Guide* is divided into many chapters and appendixes, which contain information about installing and updating HP-UX 11i version 2.

IMPORTANT

The *Read Before Installing or Updating to HP-UX 11i Version 2* DVD booklet that comes with the HP-UX 11i v2 media contains last-minute cold-install and update information that was not available when this guide was published. Make sure to review the booklet before continuing.

- Chapter 1, “Welcome to HP-UX 11i Version 2,” on page 27
Use this chapter to learn about the media kit contents and Operating Environments of HP-UX 11i v2 (B.11.23).
- Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 33
Use this chapter to learn about the system requirements either to cold-install or update to HP-UX 11i v2.
- Chapter 3, “Choosing an Installation Method,” on page 45
Use this chapter to help you decide the most appropriate method to install HP-UX 11i v2 on your system.
- Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71
Use this chapter to learn the details of the required and recommended tasks to prepare your system for HP-UX 11i v2. This chapter also includes additional information about required, default, and optional software installed with HP-UX 11i v2.
- Chapter 5, “Cold-Installing HP-UX 11i v2,” on page 87
Use this chapter to learn how to cold-install the HP-UX 11i v2 Operating System (OS) and selected Operating Environment (OE). Alternative cold-install methods such as installing from depots or from golden images are also discussed.

- Chapter 6, “Updating to HP-UX 11i v2,” on page 103
Use this chapter to learn how to update your system to HP-UX 11i v2 using the `update-ux` command. Several examples are provided to assist you with your update scenario.
- Chapter 7, “Installing HP Applications and Patches,” on page 133
Use this chapter to learn how to update applications on your system that are not installed or updated with HP-UX 11i v2 Operating Environments.
- Chapter 8, “Verifying System Install or Update,” on page 143
Use this chapter to learn how to verify a successful install or update to HP-UX 11i v2.
- Appendix A, “Data Collection Tables,” on page 151
Use this appendix to enter information in the Network Data and Miscellaneous Data collection tables during your install of HP-UX 11i version 2.
- Appendix B, “Known Problems and Troubleshooting,” on page 155
Use this appendix to learn about the known problems and troubleshooting steps for the install and update.
- Appendix C, “Controlling Memory Utilization of VxFS 3.5 on HP-UX 11i v2,” on page 167
Use this appendix to learn about the effect of two VxFS tunables, `vx_ninode` and `vxfs_bc_bufhwm`, on system memory consumption and learn about the guidelines on setting them for machines with relatively low RAM.
- Appendix D, “Software Distribution Media,” on page 173
Use this appendix to learn about the Operating Environments and media contents.

Typographical Conventions

This document uses the following conventions:

<i>audit</i> (5)	An HP-UX manpage. In this example, <i>audit</i> is the name and 5 is the section in the <i>HP-UX Reference</i> . On the web and on the Instant Information DVD, it may be a hot link to the manpage itself. From the HP-UX command line, you can enter “man audit” or “man 5 audit” to view the manpage. See <i>man</i> (1).
<i>Book Title</i>	The title of a book. On the web and on the Instant Information DVD, it may be a hot link to the book itself.
KeyCap	The name of a keyboard key. Note that Return and Enter both refer to the same key.
<i>Emphasis</i>	Text that is emphasized.
Bold	Text that is strongly emphasized.
Bold	The defined use of an important word or phrase.
ComputerOut	Text displayed by the computer.
UserInput	Commands and other text that you type.
Command	A command name or qualified command phrase.
<i>Variable</i>	The name of a variable that you may replace in a command or function or information in a display that represents several possible values.
[]	The contents are optional in formats and command descriptions. If the contents are a list separated by , you must choose one of the items.
{ }	The contents are required in formats and command descriptions. If the contents are a list separated by , you must choose one of the items.
...	The preceding element may be repeated an arbitrary number of times.
	Separates items in a list of choices.

HP-UX Release Name and Release Identifier

Each HP-UX 11i release has an associated release name and release identifier. The *uname* (1) command with the -r option returns the release identifier. Table 2 lists the releases available for HP-UX 11i.

Table 2 **HP-UX 11i Releases**

Release Identifier	Release Name	Supported Processor Architecture
B.11.11	HP-UX 11i v1	PA-RISC
B.11.20	HP-UX 11i v1.5	Intel® Itanium®
B.11.22	HP-UX 11i v1.6	Intel® Itanium®
B.11.23	HP-UX 11i v2	PA-RISC and Intel® Itanium®

Related Documents

This section discusses documentation for and other sources of information about HP-UX 11i v2.

HP-UX 11i v2 Resources

The following sources provide detailed information about HP-UX 11i v2:

- **HP-UX 11i v2 Instant Information DVD**

The Instant Information DVD provides HP-UX documentation supporting the release.

- **Manual Pages**

For the HP-UX 11i v2 release, the manual pages (manpages) are available on the HP-UX Welcome Page of your system, on the Instant Information DVD in the *HP-UX Reference* document, through the use of the `man` command, and on the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iV2/index.html#HP-UX%20Reference%20%28Manpages%29>

- **HP-UX Welcome Page**

The HP-UX Welcome Page on your HP-UX 11i v2 system contains pointers to information to help you use your HP-UX system.

- **Release Notes**

The *HP-UX 11i Version 2 Release Notes* describes what is new, has changed, and has been deprecated or obsoleted in the current release compared to the previous HP-UX 11i v2 release.

You can find the release notes in the following locations:

- HP-UX Instant Information DVD. See “Media Kit Contents” on page 28 for more information.
- The HP Technical Documentation Web site:

<http://docs.hp.com/>

Here you will find the release notes pertinent to all previous releases of HP-UX, as well as release notes for various individual products.

- **README (Read Before Installing) Documents**

README documents or Read Before Installing (RBI) media booklets contain information about the installation process that may not appear in this *HP-UX 11i Version 2 Installation and Update Guide*. Any product contained in the release may have a README document, so several README documents may be included. The *Read Before Installing or Updating to HP-UX 11i Version 2* booklet is included with your media kit.

The following references assume you know how to mount a DVD on your system. Files located on mounted DVD drives are referenced as *dvd_mount_point*, followed by the file path on the DVD media.

NOTE

If you plan to read the HP-UX 11i v2 DVDs on an HP-UX 11i v1 system, then you need to install the PHKL_28025 patch.

The PHKL_28025 patch is in the GOLDBASE11i bundle as of June 2003, which you can find on the Support Plus media for HP-UX 11i v1 or at the IT Resource Center Web site:

`http://itrc.hp.com`

The PHKL_28025 patch supersedes PHKL_25760.

- **Bundle Readme Files**

Bundle readme files (in text and HTML formats) contain additional installation instructions, notes about problems in current and previous releases, a list of patches and their dependencies, and changes since the last release. You can print or view these files directly from the DVD, for example:

`more /dvd_mount_point/DOCS/PATCH/QPK1123.readme.html`

Each bundle readme file in HTML format contains hyperlinks to the patch text files, located at the same directory level as each bundle. You can enter a URL into a web browser to view these files directly from the DVD, for example:

`file:/dvd_mount_point/DOCS/PATCH/QPK1123.readme.html`

- **Patch Text Files**

Patch text files for all patches are on the DVD in the `/dvd_mount_point/DOCS/PATCH/TEXT_FILES` directory. These files provide detailed information about the patch. Patch text files are also included with individual patches that you retrieve from HP. You can print or view these directly from the DVD, for example:

```
more \  
/dvd_mount_point/DOCS/PATCH/TEXT_FILES/PHSS_XXXXX.text
```

- **White Papers on HP-UX**

White papers associated with the HP-UX 11i v2 release are available at the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

Other white papers, including an HP-UX 11i v2 overview, can be found at the HP-UX Information Library at the HP Web site:

<http://www.hp.com/products1/unix/operating/infolibrary/index.html>

You can find additional information about HP-UX 11i v2 at the HP Technical Documentation Web site in the **HP-UX 11i v2 operating environments** collection under **Installing and Updating**:

<http://www.docs.hp.com/hpux/os/11iv2/index.html#Installing%20and%20Updating>

Other documents in this collection include:

- *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*
- *Ignite-UX Administration Guide*
- *Software Distributor Administration Guide*
- *Software Package Builder 1.0 User's Guide*
- *HP System Partitions Guide*
- *HP-UX 11i Version 2 Reference*

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

Third-Party Resources

You can find additional information about HP-UX 11i v2 from sources in *Disk and File Management Tasks on HP-UX* — Prentice-Hall Hewlett-Packard Professional Books, 1997.

Other HP Web Resources

The following Web sites provide a variety of information regarding the HP-UX 11i v2 release:

- HP Integrity Servers:
<http://www.hp.com/products1/servers/integrity>
- HP Workstations and HP 9000 Servers:
 - For workstations:
<http://www.hp.com/workstations/>
 - For servers:
<http://www.hp.com/products1/unix/operating/>
- Itanium-based Workstations:
<http://www.hp.com/workstations/itanium/index.html>
- Itanium-based Server and Workstation Information:
http://www.hp.com/products1/unix/operating/choice/hpux_itanium.html
- HP Software Depot:
<http://software.hp.com>
- HP Software Releases and Media:
<http://www.software.hp.com/RELEASES-MEDIA>
- Software Availability Matrix:
<http://software.hp.com/MATRIX>

- After installation of HP-UX 11iv2, all HP-specific documentation is included in the HP Apache-based Web Server software:

http://yourserver.com/hp_apache_docs

Or you can find it in the `/opt/apache/hp_apache_docs/` directory. The latest information for the HP Apache-based Web Server is at the following web site:

<http://www.hp.com/go/webserver>

- HP Technical Documentation feedback form:

<http://docs.hp.com/assistance/feedback.html>

- HP-UX 11i v2 documentation, including release notes, guides, and white papers:

<http://docs.hp.com/hpux/os/11iv2>

- HP-UX 11i v2 information:

<http://forums.itrc.hp.com>

<http://www.hp.com>

- *Patch Management User Guide for HP-UX 11.x Systems:*

<http://docs.hp.com>

- HP-UX patches and patch information from the HP IT Resource Center web:

<http://itrc.hp.com>

Select **maintenance and support for hp products**, then select the appropriate patching tools. To receive HP Security Bulletins, under **maintenance and support**, select **subscribe to security bulletin and patch digests**.

TIP

To simplify sharing of patch information, you may want to copy the documentation files onto your own system. The hyperlinks from the HTML bundle readme files to the patch text files will work as long as the HTML files reside in the same directory as the `TEXT_FILES` subdirectory.

- HP-UX Software Transition Kit:
<http://devresource.hp.com/STK>
- High-availability products:
<http://docs.hp.com/hpux/ha>
- Instant Support Enterprise Edition:
<http://docs.hp.com>
- Ignite-UX information and download:
<http://software.hp.com/products/IUX>
- Latest hardware support tools (diagnostics) information, including STM and EMS Hardware Monitors:
<http://docs.hp.com/hpux/diag>
- International information:
<http://www.hp.com>
Select a country or region if you are not automatically directed.
- Localized user guides:
<http://docs.hp.com>
Use the navigation menu to select a language.
- Partition Manager
<http://www.software.hp.com/products/PARMGR>
- Safety and ergonomic information:
<http://www.hp.com/ergo>
- Servicecontrol Manager:
<http://software.hp.com/products/SCMGR>
- Software Distributor:
http://software.hp.com/products/SD_AT_HP
- Support Plus web site:
http://software.hp.com/SUPPORT_PLUS

- System administration for HP-UX systems:
<http://docs.hp.com/hpux/os/11iv2>
<http://forums.itrc.hp.com>
- System firmware:
<http://docs.hp.com/hpux/hw/index.html#System%20Firmware>

HP Encourages Your Comments

HP encourages your comments concerning this document. We are truly committed to providing documentation that meets your needs.

Please send comments to:

<http://docs.hp.com/assistance/feedback.html>

Please include document title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document. Also, please include what we did right so we can incorporate it into other documents.

HP-UX 11i Version 2, for both the PA-RISC and Intel® Itanium® architectures, offers a full range of HP-UX Operating Environments (OEs), including systems management and high-availability software products.

This chapter introduces you to the media kit contents and Operating Environments of HP-UX 11i Version 2 (B.11.23). The HP-UX 11i v2 OEs are integrated and tested software solutions containing the operating system and selected applications.

What You Will Find in This Chapter

- “Media Kit Contents” on page 28
- “HP-UX 11i v2 Operating Environments” on page 30
- “The Next Step” on page 32

Media Kit Contents

This guide is part of the HP-UX 11i v2 media kit, which includes the following DVDs and documents:

- **HP-UX 11i v2 (B.11.23) DVD** — Contains the HP-UX Operating System (OS), Operating Environments (OEs), required networking software, Update-UX, Ignite-UX, standard HP-UX patch bundles, and online diagnostics.
- **HP-UX 11i v2 (B.11.23) Applications DVD** — Contains HP-UX application software.
- **HP-UX 11i v2 Instant Information DVD** — Contains HP-UX manuals, release notes, and white papers. See the DVD booklet for more information.
- **HP-UX 11i v2 Internet Express DVD**— Contains a collection of Open Source Web, Internet, and security services that have been tested and qualified on HP-UX.
- ***Read Before Installing or Updating to HP-UX 11i Version 2*** — Provides last-minute information for HP-UX 11i v2. Read this booklet before cold-installing or updating HP-UX. The booklet is also available on the HP Technical Documentation Web site:
<http://docs.hp.com/hpux/os/11iv2>
- ***HP-UX 11i Version 2 Release Notes*** — Describes new features and functionality changes for HP-UX 11i v2. Release Notes are available on the Instant Information DVD and on the HP Technical Documentation Web site:
<http://docs.hp.com/hpux/os/11iv2>
- ***HP-UX 11i Version 2 Installation and Update Guide*** (this document) — Describes the media kit and instructions to cold-install or update to the latest release of HP-UX. The guide is also available on the HP Technical Documentation Web site:
<http://docs.hp.com/hpux/os/11iv2>

NOTE

If you plan to read the HP-UX 11i v2 DVDs on an HP-UX 11i v1 system, or to cold-install HP-UX 11i v2 from a depot on an HP-UX 11i v1 system, then you need to install the PHKL_28025 patch.

The PHKL_28025 patch is in the GOLDBASE11i bundle as of June 2003, which you can find on the Support Plus media for HP-UX 11i v1 or at the IT Resource Center Web site:

<http://itrc.hp.com>

The PHKL_28025 patch supersedes PHKL_25760.

HP-UX 11i v2 Operating Environments

Operating Environments (OEs) are tested and integrated application bundles designed to work with the operating system and provide the functionality needed for your system's purpose. The following OEs are included on the HP-UX 11i v2 (B.11.23) DVD:

- **HP-UX 11i v2 Foundation OE (FOE)** — Designed for the demands of Web servers, content servers, and front-end servers, this OE includes applications such as HP-UX Web Server Suite, Java™, and Mozilla Application Suite. This OE is bundled as HPUX11i-OE.
- **HP-UX 11i v2 Enterprise OE (EOE)** — Designed for database application servers and logic servers, this OE contains the HP-UX 11i v2 Foundation OE bundles and additional applications such as GlancePlus Pak to enable an enterprise-level server. This OE is bundled as HPUX11i-OE-ENT.
- **HP-UX 11i v2 Mission Critical OE (MCOE)** — Designed for the large, powerful, back-end application servers and database servers that access customer files and handle transaction processing, this OE contains the Enterprise OE bundles, plus applications such as HP Serviceguard and Workload Manager to enable a mission-critical server. This OE is bundled as HPUX11i-OE-MC.
- **HP-UX 11i v2 Minimal Technical OE (MTOE)** — Designed for workstations running HP-UX 11i v2, this OE includes the Mozilla Application Suite, Perl, VxVM, and Judy applications, plus the OpenGL Graphics Developer's Kit. This OE is bundled as HPUX11i-MTOE.
- **HP-UX 11i v2 Technical Computing OE (TCOE)** — Designed for both compute-intensive workstation and server applications, this OE contains the MTOE bundles plus extensive graphics applications and Math Libraries. This OE is bundled as HPUX11i-TCOE.

For more information about the contents of the Operating Environments, see Appendix D, “Software Distribution Media,” on page 173.

Table 1-1 details the supported Operating Environments for HP servers and workstations:

Table 1-1 Supported Operating Environments

	FOE	EOE	MCOE	MTOE	TCOE
HP Commercial Servers	X	X	X		X
HP Workstations				X	X

The Next Step

Continue with Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 33.

System Requirements for Cold-Installing and Updating

This chapter helps you assess the current state of your system prior to cold-installing or updating to HP-UX 11i v2.

What You Will Find in This Chapter

- “System Requirements” on page 34
- “How to Plan Your Disk Space Needs” on page 35
- “Supported Servers and Workstations” on page 38
- “Unsupported Servers and Workstations” on page 39
- “Supported Network Drivers, Mass Storage Drivers, and SCSI Devices” on page 40
- “Supported Firmware” on page 41
- “Identification of Model, OS/OE, and Software” on page 42
- “The Next Step” on page 44

IMPORTANT

Review the *Read Before Installing or Updating to HP-UX 11i v2* DVD booklet. It describes last-minute information that was not available when this guide was published.

Time Estimate for This Chapter: Approximately 1 hour to compare the system requirements in this chapter with your system.

System Requirements

To cold-install or update HP-UX 11i v2, you must have the following:

- A supported system. See “Supported Servers and Workstations” on page 38
- HP-UX 11i v2 OE and application media (a two-DVD set)
- 1 GB memory, minimum
- 1 GB swap space, minimum
- 1 GB disk space to accommodate the EFI Boot Disk and the HP Service Partition

NOTE

If your system has less than 1 GB of memory, you may need to manually set VxFS tunables for optimal performance *after* cold-installing or updating to HP-UX 11i v2. For more information about these tunables, see Appendix C, “Controlling Memory Utilization of VxFS 3.5 on HP-UX 11i v2,” on page 167.

How to Plan Your Disk Space Needs

This section provides hints and information to help you determine your disk needs for HP-UX 11i v2. If you need more disk space, be sure to order the equipment and plan on installing it after backing up your current system.

- Record the hardware path to the DVD drive.
- Develop a clear configuration plan, including:
 - File system sizes
 - Swap space size
 - Dump device
 - Disk and file system parameters
 - Mirroring information
- If installing application programs other than those supplied within an HP-UX 11i v2 Operating Environment (OE), consider the vendor's size recommendations.
- When planning disk space, refer to these documents:
 - *Managing Systems and Workgroups: A Guide for HP-UX System Administrators* — This manual is available on the Instant Information DVD and at the HP Technical Documentation Web site:
<http://docs.hp.com>
 - *Disk and File Management Tasks on HP-UX* — Prentice-Hall Hewlett-Packard Professional Books, 1997.

Disk Space Allocation for File Partitions

Depending on your system's purpose, you may need to determine how much disk space you will need for each file partition before you cold-install or update to HP-UX 11i v2. For example, if you plan to install applications from other vendors, you may need to modify the size of the /opt partition to accommodate their size.

Disk Space Requirements for a Cold-Install

Table 2-1 lists the amount of disk space allocated for the indicated partitions during a default cold-install for each Operating Environment. (The percentage used in each partition is in parentheses.)

Table 2-1 File Partition Disk Space Allocation by Operating Environment¹

Partition	FOE	EOE	MCOE	TCOE	MTOE
/	208 MB (78% used)	208 MB (81% used)	208 MB (81% used)	208 MB (77% used)	223 MB (83% used)
/stand	304 MB (21% used)	304 MB (21% used)	304 MB (21% used)	304 MB (21% used)	300 MB (23% used)
/var	4.5 GB (2% used)	4.5 GB (2% used)	4.5 GB (2% used)	4.5 GB (2% used)	1.5 GB (6% used)
/usr	2.6 GB (76% used)	2.7 GB (75% used)	2.7 GB (75% used)	3.7 GB (61% used)	3.7 GB (62% used)
/tmp	208 MB (4% used)	208 MB (4% used)	208 MB (4% used)	208 MB (4% used)	200 MB (4% used)
/opt	3.6 GB (52% used)	3.7 GB (53% used)	3.7 GB (53% used)	4.5 GB (58% used)	2.7 GB (63% used)
/home	32 MB (26% used)	32 MB (26% used)	32 MB (26% used)	32 MB (26% used)	20 MB (41% used)
Total^{2,3}	11.5 GB (37% used)	11.7 GB (37% used)	11.7 GB (36% used)	13.5 GB (38% used)	8.7 GB (50% used)

1. The results are from using the *ddf* (1M) command; your results may vary if you use the *du* (1) command.
2. Totals are not exact due to rounding.
3. Totals do not include disk space required for the EFI Boot Partition, HP Service Partition, or /swap.

Depending on how much disk space is available, you can change the partition size to meet your needs. For information about modifying your file system, see *Managing Systems and Workgroups: A Guide for HP-UX System Administrators* at the HP Technical Documentation Web site:

<http://docs.hp.com>

Disk Space Requirements for an Update

To ensure a successful update to HP-UX 11i v2, make sure that you have at least as much disk space allocated to the file partitions listed in Table 2-1 on page 36, *and* that each partition (most importantly, /usr, /opt, and /var) has at least 10-20 percent free space to allow for any growth. Additionally, make sure that you have at least 1 GB allocated for /swap.

Extra Space Needed with TCOE and MTOE

Cold-installing or updating the HP-UX 11i v2 Technical Computing OE (TCOE) and the Minimal Technical OE (MTOE) installs all CDE languages rather than just a selected language.

To remove unneeded CDE language bundles after installing the TCOE or MTOE, list them using `swlist` and remove unneeded bundles using `swremove`.

See Chapter 8, “Verifying System Install or Update,” on page 143 for examples of `swlist` and `swremove`. Refer to *HP-UX 11i v2 Release Notes* for software dependencies:

<http://docs.hp.com/hpux/os/11iv2/index.html>

Supported Servers and Workstations

This HP-UX 11i v2 (B.11.23) release supports only a 64-bit version of the HP-UX kernel. It fully supports the following HP Integrity Servers, HP Workstations, and HP 9000 Servers:

PA-RISC Systems

- HP 9000 rp8400 and rp7400 series
- HP 9000 rp5400 and rp4400 series
- HP 9000 rp3440 and rp2400 series
- HP 9000 Superdome server
- 64-bit A-Class, L-Class, and N-Class servers

Itanium-based Systems

- HP Integrity rx1600 server
- HP Integrity cx2600 server
- HP Integrity rx2600 server
- HP Integrity rx4640 server
- HP Integrity rx5600 series
- HP Integrity rx7600 series
- HP Integrity rx8600 series
- HP Integrity Superdome server
- HP zx2000 workstation
- HP zx6000 workstation

For additional information about these servers and workstations go to the Enterprise Servers, Workstations, and Systems Hardware Web site:

<http://docs.hp.com/hpux/hw>

Unsupported Servers and Workstations

This release of HP-UX 11i v2 does not support the following HP Integrity Servers, HP 9000 Servers, and HP 9000 Workstations:

Itanium-1 based Systems

- HP Integrity rx4610 server
- HP Integrity rx9610 server
- HP Integrity i2000 workstation

PA-RISC Servers

- All 32-bit servers (including 32-bit A-Class servers A180 and A180C)
- All D-Class servers
- All R-Class servers
- All E-Class servers
- All K-Class servers
- All T-Class servers
- All V-Class servers

PA-RISC Workstations

This HP-UX 11i v2 release is not supported on PA-RISC Workstations. HP recommends customers use an HP-UX 11i v1 release.

- B132L, B132L+, B160L, B180L
- B1000, B2000, B2600
- C100, C110, C160L, C160, C180, C200, C240, C360
- C3000, C3600, C3650, C3700, C3750, C8000
- J200, J210, J210XC, J280, J282, J2240
- J5000, J5600, J7000, J6000, J6700, J6750
- 705, 710, 712, 715/33, 715/50, 715/75, 715/64, 715/80, 715/100, 715/100XC, 720, 730, 735, 750, 755, 725/50, 725/75, 725/100

Supported Network Drivers, Mass Storage Drivers, and SCSI Devices

For a complete list of supported network drivers, mass storage drivers, and SCSI devices, refer to the *HP-UX 11i Version 2 Release Notes* at the HP Technical Documentation Web site:

`http://docs.hp.com/hpux/os/11iv2/index.html`

Supported Firmware

Firmware changes frequently. Make sure your system has the latest firmware installed to support, for example, the latest versions of I/O adapters, mass storage devices, and devices used when you install from media or a network depot.

- For the latest HP-UX 11.x firmware updates, go to the IT Resource Center Web (ITRC) site:

<http://itrc.hp.com>

Log in to your appropriate region. Click **maintenance and support (for HP products)**, then **find individual patches and firmware**.

If you have to patch your firmware, the ITRC provides a patch database to search and instructions in the patch documentation on how to patch the firmware.

HP also provides the Subscriber's Choice. You can sign up to receive email notices for firmware updates.

- For firmware revisions needed for HP-UX boot support on I/O adapters, go to the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/hw/index.html#System%20Firmware>

- For the latest firmware documentation, go to the HP Technical Documentation Web site and search for firmware:

<http://docs.hp.com>

Identification of Model, OS/OE, and Software

Before you cold-install or update to HP-UX 11i v2, you need to identify the model of your system and other information.

Identifying the Model

To determine the model number of your system, enter:

```
model
```

To verify that HP-UX 11i v2 is supported on your system, see “Supported Servers and Workstations” on page 38.

For Itanium-based systems, you can identify the model by using the Extensible Firmware Interface (EFI): interrupt the autoboot process in the boot manager, enter the EFI shell, and use the `info sys` command:

```
Shell> info sys
```

Information about the model is displayed. For example:

```
SYSTEM INFORMATION
Product Name: server rx2600
Serial Number: sg20220034
UUID: FFFFFFFF-FFFF-FFFF-FFFF-FFFFFFFFFFFFFF
```

Identifying the OS

To identify the OS version that your system is currently running, enter:

```
uname -r
```

When a system has HP-UX 11i v2 installed, you can determine which revision (Release ID) is installed by entering the following command:

```
/usr/sbin/swlist -l bundle
```

The `HPUXBaseAux` bundle indicates the current installed revision level. The revision level is indicated both in the bundle version number and in the description text.

Identifying the OE

To identify the Operating Environment currently installed on your system, use `swlist`. For example:

```
/usr/sbin/swlist
```

The output of this command includes a line that identifies the installed OE. For example:

```
HPUX11i-OE B.11.23 HP-UX 11i Operating Environment Component
```

Identifying Installed Software

To identify the software products on a system or media, use `swlist`. For example, to show revision and descriptive title of all software installed on a system, enter:

```
/usr/sbin/swlist
```

To list all products and their versions on a DVD mounted at `/cdrom`, enter:

```
/usr/sbin/swlist -s /cdrom
```

To get a table of contents and product details, enter:

```
/usr/sbin/swlist -dvl product -a readme @ /cdrom
```

The `swlist` command has many options to expand or narrow the listing to specific attributes. Refer to the *swlist* (1M) manpage or the *Software Distributor Administration Guide*, available on the Instant Information DVD and on the HP Technical Documentation Web site:

```
http://docs.hp.com/hpux/os/11iv2
```

The Next Step

Continue with Chapter 3, “Choosing an Installation Method,” on page 45.

Choosing an Installation Method

This chapter provides information and scenarios to help you choose the most appropriate method to install HP-UX 11i v2 on your system.

What You Will Find in This Chapter

- “Supported Cold-Install Paths to HP-UX 11i v2” on page 46
- “Supported Update Paths to HP-UX 11i v2” on page 47
- “Deciding Which Method to Use” on page 51
- “Security Considerations” on page 60
- “Standard HP-UX Bundle Considerations” on page 67
- “Online Diagnostics” on page 68
- “Offline Diagnostics” on page 69
- “The Next Step” on page 70

Time Estimate for This Chapter: Approximately 1 hour to read about the cold-install and update-to paths, as well as security, and to choose a method.

NOTE

For customers ordering new systems with the Instant Ignition option (also known as factory integrated), the cold-installation process described here has already been performed. Skip this chapter and proceed to installing application and patching software. See Chapter 7, “Installing HP Applications and Patches,” on page 133.

Supported Cold-Install Paths to HP-UX 11i v2

Cold-install is supported on HP PA-RISC Servers and Itanium-based Servers and Workstations.

You can **cold-install** HP-UX 11i v2 and its accompanying Operating Environment on any supported system listed in “Supported Servers and Workstations” on page 38.

You can cold-install from many HP-UX 11i v1.0 (B.11.11) and HP-UX 11i v1.6 (B.11.22) systems and all HP-UX 11i v2 (B.11.23) systems.

IMPORTANT

If you have an LVM-based HP-UX 11i v1.0 system or HP-UX 11i v1.6 system, you can use an HP-UX 11i v2 Ignite-UX server to cold-install HP-UX 11i v2 on your system.

If you have an VxVM-based HP-UX 11i v1.0 system or HP-UX 11i v1.6 system, you cannot use an HP-UX 11i v2 Ignite-UX server to cold-install HP-UX 11i v2 on your system.

For more details, go to the Ignite-UX web site:

<http://software.hp.com/products/IUX>

Supported Update Paths to HP-UX 11i v2

Update is supported on HP PA-RISC Servers and Itanium-based Servers and Workstations. Update is **not** supported on HP 9000 PA-RISC Workstations.

You can update to HP-UX 11i v2 from the following releases:

- HP-UX 11i version 1.0 (B.11.11)
- HP-UX 11i version 1.6 (B.11.22)
- HP-UX 11i version 2.0 (B.11.23)

Updating from any other release directly to HP-UX 11i v2 is not supported.

- Update Path Notes**
- You cannot downgrade to a lower level Operating Environment, for example, from Enterprise OE (EOE) to Foundation OE (FOE), or from Technical Computing Operating Environment (TCOE) to Minimal Technical Operating Environment (MTOE).
 - You cannot update between server Operating Environments (FOE, EOE, and MCOE) and technical Operating Environments (MTOE and TCOE).

Updating from HP-UX 11i Version 1.0 (B.11.11)

Table 3-1 lists the supported update paths from HP-UX 11i v1.0 to HP-UX 11i v2.

NOTE There is no supported update path on HP 9000 PA-RISC Workstations.

Table 3-1 Supported Update Paths from HP-UX 11i v1.0 to HP-UX 11i v2

HP-UX 11i version 1.0	HP-UX 11i version 2 OS/OE
Base OS	<ul style="list-style-type: none"> • Base OS • Foundation OE • Enterprise OE • Mission Critical OE • Technical Computing OE
Foundation OE	<ul style="list-style-type: none"> • Foundation OE • Enterprise OE • Mission Critical OE
Enterprise OE	<ul style="list-style-type: none"> • Enterprise OE • Mission Critical OE
Mission Critical OE	<ul style="list-style-type: none"> • Mission Critical OE
Minimum Technical OE	<ul style="list-style-type: none"> • No HP 9000 PA-RISC workstation support for HP-UX 11i v2
Technical Computing OE	<ul style="list-style-type: none"> • Technical Computing OE

Updating from HP-UX 11i Version 1.6 (B.11.22)

Table 3-2 lists the supported update paths from HP-UX 11i v1.6 to HP-UX 11i v2.

NOTE

To update from HP-UX 11i v1.6 Foundation OE to a premium OE you must update to the HP-UX 11i v2 Foundation OE first and then update to the desired premium OE.

Table 3-2 Supported Update Paths from HP-UX 11i v1.6 to HP-UX 11i v2

HP-UX 11i version 1.6	HP-UX 11i version 2 OS/OE
Base OS	<ul style="list-style-type: none"> • Base OS • Foundation OE • Enterprise OE • Mission Critical OE • Technical Computing OE
Foundation OE	<ul style="list-style-type: none"> • Foundation OE
Minimum Technical OE	<ul style="list-style-type: none"> • No supported paths (cold-install only)
Technical Computing OE	<ul style="list-style-type: none"> • Technical Computing OE

Updating from HP-UX 11i Version 2 (B.11.23)

Table 3-3 lists the supported update paths from HP-UX 11i v2.0 to the latest release of HP-UX 11i v2.

Table 3-3 Supported Update Paths from HP-UX 11i v2 to Latest HP-UX 11i v2

HP-UX 11i version 2	HP-UX 11i version 2 OS/OE
Base OS	<ul style="list-style-type: none"> • Base OS • Foundation OE • Enterprise OE • Mission Critical OE • Technical Computing OE
Foundation OE	<ul style="list-style-type: none"> • Foundation OE • Enterprise OE • Mission Critical OE
Enterprise OE	<ul style="list-style-type: none"> • Enterprise OE • Mission Critical OE
Mission Critical OE	<ul style="list-style-type: none"> • Mission Critical OE
Minimum Technical OE	<ul style="list-style-type: none"> • Minimum Technical OE
Technical Computing OE	<ul style="list-style-type: none"> • Technical Computing OE

Deciding Which Method to Use

Now that you have evaluated your system and ordered any needed hardware, you need to decide whether to **cold-install** or **update** to HP-UX 11i v2 on your system.

Time to Complete a Cold Install or Update

The time it takes to install or update your system will vary depending on the following choices and considerations:

- Operating Environment (OE)
- Cold install or update
- Size of your system, such as number of processors, amount of memory, and number of I/O cards

Cold-installing HP-UX 11i v2 may take several hours to complete. For example:

- A cold install of TCOE on a mid-range system, such as an rx2600, may take one hour to complete.
- A cold install of MCOE on an rp7410 server may take one hour to complete
- A cold install of MCOE on Superdome 128-way may take three hours.
- A cold install of MCOE on Superdome 32- and 64-way may take two hours.

Due to the large content in the September HP-UX 11i v2 release, updating from HP-UX 11i v1 (B.11.11) may take over three hours to complete. For example:

- An update from HP-UX 11i v1 to HP-UX 11i v2 MCOE on an rp8400 may take over three hours to complete.
- An update from HP-UX 11i v1 to HP-UX 11i v2 MCOE on an rp7420 may take three hours to complete.
- An update from HP-UX 11i v1 to HP-UX 11i v2 TCOE on an rp7410 may take three hours to complete.

- An update from HP-UX 11i v2 to HP-UX 11i v2 TCOE on an rx2600 may take one hour to complete.

When to Cold-Install

CAUTION

The cold-install process erases software on the root volume before installing HP-UX 11i v2. If you want to retain any existing software, make sure to back up that software before migrating or use update. **Cold-installing using Ignite-UX overwrites everything on the target disk.**

Use Ignite-UX to cold-install HP-UX 11i v2 in the following situations:

- You have a new system.
- You are managing several systems with similar OS configurations.
- You need fast, predictable deployment.
- Your disk space needs reconfiguration. See “How to Plan Your Disk Space Needs” on page 35.
- Your systems are organized with clean separation of the OS from user, application, and data files.
- Overwriting the root(/) volume on existing systems will not cause a loss of applications or data.
- Your system configuration is not listed as a supported update path. See “Supported Update Paths to HP-UX 11i v2” on page 47.
- You are migrating an HP Workstation to HP-UX 11i v2.

You can cold-install from *any supported* configuration. See “Supported Servers and Workstations” on page 38.

The process described in this guide cold-installs a single system from local media. If you plan to install many systems simultaneously, use an Ignite-UX server. Ignite-UX is available on the HP-UX 11i v2 DVD. Additional information on Ignite-UX and newer versions are available at the Software Depot Web site:

<http://software.hp.com/products/IUX>

See Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71 for more information about preparing your system for cold-install and then read the cold-install process using Ignite-UX in Chapter 5, “Cold-Installing HP-UX 11i v2,” on page 87.

When to Update

You can update rather than cold-install HP-UX 11i v2 when:

- You are updating from a supported HP-UX 11i v1.0, HP-UX 11i v1.6, and HP-UX 11i v2 system. See “Supported Update Paths to HP-UX 11i v2” on page 47 for specific details.
- You are concerned about recovering unique applications and data on your root volume, and do not want to write over non-OS files, which occurs when cold-installing HP-UX 11i v2.
- Each system has a unique configuration.
- Current disk space is sufficient for HP-UX 11i v2. See “How to Plan Your Disk Space Needs” on page 35.

NOTE

Update is not supported on HP 9000 PA-RISC Workstations.

This installation method uses the `update-ux` command and Software Distributor (SD) tools to selectively overwrite the operating system and application software from media or a network source depot. An advantage of performing an update is that it leaves user data, configuration, and applications in place. Updating to HP-UX 11i v2 is limited to the supported paths listed in “Supported Update Paths to HP-UX 11i v2” on page 47.

See Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71 for details on how to prepare your system to update to HP-UX 11i v2. The update process is described in Chapter 6, “Updating to HP-UX 11i v2,” on page 103.

Additional Cold-Install Considerations

The following sections provide additional information to assist you in deciding whether to cold-install HP-UX 11i v2.

HP Service Partition (Itanium-based Systems Only)

During cold-install or recovery *on Itanium-based systems only*, Ignite-UX changes the boot disk partition layout to create a new HP Service Partition (HPSP). Online and Offline Diagnostics use this 400MB partition created at the end of the boot disk to hold tools and system data.

The order of the partitions on the boot disk will be:

1. EFI OS Boot Partition (ESP)
2. HP-UX File System (HPUX)
3. HP Service Partition (HPSP)

During backup and recovery operations, Ignite-UX does not save or restore any changes you make to the HPSP.

Using the HP-UX 11i v2 DVDs on an HP-UX 11i v1 (B.11.11) System

If you plan to read the HP-UX 11i v2 DVDs on an HP-UX 11i v1 system, or to cold-install HP-UX 11i v2 from a depot on an HP-UX 11i v1 system, then you need to install the PHKL_28025 patch.

The PHKL_28025 patch is in the GOLDBASE11i bundle as of June 2003, which you can find on the Support Plus media for HP-UX 11i v1 or at the IT Resource Center Web site:

<http://itrc.hp.com>

The PHKL_28025 patch supersedes PHKL_25760.

Alternative Cold-Install Methods

Instead of cold-installing HP-UX 11i v2 as described in this guide, you can cold-install your system using the following methods:

- Install from Software Depots

Use Software Distributor commands to create depots containing OS, OE, and other software bundles, then install from the depot using Ignite-UX. For help with this method, refer to the *swinstall* (1M) manpage, the *Software Distributor Administration Guide*, and the *Ignite-UX Administration Guide*.

- Install from Golden Images

If you need to install the same OS/OE and applications on many systems in your network, use an Ignite-UX server as explained in the *Ignite-UX Administration Guide*. With Ignite-UX, you can create a single install image (golden image) containing OS/OE bundles, application bundles, and patch bundles, then install the image on multiple systems in your environment.

IMPORTANT

If you are running an Ignite-UX server on HP-UX 11i v2 and have used HP-UX Bastille to configure security, then cold-installing a golden image onto another system requires additional steps. For the latest information go to the Ignite-UX Web site:

<http://software.hp.com/products/IUX>

Additional Update Considerations

The following sections provide additional information to assist you in deciding whether to update to HP-UX 11i v2.

Requirement for Updating from HP-UX 11i v1.6 (B.11.22)

If you are updating from HP-UX 11i v1.6, you must install the August 2004 version of BUNDLE11i (revision tag, B.11.22.0408.1) for HP-UX 11i v1.6 on your system prior to updating to the HP-UX 11i v2 September 2004 or later release. If the August 2004 version of BUNDLE11i is not installed on your system prior to the update, the update script will not execute and you will get a `mk_kernel` error. If you have a support contract with HP, you should have already received this patch bundle. Request the patch PHKL_31152 from the IT Resource Center web site; it will provide you with all seven required patches:

<http://itrc.hp.com>

Requirement for Updating from Earlier Releases of HP-UX 11i v2 (B.11.23)

If you are updating from earlier releases of HP-UX 11i v2, you must install the August 2004 version of BUNDLE11i (revision tag, B.11.23.0408.1) for HP-UX 11i v2 on your system prior to updating to the HP-UX 11i v2 September 2004 or later release. If the August 2004 version of BUNDLE11i is not installed on your system prior to the update, the update script will not execute and you will get a `mk_kernel` error. If you have a support contract with HP, you should have already received this patch bundle. Request the patch PHKL_31151 from the IT Resource Center web site; it will provide you with all seven required patches:

<http://itrc.hp.com>

HP Service Partition Is Not Created During Update (Itanium-based Systems Only)

NOTE

This section only applies to Itanium-based systems. For PA-RISC systems proceed to “Security Considerations” on page 60.

The HP Service Partition (HPSP) is not created or modified when you update from a supported update path. (See “Supported Update Paths to HP-UX 11i v2” on page 47.) OnlineDiag will continue to work properly. Offline Diagnostics, however, will work with reduced functionality without the HP Service Partition.

To have full Offline Diagnostics functionality, do the following:

1. Update your system.
2. Back up your system with either `make_net_recovery` or `make_tape_recovery`.
3. Reconfigure your boot disk partition layout to include the HP Service Partition.
4. Restore your system with either `make_net_recovery` or `make_tape_recovery`.

Consult the *Ignite-UX Administration Guide* for more details about `make_net_recovery` and `make_tape_recovery`.

5. Update the Offline Diagnostics with the latest version of the HP Itanium-Processor Family Offline Diagnostics and Utilities. See “Offline Diagnostics” on page 69.

Determining Whether You Have an HP Service Partition

To determine whether an HP Service partition exists on your system, enter the following command on your physical disk volume (here named `/dev/rdisk/c2t1d0`):

```
idisk -p /dev/rdisk/c2t1d0
```

Example 3-1 shows that you need to create the HP Service Partition after updating to HP-UX 11i v2.

Example 3-1 idisk Output from Disk Without HP Service Partition

```
idisk version: 1.31
EFI Primary Header:
  Signature           = EFI PART
  Revision            = 0x10000
  HeaderSize          = 0x5c
  HeaderCRC32         = 0x20e10a24
  MyLbaLo             = 0x1
  AlternateLbaLo     = 0x43d671f
  FirstUsableLbaLo   = 0x22
  LastUsableLbaLo    = 0x43d66fc
  Disk GUID           = 59609df4-c295-11d7-8001-d6217b60e588
  PartitionEntryLbaLo = 0x2
  NumberOfPartitionEntries = 0xc
  SizeOfPartitionEntry = 0x80
  PartitionEntryArrayCRC32 = 0xc0a93cc2

Primary Partition Table (in 512 byte blocks):
  Partition 1 (EFI):
    Partition Type GUID = c12a7328-f81f-11d2-ba4b-00a0c93ec93b
    Unique Partition GUID = 5960a1be-c295-11d7-8002-d6217b60e588
    Starting Lba = 0x22
    Ending Lba = 0xfa021
  Partition 2 (HP-UX):
    Partition Type GUID = 75894c1e-3aeb-11d3-b7c1-7b03a0000000
    Unique Partition GUID = 5960a1fa-c295-11d7-8003-d6217b60e588
    Starting Lba = 0xfa022
    Ending Lba = 0x430e02
```

Under the “Primary Partition Table (in 512 byte blocks)” heading only two partitions exist on the system: the EFI boot partition and the HP-UX partition.

Update-UX Contains a Default-Installed Selection File

The Update-UX product includes a **default selections** file, `update-ux.selections`, which is installed in `/usr/lib/sw`. This file provides a list of bundles that are selected for install during an OS update.

Update-UX provides support for the `-f selection_file` option on the `update-ux` command line. With this option you can create your own selections file and specify that your file be used in place of the default selections file. This provides you with the flexibility to deselect any bundles listed in the `update-ux.selections` file by providing your own file, which does not contain these bundles.

To do this, you must first install the March 2004 version of the Update-UX product onto your target system, then copy and edit the `/usr/lib/sw/update-ux.selections` file as desired. When executing Update-UX, your custom selections file can be specified on the `update-ux` command line via the `-f selection_file` option.

Update-UX Creates Two Backup Configurations

Starting with the March 2004 release of HP-UX 11i v2, Update-UX creates two backup kernel configurations from the update process. These configurations are:

- **`/stand/backup`**: Contains the *latest* updated configuration and any changes that you have made since rebooting your system.
- **`/stand/backup_prior_to_update`**: Contains your configuration saved *prior* to updating to the latest release of HP-UX 11i v2.

If you need to revert your system to the earlier configuration, you can use the `kconfig (5)` commands to mark `/stand/backup_prior_to_update` for use on the next reboot of your system. Otherwise, you should boot to `/stand/backup` to ensure that your system will run on a good configuration.

IMPORTANT

Booting to `/stand/backup_prior_to_update` is not guaranteed to work correctly because it restores only the kernel and not the rest of HP-UX. Make sure you back up your system using supported HP backup software *prior* to updating your system. For more information, see “Backing Up Your System” on page 80.

Security Considerations

HP-UX Bastille (B6849AA) is included as default-installed software on the Operating Environment media and can be installed with Ignite-UX or Update-UX.

HP-UX Bastille is a security hardening and lockdown tool that can be used to enhance security of the HP-UX operating system. It provides customized lockdown on a system-by-system basis by encoding functionality similar to Bastion Host and other hardening and lockdown checklists.

NOTE

For more information about HP-UX Bastille, refer to the *HP-UX 11i Version 2 Release Notes* and *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*.

Predefined Configuration Bundles

At cold-install- or update-time, you can choose one of the security configuration bundles listed in Table 3-4, with each bundle providing incrementally higher security.

Table 3-4 Predefined Security Configuration Bundles

Bundle Name	Configuration File Name¹	Description
Sec00Tools ²	Not applicable	The install-time security infrastructure; no security changes
Sec10Host ³	HOST.config	Host-based lockdown: no firewall; some common clear-text services turned off, excluding Telnet and FTP
Sec20MngDMZ ³	MANDMZ.config	Lockdown with Secure Management: IPFilter firewall blocks incoming connections except common, secured, management protocols
Sec30DMZ ³	DMZ.config	Network-DMZ Lockdown: IPFilter blocks all incoming connections except HP-UX Secure Shell

1. Configuration files are installed to `/etc/opt/sec_mgmt/bastille`
2. This is a default-installed bundle.
3. This is a selectable bundle.

Security Choice Dependencies

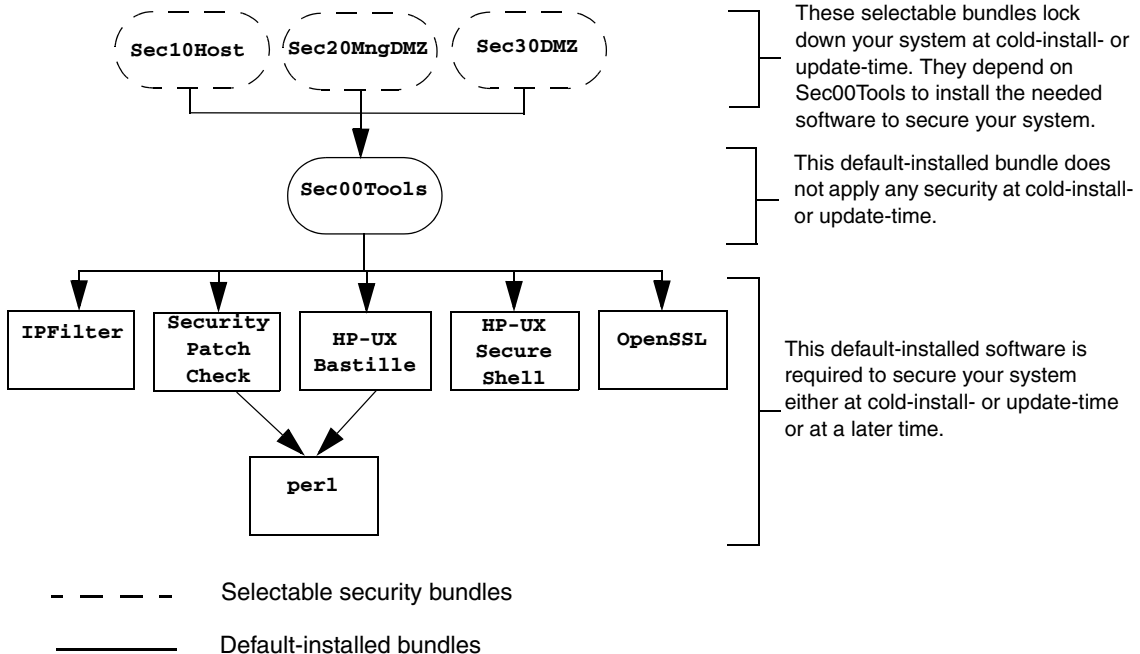
The `Sec00Tools` security infrastructure bundle is default-installed on your system. Although this bundle does not implement any security changes at cold-install- or update-time, it does ensure that the required software (Figure 3-1) is installed. By installing `Sec00Tools`, you can run HP-UX Bastille at a later time to lock down your system.

Alternately, you can lock down your system using one of the following selectable security configuration bundles at cold-install- or update-time:

- `Sec10Host`
- `Sec20MngDMZ`
- `Sec30DMZ`

These bundles are dependent on the `Sec00Tools` bundle.

Figure 3-1 Install-time Security Software Dependencies



Secured Services and Protocols

Each security configuration bundle provides incrementally higher security by locking down various protocols and services. HP-UX Bastille uses a series of questions to determine which services and protocols to secure. Using one of the Security Configuration bundles applies a default security profile, simplifying the lockdown process.

The following tables detail the services and protocols affected by the security bundles, listed in Table 3-4 on page 61, if you choose to apply one at cold-install- or update-time:

- Table 3-5 on page 64 lists the security settings for *Sec10Host*. These settings also apply to *Sec20MngDMZ* and *Sec30DMZ*.
- Table 3-6 on page 65 lists the security settings applied with *Sec20MngDMZ*, in *addition* to the settings in Table 3-5.
- Table 3-7 on page 66 lists the security settings applied with *Sec30DMZ*, in addition to the settings in Table 3-5 and Table 3-6.

IMPORTANT

Review these tables carefully. Some of the locked down services and protocols may be used by other applications, and *may* have adverse effects on the behavior or functionality of these applications. For example, Servicecontrol Manager and ParMgr rely on WBEM for part of their functionality; *Sec30DMZ* blocks all incoming WBEM connections via IPFilter.

You can change the security settings configured at cold-install- or update-time by running HP-UX Bastille after installing or updating your system. For more information about using HP-UX Bastille, refer to *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*, or the *HP-UX Bastille User's Guide* located on your system at: `/opt/sec_mgmt/bastille/docs/user_guide.txt`

Table 3-5 Host-based Sec10Host Install-time Security Settings¹

Category	Actions
Logins and Passwords	Deny login unless home directory exists Deny non-root logins if /etc/nologin file exists Set a default path for su command Disable root logins from network tty Hide encrypted passwords Disallow ftpd system account logins Disable remote X logins
File System, Network, and Kernel	Modify ndd settings ^{2,3} Restrict remote access to swlist Set default umask Enable kernel-based stack execute protection
Daemons	Disable ptydaemon Disable pwgrd Disable rbootd Disable NFS client daemons Disable NFS server Disable NIS client programs Disable NIS server programs Disable SNMPD
inetd Services	Deactivate bootp Deactivate inetd's built-in services Deactivate CDE helper services Deactivate finger Deactivate ident Deactivate klogin and kshell Deactivate ntalk Deactivate login, shell, and exec services Deactivate swat Deactivate printer Deactivate recserv Deactivate tftp Deactivate time Deactivate uucp Enable logging for all inetd connections
sendmail	Run sendmail via cron to process queue Stop sendmail from running in daemon mode Disable vrfy and expn commands

Table 3-5 Host-based Sec10Host Install-time Security Settings¹ (Continued)

Category	Actions
Other Settings	Deactivate HP Apache 2.x Web Server ⁴ Set up cron job to Security Patch Check ²

1. Security settings listed here also apply to Sec20MngDMZ and Sec30DMZ
2. Manual action may be required to complete configuration. Refer to `/etc/opt/sec_mgmt/bastille/TODO.txt` for more information, after install or update.
3. The following `nnd` changes will be made:


```
ip_forward_directed_broadcasts=0
ip_forward_src_routed=0
ip_forwarding=0
ip_ire_gw_probe=0
ip_pmtu_strategy=1
ip_send_source_quench=0
tcp_conn_request_max=4096
tcp_syn_rcvd_max=1000
```
4. Settings applied only if software is installed

Table 3-6 Additional Sec20MngDMZ Install-time Security Settings¹

Category	Actions
inetd Services	Includes all disabled <code>inetd</code> services in Table 2-3 and: Deactivate <code>ftp</code> Deactivate <code>telnet</code>
IPFilter Configuration²	Block incoming DNS query connections Block incoming HIDS administration connections ^{3,4} Configure IPFilter to allow outbound traffic, block incoming traffic with IP options set, and all other traffic except for HP-UX Secure Shell, HIDS agent, WBEM, web admin and web admin autostart. ⁵

1. Applies all security configuration settings in Table 3-5
2. IPFilter rules are applied via a custom rules file located at `/etc/opt/sec_mgmt/bastille/ipf.customrules`
3. HP-UX Host IDS is a selectable software bundle and only available for commercial servers
4. Settings applied only if software is installed
5. Manual action may be required to complete configuration. Refer to `/var/opt/sec_mgmt/bastille/TODO.txt` for more information, after install or update.

Table 3-7 Additional sec30DMZ Install-time Security Settings¹

Category	Actions
IPFilter Configuration²	Includes all IPFilter settings in Table 2-4 and: Block incoming HIDS agent connections ^{3,4} Block incoming WBEM connections ⁵ Block incoming web admin connections Block incoming web admin autostart connections Block all traffic except HP-UX Secure Shell

1. Applies all security configuration settings in Table 3-5 and Table 3-6
2. IPFilter rules are applied via a custom rules file located at `/etc/opt/sec_mgmt/bastille/ipf.customrules`
3. Settings applied only if software is installed
4. HP-UX Host IDS is a selectable software bundle and only available for commercial servers
5. WBEM is required for several HP management applications including Servicecontrol Manager and ParMgr

Standard HP-UX Bundle Considerations

Standard HP-UX bundles supply diagnostics and patches for HP-UX core files, applications, and diagnostic products. These bundles enable new hardware, fix known defects, and provide diagnostics tools. In some cases, a patch may deliver new software functionality.

All bundle software is cumulative and replaces completely any previous bundle release for the same operating system (OS) release. See Appendix D, “Software Distribution Media,” on page 173 for a listing of the always-installed, default-installed, and selectable software bundles.

Support Plus Media Updates

For HP-UX 11i v2 (B.11.23) and later, Support Plus media is no longer available. All content on the Support Plus media is now incorporated into the Operating Environments (OEs) media. The content includes diagnostics and patch bundles.

For HP-UX 11i v1 (B.11.11), Support Plus media updates are still available twice yearly in June and December.

Patch Management Resources

The *Patch Management User Guide for HP-UX 11.x Systems* provides information and procedures on how to acquire and install standard HP-UX patch bundles, including the HWE and QPK bundles. Go to the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

Online Diagnostics

HP-UX 11i v2 automatically installs diagnostics on all systems to provide required hardware support. These tools, contained in the `OnlineDiag` bundle, give you a complete solution to verify, troubleshoot, and monitor Itanium-based system hardware, including CPUs, memory, interface cards, and mass storage and other devices.

CAUTION

Uninstalling the `OnlineDiag` bundle prevents products with dependencies on the diagnostics from functioning correctly.

Not installing `OnlineDiag` removes protections against hardware failures that diagnostics provide. Without the tools, it is much harder to troubleshoot and fix problems if a hardware failure occurs.

To ensure the reliability of your computer system, HP highly recommends installing the `OnlineDiag` bundle with HP-UX 11i v2. With a media install, the `OnlineDiag` bundle is default installed with any HP-UX 11i Operating Environment.

The tools in `OnlineDiag`:

- Protect you against some hardware failures, for example, some memory problems.
- Provide EMS hardware monitors that notify you of hardware events that may indicate impending hardware failure.
- Maintain logs that can give you critical help in determining the cause of failures.
- Enable you to troubleshoot system problems with the system online or offline.

For most computer systems, no special configuration of the diagnostics is necessary.

For complete information, go to the Diagnostics Web site:

`http://docs.hp.com/hpux/diag`

Offline Diagnostics

Offline Diagnostics (ODE) are on the HP Itanium-Processor Family Offline Diagnostics and Utilities CD. The CD is delivered with the hardware and is non-OS dependent (not delivered with the HP-UX 11i v2 media kit).

HP highly recommends that you get the latest CD and update the Offline Diagnostics for improved functionality. To order the HP Itanium-Processor Family Offline Diagnostics and Utilities CD, go to the following Web sites:

Software Depot:

www.software.hp.com

Biz Support:

www.hp.com/support/Itaniumservers

For more information on the HP Itanium-Processor Family Offline Diagnostics and Utilities CD, go to the following Web site:

http://docs.hp.com/hpux/onlinedocs/diag/ode/ipf_ode_over.htm

The Next Step

After deciding which method to use to install HP-UX 11i v2, you can start preparing your system for either cold-install or update. Proceed to Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71.

IMPORTANT

Make sure you review the *Read Before Installing or Updating to HP-UX 11i v2* DVD booklet for situations not discussed in Chapter 3, “Choosing an Installation Method,” on page 45 that may apply to your system.

Preparing to Install or Update to HP-UX 11i v2

This chapter details the preparation tasks required to cold-install or update to HP-UX 11i v2.

What You Will Find in This Chapter

- “Cold-Install Tasks” on page 72
- “Update Tasks” on page 78
- “Backing Up Your System” on page 80
- “Locating Source Media and Codewords” on page 83
- “The Next Step” on page 85

Time Estimate for This Chapter: Approximately 2 hours to gather the information needed and perform the prescribed tasks.

Cold-Install Tasks

Prior to cold-installing HP-UX 11i v2, perform these tasks:

- Select an HP-UX Console (Itanium-based systems only), if appropriate.
- Back up any configuration files you want to reinstall.
- Back up your system using any supported HP-UX backup software.
- If you intend to cold-install HP-UX 11i v2 on more than one system, update your Ignite-UX server.
- Locate source media and codewords.

Task 1: Selecting Your HP-UX Console (Itanium-based Systems Only)

NOTE

This section does not apply to PA-RISC systems. If you are cold-installing on a PA-RISC system, you can skip this section and proceed to “Task 2: Backing Up Your Configuration Files” on page 76.

If you are using an Itanium-based system, HP-UX requires that you select the correct console via a firmware selection menu. If you have ordered a machine with HP-UX pre-installed, your console selections have been correctly chosen for you. If you are already on the system console, then you can skip this section.

However, if you are cold-installing HP-UX or changing your system configuration, you may need to select the correct console. Skipping this step can result in HP-UX using an unexpected device as a console, which can appear as a system hang.

Do not select more than one console device. HP-UX 11i v2 recognizes only one device at a time. Choosing more than one device can result in the appearance of system hang.

1. Decide what console you want to use.

Depending on your system configuration, HP-UX can use one of the following devices as your system console:

- System Serial Port
- Management Processor (MP) Serial Port (if present)
- VGA device (if present)

2. Using the EFI menus, select the appropriate console device and deselect others:

- Select **Boot option maintenance** from the main **Boot Manager Menu**.
- Select **Select Active Console Output Devices**.
- Select the correct output device and deselect others. On the HP Integrity rx2600, HP Integrity rx5670, and zx6000 systems, the Select Active Console Output Devices menu looks like this:

```
EFI Boot Maintenance Manager ver 1.10 [14.57]
```

```
Select the Console Output Device(s)
```

```

Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (PcAnsi)
Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100)
Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100+)
Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (VtUtf8)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (PcAnsi)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100+)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (VtUtf8)
* Acpi (HWP0002,700) /Pci (2|0)
Acpi (HWP0003,400) /Pci (0|0)
Save Settings to NVRAM
Exit
```

See “Understanding Interface Differences Between Itanium-based Systems” on page 74 for details about choosing the appropriate device.

Understanding Interface Differences Between Itanium-based Systems

NOTE

This section does not apply to PA-RISC systems. If you are cold-installing on a PA-RISC system, proceed to “Backing Up Your System” on page 80.

Each Itanium-based system has a similar interface with minor differences. You can navigate these menus with the arrow keys or “v” and “^” keys, and use the **Enter** or **spacebar** key to select and deselect devices. Selected devices have an asterisk (*) next to them. After making your changes to this menu, select **Save Settings to NVRAM** and then **Exit**.

VGA Consoles

Any device in the output device menu that has a `Pci` section in its path, but does not have a `Uart` section, is a VGA device. If you require a VGA console, select this device, and unmark all others. In the previous example, a VGA device is selected as the console.

Other Console Types

Any device in the output device menu that has a `Uart` section but no `Pci` section is one of the system serial ports; devices containing *both* a `Uart` and `Pci` section are MP serial ports. Four almost identical system serial ports are listed in the example. The first four entries are identical except for their `VenMsg` section. This means that each entry is actually the same device, with different protocols for accessing the device. If the first entry is selected, use an ANSI-capable terminal device to communicate with the serial port. If the second entry is selected, use a VT100-capable terminal device, and so on.

If you select either a system or an MP serial port, HP recommends you choose a VT100-capable terminal device.

Selecting a Console on the HP Integrity rx2600, rx5670, and zx6000 Systems

On the HP Integrity rx2600, HP Integrity rx5670, and zx6000 systems, an entry in the output device menu that has a `Uart` section and a `Pci` section is the serial port on a Management Processor (MP). To use the MP as your console device, select one of the MP serial device entries and deselect everything else.

1. Select **Select Active Console Input Devices**.

2. Select the correct input device and deselect others.

For input devices, a device that has a `Pci` section in its path but does not have a `Uart` section is a USB keyboard device.

3. Select **Select Active Standard Error Devices**.

4. Select the correct standard error device and deselect others.

The device displays important firmware messages reporting errors.

5. Reset your system.

A system reset is required for your console selections to take effect.

Additional Notes on Console Selection

HP-UX acts based upon the EFI Boot Maintenance Manager menu's **Select Active Console** sections to determine where to send its output. If the incorrect console devices are selected, HP-UX may either fail to boot or boot with output directed to the wrong location. Therefore, any time new potential console devices are added to a system, or anytime NVRAM on a system is cleared, review console selections to ensure that they are correct.

You can find more information on the EFI Paths used for console selection in the Intel® Extensible Firmware Interface (EFI) documents available from the Intel Web site.

Task 2: Backing Up Your Configuration Files

If you plan to cold-install HP-UX 11i v2 on a system that already has HP-UX installed, make sure to save the files that you want to re-install, such as:

- Configuration files in `/etc`
- The contents of `/usr/local`
- Any local home directories (that is, those you do not import from another system)
- Any configuration files located in the `/etc/opt` directories for installed software

If multiple users are preparing for the cold-install, you might consider creating a directory (such as `/backup`) on another system. *Do not create this directory on your root disk.* Mount it with `sam`. Then create a subdirectory for each system or user (for example, `/backup/your_sys`).

As root, copy the files. For example:

1. Copy all config files from `/etc` on a system named `system1` to system `system2`. On `system2`, enter:

```
mkdir /backup/system1/etc  
rcp -p your_name@system1:/etc/* /backup/system1/etc/
```

2. Copy your local home directory to the backup system:

```
mkdir /backup/system1/home  
rcp -pr your_name@system1:/home/ /backup/system1/home/
```

Task 3: Backing Up Your System

Back up your system before performing a cold-install, and again after the cold-install is complete. If a problem occurs, you can easily restore the system to its original state. See “Backing Up Your System” on page 80 for more information.

Task 4: Updating Your Ignite-UX Server

If you intend to cold-install HP-UX 11i v2 on more than one system, update your Ignite-UX server.

The HP-UX 11i v2 DVD contains the complete Ignite-UX product. When you cold-install HP-UX 11i v2 from the media, a subset of Ignite-UX is used to perform the installation on a single system.

If you plan to update an existing Ignite-UX server to install HP-UX 11i v2 on more than one system in your network, update *your Ignite-UX server first*.

Updating your Ignite-UX server and using it to update other systems ensures that:

- You have the following commands to back up and recover your systems: `make_net_recovery` and `make_tape_recovery`. Refer to the `make_net_recovery` (1M) and `make_tape_recovery` (1M) manpages for information.
- You keep consistent kernel configuration with specific drivers, daemons, and kernel tunables on all systems.

You can also download the latest Ignite-UX software and documentation from the Ignite-UX Web site:

<http://software.hp.com/products/IUX>

Task 5: Locating Source Media and Codewords

Locate the source media needed for the cold-install. See “Locating Source Media and Codewords” on page 83 for instructions.

Update Tasks

Prior to updating to HP-UX 11i v2, perform these tasks:

- Identify all software products and bundles on your system.
- Rebuild the HP-UX kernel.
- Rename your log files to make it easier to find problems encountered during an update.
- Back up your system using any supported HP-UX backup software.
- Locate source media and codewords.

Task 1: Identifying Software Versions

Run the `swlist` command, and print the list of all software products and bundles prior to updating to HP-UX 11i v2. For example, enter:

```
/usr/sbin/swlist | lp
```

After updating to HP-UX 11i v2, run the `swlist` command again and print the list of all products and bundles. Compare the two lists to determine what software products and bundles still need to be updated.

Task 2: Rebuilding the Kernel

The update can fail if the HP-UX kernel build fails in the starting environment. To ensure that you have a reliable starting point, rebuild the kernel before you update:

1. As root, enter:

```
/usr/sbin/mk_kernel
```

2. Fix any problems listed in the `mk_kernel` output.
3. Reboot your system to ensure that your new kernel boots.

Task 3: Renaming Your Log Files

To make it easier to look for problems encountered during an update, rename the log files before starting an update:

1. `cd /var/adm/sw`
2. As root, rename each log file. For example:

```
mv swagent.log swagent_old.log
```

Task 4: Backing Up Your System

Back up your system before performing an update, and again after the update is complete. If a problem occurs, you can easily restore the system to its original state. See “Backing Up Your System” on page 80 for more information.

Task 5: Locating Source Media and Codewords

Locate the source media needed for the update. See “Locating Source Media and Codewords” on page 83 for instructions.

Backing Up Your System

Back up your system before performing a cold-install or update, and again after the cold-install or update. If a problem occurs, you can easily restore the system to its original state.

This section offers several alternatives for performing system backups: `fbackup` and `frecover`, and `make_net_recovery` and `make_tape_recovery`.

Using `fbackup` and `frecover`

Many administrators use the basic `fbackup` command to back up the entire system to tape. You do not need to unmount any imported file systems; `fbackup` does not cross NFS boundaries unless specified.

Using the normal tape location to do a full backup, insert a new tape and enter:

```
fbackup -f/dev/rmt/0m -i -v
```

Later, to return the system to its previous state, use the `frecover` command. Refer to the *fbackup* (1M) manpage for examples.

Ignite-UX Recovery Commands

For recovering a system, the `make_net_recovery` or `make_tape_recovery` commands available with Ignite-UX offer more flexibility than `fbackup` and `frecover`, including the ability to recover non-bootable systems.

The Ignite-UX server software for HP-UX 11i v2 is provided on the HP-UX 11i v2 DVD, and can be cold-installed or updated along with HP-UX 11i v2 to create or update a new server.

**Using
make_net_recovery**

The Ignite-UX server has the `make_net_recovery` command to create a system recovery archive on another system on the network. The archive created by `make_net_recovery` is specific to the system it was created for and its identity includes host name, IP address, networking information, and so on. In the event of root disk failure, you use the Ignite-UX server to restore the system by installing the recovery archive.

The contents of the system recovery archive always include all files and directories that are essential to bringing up a functional system. This essential list is predefined by `make_net_recovery`. You can run `make_net_recovery` in its interactive mode to review the directories and files that make up the essential list, and also to add or remove other data from the archive on a disk/volume group, file, or directory basis.

For more information on using `make_net_recovery`, refer to the *make_net_recovery* (1M) manpage or the *Ignite-UX Administration Guide*.

Using make_tape_recovery

The Ignite-UX server's `make_tape_recovery` command creates a bootable recovery tape for an LVM or whole disk file system while it is up and running. When a system has a logical volume layout, the recovery tape only includes data from the root volume group, plus data from any non-root volume group containing the `/usr` directory.

You can run `make_tape_recovery` either on the Ignite-UX server or locally on the system from which you are trying to make a recovery tape.

To create the bootable recovery tape, enter:

```
/opt/ignite/bin/make_tape_recovery -Av
```

where `A` specifies the entire root disk or volume group and `v` is for verbose mode. Also, you can specify more than one volume group with the `-x` option.

If you intend to use a tape drive other than the default (`/dev/rmt/0m`), modify the command to point to the device you want to use, for example, a tape drive at `/dev/rmt/3mn`:

```
/opt/ignite/bin/make_tape_recovery -Av -a /dev/rmt/3mn
```

To recover a failed system disk or volume group after a recovery tape has been made, simply load the recovery tape, boot the system and interrupt the boot sequence to redirect to the tape drive. Allow the install process to complete. Do not intervene. The system will reboot and, because map files for all associated volume groups have been saved on the tape, any

Backing Up Your System

other existing volume groups are imported and mounted automatically. Data that is not in the root volume group must be backed up and recovered using normal backup utilities.

For more information on using `make_tape_recovery`, refer to the *make_tape_recovery* (1M) manpage on an Ignite-UX server or the *Ignite-UX Administration Guide*. The guide is available on the HP-UX 11i v2 Instant Information DVD and at the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

Locating Source Media and Codewords

Now that you have backed up your system and important data files, you need to locate the source media needed for the cold-install or update:

- **If you are cold-installing or updating one system at a time** — Cold-install or update directly from the DVDs in the HP-UX 11i v2 media kit:
 - **HP-UX 11i v2 DVD** — Boot and install a new system.
 - **HP-UX Application DVDs** — Install applications not installed with the OE or install a newer version of an OE application. Some applications installed with an HP-UX 11i v2 OE may be older versions than those available on the HP-UX Applications DVDs supplied in the media kit. Products available on Applications DVDs are listed in the `TABLE_OF_CONTENTS` file on each DVD.
- **If you plan to cold-install on many systems in your enterprise** — Use an Ignite-UX server to create a golden image from which to cold-install. This install image can contain the OS and OE, other applications, and any needed patches. After the archive is in place, either on the Ignite-UX server or on another system, cold-install on each client system in a single-pass operation; you need to reboot each client only once.

For details on installing an Ignite-UX server, refer to the *Ignite-UX Administration Guide* supplied on the Instant Information DVD and on the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

You can obtain a codeword for a purchased product by contacting one of the HP licensing services in Table 4-1:

Table 4-1 HP Licensing Services

Location	Telephone	Email
Asia	0120.42.1231 (Inside Japan) 0426.48.9310 (Inside Japan) +81.426.48.9312 (Outside Japan)	sw_codeword@hp.com
Europe	+33 (0)4.76.14.15.29	codeword_europe@hp.com
North America	(800) 538-1733	hplicense@mayfield.hp.com

NOTE

For more information on HP licensing services and codeword redemption, go to Software Licence Manager Web site:

<http://licensing.hp.com>

The Codeword Request forms also list the telephone numbers and web site for codeword redemption.

The Next Step

You are now ready to cold-install or update to HP-UX 11i v2.

- **To cold-install:** see Chapter 5, “Cold-Installing HP-UX 11i v2,” on page 87.
- **To update:** see Chapter 6, “Updating to HP-UX 11i v2,” on page 103.

The Next Step

This chapter describes cold-installing HP-UX 11i v2.

What You Will Find in This Chapter

- “Before You Begin” on page 88
- “Reviewing the Cold-Install Process” on page 89
- “Cold-installing HP-UX 11i v2” on page 91
- “Retrieving Information After Cold-installing” on page 100
- “The Next Step” on page 102

Time Estimate for This Chapter: Approximately 2-3 hours, depending on your system and whether you are installing the HP-UX operating system (OS) or an HP-UX Operating Environment (OE).

NOTE

For customers ordering new systems with the Instant Ignition option (also known as factory ignited), the cold-installation process described here has already been performed. Skip this chapter and proceed to Chapter 8, “Verifying System Install or Update,” on page 143.

CAUTION

The cold-install process overwrites everything on the root (/) disk. Make sure you completed backups in “Backing Up Your System” on page 80.

Before You Begin

Before you cold-install HP-UX 11i v2, make sure that:

- You are installing from a supported migration path. See “Supported Cold-Install Paths to HP-UX 11i v2” on page 46.
- You understand all of the considerations provided in Chapter 3, particularly “Additional Cold-Install Considerations” on page 54.
- Your system meets the system requirements to install and operate HP-UX 11i v2. For more details see Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 33.
- You have completed the preparation tasks required to update your system. For more information see Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71.
- You have available Appendix A, “Data Collection Tables,” on page 151 for networking information and other data that you need to collect.

Reviewing the Cold-Install Process

Figure 5-1 on page 90 shows the overall process, along with alternative methods of cold-installing HP-UX 11i v2.

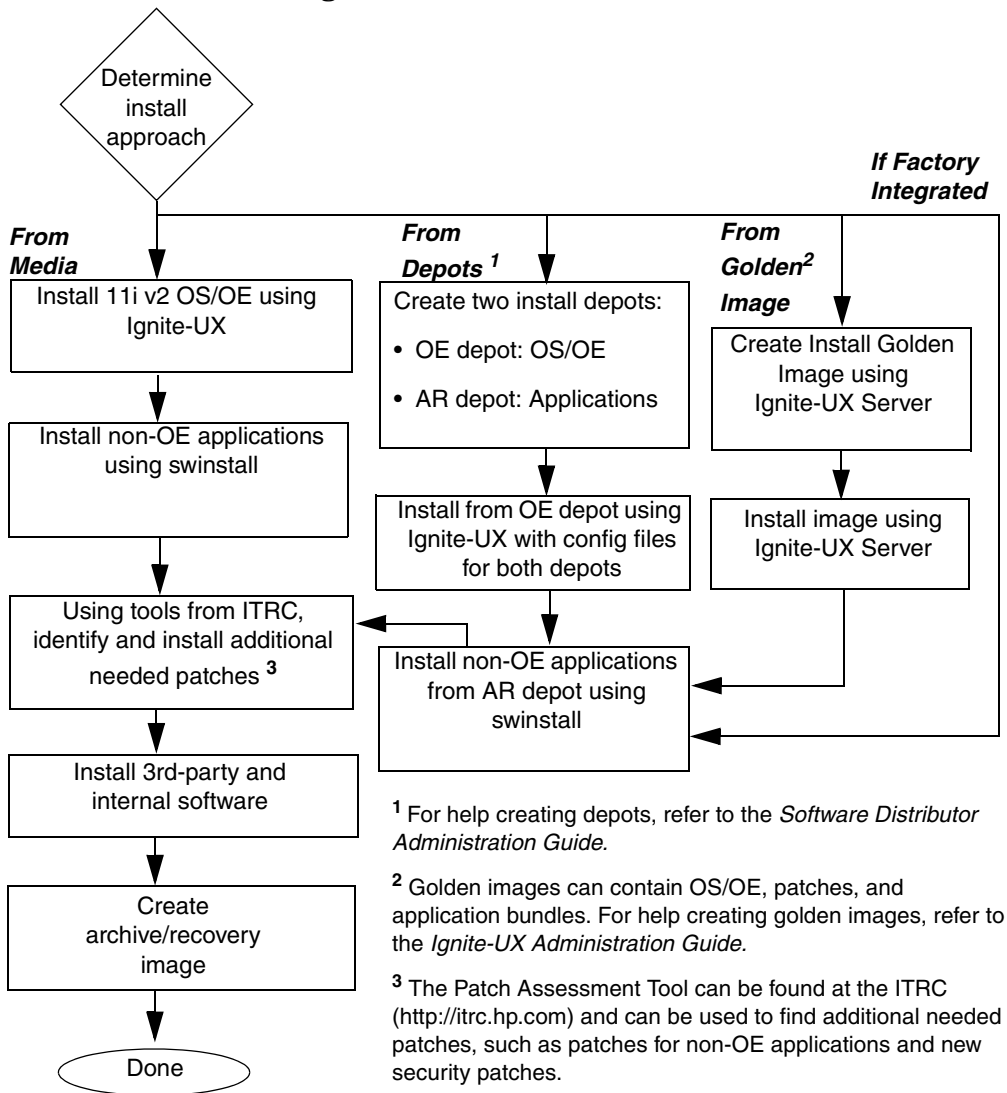
Alternative methods of cold-installing include the following:

- Installing from network depots — Use Software Distributor commands to create depots containing OS, OE, and other software bundles, then install from the depot using Ignite-UX. For help with this method, refer to the *swinstall* (1M) manpage, the *Software Distributor Administration Guide*, and the *Ignite-UX Administration Guide*.
- Installing from golden images — If you need to install the same OS/OE and applications on many systems in your network, use an Ignite-UX server as explained in the *Ignite-UX Administration Guide*. With Ignite-UX, you can create a single install image (golden image) containing OS/OE bundles, application bundles, and patch bundles, then install the image on multiple systems in your environment.

NOTE

If your system is on HP Mission Critical Support, discuss the proper method of installing and patching the OE with your HP Customer Engineer.

Figure 5-1 Cold-installing HP-UX 11i v2



Cold-installing HP-UX 11i v2

This section describes cold-installing from the HP-UX 11i v2 DVDs, including the operating system, a selected Operating Environment (OE) bundle, network drivers, CDE language bundle, and diagnostics.

Before you begin, review Appendix B, “Known Problems and Troubleshooting,” on page 155 for any installation issues that apply to your system.

This section contains the following tasks:

- “Task 1: Booting Your Machine” on page 92
- “Task 2: Selecting Your Installation Type” on page 94
- “Task 3: Configuring Your Installation” on page 96
- “Task 4: Finishing Your Installation” on page 99

Required Media

Have these DVDs ready from the HP-UX 11i v2 media kit:

- HP-UX 11i v2 DVD
- HP-UX 11i v2 Applications DVD

CAUTION

Cold-installing overwrites everything on the target disk.

Task 1: Booting Your Machine

This task describes how to boot your system from the install media. If you want to boot an Itanium-based system, follow the instructions in “Booting Your Itanium-based System” on page 92. If you want to boot a PA-RISC system, follow the instructions in “Booting Your PA-RISC System” on page 93.

Booting Your Itanium-based System

- Step 1.** Make sure any external devices connected to the target system are turned on and operational.
- Step 2.** Insert the HP-UX 11i v2 DVD into the drive.
- Step 3.** Turn the system on, reboot, or cycle power.
- If the system boots automatically, the kernel scans the system for I/O devices.
 - If the system does not boot automatically, it goes to the boot menu. It is a timed menu; press any key to stop the timer. Then, you can run the install manually from the EFI shell using the following steps:
 - a. From the boot menu, select `EFI Shell (Built In)`.
 - b. If the device is not automatically selected, select the device name for the DVD-ROM and then execute `install`. For example, from the EFI shell prompt, you may see something similar to the following:

```
Shell> fs1:  
  
fs1:\> install
```

If you do not see the DVD-ROM device, use the `map` command to list all device names from the EFI shell prompt.

The list of devices is displayed automatically, and the `install` process selects the device for you.

NOTE

Your DVD device may not always be `fs1`. Make sure you verify the ID appropriate to your DVD device.

After the kernel has booted, it scans the system for I/O devices.

Booting Your PA-RISC System

Step 1. Make sure any external devices connected to the target system are turned on and operational.

Step 2. Insert the HP-UX 11i v2 DVD into the drive.

Step 3. Stop the autoboot by pressing any key.

The boot console menu is displayed. If you need help, enter: **HELP**

Step 4. Ensure that Fast Boot is enabled.

1. Select the Configuration Menu: **CO**

2. If the Fast Boot selection is available, switch Fast Boot ON:

FB ON

3. Return to the Main Menu: **MA**

(Remember to switch Fast Boot back OFF after installing HP-UX 11i.)

The full memory check that is run when Fast Boot is OFF may take several hours on a large system.

Step 5. Search for bootable devices, using the choices displayed (for example, enter **search** or **sea**). A table similar to this is displayed:

Path#	Device Path	Device Type
-----	-----	-----
P0	SCSI	HP DVD-ROM
P1	LAN.1.2.3.4.5.6	1.2.3.4
P2	FWSCSI.6.0	IBM DDRS-34560WS

Of the media listed, a fast/wide SCSI device (**FWSCSI**) is usually a disk, whereas a single-ended SCSI device (**SCSI**) can be a disk or CD/DVD drive.

Step 6. Boot from the DVD drive using the listed path number. For the drive shown in the previous example (P0), enter: **BOOT P0**

Step 7. After a few minutes, at the `Interact with IPL?` prompt press **n**.

The install kernel loads (3-5 minutes), after which a screen might prompt you to enter the keyboard language of your console.

Step 8. Enter the number and press **Enter** again to confirm.

Task 2: Selecting Your Installation Type

The system displays the Ignite-UX welcome screen for the HP-UX installation process. When the initial Ignite-UX welcome screen appears, read how to navigate and select choices on this terminal interface:

- Use the **Tab** key to navigate between fields and the arrow keys to navigate within fields.
- Use the **Return/Enter** key to select an item. Pressing **Return/Enter** or the spacebar opens a menu list.
- For Help, use **Ctrl-K** for navigation key help and **Ctrl-F** (or **F1**) for context-sensitive help.
- You can enter the underlined letter of an item (such as **I** for install HP-UX) to navigate more quickly.

The remainder of this section describes how to choose the degree of customization needed to configure your installation.

Step 1. If the install detects that you have a keyboard, the system displays the **Language Mapping** screen. Select the number of the language you want to use, for example, **26** and then press **Enter** to confirm your choice.

A USB interface has been detected on this system. In order to use a keyboard on this interface, you must specify a language mapping which will be used by X windows and the Internal Terminal Emulator (ITE). The characters "1234567890" will appear as "!@#\$%^&*()" on keyboards that use the shift key to type a number. Your choice will be stored in the file /etc/kbdlang

- | | |
|---------------------------------|------------------------------------|
| 1) USB_PS2_DIN_Belgian | 2) USB_PS2_DIN_Belgian_Euro |
| 3) USB_PS2_DIN_Danish | 4) USB_PS2_DIN_Danish_Euro |
| 5) USB_PS2_DIN_Euro_Spanish | 6) USB_PS2_DIN_Euro_Spanish_Euro |
| 7) USB_PS2_DIN_French | 8) USB_PS2_DIN_French_Euro |
| 9) USB_PS2_DIN_German | 10) USB_PS2_DIN_German_Euro |
| 11) USB_PS2_DIN_Italian | 12) USB_PS2_DIN_Italian_Euro |
| 13) USB_PS2_DIN_JIS_109 | 14) USB_PS2_DIN_Korean |
| 15) USB_PS2_DIN_Norwegian | 16) USB_PS2_DIN_Norwegian_Euro |
| 17) USB_PS2_DIN_S_Chinese | 18) USB_PS2_DIN_Swedish |
| 19) USB_PS2_DIN_Swedish_Euro | 20) USB_PS2_DIN_Swiss_French2_Euro |
| 21) USB_PS2_DIN_Swiss_German2 | 22) USB_PS2_DIN_Swiss_German2_Euro |
| 23) USB_PS2_DIN_T_Chinese | 24) USB_PS2_DIN_UK_English |
| 25) USB_PS2_DIN_UK_English_Euro | 26) USB_PS2_DIN_US_English |

- Step 2.** From the **Ignite-UX Welcome screen**, select **Install HP-UX** to begin interacting with the Ignite-UX (cold-install) program and then press **Enter**. The system displays the **User Interface and Media Options** window.
- Step 3.** From the **User Interface and Media Options** window, choose the degree of customizing needed to configure the installation. Mark your choices and select **OK**.
- Select the default setting (Media only installation) shown in **Source Location Options** for installing from a DVD.
 - Select from one of the three choices shown in **User Interface Options**:
 - **Guided Installation** provides tutorial information and limited choices for inexperienced Ignite-UX users. (Ignite-UX permits you to exit from Guided Installation. You can restart the configuration using Advanced Installation later by either selecting the **Cancel** button or pressing **C**.)
 - **Advanced Installation** enables you to customize your system on tabbed screens. Use this mode to change VxVM settings. You may also find it convenient to set system parameters, network services, file-system characteristics, and other configuration details. For more help on using **Advanced Installation**, refer to the *Ignite-UX Administration Guide*.
 - **No User Interface** uses all the defaults and begins.

The remaining sections take you through the **Guided Installation** option.

Task 3: Configuring Your Installation

At this point, the system displays the **Install HP-UX Wizard** screen for the HP-UX installation process. You are now at the first step of the **Install HP-UX Wizard**. This section describes how to configure your installation using the **Guided Installation** process.

- Step 1.** From the **Install HP-UX Wizard** screen, select an overall system configuration. Press **Enter** to accept the default option, HP-UX B.11.23 Default. The system displays the **Operating Environment** screen.
- Step 2.** From the **Operating Environment** screen, select the type of Operating Environment you want to install on your system. Press **Enter** to view the choices.

- For Technical Computing OE media, the choices are:

```
x Environments: [HP-UX 11i TCOE-64bit  ->] (HP-UX B.11.23) x
x                               HP-UX 11i MTOE-64bit      x
x                               HP-UX 11i Base OS-64bit    x
```

- For Foundation OE media, the choices are:

```
x Environments: [HP-UX 11i OE-64bit    ->] (HP-UX B.11.23) x
x                               HP-UX 11i Base OS-64bit    x
```

- For Minimal Technical OE media, the choices are:

```
x Environments: [HP-UX 11i MTOE-64bit  ->] (HP-UX B.11.23) x
x                               HP-UX 11i Base OS-64bit    x
```

- Step 3.** On the **Root Disk** screen select the disk to store your root file system. Press **Enter** to view the choices. If you are unsure of what to choose, keep the default selection that has been calculated by the install program.
- Step 4.** On the **Root Swap Space** screen, specify the amount of root swap space you need. Press **Enter** to view the choices.

Some initial calculations have been performed by the install program, and a recommended value has been set for you. You can either accept this value or change it before continuing.

- Step 5.** On the **File System Type** screen, select the type of file system you want to use. Unless you have other requirements, use the default value chosen by the install program.

NOTE

If you select VxVM, the root disk can not be moved to another SCSI bus or address that results in a change in the hardware path to the device. If it is moved, you may not be able to boot safely from it. This is similar to the limitation present in LVM.

- Step 6.** On the **Root Group** screen, specify how many disks you want placed into the root disk volume group. If you have more than one disk, select **Yes** to choose the Striping option.
- Step 7.** On the **Languages** screen, browse the available languages, marking the desired selections. During the first boot, you may have been asked this already.
- Step 8.** On the **Additional Software** screen, select any additional software that you want loaded onto your system. Browse the list, marking your selections, then continue to the next step.

For example, to secure your system at install-time with the `Sec30DMZ` configuration bundle do the following:

a. Select **Security Choices**.

The four security configuration bundles appear. By default, `Sec00Tools` is selected

b. Select `Sec30DMZ` from the list.

c. Select **OK**.

For more information, see “Security Considerations” on page 60.

- Step 9.** On the **Pre-Install Disk Information** screen (Step 1), identify which disks will be overwritten during the install process. If you see a disk in the list that you do not want included, back up to the root disk selection and choose another disk. Otherwise, continue on to the next step.
- Step 10.** On the **Pre-Install Check Information** screen (Step 2), review any errors, warnings, or notes. Warnings are simply informational. If there are any errors, they will need to be resolved before the installation can continue.

Step 11. On the **System Summary** screen, use the **Show Summary** button to view a summary of how your system will be configured. If you see any problems, or want to change any of your selections, back up to the appropriate step, and make the needed changes. Otherwise, select **Finish** (at the bottom of the tabs). You can **Cancel** at this time. If you cancel, you can start again.

Deselecting OE Software Bundles

If you use the Guided Installation or Advanced Installations, then you can deselect the software bundles that are installed by default. For a list of default-installed software bundles, see “HP-UX 11i v2 Default-Installed Software Bundles” on page 183.

If you choose the **No User Interface** option, then you *cannot* deselect the default-installed software bundles.

To deselect the software bundles:

1. In the **Guided Installation** or **Advanced Installation** windows, select the **Software** tab.
2. Use the arrow keys to select a bundle and the spacebar to change the option.

IMPORTANT

Review the *HP-UX 11i Version 2 Release Notes* to ensure that any bundle you deselect does not have a dependency. For example, you may deselect a software bundle that is necessary for another program to work correctly.

Task 4: Finishing Your Installation

Finishing the Guided Installation process begins with filesets being copied from the media to the hard disk. The system automatically reboots during the installation process.

Depending on how you set up your parameters, the system either sets basic network configurations automatically, or calls the `set_parms` command after it has rebooted to enable you to set the root password, date and time, time zone, IP address, and additional network parameters.

After `set_parms` is executed, then the **Welcome to HP-UX** screen is displayed.

Installing HP-UX 11i v2 installs a minimum set of default networking drivers that apply to the system. Refer to the *HP-UX 11i v2 Release Notes* available at:

<http://docs.hp.com/hpux/os/11iv2/index.html>

You may need to select or specify other available networking drivers to enable other cards on your system.

- Step 1.** To use a keyboard on this interface, you must specify a language mapping to be used by X Windows and the Internal Terminal Emulator (ITE). Choose the appropriate language. For English, select number **26**.
- Step 2.** You are prompted to answer a few questions before you can use the system. The first is whether or not you plan to use the system on a network. If you completed the pre-install data collection tables in Appendix A, “Data Collection Tables,” on page 151, you have all the information you need for `set_parms`, so answer **Y** for yes.
- Step 3.** Enter the basic network information that you collected in Appendix A, “Data Collection Tables,” on page 151 on the screens that are displayed.
- Step 4.** Confirm your choices. You are now finished with the install procedures and presented with a login screen. Log in to the system as root.

After the cold-install, store the HP-UX DVDs in a safe place. You may need them to install drivers or other software later.

Retrieving Information After Cold-installing

After completing the cold-install, you can retrieve the information you had previously saved onto another system.

Create a New Root Home Directory

Consider creating a root home directory that is not `/`. Doing this keeps the user root dot files out of the `/` directory. Make sure it is on the root volume by calling it something like `/homeroot`. Doing this is especially important if you are using Logical Volume Manager (LVM) and `/home` is a separate volume.

1. From the **CDE login** screen, select **Options -> Command Line Login** and log in as root.
2. Except on trusted systems, edit `/etc/passwd` to change the home directory from `root` to `/homeroot` and save it.
3. Create the `/homeroot` directory:

```
mkdir /homeroot
```

4. Move root's personal files (files beginning with `.`) to `/homeroot`:

```
mv /. [a-zA-Z]* /homeroot
```

5. Exit and log in again as root.

Recover Files

Recover all the customized and personal files that you saved previously by merging them manually. For example, do not overwrite `/etc/passwd` with your old version. Instead, either paste in entries from your old files or *merge* the old information into the new files.

Restore /home

If you had a local home directory, you can restore it as follows:

- For instance, if you copied it to /backup/system1/home, enter these commands:

```
cd /backup/system1/home  
find -depth | cpio -pdm /system1/home
```

- If you backed it up to tape with fbackup, enter:

```
frecover -x -i /system1/home -v
```

Restore Other Files

Carefully use the same techniques to restore other files and directories, such as /usr, /local, and /opt. For help in importing entire volume groups, refer to either *Managing Systems and Workgroups: A Guide for HP-UX System Administrators* or *Managing Superdome Complexes*.

The commands cited in this section do not write over newer files, so your new operating system and any files you update are well protected.

The Next Step

Continue with Chapter 7, “Installing HP Applications and Patches,” on page 133.

This chapter describes updating your system to HP-UX 11i v2 using the `update-ux` command.

What You Will Find in This Chapter

- “Before You Begin” on page 104
- “Reviewing the Update Process” on page 106
- “Updating Tips” on page 108
- “Updating to HP-UX 11i v2” on page 110
- “Post-Update Tasks” on page 122
- “The Next Step” on page 131

Time Estimate for This Chapter: Approximately 3-4 hours, depending on your system and whether you are installing the HP-UX operating system (OS) or an HP-UX Operating Environment (OE). If you need to create an HP Service Partition (HPSP), plan for an additional 4-6 hours.

Before You Begin

Before you update to HP-UX 11i v2, make sure that:

- You are updating from a supported migration path. See “Supported Update Paths to HP-UX 11i v2” on page 47.
- You understand all of the considerations provided in Chapter 3, particularly “Additional Update Considerations” on page 56.
- Your system meets the system requirements to update and operate HP-UX 11i v2. For more details see Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 33.
- You have completed the preparation tasks required to update your system. For more information see Chapter 4, “Preparing to Install or Update to HP-UX 11i v2,” on page 71.

CAUTION

Requirement for Updating from HP-UX 11i v 1.6 (B.11.22)

If you are updating from HP-UX 11i v 1.6 (B.11.22), you must install the August 2004 version of BUNDLE11i (revision tag, B.11.22.0408.1) for HP-UX 11i v1.6 on your system prior to updating to the HP-UX 11i v2 September 2004 or later release. If the August 2004 version of BUNDLE11i is not installed on your system prior to update, the update script will not execute and you will get a `mk_kernel` error. If you have a support contract with HP, you should have already received this patch bundle. Request the patch PHKL_31152 from the IT Resource Center web site; it will provide you with all seven required patches:

<http://itrc.hp.com>

CAUTION

Requirement for Updating from Earlier Releases of HP-UX 11i v2 (B.11.23)

If you are updating from earlier releases of HP-UX 11i v2 (B.11.23), you must install the August 2004 version of BUNDLE11i (revision tag, B.11.23.0408.1) for HP-UX 11i v2 on your system prior to updating to the HP-UX 11i v2 September 2004 or later release. If the August 2004 version of BUNDLE11i is not installed on your system prior to update, the update script will not execute and you will get a `mk_kernel` error. If you have a support contract with HP, you should have already received this patch bundle. Request the patch PHKL_31151 from the IT Resource Center web site; it will provide you with all seven required patches:

<http://itrc.hp.com>

Reviewing the Update Process

This section describes updating to HP-UX 11i v2 using the `update-ux` command and Software Distributor (SD) tools to selectively overwrite the operating system and application software from a media or network source depot.

Figure 6-1 on page 107 shows the overall update process. You can update your system using one of the following methods:

- From a network depot — Use Software Distributor commands to create depots containing OS, OE, and other software bundles, then install from the depot using Ignite-UX. For help with this method, refer to the *swinstall* (1M) manpage, the *Software Distributor Administration Guide*, and the *Ignite-UX Administration Guide*. See “Updating from a Network Depot” on page 119 for an example.
- From DVD media — Use the `update-ux` command described in “Updating to HP-UX 11i v2” on page 110.

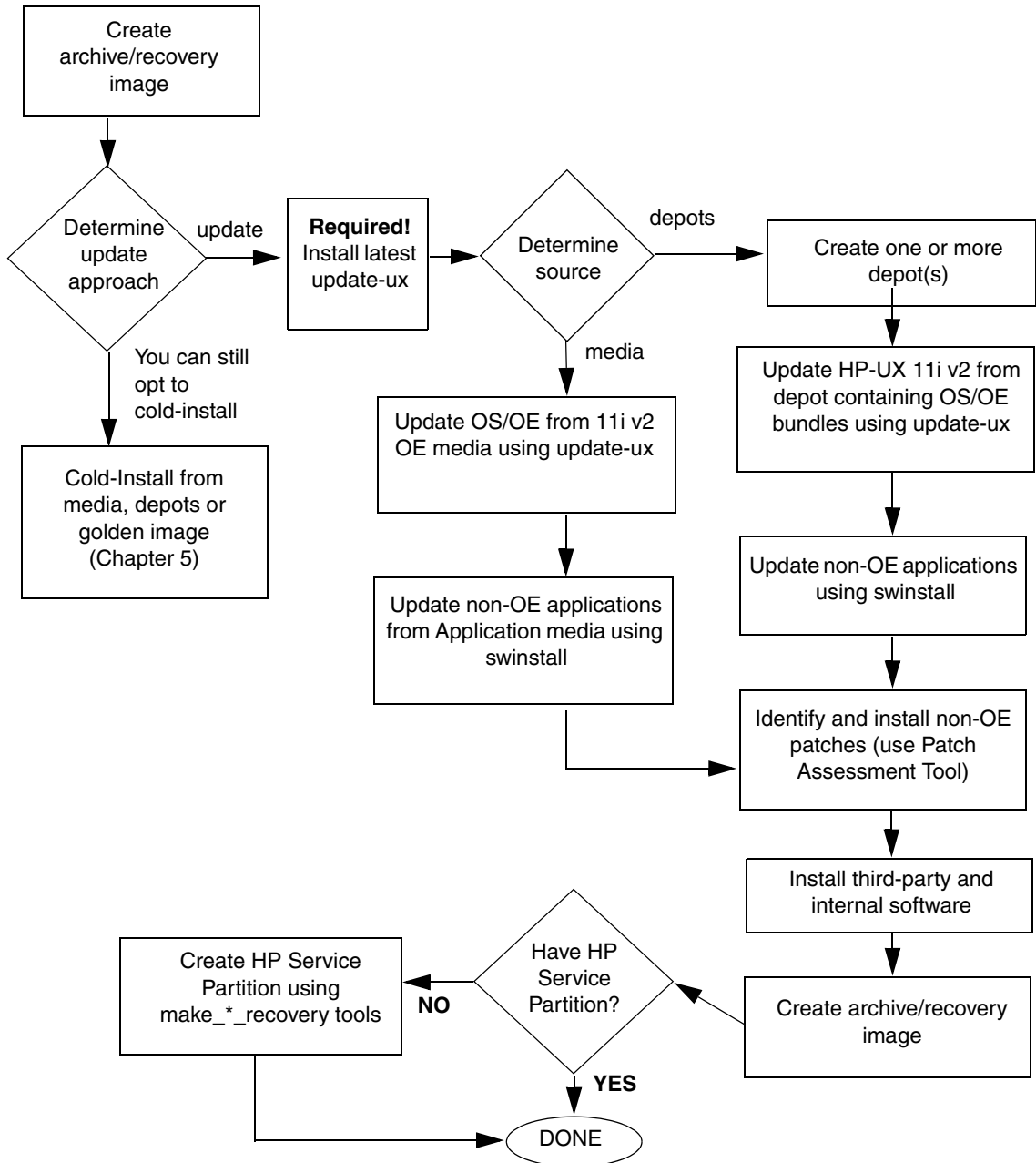
NOTE

If your system is on HP Mission Critical Support, discuss the proper method of installing and patching the OE with your HP Customer Engineer.

IMPORTANT

You **must install** the latest version of Update-UX prior to updating your system. Failure to do so may cause the update to fail.

Figure 6-1 Updating to HP-UX 11i v2



Updating Tips

Table 6-1 suggests some tips and recommendations to be aware of during an update process:

Table 6-1 **Updating Tips**

Topic	Tip
<p>Monitoring the Update Process</p>	<p>If you want to view the update process in detail, open another terminal window and drag it aside so you can also watch for any messages on the window running <code>update-ux</code>. Then, use the <code>tail</code> command to view <code>swinstall</code> messages being logged:</p> <pre>tail -f /var/adm/sw/swagent.log</pre> <p>If you want to log all messages directed to the console, use the <code>script</code> command. For example, to log all messages into a file named: <code>/tmp/updateOS</code>, enter:</p> <pre>script -a /tmp/updateOS</pre> <p>To halt the <code>script</code> log process, enter:</p> <pre>exit</pre>
<p>Running Other Commands</p>	<p>You can run other commands during an update, such as viewing files and <code>tail</code>. However, do not run other Software Distributor commands during an update; doing so may cause the commands to function improperly.</p>
<p>All Software Does Not Get Updated</p>	<p>The <code>update-ux</code> command updates the HP-UX OS and any software specified in additional software bundles available on the source media or depot. When an OE is specified, some products in the OE are not updated automatically when a version of the product not previously installed with an OE already exists on the system.</p> <p>You have to update or re-install those products after updating HP-UX 11i v2. For more information about how to update these additional software bundles, see “Updating Selectable Software” on page 120.</p>

Table 6-1 Updating Tips (Continued)

Topic	Tip
In Case of Trouble	<p>The update-ux command returns an error value when it is not successful:</p> <ul style="list-style-type: none"> 1 - Error during execution; update aborted. 2 - Update aborted via user action (-n or keyboard press) <p>Messages are recorded in /var/adm/sw/swagent.log, /var/adm/sw/swinstall.log, and /var/adm/sw/update-ux.log.</p> <p>When updating Ignite-UX, also look at its log in /var/adm/sw/.</p> <p>If you encounter a problem during the update process, review Appendix B, “Known Problems and Troubleshooting,” on page 155 for possible solutions.</p>

Updating to HP-UX 11i v2

Updating your system using `update-ux` includes the following tasks:

1. Create a network depot so you can update other systems on the network. See “Task 1: Creating a Network Depot (Optional)” on page 111. If you are not creating a network depot, you can skip this task.
2. Install the latest version of the `update-ux` command on your system. See “Task 2: Installing the Latest Update-UX Bundle (Required)” on page 112.
3. Use `update-ux` to update your system. Several examples are provided to assist you with some of the most common scenarios for using `update-ux`. See “Task 3: Using `update-ux` (Required)” on page 114.

After updating to HP-UX 11i v2, you might need to perform these additional tasks to make your system fully functional:

1. Configure OE Applications
2. Create an HP Service Partition

NOTE

Updating to the HP-UX 11i v2 September 2004 release removes the following products. Supported versions of these products will be available later for download from the Software Depot Web site:

<http://software.hp.com>

- Route Administration Manager for IPv6 Routing Protocols (RAMIPv6)
 - Mobile IPv4
 - Multimedia Streaming Protocols (MSP)
 - Network Server Accelerator HTTP
 - DMI
-

Task 1: Creating a Network Depot (Optional)

If you want to update other systems on the network then you must first create a network depot before you update your system and other systems.

NOTE

This optional step pertains to creating a network depot so you can update other systems on the network.

If you already have a network depot, go to “Task 2: Installing the Latest Update-UX Bundle (Required)” on page 112.

As root, follow this procedure to create a network depot from the HP-UX 11i v2 DVD onto a depot server or other system running HP-UX 11i v2 in your network:

Step 1. Verify that you have at least 2 GB of free space to create the network depot on another system in your network. If this space is not available, use `sam` either to create a new volume group or to extend an existing volume group. For help, refer to either `SAM help` or *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*.

Step 2. Log in as root and mount the logical volume on a new directory named `/update`.

This directory will hold your network depot.

Step 3. Insert the HP-UX 11i v2 DVD into the drive.

Step 4. Find the DVD-ROM device file name:

```
ioscan -C disk -f -n | more
```

`/dev/dsk/c1t2d0` is a typical device name.

Step 5. Create the directory under root (`/`):

```
mkdir /dvdrom
```

Step 6. Mount the DVD onto the new directory as a file system. For example:

```
mount /dev/dsk/c1t2d0 /dvdrom
```

Step 7. Copy all products on the mounted DVD to the target depot, for example to `/update/update-depot`:

```
swcopy -s /dvdrom \* @ /update/update-depot
```

Step 8. Unmount the DVD from its directory:

```
umount /dvdrom
```

The network depot is now ready to update your system to HP-UX 11i v2. Continue with “Task 2: Installing the Latest Update-UX Bundle (Required)” on page 112.

Task 2: Installing the Latest Update-UX Bundle (Required)

IMPORTANT

Prior to updating your system, you **must** install a supported version of the `update-ux` command.

- If you are updating from an HP-UX 11i v1 system, you must have the June 2004 version of the `Update-UX` bundle (release string: B.11.11.0406) or higher installed on your system.
- If you are updating from an HP-UX 11i v1.6 or HP-UX 11i v2 system, you must have the September 2004 version of the `Update-UX` bundle (release string: B.11.23.0409) or higher installed on your system.

To determine if you have installed a supported version of the `Update-UX` bundle, enter the following command:

```
/usr/sbin/swlist -l product -s source_depot_path Update-UX
```

The output of the command returns the following data in the revision string:

- The operating system that the `update-ux` command is intended to run on.
- The release date.

For example, the revision string of B.11.23.0409 indicates that **Update-UX** was bundled for HP-UX 11i v2 (B.11.230409), which is the September 2004 release.

This procedure walks you through the installation of the latest version of the Update-UX bundle, which includes the `update-ux` command, from the DVD media.

Step 1. Find the DVD-ROM device file name:

```
ioscan -C disk -f -n | more
```

A device name associated with your DVD device should be displayed. For example:

```
/dev/dsk/c1t2d0
```

Step 2. Create the directory under root (`/`). For example:

```
mkdir /dvdrom
```

Step 3. Mount the DVD onto the new directory as a file system. For example:

```
mount /dev/dsk/c1t2d0 /dvdrom
```

Step 4. Using `ksh`, `Posix-sh`, or `Bourne shell`, install the latest version of the Update-UX bundle on the target system.

NOTE

Make sure you use the correct case to install the Update-UX bundle (in title case). This bundle contains the `update-ux` command (lowercase).

From the DVD Media

```
swinstall -s /dvdrom Update-UX
```

From a Depot

The depot example uses the following syntax:

```
depot_server:depot_path.
```

```
swinstall -s depot_server:/var/depots/my_depot Update-UX
```

Task 3: Using update-ux (Required)

After you have installed the Update-UX bundle on the target system and, optionally, created an update depot containing all software to be installed, you can now proceed to update your target system. Use the following syntax to run the `update-ux` command:

```
update-ux -s source_location [-?] [-n|-y] [-i]  
[-f selection_file] [-x option=value] [sw_spec]
```

where:

`-s source_location`

Specifies the source containing the new software depot. Possible locations are a local directory, a mounted DVD containing a depot, or a remote system-and-depot combination. All paths used in the *source_location* must be absolute paths. If *source_location* is a remote system and depot combination, specify the remote system first, followed by the absolute path to the remote depot, separated by a colon with no spaces; for example: `swperf:/var/spool/sw`

`-?`

Prints the usage statement.

`-n|-y`

Specifies whether or not `update-ux` issues a message and waits for your response to continue whenever something unexpected is attempted. Specify `-n` first (or omit this option) to have `update-ux` “not continue” when an error is issued. When you have reviewed or resolved all errors, use `-y` instead of `-n` to have `update-ux` ignore all messages that would otherwise cause `update-ux` to wait for a user response.

`-i`

Specifies the `swinstall` interactive user interface to select software products from a depot or bundle during the update. For more information, refer to the *swinstall* (1M) manpage.

`-f selection_file`

Reads the list of software selections from *software_file* instead of (or in addition to) the command line. This option enables you to select and update optional software or to deselect default-installed software.

-x option=value

Specifies `swinstall` options to be applied during the update. For a typical update, no `swinstall` options are required. `swinstall -p` (preview) is not supported. For information on `swinstall` options, refer to the *swinstall* (1M) manpage or the *Software Distributor Administration Guide*.

sw_spec

Specifies one or more optional software bundles to be updated, such as an Operating Environment (OE) bundle name, a network-driver bundle, or Ignite-UX. If an OE bundle name is not included on the command line, only the core OS will be updated. For more information, see Appendix D, “Software Distribution Media,” on page 173.

For more about `update-ux`, refer to the *update-ux* (1M) manpage.

Examples: Using update-ux to Update Your System

Your system configuration and your planning determine how you use `update-ux`. This section provides some scenarios and examples of how you might use `update-ux` to update your system:

- “Updating to HP-UX 11i v2 OS (OE Installed)” on page 117 explains how to update to HP-UX 11i v2 with an Operating Environment.
- “Updating to HP-UX 11i v2 OS (No OE Installed)” on page 118 describes how to update the HP-UX 11i v2 OS without an Operating Environment.
- “Adding or Upgrading an OE” on page 118 explains how to update your system by either adding or upgrading the Operating Environment on your system.
- “Updating from a Network Depot” on page 119 explains how to update your system from a server on the network.
- “Updating Using Interactive Software Selection” on page 119 explains how to use the interactive option to manually select the software you want to update.
- “Updating Selectable Software” on page 120 explains how to update your system with selectable software bundles.

Recommended Update

Updating to HP-UX 11i v2 OS (OE Installed)

To update to HP-UX 11i v2 and include an HP-UX 11i v2 Operating Environment, you need to specify the OE bundle name in the `update-ux` command. The OE bundle names are:

```
HPUX11i-OE      HP-UX 11i v2 Foundation OE
HPUX11i-OE-Ent HP-UX 11i v2 Enterprise OE
HPUX11i-OE-MC  HP-UX 11i v2 Mission Critical OE
HPUX11i-MTOE   HP-UX 11i v2 Minimal Technical OE
HPUX11i-TCOE   HP-UX 11i v2 Technical Computing OE
```

For example, to update to HP-UX 11i v2 and install the HP-UX 11i v2 Foundation OE, insert the HP-UX 11i v2 DVD in the local drive mounted at `/dvdrom`. As root, enter:

```
/usr/sbin/update-ux -s /dvdrom HPUX11i-OE
```

Alternately, if you want to update to HP-UX 11i v2 and install the Enterprise OE (from a supported update path), enter:

```
/usr/sbin/update-ux -s /dvdrom HPUX11i-OE-Ent
```

NOTE

Make sure to read “Supported Update Paths to HP-UX 11i v2” on page 47 to ensure that you are updating your system from a supported update path.

NOTE

Make sure that you install all of the selectable OE bundles that you want at the same time that you do your update. See “Updating Selectable Software” on page 120 for more information.

For details on what is included in each of the Operating Environments, see Appendix D, “Software Distribution Media,” on page 173.

Updating to HP-UX 11i v2 OS (No OE Installed)

IMPORTANT

If you already have an Operating Environment installed on your system, you cannot use this scenario. Instead, use “Updating to HP-UX 11i v2 OS (OE Installed)” on page 117. Attempting this scenario when you already have an Operating Environment installed will cause `update-ux` to fail.

NOTE

HP strongly recommends that you update your system with an Operating Environment to provide you with an integrated and tested set of supporting software and applications.

If you do not specify an OE bundle, `update-ux` only installs the OS, networking, diagnostic, and CDE bundles listed in Chapter D, “Software Distribution Media,” on page 173. Any additional software bundles associated with an OE are not installed.

For example, to update the HP-UX 11i v2 OS, insert the HP-UX 11i v2 DVD in the local mounted drive and enter the following command:

```
/usr/sbin/update-ux -s /dvdrom
```

Adding or Upgrading an OE

To install an OE on an HP-UX 11i v2 system not containing an OE, or to upgrade HP-UX 11i v2 to higher-level OE (for example, HP-UX 11i v2 Foundation OE to HP-UX 11i v2 Enterprise OE), insert the HP-UX 11i v2 DVD and specify the new OE using the `update-ux` command.

For example, to add the HP-UX 11i v2 Enterprise OE, enter:

```
/usr/sbin/update-ux -s /dvdrom HPUX11i-OE-Ent
```

When the update is complete, the original OE bundle wrapper (if one existed) is removed and replaced with the new bundle wrapper.

IMPORTANT

Upgrading to a higher level OE is supported only if you are updating from a lower level HP-UX 11i v2 Operating Environment. You cannot update, for example, from an HP-UX 11i v1.6 Foundation OE to HP-UX 11i v2 Enterprise OE.

You cannot downgrade from a higher level OE to a lower level OE.

Updating from a Network Depot

To update from a network depot on a remote system named `netdepot`, include the path to the depot in the `update-ux` command. The following example does an update to the HP-UX 11i v2 Enterprise OE:

```
/usr/sbin/update-ux -s netdepot:/update/update_depot \  
HPUX11i-OE-Ent
```

Updating Using Interactive Software Selection

To interactively select software for an update, use the `-i` option. For example:

```
/usr/sbin/update-ux -s /cdrom -i
```

`update-ux` displays `swinstall`'s interactive user interface with software already selected to match the default update. Now you can change software selections. For example, you can select a non-default network driver or a web browser before performing the update. Because `update-ux` selects OS, networking, language, and diagnostic bundles by default, the interactive user interface provides a way to deselect the default software.

CAUTION

Do not combine `-i` and `-x` options in the same `update-ux` command.

IMPORTANT

`swinstall`'s interactive user interface does not provide for selecting mutually exclusive selectable software bundles. As a result, if you select more than one HP-UX Bastille security configuration bundle from the Security Choices section of the Select Additional Software screen (for example, `Sec20MngDMZ` and `Sec30DMZ`), HP-UX Bastille applies the *highest* security configuration selected.

For help using `swinstall` in interactive mode, refer to the `swinstall` (1M) manpage or the *Software Distributor Administration Guide*.

Updating Selectable Software

To update to HP-UX 11i v2 and include additional selectable bundles such as one of the HP-UX Bastille Security Configuration bundles, like `Sec30DMZ`, follow these steps:

- Step 1.** If you want to install the HP-UX 11i v2 Foundation Operating Environment bundles listed in Appendix D, “Software Distribution Media,” on page 173, plus the `Sec30DMZ` security configuration bundle, enter from the DVD media as root:

```
/usr/sbin/update-ux -s /dvdrom HPUX11-OE Sec30DMZ
```

If you only want to update your system with a selectable software bundle, enter:

```
/usr/sbin/update-ux -s /dvdrom Sec30DMZ
```

IMPORTANT

The HP-UX Bastille security model provides *incrementally* higher security (metaphorically, like a ratchet). As a result, you can update from a lower security level to a higher security level (example: `Sec10Host` to `Sec20MngDMZ`).

If you intend to downgrade from a higher security level to a lower security level, HP recommends that you run `bastille -r` before you update your system to ensure that only the security settings you wanted in the lower security level are applied. Otherwise, you may encounter some security configurations that remain from the previous security settings applied by HP-UX Bastille.

- Step 2.** Complete any configuration for HP software explained in the *HP-UX 11i v2 Release Notes* available on the Instant Information DVD and at **<http://docs.hp.com/hpux/os/11iv2>**

In this example, to complete the HP-UX Bastille installation, refer to the security chapter in *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*.

Post-Update Tasks

After updating to HP-UX 11i v2, you might need to perform these additional tasks to make your system fully functional:

1. “Task 1: Configuring OE Applications” on page 122.
2. “Task 2: Creating an HP Service Partition (Itanium-based Systems Only)” on page 123.

Task 1: Configuring OE Applications

After updating to an HP-UX 11i v2 Operating Environment (OE), some OE products need post-installation configuration to make them functional. This may be indicated by a message logged in `/var/adm/sw/swagent.log`.

Refer to each product’s installation instructions for details. The location of OE product documentation is listed in the *HP-UX 11i v2 Release Notes*, available on the Instant Information DVD and at the HP Technical Documentation Web site:

<http://docs.hp.com>

Task 2: Creating an HP Service Partition (Itanium-based Systems Only)

NOTE

This section only applies to Itanium-based systems for Offline Diagnostics. If you are updating from a PA-RISC system proceed to Chapter 7, “Installing HP Applications and Patches,” on page 133.

Update-UX does not create or modify the HP Service Partition required by some HP Offline Diagnostics tools. If you are updating from a system that does not have an HP Service Partition, such as system newly updated from HP-UX 11i v1.6, you need to create the HP Service Partition now.

To Determine Whether the HP Service Partition Exists

Step 1. As root, find the location of your root disk:

- If you are using LVM, enter the following command:

```
lvinboot -v
```

Results similar to the following are displayed:

```
# lvinboot -v
```

```
Boot Definitions for Volume Group /dev/vg00:
```

```
Physical Volumes belonging in Root Volume Group:
```

```
    /dev/dsk/c2t1d0s2 (0/1/1/0.1.0) -- Boot Disk
```

```
Boot: lvol1    on:    /dev/dsk/c2t1d0s2
```

```
Root: lvol3    on:    /dev/dsk/c2t1d0s2
```

```
Swap: lvol2    on:    /dev/dsk/c2t1d0s2
```

```
Dump: lvol2    on:    /dev/dsk/c2t1d0s2, 0
```

- For VxVM, enter the following command:

```
vxprint -d
```

Output similar to the following is displayed:

```
# vxprint -d
Disk group: rootdg
TY NAME          ASSOC          KSTATE  LENGTH  PLOFFS  STATE  TUTILO  PUTILO
dm rootdisk01    c0t0d0s2      -        34640800 -        -        -        -
```

Step 2. Run the `idisk` command on the boot disk. For example, on LVM enter:

```
# idisk -p /dev/rdisk/c2t1d0
```

Example 6-1 on page 125 shows `idisk` output without an HP Service Partition installed; Example 6-2 on page 126 shows `idisk` output with an HP Service Partition installed.

Example 6-1 idisk Output Showing No HP Service Partition Installed

idisk version: 1.31

EFI Primary Header:

Signature	=	EFI PART
Revision	=	0x10000
HeaderSize	=	0x5c
HeaderCRC32	=	0x20e10a24
MyLbaLo	=	0x1
AlternateLbaLo	=	0x43d671f
FirstUsableLbaLo	=	0x22
LastUsableLbaLo	=	0x43d66fc
Disk GUID	=	59609df4-c295-11d7-8001-d6217b60e588
PartitionEntryLbaLo	=	0x2
NumberOfPartitionEntries	=	0xc
SizeOfPartitionEntry	=	0x80
PartitionEntryArrayCRC32	=	0xc0a93cc2

Primary Partition Table (in 512 byte blocks):

Partition 1 (EFI):

Partition Type GUID	=	c12a7328-f81f-11d2-ba4b-00a0c93ec93b
Unique Partition GUID	=	5960a1be-c295-11d7-8002-d6217b60e588
Starting Lba	=	0x22
Ending Lba	=	0xfa021

Partition 2 (HP-UX):

Partition Type GUID	=	75894c1e-3aeb-11d3-b7c1-7b03a0000000
Unique Partition GUID	=	5960a1fa-c295-11d7-8003-d6217b60e588
Starting Lba	=	0xfa022
Ending Lba	=	0x430e02

Example 6-2 idisk Output Showing HP Service Partition Installed

```
idisk version: 1.31
EFI Primary Header:
    Signature                = EFI PART
    Revision                 = 0x10000
    HeaderSize               = 0x5c
    HeaderCRC32              = 0x20e10a24
    MyLbaLo                  = 0x1
    AlternateLbaLo           = 0x43d671f
    FirstUsableLbaLo         = 0x22
    LastUsableLbaLo          = 0x43d66fc
    Disk GUID                 = 59609df4-c295-11d7-8001-d6217b60e588
    PartitionEntryLbaLo      = 0x2
    NumberOfPartitionEntries = 0xc
    SizeOfPartitionEntry     = 0x80
    PartitionEntryArrayCRC32 = 0xc0a93cc2

Primary Partition Table (in 512 byte blocks):
    Partition 1 (EFI):
        Partition Type GUID    = c12a7328-f81f-11d2-ba4b-00a0c93ec93b
        Unique Partition GUID  = 5960a1be-c295-11d7-8002-d6217b60e588
        Starting Lba           = 0x22
        Ending Lba              = 0xfa021
    Partition 2 (HP-UX):
        Partition Type GUID    = 75894c1e-3aeb-11d3-b7c1-7b03a0000000
        Unique Partition GUID  = 5960a1fa-c295-11d7-8003-d6217b60e588
        Starting Lba           = 0xfa022
        Ending Lba              = 0x430e021
    Partition 3 (HPSP):
        Partition Type GUID    = e2a1e728-32e3-11d6-a682-7b03a0000000
        Unique Partition GUID  = 5960a22c-c295-11d7-8004-d6217b60e588
        Starting Lba           = 0x430e022
        Ending Lba              = 0x43d602
```

In Example 6-1 on page 125, only two partitions are displayed in the Primary Partition Table list: Partition 1 (EFI) and Partition 2 (HP-UX).

If the HP Service Partition were already configured, the Primary Partition Table shows a third partition listed as HPSP such as in Example 6-2 on page 126.

If you already have an HP Service Partition, skip the rest of this section and continue with Chapter 7, “Installing HP Applications and Patches,” on page 133.

Before You Begin You need to ensure that you have a minimum of 1 GB of disk space that you can allocate for use by the EFI Boot Disk Partition and the new HP Service Partition prior to beginning this procedure.

Make sure that you are familiar with the Ignite-UX *make_tape_recovery* (1M) or *make_net_recovery* (1M) commands before you start. You can also find more information about Ignite-UX, including the latest documentation, on the Ignite-UX Web site:

<http://software.hp.com/products/IUX>

Use the following procedure to create and configure a new HP Service Partition.

Creating an HP Service Partition

Step 1. Determine which recovery method to use: `make_tape_recovery` or `make_net_recovery`.

- `make_tape_recovery` generally provides faster recovery and restore performance than `make_net_recovery`. However HP Integrity Servers do not support direct boot from tape devices. Consequently, you need to perform a two-step media recovery process. To create the HP Service Partition and restore your system, you need a tape device with enough capacity to hold the system archive, the HP-UX 11i v2 DVD media, and the recovery tape.
- `make_net_recovery` recovery and restore performance is determined by the speed of your network. In most cases, this method is slower than `make_tape_recovery`. However, you can boot directly to the Ignite-UX server containing your system archive.

IMPORTANT

The recovery process may fail if the boot disk file system is full while attempting to create a full archive with `make_tape_recovery` or `make_net_recovery`. Either the system or user data restore may run out of space.

Make sure that you back up your user data using other supported backup software for HP-UX 11i v2, and use `make_tape_recovery` or `make_net_recovery` to create an archive of your system data.

Refer to the *Ignite-UX Administration Guide* for more details on the `make_net_recovery` and `make_tape_recovery` commands.

Step 2. Make a system archive using either the `make_net_recovery` or `make_tape_recovery` command:

- To save a system archive to an Ignite-UX server:

```
make_net_recovery -s iuxServer -x inc_entire=vg00
```

- To save a system archive to tape:

```
make_tape_recovery -a /dev/rmt/0mn -x inc_entire=vg00
```


Step 3. Reboot your system.

If you created a system archive using the `make_tape_recovery` command, insert your HP-UX 11i v2 DVD into the DVD drive before resetting your system.

Step 4. Depending on which method you used to create your system archive, choose the appropriate boot method:

- `make_net_recovery` method: Select the appropriate network EFI boot option.
- `make_tape_recovery` method: Select the appropriate DVD boot option.

NOTE

Refer to the System Recovery chapter of the *Ignite-UX Administration Guide* for more details and information about the appropriate boot methods.

Step 5. Enter the appropriate keyboard device for your system.

The **Welcome to Ignite-UX!** screen appears.

Step 6. Using the **Tab** key, select **Advanced Options**.

The **User Interface and Media Options** screen appears.

Step 7. From the list of User Interface Options, select **Advanced Installation**, then select **OK**.

The `/opt/ignite/bin/itool()` screen appears.

Step 8. From the **Basic** tab, select **Additional**.

The **Additional Configuration Controls** screen appears. This screen includes a list of current partitions and their sizes (in KB).

Step 9. Select **EFI Boot Partition**.

A popup window appears listing partition size options (in KB) that you can choose from. Select 512000 (500 MB) from the list and select **OK**.

The **Additional Configuration Controls** screen is displayed.

Step 10. Select **HP Service Partition**. Select 409600 (400 MB) from the list and select **OK**.

Step 11. In the **Additional Configuration Controls** screen, select **OK**.

Step 12. In the `/opt/ignite/bin/itool()` screen select **Go!**

Your system partitions (EFI and HP Service Partition) have been configured and Ignite-UX begins restoring your system data.

Step 13. If you backed up your user data using other backup software, restore this data now following the vendor's restore procedures.

Step 14. After your system and user data has been restored, run the `idisk` command again to verify that the HP Service Partition was created and the partition size is correct.

The Next Step

Continue with the Chapter 7, “Installing HP Applications and Patches,” on page 133.

Updating to HP-UX 11i v2

The Next Step

Installing HP Applications and Patches

This chapter describes how to install HP applications from the Applications DVD, and provides references for patching and patch management. Before you begin, make sure you have already completed installing or updating HP-UX.

What You Will Find in This Chapter

- “Installing HP-UX Applications” on page 134
- “Keeping Up-to-Date with the Latest Critical Patches” on page 139
- “HP-UX Patching and Patch Management” on page 140
- “The Next Step” on page 141

Time Estimate for This Chapter: Approximately 1-2 hours per patch (less if you download and install multiple patches in a single session) and 1-2 hours per application.

Installing HP-UX Applications

Your HP-UX 11i v2 media kit contains the HP-UX Applications DVD. The Applications DVD has optional development tools and system management software that you can choose to install as new to update existing software on your system.

You can choose to install HP-UX applications on your system in one of two ways:

- “Option 1: Installing HP-UX Applications from the DVD” on page 136

You must mount the DVD as a filesystem that HP-UX 11i v2 can access.

- “Option 2: Installing HP-UX Applications Using Ignite-UX” on page 138

You can use the Ignite-UX utility to install HP-UX applications on systems using a local mount directory, or over a network using an Ignite-UX server. Ignite-UX is an HP-UX product that facilitates installing and configuring HP-UX systems.

TIP

You can find the complete list of applications included in the HP-UX 11i v2 release in the HP Application Availability Matrix:

<http://www.software.hp.com/MATRIX>

Tips for Installing or Updating HP Applications

Here are some tips for installing or updating HP applications:

- HP-UX Applications DVDs have an ASCII file on each DVD called `TABLE_OF_CONTENTS` that lists all software products delivered with the Applications DVD. You can view this ASCII file with `vi`, `emacs`, or any other text editor.
- To minimize the number of required reboots for installation of applications and patches you can use the same `swinstall` session.
- For HP applications, documentation exists that explains how to install and use an application. The documents may include release notes, readme files, CD and DVD booklets, white papers, and guides. Refer to the Instant Information DVD or go to the HP Technical Documentation Web site:

`http://docs.hp.com`

Option 1: Installing HP-UX Applications from the DVD

You must boot HP-UX 11i v2 to install HP-UX application software products. Use the following procedure to install products from the Applications DVD:

Step 1. Insert the Applications DVD in the DVD-ROM drive.

Step 2. Mount the Applications DVD.

To install software from the Applications DVD, you must mount the DVD as a file system that HP-UX 11i v2 can access:

a. Determine the DVD device name.

Use the `ioscan -funC disk` command to list disk devices, including the DVD devices.

b. Create a mount point for the Applications DVD, if one does not yet exist.

The mount point is a directory that HP-UX uses as an access point for the DVD. Often a `/cdrom` directory is used. If this directory does not exist, create it using the `mkdir /cdrom` command.

c. Use the `mount` command to mount the DVD.

Using the `mount` command, specify the DVD device name and mount point. For example, the following command mounts the `/dev/dsk/c1t0d0` device as the `/cdrom` directory:

```
mount /dev/dsk/c1t0d0 /cdrom
```

Refer to the `mount (1M)` manpage for details.

Step 3. To determine which products and versions are on your system, use the `swlist` command:

```
/usr/sbin/swlist -l product
```


Step 4. Use `swinstall` to install software from the Applications DVD.

The following example uses `swinstall` to install software from the source mounted at `/cdrom`:

```
swinstall -i -s /cdrom
```

Refer to the *swinstall* (1M) manpage for details.

Step 5. Select and install software from the Applications DVD.

The `swinstall` program presents an interface for selecting and installing software from the DVD.

Step 6. Unmount and eject the Applications DVD.

You must unmount the DVD before you can eject it from the DVD-ROM drive. The DVD is automatically unmounted whenever the server reboots.

Use the `umount` command to unmount the DVD. For example, `umount /cdrom` unmounts the `/cdrom` file system. Refer to the *umount* (1M) manpage for details.

Option 2: Installing HP-UX Applications Using Ignite-UX

You can install the Ignite-UX utilities to install HP-UX and applications on other systems as follows:

- Step 1.** Mount the HP-UX 11i v2 DVD containing Ignite-UX and enter the command:

```
/usr/sbin/swinstall -s /cdrom B5725AA
```

The mount point in the example is */cdrom*.

- Step 2.** After installing the software, refer to the Ignite-UX release notes and *Ignite-UX Administration Guide* to complete any post-install steps and configuration.

After running an Ignite-UX install session, you have a working HP-UX client system.

Refer to the *Ignite-UX Administration Guide* for detailed instructions on how to install HP-UX applications. It is on the Instant Information DVD and at the HP Technical Documentation Web site:

```
http://docs.hp.com/hpux/os/11iv2
```

Keeping Up-to-Date with the Latest Critical Patches

After you install or update HP-UX 11i v2, the latest critical patches that shipped with the media are installed on your system.

Other recommended critical or required patches may have become available after the initial release of the media. On a regular basis go to the HP IT Resource Center for any new, recommended critical patches:

<http://itrc.hp.com>

HP-UX Patching and Patch Management

HP releases patches to deliver incremental updates to your system. Patches are best known for delivering defect fixes, but also deliver new functionality and features, enable new hardware, and update firmware. You can use HP-UX patches to update HP-UX software without having to completely reinstall your system application.

For patching information, patch management strategies, and patch tools, refer to the *Patch Management User Guide for HP-UX 11.x systems* at the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2/>

In addition, the IT Resource Center is a good resource for patches, tools, and information:

<http://itrc.hp.com>

NOTE

The HP patch resources are for HP-related patches only. To install or upgrade other vendor patches and applications, refer to the appropriate vendor documentation.

The Next Step

Continue with Chapter 8, “Verifying System Install or Update,” on page 143.

Verifying System Install or Update

This chapter provides steps to verify that your system is ready and back in production. Before you begin, make sure you have already completed either cold-installing or updating to HP-UX 11i v2.

What You Will Find in This Chapter

- “Verifying the HP-UX Cold-Install or Update” on page 144
- “Verifying HP Applications” on page 147
- “Backing Up the System” on page 149
- “The Next Step” on page 150

Time Estimate for This Chapter: Approximately 2-3 hours to verify the installation or update of HP-UX and HP applications.

TIP

This chapter provides verification information for the HP-UX cold-install, update, and applications. To verify other vendor applications, refer to the appropriate vendor documentation.

Verifying the HP-UX Cold-Install or Update

To verify that HP-UX 11i v2 was installed or updated successfully, use the Software Distributor commands `swlist` and `swverify`, as described in this section.

TIP

For help with these commands, refer to the *swlist* (1M) and *swverify* (1M) manpages, and the *Software Distributor Administration Guide*, which is available on the Instant Information DVD or the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

Task 1: Listing all Software Installed on Your System

Step 1. Run `swlist` to display all software installed on your system:

```
/usr/sbin/swlist
```

You can control the detail level of the information displayed with the `-l` option.

NOTE

Delivering HP-UX Standard Patch Bundles

In the March 2004 release of HP-UX 11i v2, HP delivered a Hardware Enablement (HWEEnable11i) bundle and a Quality Pack (QPKBASE) patch bundle. In this new release, September 2004, HP delivered required patches in BUNDLE11i. BUNDLE11i supersedes the March 2004 HWEEnable11i and QPKBASE patches. Therefore, you may notice that there are no HWEEnable11i and QPKBASE patch bundles in this release if you run the `swlist` command.

If you run `swlist -i` you may still see the bundle tags for HWEEnable11i and QPKBASE. This simply indicates that these patch bundles have been superseded (but not deleted).

In subsequent releases, March 2005 onward, HP will retain the BUNDLE11i patches and provide superseding patches in the HWEEnable11i and QPKBASE patch bundles.

Step 2. Run `swlist` with options to display all bundles installed:

```
/usr/sbin/swlist -l bundle
```

Step 3. Run `swlist` with options to display all products installed or all file sets installed:

```
/usr/sbin/swlist -l product
```

```
/usr/sbin/swlist -l fileset
```

Step 4. For a cold install, compare your list with the list of software products in the TABLE_OF_CONTENTS files on the HP-UX 11i v2 Operating Environment DVD and on the Applications DVD.

Task 2: Verifying Bundles Are Installed

Step 1. Run `swverify` to verify that each bundle is intact:

```
/usr/sbin/swverify bundle-name
```

Step 2. To verify that an installed English 64-bit OS is intact, enter the command:

```
/usr/sbin/swverify HPUXBaseOS
```

Step 3. To verify all HP software on your system, enter the command:

```
/usr/sbin/swverify \*
```

The selection process determines dependencies of software. After the list, the system displays the following message:

```
* Selection succeeded.
```

Then, the analysis process verifies that each required file is loaded (existence and revision), that all required dependencies are met, and then it runs any available verification scripts for the product. After the analysis, the system displays the following message:

```
* Analysis succeeded.
```

If the analysis fails, either view the `/var/adm/sw/swagent.log` to review the analysis log or run the `swjob` command listed at the end of the `swverify` report sent to standard output.

After the verification, the system displays the following message:

```
* Verification succeeded.
```

NOTE

The HP-UX Bastille install-time security configuration bundles (Sec10Host, Sec20MngDMZ, or Sec30DMZ) do not appear in the `swagent.log`. Instead, review your `/etc/rc.log` to determine the status of the install-time security configuration. If errors are found in the `/etc/rc.log`, review `/var/opt/sec_mgmt/bastille/level-application-errors` for more details. To determine which security configuration bundle you have enabled, enter the following command:

```
/opt/sec_mgmt/bastille/bin/bastille -l
```

Verifying HP Applications

To verify that all required HP-UX applications have been installed or updated, you have already used the Software Distributor `swlist` and `swverify` commands, as explained in “Verifying the HP-UX Cold-Install or Update” on page 144.

In this section, you need to use `swlist` and `swverify` again, but with different options.

Task 1: Identifying and Verifying the Bundle

Step 1. List all of the bundles on your system:

```
/usr/sbin/swlist -l bundle
```

Step 2. From the list, identify the bundle or bundles containing the OE extension that you want to verify.

Step 3. Verify that you have the correct bundle for the Operating Environment:

```
/usr/sbin/swverify bundle-name
```

If you get an error like the following, then the software identified is incompatible with your system and needs to be replaced with a newer version:

```
The product "xyz,l=/,r=B.xx.xx" is not compatible with this
system's architecture or operating system.
```

Step 4. Continue with the next section, “Task 2: Updating the HP-UX Applications Software” on page 148.

Task 2: Updating the HP-UX Applications Software

If you have determined that the software you identified in “Task 1: Identifying and Verifying the Bundle” on page 147” is incompatible with your system and needs to be replaced with a newer version, follow these steps:

Step 1. Mount the HP-UX Applications DVD.

You must use the HP-UX Applications DVD that came with your OE media.

Step 2. Go to Chapter 7, “Installing HP Applications and Patches,” on page 133 to install or update the new version using the `swinstall` command.

Step 3. Use the application to verify the application’s operation.

Open each application, view a working document or project, and perform typical production operations such as editing a file and printing a report. If the application does not work as expected, refer to the application’s release notes and documentation to determine the problem.

TIP

You can find the complete list of applications included in the HP-UX 11i v2 release in the HP Application Availability Matrix:

<http://www.software.hp.com/MATRIX>

Backing Up the System

Now that you have a solid system configuration, you need to back it up. This provides you with a stable configuration that you can use to rebuild the system, if necessary.

You can use the Ignite-UX product for making a system recovery backup. Refer to the *Ignite-UX Administration Guide* on the Instant Information DVD and on the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2>

For more information, see “Backing Up Your System” on page 80.

The Next Step

Now that you have installed or updated your system and have all the HP applications and patches that you need, you must configure your system.

You can find many of the configuration tasks in *Managing Systems and Workgroups: A Guide for HP-UX System Administrators*. The guide is available at the HP Technical Documentation Web site:

`http://docs.hp.com/hpux/os/11iv2/index.html`

Before you cold-install or update to HP-UX 11i v2, you need to collect information about your existing system. This appendix contains tables where you can record information. Then, when you are installing HP-UX 11i v2, you use information from the Network Data and Miscellaneous Data collection tables when needed.

What You Will Find in This Appendix

- “Network Data Collection Table” on page 152
- “Miscellaneous Data Collection Table” on page 153

Use the collection tables:

- If you chose the Guided Installation, the HP-UX Install Wizard prompts you for the data in these tables at various stages during the install.
- If you chose the Advanced Installation, an interface gives you the opportunity to enter all of this data at the beginning of the install. The interface is a tabbed file-folder and character-based.
- If you choose to network-enable your system, you must designate a unique host name, host Internet Protocol (IP) address, and other network information for your server or workstation.

Contact your site network administrator for the details to include in these tables.

Network Data Collection Table

Table A-1 provides HP-UX commands that you can use after the install to confirm specific information.

Table A-1 **Network Data**

Type of Data	Your Specific Data	HP-UX Command to Confirm Data After System is Up and Running
Host Name		<code>uname -n</code>
Host IP Address		<code>nslookup name</code>
Subnet Mask		<code>grep SUBNET_MASK /etc/rc.config.d/netconf</code>
Default Gateway IP Address		<code>netstat -r</code>
Domain Name		<code>cat /etc/resolv.conf</code>
DNS IP Address		<code>cat /etc/resolv.conf</code>
NIS Domain Name		<code>grep NIS_DOMAIN /etc/rc.config.d/namesvrs</code>

Miscellaneous Data Collection Table

Table A-2 may contain some items that are not familiar to you, but you will be prompted for this information during the install.

The install process describes all options in detail, so you can defer making decisions about items that are unfamiliar to you until you reach that point in the install.

Table A-2 **Miscellaneous Data**

Type of Data	Your Specific Data
Type of Desktop	
Root Disk Path	
Root Swap Space	
Filesystem Type LVM, VxVM w/VxFS, or Whole disk with VxFS	
Root Disk Volume Group Disks (How many disks you want placed into the root disk volume group and whether or not you want the disks to be striped?)	
Select additional software (All, HP-UX Additions, Uncategorized)	
Pre-Installed Disk Information (Is overwritten during the install disk; see Root Disk Path) This is a “review” confirmation step.	

B

Known Problems and Troubleshooting

This appendix lists known problems and troubleshooting steps for the install and update.

What You Will Find in This Appendix

- “Known Install and Update Problems” on page 156
- “Problems Reading HP-UX 11i v1 DVD Media” on page 163
- “Uninstalling HP-UX 11i v2” on page 165

NOTE

While the HP-UX 11i v2 install progresses, messages are displayed relating to the progress being entered into the log file. These messages usually refer to normal behavior. The `ERROR`, `WARNING`, and `NOTE` messages, however, have the following significance:

<code>ERROR</code>	Indicates a serious problem, usually requiring action from you so that the installation can proceed.
<code>WARNING</code>	Indicates something out of the ordinary, but <i>not</i> fatal. The warning <i>may</i> require action from you.
<code>NOTE</code>	Indicates something out of the ordinary, but <i>not</i> fatal. The note <i>does not</i> require action from you.

Known Install and Update Problems

Table B-1 describes problems known to occur in the HP-UX 11i v2 release.

Table B-1 **Known Install and Update Problems**

Problem	Description/Action
Cold-Install Error Messages	<p>After you cold-install the HP-UX 11i v2 September 2004 or later release, you may see the following messages in the <code>swagent.log</code> file:</p> <pre>lvlnboot: /etc/lvmtab: No such file or directory lvlnboot: "/etc/lvmtab" could not be read into memory.</pre> <p>You can safely ignore these messages.</p>
HPUX-HIDS Causes Automatic Reboot	<p>Due to restructuring of the HIDS product bundle in this release (September 2004), installation or update from any prior release of HPUX-HIDS will cause an automatic reboot of the system. The restructuring of the product was implemented to address a behavior that existed in past product releases of an orphaned file set remaining on the system following an update. Updates in future releases of the product will not require a system reboot.</p>
OE Media Install Tool and Network Depot Must Match	<p>The Ignite-UX install tool on the OE media supports the use of network depots. However, network depots must match the media depots for the choices in the install tool to work properly.</p> <p>The Ignite-UX documentation also explains the setup and use of network depots without using the OE media for each installation. Go to the following web site for information on the Ignite-UX product:</p> <p>http://software.hp.com/products/IUX</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
<p>Igniting an HP-UX 11i v1.6 System with an HP-UX 11i v2 Ignite-UX Server</p>	<p>If you are trying to install HP-UX 11i v2 on an HP-UX 11i v1.6 system from an HP-UX 11i v2 Ignite-UX server, you may see the following error message if your HP-UX 11i v1.6 system is using VxVM:</p> <pre>ERROR: VxVM installs of 11.22 are not supported with the 11.23 or later install kernel due to VxVM 3.5 versus 3.1 incompatibilities. The VxVM disk group "rootdg" must be changed to LVM or whole-disk or be removed</pre> <p>You will receive this message when your current system is running HP-UX 11i v1.6 and VxVM, and you attempt to install HP-UX 11i v2 from an Ignite-UX server.</p> <p>Because of incompatibilities between VxVM 3.1 (on HP-UX 11i v1.6) and VxVM 3.5 (on HP-UX 11i v2), you cannot install HP-UX 11i v2 on an HP-UX 11i v1.6 system running VxVM 3.1 from an Ignite-UX server. Instead, you can do one of the following:</p> <ul style="list-style-type: none"> • Change your volume manager to LVM or Whole Disk, and retry installing HP-UX 11i v2 from the Ignite-UX server. • Install HP-UX 11i v2 from the DVD media. <p>For more information, go to the Ignite-UX Web site: http://software.hp.com/products/IUX</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
<p>“Incorrect protocol version (20) in volboot file” Warning</p>	<p>After you update to HP-UX 11i v2 from HP-UX 11i v1.6, the following error message may appear during reboot:</p> <pre>Starting vxconfigd in boot mode (pre_init_rc). vxvm:vxconfigd: WARNING: volboot: Incorrect protocol version (20) in volboot file. vxvm:vxconfigd: WARNING: volboot: Using the highest supported protocol version 40 Checking root file system.</pre> <p>You encounter this error if you updated an HP-UX 11i v1.6 system with VxVM 3.1 as your volume manager to HP-UX 11i v2 with VxVM 3.5. The problem is caused by different version values in the volboot file (20 in VxVM 3.1; 40 in VxVM 3.5).</p> <p>You can safely ignore this message.</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
<p>Installing or Removing MirrorDisk/UX (B2491BA or B5403BA)</p>	<p>If you choose to install or remove MirrorDisk/UX as a stand-alone product, you must reinstall the latest LVM commands patch present on your system. The LVM commands patch may be PHCO_31709 or a superseded patch.</p> <p>If you do not reinstall the LVM commands patch, the following two problems may occur:</p> <p>First, the following error message may appear in your swverify.log:</p> <pre>* [140112] Checking files for fileset "PHCO_31709.LVM-RUN,l=/,r=1.0". ERROR: [40263] File "/sbin/lvchange" should have mtime "1089446778" but the actual mtime is "1062572400". ERROR: [40265] File "/sbin/lvchange" should have size "1759044" bytes but the actual size is "1808628" bytes. ERROR: [40263] File "/usr/sbin/lvchange" should have mtime "1089446783" but the actual mtime is "1062572400". ERROR: [40265] File "/usr/sbin/lvchange" should have size "1110444" bytes but the actual size is "1138004" bytes. ERROR: [140113] Fileset "PHCO_31709.LVM-RUN,l=/,r=1.0" had file errors.</pre> <p>Second, the LVM commands on the system will not be the newest ones (the ones delivered by the last LVM commands patch installed).</p> <p>You must reinstall the LVM commands patch present on your system or a later one. If you <i>remove</i> the MirrorDisk/UX product from the system, the LVM commands patch must be installed with the option -x reinstall=true</p> <p>You can find the LVM commands patch PHCO_31709 or a superseding patch in BUNDLE11i located on the HP-UX 11i v2 OE media September 2004 or later, or on the IT Resource Center Web site at: http://itrc.hp.com</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
last_install configuration already exists Warning	<p>During an update to HP-UX 11i v2, the following warning may appear in your swagent.log:</p> <pre>WARNING: The configuration named 'last_install' already exists. NOTE: Continuing since -f flag was specified. * Please wait: flushing kernel registry database to disk. * The current configuration has been saved to 'last_install'. * The title of the configuration 'last_install' has been set to "Created by last OS install".</pre> <p>This problem is caused by the kernel configuration tools attempting to save a copy of the newly updated system configuration to /stand/last_install. Because a previous version of the configuration already exists from the previous install or update, a warning is issued.</p> <p>You can safely ignore this warning. The kernel configuration tools overwrite the previous configuration with the latest version, as expected.</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
<p>update() Hang Panic on Large Memory Systems</p>	<p>During a reboot <code>-r</code> process, large memory systems may hang due to the failure of the <code>update()</code> function called during the reboot. This failure is caused by a timer value (<code>UpdateHangTimeout</code>) expiring before <code>update()</code> is finished.</p> <p>This issue is known to be a problem for rx8620 32-way servers with 128 GB of memory.</p> <p>To mitigate this problem, increase the <code>UpdateHangTimeout</code> timer value to 20 minutes using <code>adb</code> (user input in bold):</p> <pre>adb -w /stand/vmunix /dev/kmem abd> UpdateHangTimeout /W 0x1d4c0 UpdateHangTimeout: 0x120000 =0x1d4c0 abd> UpdateHangTimeout/D UpdateHangTimeout: UpdateHangTimeout: 120000</pre> <p>NOTE: The system may still appear to be hung during reboot for at least 20 minutes if the load is high.</p>

Table B-1 Known Install and Update Problems (Continued)

Problem	Description/Action
<p>update-ux Aborts when Updating from HP-UX 11i (B.11.11) Prior to the June 2004 HP-UX 11i Release</p>	<p>When updating from HP-UX 11i v1 (B.11.11) prior to the June 2004 HP-UX 11i v1 release, you may encounter the following error:</p> <pre data-bbox="511 458 1185 520">/var/adm/sw/tmp/update-ux/update-ux[34]: 6686 Abort (coredump)</pre> <pre data-bbox="511 539 1213 821">ERROR: The command: '/var/adm/sw/tmp/update-ux/swinstall -x reinstall=true -x autoselect_dependencies=false -x enforce_dependencies=false -x allow_incompatible=true -x mount_all_filesystems=false -f/var/adm/sw/tmp/update-ux/pre-update.filesets -s /SD_CDROM' failed.</pre> <p>Output follows: /usr/lib/dld.sl: Unresolved symbol: pthread_attr_init (code) from /var/adm/sw/tmp/update-ux/swinstall</p> <p>For more information, see /var/adm/sw/swagent.log/var/adm/sw/tmp/update-ux/update-ux[89]: /var/adm/sw/swagent.log: Cannot find or open the file.</p> <p>Please install the latest version of update-ux from the HP-UX 11i v2 DVD media, as documented in “Task 2: Installing the Latest Update-UX Bundle (Required)” on page 112.</p>
<p>/sbin/insf -e failed Message Reported During Cold Install</p>	<p>On some HP 9000 Servers, the /sbin/insf -e failed message may appear during a cold install. After the install, you may see the following message in the install.log file:</p> <pre data-bbox="511 1298 1079 1324">NOTE: Command "/sbin/insf -e" failed</pre> <p>You can safely ignore this message.</p>

Problems Reading HP-UX 11i v1 DVD Media

The HP-UX 11i v1 DVD media contains large volumes of data that may cause your DVD device to fail while reading the DVD media contents during an update. This particularly affects you if you use Update-UX or other Software Distributor (SD) tools. For example, you may encounter similar error messages if you attempt to read DVD media with a large volume of data from Update-UX:

```
ERROR: File "/dvd/catalog/SOE/SOE.2/INFO": No such file or
directory(2). Cannot copy it to file
"/var/tmp/BAAa04482/catalog/SOE/SOE.2/INFO".
```

```
ERROR: File "/var/tmp/BAAa04482/catalog/SOE/SOE.2/INFO" does
not exist.
```

```
ERROR: The catalog files for product "SOE,r=B.11.11" failed to
load. Check the above output for details.
```

```
ERROR: Cannot continue the Analysis Phase until the previous
errors are corrected.
```

To resolve this problem, do one of the following:

- For HP-UX 11.00 or 11.11, install the appropriate patches listed in this section *before* you update to the latest version of HP-UX 11i v1 (recommended).
- For HP-UX 10.20, use the *pfs_mount* (1M) command to mount the DVD.

To patch your system, use the following patches (patch descriptions are in parentheses) for your current OS version:

NOTE

The listed HP-UX 11i v1 patches are included in the December 2003 (and later) version of the HP-UX 11i v1 install kernel. If you are planning to cold-install HP-UX 11i v1 (December 2003 or later), you do *not* need to install these patches.

Patches for Systems Currently Running HP-UX 11i v1

- PHKL_26269 (11.11 Rock Ridge extension for ISO-9660)
- PHKL_28025 (11.11 Rock Ridge extension for ISO-9660)
- PHCO_25841 (11.11 Add Rock Ridge extension to *mount_cdfs* (1M))

Patches for Systems Currently Running HP-UX 11.0

- PHKL_26450 (11.00 Rock Ridge extension for ISO-9660)
- PHKL_28060 (11.00 Y2k; Rock Ridge extension for ISO-9660)
- PHCO_26449 (11.00 Add Rock Ridge extension to *mount_cdfs* (1M))

Patches for Systems Currently Running HP-UX 10.20

No patches are available.

Determining Whether You Need to Install the Patches

To determine whether your system already has the listed patches installed, run the following:

```
/usr/sbin/swlist -l patch | grep patch_name
```

where *patch_name* is one of the listed patches for your operating system version. If nothing is printed to standard output, you need to install the patches from one of the following sources:

- The GOLDBase11i bundle on the Support Plus CD (June 2003 or later) for HP-UX 11i v1
- The QPK1100 bundle on the Support Plus CD (September 2003 or later) for HP-UX 11.0
- The IT Resource Center website (requires login):
<http://itrc.hp.com>
- The anonymous IT Resource Center FTP site:
<ftp://ftp.itrc.hp.com>

Uninstalling HP-UX 11i v2

If you cannot resolve problems after installing HP-UX 11i v2, then you may want to un-install it. The process depends upon the install process you followed:

- If you made a `make_net_recovery` tape using Ignite-UX, boot the system from that media to return the OS and any archived applications to the previous release. Refer to the *Ignite-UX Administration Guide* available on the Instant Information DVD and on the HP Technical Documentation Web site:

`http://docs.hp.com`

- If you do not use Ignite-UX or do not have a current `make_net_recovery` tape:
 - If your applications and data are on a separate disk from the OS, cold-install the previous OS. Doing this ensures a clean OS installation, removing all previous upgrade and patch information.
 - If applications, data, or both are on the same volume with the OS, boot from the previously-saved system recovery tape to return to a previous OS. These expert recovery processes are in the *Ignite-UX Administration Guide*.

To determine which applications are on the system and where they are located, use `swlist`. If you only need to remove applications or patches from the system, use `swremove`. Refer to the *Software Distributor Administration Guide* for details.

C **Controlling Memory Utilization of VxFS 3.5 on HP-UX 11i v2**

This appendix discusses the effect of two VxFS tunables, `vx_ninode` and `vxfs_bc_bufhwm`, on system memory consumption and provides guidelines on setting them for machines with relatively low RAM.

What You Will Find in This Appendix

- “Introduction” on page 168
- “Controlling the inode Cache” on page 169
- “Controlling the Buffer Cache” on page 170
- “Conclusion” on page 171

Introduction

VxFS 3.5 caches objects in memory to improve performance. Most of the memory consumed by VxFS is used to cache inodes (in the inode cache) and metadata (in the buffer cache). The sizes of these caches and the behavior of VxFS are controlled by a set of tunables. You can tailor the performance of VxFS to meet a variety of usage scenarios while taking into account variations in machine configurations *via* the use of these tunables.

The default settings of these tunables are meant to provide good performance for typical deployment configurations. However, these default values can result in the VxFS driver consuming more memory, especially when the file systems are under heavy file system load. For machines low on RAM, these tunables may need to be manually turned down depending on the expected use of the machine and the performance required of the file system.

VxFS 3.5 exposes two global tunables, `vx_ninode` and `vxfs_bc_bufhwm`, that control the size of the inode cache and buffer cache, respectively, and thereby affect system memory consumption by the file system driver.

This appendix discusses when and why the sizes of the inode and buffer caches need to be tuned down from their default values in certain configurations. The following sections describe these tunables in detail as well as the effects of changing their default values.

Controlling the inode Cache

As a matter of course, VxFS file systems allocate and free up inodes as required by the load on the file system. VxFS caches these inodes for better performance (faster lookups). In general, larger inode caches help file systems perform better for file server and web server loads. The global (static) tunable `vx_ninode` represents the maximum possible size of the VxFS inode cache.

Normally, the size of the inode cache is decided (auto-tuned) at boot time by VxFS depending on the amount of physical memory in the machine, provided that the value of `vx_ninode` is set to zero (default).

However, systems low on RAM (typically less than or equal to 1GB/CPU) may not require a large inode cache if file systems are not exposed to file server and web server loads, or when file system performance is not critical. HP recommends that you set the value of `vx_ninode` to more than that of `nfile`, an HP-UX tunable that represents the maximum number of file descriptors.

Controlling the Buffer Cache

VxFS 3.5 implements a private buffer cache used exclusively for metadata. The allocations made for this buffer cache are not static but grow and shrink during system usage, depending on the load on the file system. The global (static) tunable `vxfs_bc_bufhwm` represents the maximum possible size of the VxFS buffer cache.

The maximum size of the metadata buffer cache is set (auto-tuned) at boot time based on system memory size, provided that the value of `vxfs_bc_bufhwm` is set to zero (default).

Like with the tunable `vx_ninode`, a large metadata buffer cache can help improve file system performance, especially during metadata-intensive loads (stat, create, remove, link, lookup operations).

Systems low on RAM (having typically 1GB/CPU or less) may not need a large metadata buffer cache if the file system load is not metadata-intensive or when performance is not critical. In such circumstances, the value of `vxfs_bc_bufhwm` can be manually tuned down, subject to a minimum of 6MB.

Conclusion

VxFS uses in-memory caches for objects that result in improved file system performance. The cache sizes are controlled by tunables that are auto-tuned at boot time by the driver. For situations where the auto-tuned values are not optimal, you can set these tunables.

Conclusion

This appendix describes the Operating Environments (OEs) and media contents.

What You Will Find in This Appendix

- “HP-UX 11i v2 Core Software Bundles” on page 174
- “HP-UX 11i v2 Always-Installed Patch Bundles” on page 176
- “HP-UX 11i v2 Always-Installed Software Bundles” on page 177
- “HP-UX 11i v2 Always-Installed Network and Mass Storage Drivers” on page 182
- “HP-UX 11i v2 Default-Installed Software Bundles” on page 183
- “HP-UX 11i v2 Selectable Software Bundles” on page 185
- “HP-UX 11i v2 Selectable Network Drivers” on page 186

HP-UX 11i v2 Core Software Bundles

The base software installed for all Operating Environments comprise the following software bundles:

Table D-1 HP-UX 11i v2 Core Software Bundles

Bundle Name	Description
HPUXBaseOS	HP-UX Base OS installation bundle (64-bit)
HPUXBaseAux	HP-UX Base Auxiliary bundle. Additional OS software (shown with bundle tag): Kernel Configuration (Casey) EMS Framework (B7609BA) ONC (ONCplus) SWGETTOOLS (SWGETTOOLS) HP-UX Peripheral Device Tool (PeriphDev) System Management Base (SysMgmtBase) Software Distributor (SD) Update UX (UPDATE-UX) System Administration Manager (SAM)
HPUXBASE64	Delivers additional commands.
CDE-xxx	Common Desktop Environment (CDE) bundle (xxx is language variable)

NOTE

Delivering HP-UX Standard Patch Bundles

In the March 2004 release of HP-UX 11i v2, HP delivered a Hardware Enablement (HWEenable11i) bundle and a Quality Pack (QPKBASE) patch bundle. In this new release, September 2004, HP delivered required patches in BUNDLE11i. BUNDLE11i supersedes the March 2004 HWEenable11i and QPKBASE patches. Therefore, you may notice that there are no HWEenable11i and QPKBASE patch bundles in this release if you run the `swlist` command.

If you run `swlist -i` you may still see the bundle tags for HWEenable11i and QPKBASE. This simply indicates that these patch bundles have been superseded (but not deleted).

In subsequent releases, March 2005 onward, HP will retain the BUNDLE11i patches and provide superseding patches in the HWEenable11i and QPKBASE patch bundles.

HP-UX 11i v2 Always-Installed Patch Bundles

The base software installed for all Operating Environments comprise the following software bundles:

Table D-2 Always-Installed Patch Bundles¹

Patch Bundle Name	Bundle Description
BUNDLE11i	Required OS Patches
HWEnable11i ²	Hardware Enablement patches
QPKBASE ³	Quality Pack Patch Bundle

1. For more information about these patch bundles and patch management, see the *Patch Management User Guide for HP-UX 11.x Systems*, available at the HP Technical Documentation Web site:
<http://docs.hp.com/>
2. For the September 2004 release, all HWEnable11i patches have been included with BUNDLE11i. Subsequent Hardware Enablement patches will be bundled in the HWEnable11i patch bundle.
3. For the September 2004 release, all QPKBASE patches have been included in the BUNDLE11i patch bundle. Subsequent Quality Pack patches will be delivered through the QPKBASE patch bundle.

HP-UX 11i v2 Always-Installed Software Bundles

In addition to the core software bundles installed in Table D-1 on page 174, the software bundles listed in Table D-3 on page 179 are installed by Operating Environment.

The Operating Environments are represented as follows:

FOE	Foundation Operating Environment
EOE	Enterprise Operating Environment
MCOE	Mission Critical Operating Environment
MTOE	Minimal Technical Operating Environment
TCOE	Technical Computing Operating Environment

For the latest version information, refer to the *Read Before Installing or Updating to HP-UX 11i v2* DVD booklet.

New Bundle: OBSOLESCENCE Bundle

The Obsolescence product is used in an update when obsolete software on the system needs to be removed. This product is automatically selected for both install and update. During the cold-install process, Obsolescence verifies whether an update is being performed. If it is not an update, it does not remove anything. If it is an update, the following obsolete products and/or drivers are removed:

- HP-UX Visualize Conference Run Time Environment
- HP Frame Relay Link Software
- HP EISA 100BaseT Driver
- HP HPPB 100BaseT Driver
- HP I2O RAID Product
- SCR
- DMI
- Mobile IPv4
- HP HPPB TokenRing Driver
- HP EISA TokenRing Driver
- HP-PB ATM Driver
- HP HSC FDDI Driver
- HP HPPB FDDI Driver
- HP EISA FDDI Driver

Table D-3 HP-UX 11i v2 Always-Installed Software Bundles (By OE)

Description	Bundle	FOE	EOE	MCOE	MTOE	TCOE
3D Graphics Development Kit (DK) and Runtime Environment (RTE) for OpenGL	Graphics				X	X
Cluster Object Manager	B8324BA			X		
Enterprise Cluster Master (ECM) Toolkit	T1909BA			X		
GlancePlus Pak	B3701AA		X	X		
High Availability (HA) Monitors	B5736DA		X	X		
HP CIFS 9000 Client	B8724AA	X	X	X		X
HP CIFS 9000 Server	B8725AA	X	X	X		X
HP MLIB Mathematical Software Library	B6061AA					X
HP Message Passing Interface (MPI)	B6060BA					X
HP MPI Documentation Set	B6281AA					X
HP Serviceguard	T1905BA			X		
HP WBEM LAN	WBEMLAN-00	X	X	X	X	X
HP WBEM Services for HP-UX	B8465BA	X	X	X	X	X
Instant Capacity on Demand (iCOD)	B9073BA	X	X	X	X	X

Table D-3 HP-UX 11i v2 Always-Installed Software Bundles (By OE)

Description	Bundle	FOE	EOE	MCOE	MTOE	TCOE
Java 2 JPI v1.4	T1458AA	X	X	X		X
Java JPI v1.3	T1455AA	X	X	X		X
Java3D for JRE v1.3	T1868AA					X
Java3D for JRE v1.4	T1869AA					X
MC/Serviceguard NFS Toolkit	B5140BA			X		
MirrorDisk/UX LT	B2491BA		X	X		
nPartition Provider	NPar	X	X	X	X	X
Obsolescence Bundle	OBSOLESCENCE	X	X	X	X	X
Online Diagnostics: EMS Hardware Monitors & Support Tool Bundles	OnlineDiag	X	X	X	X	X
OpenSSL	OpenSSL	X	X	X	X	X
PAM Kerberos	J5849AA	X	X	X		X
Process Resource Manager	B3835DA		X	X		
PRM Libraries	B7697BA	X	X	X		
Technical System Configuration	TechSysConf				X	X
VERITAS File System (VxFS v3.5)/ OnlineJFS v3.5	B3929DA		X	X		
VERITAS Volume Manager (VxVM) v3.5	Base-VXVM	X	X	X	X	X

Table D-3 HP-UX 11i v2 Always-Installed Software Bundles (By OE)

Description	Bundle	FOE	EOE	MCOE	MTOE	TCOE
Workload Manager (WLM)	B8843CA			X		
Workload Manager Toolkits	T1302AA			X		

HP-UX 11i v2 Always-Installed Network and Mass Storage Drivers

You can find the information that was formerly contained in this section in the *HP-UX 11i v2 Release Notes*. It is available at the HP Technical Documentation Web site:

<http://docs.hp.com/hpux/os/11iv2/index.html>

The HP 9000 and HP Integrity Server Connectivity Web site also provides more driver information:

<http://www.hp.com/products1/serverconnectivity/index.html>

HP-UX 11i v2 Default-Installed Software Bundles

The software bundles listed in Table D-4 are installed on all Operating Environments by default. You can deselect any of these bundles before you install or update your system.

Table D-4 HP-UX 11i v2 Default-Installed Software Bundles (All OEs)

Description	Bundle Name
GTK+ Libraries	B6848BA
Install-Time Security Infrastructure	Sec00Tools
HP-UX Bastille Security Tool	B6849AA
HP-UX IPFilter	B9901AA
HP-UX Secure Shell	T1471AA
Instant Support Enterprise Edition (ISEE) (Servers only)	ISEEPlatform
Judy Libraries	Judy
Mozilla Application Suite	MOZILLA
Mozilla Source Distribution	MOZILLAsrc
MySQL	MySQL
Partition Manager	ParMgr
Perl Programming Language	perl
Security Patch Check	SecPatchCk
Servicecontrol Manager	B8339BA
HP-UX Web Server Suite	
HP-UX Apache-based Web Server	hpuxwsApache
HP-UX Tomcat-based Servlet Engine	hpuxwsTomcat

Table D-4 HP-UX 11i v2 Default-Installed Software Bundles (All OEs) (Continued)

Description	Bundle Name
HP-UX Webmin-based Admin	hpuxwsWebmin
HP-UX XML Web Server Tools	hpuxwsXml
Java™ Bundles	
Java 2 SDK v1.3	B9788AA
Java 2 RTE v1.3	B9789AA
Java 2 SDK v1.4	T1456AA
Java 2 RTE v1.4	T1457AA
Java 2 RTE v1.4 Addon	T1457AAaddon
Java 2 SDK v 1.4 Addon	T1456AAaddon

HP-UX 11i v2 Selectable Software Bundles

The bundles listed in Table D-5 are *not* installed or updated by default. You must select the desired bundles prior to installing or updating your system.

Table D-5 **HP-UX 11i v2 Selectable Software Bundles (All OEs)**

Description	Bundle Name
HP-UX Host Intrusion Detection System (Servers Only. Not in MTOE or TCOE)	HPUX-HIDS
HP-UX Installation Utilities (Ignite-UX)	B5725AA
Java Out of Box (OOB) Tunable	JAVAOOB
MobileIPv6 HA/CN	HPUXMOBILEIP
Netscape Directory Server	J4258AA
Pay Per Use	T2351AA
Security Level 10	Sec10Host
Security Level 20	Sec20MngDMZ
Security Level 30	Sec30DMZ
Software Package Builder (SPB)	SwPkgBuilder

HP-UX 11i v2 Selectable Network Drivers

You can find the information that was formerly contained in this section in the *HP-UX 11i v2 Release Notes*. It is available at the HP Technical Documentation Web site:

`http://docs.hp.com/hpux/os/11iv2/index.html`

The HP 9000 and HP Integrity Server Connectivity Web site also provides more driver information:

`http://www.hp.com/products1/serverconnectivity/index.html`

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