# HP-UX 11i v3 Installation and Update Guide

## HP Integrity Servers and HP 9000 Servers

**Manufacturing Part Number : 5991-6460**
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# About This Document

This guide describes installing (called cold-installing) HP-UX 11i v3 (B.11.31) and updating from the following paths:

- HP-UX 11i v2 (B.11.23) PA-RISC to HP-UX 11i v3 (B.11.31) PA-RISC
- HP-UX 11i v2 (B.11.23) Intel Itanium® to HP-UX 11i v3 (B.11.31) 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 v3 on HP Integrity Servers 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 |
|---|---|---|---|
| 5991-6460 | HP-UX 11i v3 | B.11.31 | February 2007 |
| 5991-5311 | HP-UX 11i v2 | B.11.23 | June 2006 |

## Document Organization

The *HP-UX 11i v3 Installation and Update Guide* is divided into chapters and appendixes, which contain information about installing and updating HP-UX 11i v3.

**IMPORTANT** The *Read Before Installing or Updating to HP-UX 11i v3* DVD booklet that comes with the HP-UX 11i v3 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 v3,” on page 23.

  Use this chapter to learn about the media kit contents and Operating Environments of HP-UX 11i v3 (B.11.31).

- Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 27.

  Use this chapter to learn about the system requirements either to cold-install or update to HP-UX 11i v3.

- Chapter 3, “Choosing an Installation Method,” on page 39.

  Use this chapter to help you decide the most appropriate method to install HP-UX 11i v3 on your system.

- Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63.

  Use this chapter to learn the details of the required and recommended tasks to prepare your system for HP-UX 11i v3. This chapter also includes additional information about required, recommended, and optional software installed with HP-UX 11i v3.

- Chapter 5, “Cold-Installing HP-UX 11i v3,” on page 79.

  Use this chapter to learn how to cold-install the HP-UX 11i v3 Operating System (OS). Alternative cold-install methods such as installing from depots or from golden images are also discussed.

- Chapter 6, “Updating to HP-UX 11i v3,” on page 105.

  Use this chapter to learn how to update your system to HP-UX 11i v3 using `update-ux`.

- Chapter 7, “Installing HP Applications,” on page 131.

  Use this chapter to learn how to update applications on your system that are not installed or updated with HP-UX 11i v3 OEs.

- Chapter 8, “Verifying System Install or Update,” on page 137.

  Use this chapter to learn how to verify a successful install or update to HP-UX 11i v3.

- Appendix A, “Known Problems and Troubleshooting,” on page 143.

  Use this appendix to learn about the known problems and troubleshooting steps for the install and update.

- Appendix B, “Controlling Memory Utilization of VxFS 4.1 on HP-UX 11i v3,” on page 149.

  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 C, “HP-UX 11i v3 Software Bundles,” on page 155.

  Use this appendix to learn about the OEs and media contents.

## Typographical Conventions

This document uses the following conventions:

| | |
|---|---|
| *audit* (5) | An HP-UX manpage. In this example, *audit* is the name and *5* is the section in the *HP-UX Reference*. 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 *man* (1). |
| *Book Title* | 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. |
| *Emphasis* | Text that is emphasized. |
| **Bold** | Text that is strongly emphasized. |
| `ComputerOut` | Text displayed by the computer. |
| **`UserInput`** | Commands and other text that you type. |
| `Command` | A command name or qualified command phrase. |
| *`Variable`* | 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.11.23 | HP-UX 11i v2 | PA-RISC and Intel Itanium® |
| B.11.31 | HP-UX 11i v3 | PA-RISC and Intel Itanium® |

# Related Documents

This section discusses documentation for and other sources of information about HP-UX 11i v3.

## HP-UX 11i v3 Resources

The following sources provide detailed information about HP-UX 11i v3:

- **HP-UX 11i v3 Instant Information DVD**

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

- **Manual Pages**

  For the HP-UX 11i v3 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/en/hpux11iv3.html`**

- **HP-UX Welcome Page**

  The HP-UX Welcome Page on your HP-UX 11i v3 system contains pointers to information to help you use your HP-UX system.

- **Release Notes**

  The *HP-UX 11i v3 Release Notes* describe what is new, has changed, and has been deprecated or obsoleted in the current release compared to the previous HP-UX 11i v3 release.

  You can find the release notes in the following locations:

  — HP-UX Instant Information DVD. See “Media Kit Contents” on page 24 for more information.

  — The HP Technical Documentation Web site:

  **`http://docs.hp.com/`**

  Here you will find the release notes pertinent to 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 v3 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 v3* booklet is included with your media kit.

- **White Papers on HP-UX**

  White papers associated with the HP-UX 11i v3 release are available at the HP Technical Documentation Web site:

  **`http://docs.hp.com/en/hpux11iv3.html`**

  Other white papers, including an HP-UX 11i v3 overview, can be found at the HP-UX Information Library at the HP Web site:

  **`http://h20338.www2.hp.com/hpux11i/cache/324537-0-0-0-121.html`**

You can find additional information about HP-UX 11i v3 at the HP Technical Documentation Web site in the **HP-UX 11i v3 operating environments** collection under **Installing and Updating**:

**`http://www.docs.hp.com/hpux/os/11iv3/index.htm`**

Other documents in this collection include:

- *Read Before Installing or Updating* (RBI)
- *HP-UX System Administrator's Guide*
- *Ignite-UX Administration Guide*
- *Software Distributor Administration Guide*
- *nPartition Administrator's Guide*

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

## Other HP Web Resources

The following Web sites provide a variety of information regarding the HP-UX 11i v3 release:

- HP Integrity Servers:

  **http://h20341.www2.hp.com/integrity/cache/332341-0-0-0-121.html**

- HP 9000 Servers:

  **http://h20338.www2.hp.com/hpux11i/cache/324545-0-0-0-121.html**

- Itanium-based Server Information:

  **http://h20338.www2.hp.com/hpux11i/cache/324923-0-0-0-121.html**

- HP Software Depot:

  **http://www.hp.com/go/softwaredepot**

- HP Software Releases and Media:

  **http://www.hp.com/softwarereleases/releases-media2/index.html**

- HP Apache-based Web Server documentation:

  **http://www.hp.com/go/webserver**

  After installation of HP-UX 11iv3, all HP-specific documentation is included in the `/opt/apache/hp_apache_docs/` directory.

- HP Technical Documentation feedback form:

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

- HP-UX 11i v3 documentation, including release notes, guides, and white papers:

  **http://docs.hp.com/en/oshpux11iv3.html**

- HP OpenView product manuals:

  **http://ovweb.external.hp.com/lpe/doc_serv/**

- HP-UX 11i v3 information:

  **http://forums.itrc.hp.com**

  **http://www.hp.com**

- High-availability products:

  **http://docs.hp.com/hpux/ha**

- Ignite-UX information and download:

  **http://docs.hp.com/en/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.docs.hp.com/en/PARMGR/**

- Safety and ergonomic information:

  **http://www.hp.com/ergo**

- HP Systems Insight Manager:

  **http://www.hp.com/go/hpsim**

- Software Distributor:

  **http://www.docs.hp.com/en/SD/**

- System administration for HP-UX systems:

  **http://docs.hp.com/en/oshpux11iv3**
  **http://forums.itrc.hp.com**

- System firmware:
  **http://www.docs.hp.com/en/hw.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/en/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.

# 1 Welcome to HP-UX 11i v3

HP-UX 11i v3 is an enterprise release delivering the highest level of integrated virtualization and automation. HP-UX 11i v3 dynamically reduces complexity and cuts deployment times to maximize return on investment.

The HP-UX 11i v3 release supports both HP Integrity servers and HP 9000 servers, including those based on dual-core Intel Itanium 2 processors. HP-UX 11i v3 is engineered to maintain compatibility with previous HP-UX 11i releases.

The dual-core Intel Itanium 2 processor supports Hyper-Threading. This feature is transparent to the applications, except for the small number of applications that assume the number of cores and the number of processors is the same. To all other applications, each hardware thread appears as an additional processor.

This chapter introduces you to the media kit contents and OEs of HP-UX 11i v3 (B.11.31). The HP-UX 11i v3 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 24
- "HP-UX 11i v3 Operating Environments" on page 25
- "The Next Step" on page 26

# Media Kit Contents

This guide is part of the HP-UX 11i v3 media kit, which includes the following DVDs and documents:

- **HP-UX 11i v3 (B.11.31) DVD (2-DVD set)** — Contains the HP-UX Operating System (OS), Operating Environments (OEs), required networking software, Update-UX, Ignite-UX, and online diagnostics.
- **HP-UX 11i v3 (B.11.31) Applications DVD** — Contains HP-UX application software.
- **HP-UX 11i v3 Instant Information DVD** — Contains HP-UX manuals, release notes, and white papers. See the DVD booklet for more information.
- ***Read Before Installing or Updating to HP-UX 11i v3*** — Provides last-minute information for HP-UX 11i v3. 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/en/oshpux11iv3`**

- ***HP-UX 11i v3 Release Notes*** — Describes new features and functionality changes for HP-UX 11i v3. Release Notes are available on the Instant Information DVD and on the HP Technical Documentation Web site:

  **`http://docs.hp.com/en/oshpux11iv3`**

- ***HP-UX 11i v3 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/en/oshpux11iv3`**

# HP-UX 11i v3 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.

HP restructured the Operating Environments in HP-UX 11i v3 to allow you to easily create smaller systems that:

- Install faster
- Require less disk space
- Update faster
- Require less software maintenance
- Have a smaller security vulnerability footprint

All products that were originally located in the separate OE bundles (FOE, EOE, MCOE, and TCOE) have been unbundled as recommended products in the HP-UX 11i v3 release. These products are automatically selected for install, but you can choose to deselect them before installing or updating to HP-UX 11i v3. The HP-UX 11i v3 OEs include the following:

**Table 1-1 HP-UX 11i v3 Operating Environments**

| HP-UX 11i v3 OE | Description |
|---|---|
| **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`. |
| **Enterprise OE (EOE)** | Designed for database application servers and logic servers, this OE contains the HP-UX 11i v3 Foundation OE bundles and additional applications such as GlancePlus Pak to enable an enterprise-level server. This OE is bundled as `HPUX11i-OE-Ent`. |
| **Mission Critical OE (MCOE)** | Designed for the application servers and database servers, 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`. |
| **Technical Computing OE (TCOE)** | Designed for server applications, this OE contains 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 C, "HP-UX 11i v3 Software Bundles," on page 155.

# The Next Step

Continue with Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 27.

# 2 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 v3.

### What You Will Find in This Chapter


- "System Requirements" on page 28
- "How to Plan Your Disk Space Needs" on page 31
- "Supported Systems" on page 32
- "Supported Network Drivers, Mass Storage Drivers, I/O Cards, and Storage Devices" on page 33
- "Finding Firmware Information" on page 34
- "Identification of Model, OS/OE, and Software" on page 35
- "The Next Step" on page 37


**IMPORTANT** Review the *Read Before Installing or Updating to HP-UX 11i v3* 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 v3, you must have the following:

- A supported system. See “Supported Systems” on page 32
- HP-UX 11i v3 OE and Application (AR) media
- 1 GB memory, minimum

**NOTE** The minimum memory limit is intended for running the HP-UX 11i v3 Foundation OE (FOE) and minimal applications. Additional memory *will be required* for optimal performance and optional software and applications. If the system being installed has less than the supported amount of RAM, the install will fail with an ERROR, which indicates the minimum amount of memory required. A WARNING may be generated if the amount of system memory is determined to be supported but less than recommended.

**NOTE** If your system has the minimum amount of memory, you may need to manually set VxFS tunables for optimal performance *after* cold-installing or updating to HP-UX 11i v3. For more information about these tunables, see Appendix B, “Controlling Memory Utilization of VxFS 4.1 on HP-UX 11i v3,” on page 149.

## System Firmware Requirements

Make sure the firmware shipped with the system meets the minimum firmware requirements for the system for the latest HP-UX 11i v3 (B.11.31) release. HP strongly recommends you review the minimum system firmware matrix for HP-UX 11i v3 (B.11.31) systems at the HP Technical Documentation Web site:

**`http://www.docs.hp.com/en/hw.html#System%20Firmware`**

## 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.

**Table 2-1 File Partition Disk Space Allocation by OE [1, 2]**

| Partition | FOE | EOE | MCOE | TCOE |
|---|---|---|---|---|
| / | 1 GB (28% used) | 1 GB (29% used) | 1 GB (29% used) | 1 GB (28% used) |
| /stand | 1.9 GB (7% used) | 1.9 GB (7% used) | 1.9 GB (7% used) | 1.9 GB (7% used) |
| /var | 8.5 GB (3% used) | 8.5 GB (3% used) | 8.5 GB (3% used) | 8.5 GB (3% used) |
| /usr | 3.7 GB (72% used) | 3.7 GB (72% used) | 3.8 GB (71% used) | 3.7 GB (72% used) |
| /tmp | 512 MB (4% used) | 512 MB (4% used) | 512 MB (4% used) | 512 MB (4% used) |
| /opt | 4.7 GB (58% used) | 4.9 GB (58% used) | 5.0 GB (59% used) | 5.8 GB (61% used) |
| /home | 112 MB (5% used) | 112 MB (5% used) | 112 MB (5% used) | 112 MB (5% used) |
| /swap | 1 GB | 1 GB | 1 GB | 1 GB |
| Itanium EFI Boot | 500 MB | 500 MB | 500 MB | 500 MB |
| Itanium HP Service | 400 MB | 400 MB | 400 MB | 400 MB |
| PA-RISC Boot | 100 MB | 100 MB | 100 MB | 100 MB |
| **Itanium Total** | **22.3 GB** | **22.5 GB** | **22.7 GB** | **23.3 GB** |
| **PA-RISC Total** | **21.6 GB** | **21.8 GB** | **22 GB** | **22.6 GB** |

1. The results are from using the *bdf* (1M) command; your results may vary if you use the *du* (1) command.
2. Totals are not exact due to rounding.

**NOTE** During installation, Ignite-UX (on the File System tab) shows a higher percentage of disk space used than the information in Table 2-1 shows. The minimums enforced by Ignite-UX ensure that the cold install completes successfully without filling a file system. This difference exists on all versions of Ignite-UX.

## Disk Space Requirements for an Update

To ensure a successful update to HP-UX 11i v3, make sure that you have at least as much disk space allocated to the file partitions listed in Table 2-1 on page 29, *and* that each partition (most importantly, `/usr`,`/opt`, and `/var`) has at least 10-20 percent free space to allow for any growth.

## 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 v3. 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. 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 the *HP-UX System Administrator's Guide* at the HP Technical Documentation Web site: **`http://docs.hp.com`**

**NOTE** If the default size for the `/stand` partition is too small for your environment, do not use the `lvextend` command to increase the size of the `/stand` partition; doing so may render your system unbootable. Instead, use either System Management Homepage to extend the `/stand` partition or Ignite-UX recovery to create a recovery image and resize the `/stand` partition. You can boot from the recovery image and resize `/stand` as you recover the system. For help using System Management Homepage, refer to the `smh`(1M) manpages or the *HP SMH Online Help* included with the product. For help creating a recovery image, refer to the *Ignite-UX Administration Guide* available on the HP Technical Documentation Web site: **`http://docs.hp.com`**

# How to Plan Your Disk Space Needs

This section provides hints and information to help you determine your disk needs for HP-UX 11i v3. 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 v3 Operating Environment (OE), consider the vendor's size recommendations.
- When planning disk space, refer to these documents:
  - *HP-UX System Administrator's Guide* — This guide is comprised of five volumes and 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.

# Supported Systems

This release of HP-UX 11i v3 release fully supports the following HP 9000 and HP Integrity servers. Additional information regarding HP servers can be found at the following Web site: **`http://www.hp.com/go/servers`**

**Table 2-2 Supported Systems**

| | |
|---|---|
| HP 9000 | rp3410<br>rp3440<br>rp4410<br>rp4440<br>rp7405<br>rp7410<br>rp7420<br>rp8400<br>rp8420<br>Superdome |
| HP Integrity | cx2600<br>rx1600<br>rx1620<br>rx2600<br>rx2620<br>rx3600<br>rx4640<br>rx5670<br>rx6600<br>rx7620<br>rx7640<br>rx8620<br>rx8640<br>BL60p blade server<br>Superdome |

# Supported Network Drivers, Mass Storage Drivers, I/O Cards, and Storage Devices

Before installing HP-UX 11i v3, make sure that the drivers, I/O cards, and storage devices on your system are supported.

You can run the `msv2v3check` script to validate whether the drivers, mass storage I/O cards, and mass storage devices installed on your system are supported on HP-UX 11i v3. This script will report if any unsupported drivers, mass storage I/O cards, and mass storage devices are found on your system.

This script will also check the minimum firmware versions required for these cards or devices on your system to run properly on HP-UX 11i v3. You can retrieve the `msv2v3check` script from the HP software depot at:

**`http://www.hp.com/go/softwaredepot`**

For a list of supported and unsupported HP-UX I/O cards and mass storage devices, refer to the *HP-UX Supported I/O Cards Matrix* and the *HP-UX Supported Mass Storage Devices Matrix* at the HP Technical Documentation Web site:

**`http://docs.hp.com`**

For more details on the `msv2v3check` script, refer to the white paper called, *HP-UX 11i v2 to 11i v3 Mass Storage Stack Update Guide* available at:

**`http://docs.hp.com/en/netsys.html#Storage%20Area%20Management`**

**WARNING** **If third-party (non-HP) storage will be connected to your HP-UX 11i v3 system, HP recommends that you contact your third-party storage vendor to determine the compatibility of the storage with HP-UX 11i v3. Check with your third-party storage vendor for information about any pre-requisites and limitations with the storage on HP-UX 11i v3.**

# Finding Firmware Information

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 a matrix of system firmware for I/O adapters with HP-UX 11i v3 (B.11.31) boot support, as well as the minimum firmware requirements for HP-UX 11i v3, refer to the documents at **`http://docs.hp.com/en/hw.html#System%20Firmware`**
- For the latest HP-UX 11i firmware updates, go to the IT Resource Center (ITRC) Web site at **`http://itrc.hp.com`** or the Business Support Center Web site at **`http://www.hp.com/go/bizsupport`**

  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, as well as patch documentation that provides information on how to patch the firmware.
- HP also provides the Subscriber's Choice, which enables you to sign up to receive email notices for firmware updates. At the ITRC Web site, click **maintenance and support (for hp products)**, then **support information digests**.

# Identification of Model, OS/OE, and Software

Before you cold-install or update to HP-UX 11i v3, 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 v3 is supported on your system, see “Supported Systems” on page 32.

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-FFFFFFFFFFFF
```

## Identifying the OS

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

```
uname -r
```

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

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

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 -l bundle HPUX11i-*
```

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

```
HPUX11i-OE B.11.31 HP-UX 11i Foundation Operating Environment
```

### 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 `/dvdrom`, enter:

```
/usr/sbin/swlist -s /dvdrom
```

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

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

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 at the HP Technical Documentation Web site:

```
http://docs.hp.com/en/oshpux11iv3.html
```

## The Next Step

Continue with Chapter 3, “Choosing an Installation Method,” on page 39.

# 3 Choosing an Installation Method

This chapter provides information and scenarios to help you choose the most appropriate method to install HP-UX 11i v3 on your system.

### What You Will Find in This Chapter


- "Cold-Installs of HP-UX 11i v3" on page 40
- "Supported Update Paths to HP-UX 11i v3" on page 41
- "Deciding Which Method to Use" on page 43
- "New Mass Storage Stack for HP-UX 11i v3" on page 46
- "Security Considerations" on page 48
- "Online Diagnostics" on page 58
- "Offline Diagnostics" on page 60
- "The Next Step" on page 61


**Time Estimate for This Chapter**: Approximately 1 hour to read about the cold-install and update paths, as well as security, and to choose an installation 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 applications. See Chapter 7, "Installing HP Applications," on page 131.

# Cold-Installs of HP-UX 11i v3

**Cold-install** means installing system software on a new (uninstalled) or existing system by completely rebuilding the root volume group, erasing the existing operating system and data on that volume, and installing the new operating system and specified software and data.

You can choose two different methods to cold-install HP-UX 11i v3 on a supported system: 1) by direct installation from the DVD media; 2) by creating depots on servers using SD-UX or Ignite-UX and installing it over the network.

An advantage of cold-install is that supported software can be installed without regard for the software currently on the system, or concern for cleaning up old software.

Supported versions of HP-UX that can be configured as Ignite-UX servers include HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3. Ignite-UX servers installed on any of these HP-UX systems can be configured to cold-install HP-UX 11i v3.

**NOTE** HP-UX 11i v3 is not supported on workstations. HP recommends that PA-RISC Workstation customers use HP-UX 11i v1 and Itanium Workstation customers use HP-UX 11i v2.

# Supported Update Paths to HP-UX 11i v3

**Update** means using `update-ux` to selectively overwrite the operating system and application software from a media or network source depot.

An advantage of performing an update is that it leaves user data, configuration, and applications in place.

You can update to HP-UX 11i v3 from HP-UX 11i v2 (B.11.23). Updating from any other release directly to HP-UX 11i v3 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). See Table 3-1 on page 42 for supported update paths.
- You cannot update between server Operating Environments and technical Operating Environments.

**NOTE**

Updating from HP-UX 11i v1 to HP-UX 11i v3 is not supported. You must first update to an HP-UX 11i v2 Operating Environment. Please see the *HP-UX 11i v2 Installation and Update Guide* for information on how to update from HP-UX 11i v1 to HP-UX 11i v2. In addition, make sure your system meets the minimum system and disk space requirements before updating from HP-UX 11i v2 to HP-UX 11i v3.

**NOTE**

If VxFS 5.0 has been used to create file systems with disk layout version 7, those disks will not be readable by the VxFS 4.1 that ships with HP-UX 11i v3. Before updating to HP-UX 11i v3, copy data from your DLV 7 file systems and onto file systems created at layout version 5 or 6.

## Updating from HP-UX 11i v2 (B.11.23)

Table 3-1 lists the supported update paths from HP-UX 11i v2 to the HP-UX 11i v3.

**Table 3-1 Update Paths HP-UX 11i v2 to HP-UX 11i v3**

| HP-UX 11i v2 | HP-UX 11i v3 OS/OE |
|---|---|
| Base OS | • Foundation OE<br>• Enterprise OE<br>• Mission Critical OE<br>• Technical Computing OE |
| Foundation OE | • Foundation OE<br>• Enterprise OE<br>• Mission Critical OE |
| Enterprise OE | • Enterprise OE<br>• Mission Critical OE |
| Mission Critical OE | • Mission Critical OE |
| Technical Computing OE | • Technical Computing OE<br>• No workstation support |

# 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 v3 on your system.

## When to Cold-Install

**CAUTION** The cold-install process erases software on the root volume before installing. 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 volume**.

You can cold-install rather than update to HP-UX 11i v3 when:

- You have a new system.
- You are managing several systems with similar OS configurations.
- Your disk space needs reconfiguration. See “How to Plan Your Disk Space Needs” on page 31.
- 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 v3” on page 41.

You can cold-install from *any supported* configuration. See “Supported Systems” on page 32.

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. Additional information on Ignite-UX and newer versions are available at: **`http://docs.hp.com/en/IUX/`**

See Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63 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 v3,” on page 79.

## When to Update

You can update rather than cold-install HP-UX 11i v3 when:

- You are updating from a supported HP-UX 11i v2 or HP-UX 11i v3 system. See “Supported Update Paths to HP-UX 11i v3” on page 41 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 v3.
- Each system has a unique configuration.
- Current disk space is sufficient for HP-UX 11i v3. See “How to Plan Your Disk Space Needs” on page 31.

You can choose two different methods to update to HP-UX 11i v3 on a supported system: 1) by the using the `update-ux` terminal user interface; 2) by using the `update-ux` command line interface.

An advantage of performing an update is that it leaves user data, configuration, and applications in place. Updating to HP-UX 11i v3 is limited to the supported paths listed in “Supported Update Paths to HP-UX 11i v3” on page 41.

See Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63 for details on how to prepare your system to update to HP-UX 11i v3. The update process is described in Chapter 6, “Updating to HP-UX 11i v3,” on page 105.

## What Software Source to Use

When cold installing or updating your systems, you can choose to update using media, copy the contents of media into network depots, or create a golden image of the desired system for installing many similar systems. The process described in this guide cold-installs and updates a single system from local media.

- **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 v3 media kit:
  - **HP-UX 11i v3 OE media** — Boot and install a new system or update an existing system.
  - **HP-UX Application media** — Install applications not installed with the OE or install a newer version of an OE application.
- **If you plan to cold-install or update on many systems in your enterprise** — You can consolidate your software sources in a network depot:
  - **Network Depot** — Use Software Distributor (SD) commands to create depots containing OS, OE, and other software bundles, then install or update from the depot using Ignite-UX or `update-ux`. For help with this method, refer to the `swcopy`(1M) manpage, the *Software Distributor Administration Guide*, and the *Ignite-UX Administration Guide*.
- **If you plan to create many similar systems in your enterprise** — You can use an Ignite-UX server to create a faster software source than an SD depot:
  - **Golden Image** — Create a golden image from which to cold-install. A golden image is a snapshot of a known, good operating system installation and configuration for use in installing other clients. The copied (source) client is called the golden image. 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, you can cold-install on each client system in a single-pass operation; you need to reboot each client only once. Please refer to the *Ignite-UX Administration Guide* for more information on golden images.

# New Mass Storage Stack for HP-UX 11i v3

HP-UX 11i v3 introduces a new representation of mass storage devices, known as the agile view. In the agile view, disk devices and tape drives are identified by the actual object, not by a hardware path to the object. In addition, paths to the device can change dynamically and multiple paths to a single device can be transparently treated as a single virtualized path, with I/O being distributed across those multiple paths.

This representation increases the reliability, adaptability, performance, and scalability of the mass storage stack, without the need for operator intervention.

### HP-UX 11i v3 Hardware Paths

In HP-UX 11i v3, there are three different types of paths to a device: legacy hardware path, lunpath hardware path, and LUN hardware path. All three are numeric strings of hardware components, with each number typically representing the location of a hardware component on the path to the device. These paths are described below.

- Legacy hardware path

  The legacy hardware path is the format used in releases prior to HP-UX 11i v3, and is displayed in the legacy view. It is composed of a series of bus-nexus addresses separated by '/' leading to the host bus adapter (HBA); beyond the HBA, additional address elements are separated by '.'.

- Lunpath hardware path

  The lunpath format enables the use of more targets and LUNs than are permitted under legacy hardware paths, and is printed in the agile view. It is identical in format to a legacy hardware path, up to the HBA (and represents the same path to the LUN). Beyond the HBA, additional elements are printed in hexadecimal.

- LUN hardware path

  The LUN format is a virtualized path that represents all the lunpaths to a single LUN. It is printed in the agile view. Instead of a series of bus-nexus addresses leading to the HBA, the path contains a virtual bus-nexus (referred as the virtual root node) with an address of 64000. An example of a LUN hardware path is "64000/0xfa00/0x22".

### HP-UX 11i v3 Device Special File (DSF)

In a similar way to hardware paths, there are two types of DSFs for mass storage: legacy DSFs and persistent DSFs. Both can be used to access a given mass storage device independently, and can coexist on a given system. These DSFs are described below.

- A legacy device special file was the only type of mass storage DSF in releases prior to HP-UX 11i v3, so it is associated with the legacy view. It is locked to a particular physical hardware path, or lunpath, and does not support agile addressing. Each lunpath requires a different DSF, so a multi-pathed LUN has multiple DSFs, one for each lunpath.
- A persistent device special file is associated with a LUN hardware path, and is seen in the agile view. Because it is based on the LUN hardware path, rather than the lunpath, it transparently supports agile addressing and multipathing. Like the LUN hardware path, the binding of device special file to device persists across reboots, but is not guaranteed to persist across installations.

### Device Files: Installing and Updating

If you cold-install HP-UX 11i v3, both legacy and persistent DSFs are automatically created. By default, the installation process will configure system devices like the boot, root, swap, and dump devices to use persistent DSFs. This means that configuration files such as `/etc/fstab`, `/etc/lvmtab`, and others will contain references to persistent DSFs.

If you update from HP-UX 11i v2 to 11i v3, existing legacy DSFs are retained, and persistent DSFs will be created.

In addition, legacy DSFs are completely backward compatible, and will not be affected by any persistent DSFs on the same server. A device can be simultaneously accessed via legacy and persistent DSFs.

For more information on the new mass storage stack, see the whitepaper called, "*The Next Generation Mass Storage Stack: HP-UX 11i v3*" at:

**`http://docs.hp.com/`**

## Security Considerations

HP-UX Bastille (`HPUXBastille`) is included as recommended software on the Operating Environment media and can be installed and run with Ignite-UX or Update-UX, (see “Predefined Security Levels” on page 49).

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 v3 Release Notes* and the *HP-UX System Administrator’s Guide*.

## Predefined Security Levels

At cold-install or update-time, you can choose one of the security levels listed in Table 3-2, with each one providing incrementally higher security.

**Table 3-2 Predefined Security Configuration**

| Security Level | Configuration File Name[1] | Description |
|---|---|---|
| `Sec00Tools`[2] | Not applicable | The install-time security infrastructure; no security changes. |
| `Sec10Host`[3] | `HOST.config` | Host-based lockdown: firewall pre-enablement; some common clear-text services turned off, excluding Telnet and FTP. |
| `Sec20MngDMZ`[3] | `MANDMZ.config` | Lockdown while allowing secure management: IPFilter firewall blocks incoming connections except common, relatively safe, 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. `Sec00Tools` is installed by default.
3. `Sec10Host`, `Sec20MngDMZ`, and `Sec30DMZ` are selectable.

**NOTE** When you select either the `Sec30DMZ`, or `MngDMZ` security level, IPFilter will restrict inbound network connections. For more information on how to add inbound ports to your `/etc/opt/ipf.customerrules` file, refer to the *HP-UX IPFilter (Version A.03.05.09 and later) Administrator's Guide* and the *HP-UX System Administrator's Guide*.

### Selecting Your Security Levels at Install Time

During installation, you can configure your security levels by navigating to either the **System** tab or the **Software** tab from the Ignite-UX Graphical User Interface Installation and Configuration dialog box. The System tab allows you to configure information unique to your system such as security levels, hostname, IP address, root password, and the time zone.

For ease of use, HP recommends using the **System** tab to select the security level appropriate for your deployment as described below.

1. Do one of the following:
   - If you are using the Ignite-UX GUI, navigate to the **System** tab (from the Ignite-UX Installation and Configuration dialog box) and select **Security Choices**.
   - If you are using the Ignite **Install HP-UX Wizard**, navigate to the **Additional Software** screen and select Security Choices.

   The four security levels appear. By default, `Sec00Tools` is selected.
2. Select the security level appropriate for your deployment. See “Predefined Security Levels” on page 49 for more information.
3. Select **OK**.

## Serviceguard Configuration (post-installation) to Enable Use with Security Levels

### Configuring Sec20MngDMZ or Sec30DMZ for Use with Serviceguard

Serviceguard uses dynamic ports. To enable operation, the possible-SG port range must be opened. Opening the port range is not consistent with the security goals of `Sec20MngDMZ` (`MANDMZ.config`) and `Sec30DMZ` (`DMZ.config`) since multiple services (including other rpc-like applications), may also listen to this same port range. The firewall, however, will still provide security benefits consistent with the Serviceguard security deployment model as described in the *Securing Serviceguard* document at:

**http://docs.hp.com/**

Before you open the Serviceguard port range make sure you review the required IPFilter-SG rules, which are documented in the *HP-UX IPFilter (Version A.03.05.09 and later) Administrator's Guide* at:

**http://docs.hp.com/en/B9901-90021/B9901-90021.pdf**

When the Serviceguard security patch of 2004 is installed, Serviceguard requires one additional service, `identd`. Enable it by following the steps below.

1. Edit the HP-UX Bastille `/etc/opt/sec_mgmt/bastille/config` configuration file by changing the answer to the question:

   ```
   Should Bastille ensure inetd's ident service does not run
   on this system?
   ```

2. Change the answer from Y to N as follows:

   **SecureInetd.deactivate_ident="N"**

3. Apply the configuration file changes. You can update your system configuration manually or use HP-UX Bastille to update your system configuration. The former will require fewer steps on systems that have been manually configured, after a user has configured the system using the Bastille tool, and the latter will require fewer steps on systems that had not been manually configured, after a user has configured the system using the Bastille tool.

4. Do one of the following:

   - Manually update the system configuration: Edit the `/etc/inetd.conf` file by uncommenting (remove the #) the following line:

     ```
     #auth stream tcp6 wait bin /usr/lbin/identd identd
     ```

     Force `inetd` to reread the configuration by running the following command:

     ```
     # inetd -c
     ```

   - Use HP-UX Bastille to update the configuration: Revert to the previous HP-UX Bastille configuration; then apply the new HP-UX Bastille configuration.

     ```
     # bastille -r
     # bastille -b
     ```

### Configuring HP-UX Bastille Sec10Host

To configure the HP-UX Bastille Sec10 Host, refer to the *Securing Serviceguard* document at:

**`http://docs.hp.com/`**

**CAUTION**

When reverting to the configuration prior to the use of HP-UX Bastille, note these precautions:

- Security configuration changes will be undone temporarily.
- Other manual configuration changes or additional software installed since HP-UX Bastille was initially run may result in HP-UX Bastille requiring a manual merge of configuration settings.
- Refer to the Bastille question text in the *HP-UX System Administrator's Guide* or in the Bastille GUI for detail on the precise interactions.

## Security Choice Dependencies

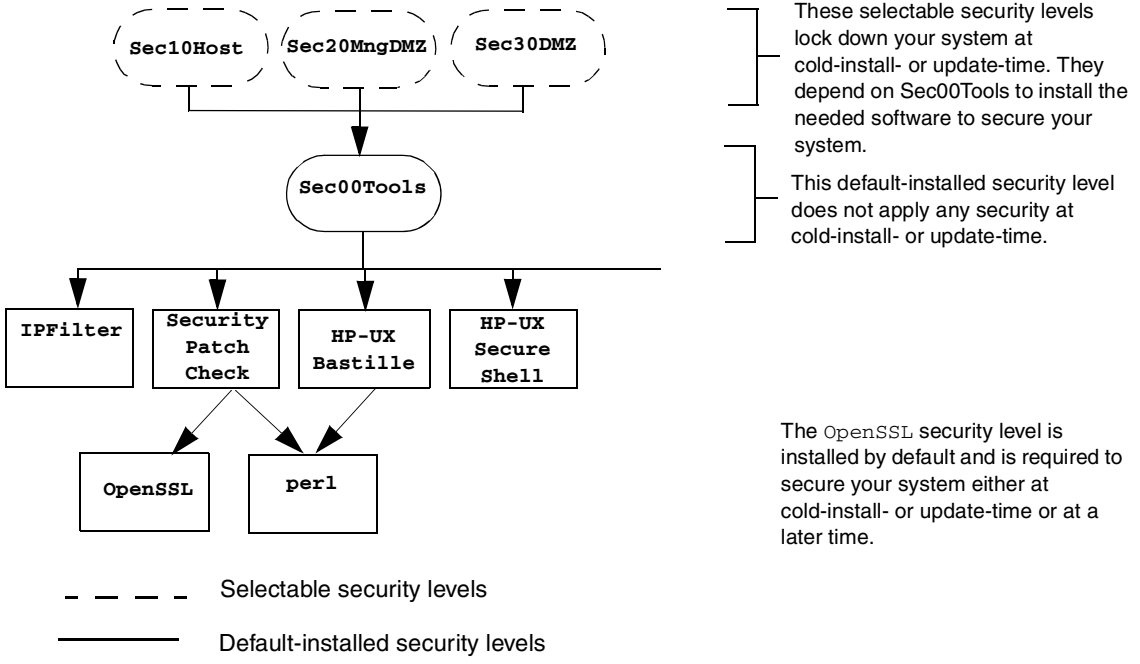
The Sec00Tools security level is installed by default on your system. Although Sec00Tools does not implement any security changes at cold-install- or update-time, it does ensure that the required software (Figure 3-1) is installed. The Sec00Tools security level contains the pre-built configuration files that you can use to create a security level or you can use it as a template to create a custom security configuration. The Sec00Tools security level also ensures that the software needed by those security levels is present.

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

- Sec10Host
- Sec20MngDMZ
- Sec30DMZ

Sec10Host, Sec20MngDMZ, and Sec30DMZ are dependent on Sec00Tools.

**Figure 3-1 Install-time Security Software Dependencies**



## Secured Services and Protocols

Each security level 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 levels applies a default security profile, simplifying the lockdown process.

The following tables detail the services and protocols affected by the security levels, listed in Table 3-2 on page 49, if you choose to apply one at cold-install- or update-time:

- Table 3-3 on page 55 lists the security settings for `Sec10Host`. These settings also apply to `Sec20MngDMZ` and `Sec30DMZ`.
- Table 3-4 on page 56 lists the security settings applied with `Sec20MngDMZ`, in *addition* to the settings in Table 3-3.
- Table 3-5 on page 57 lists the security settings applied with `Sec30DMZ`, in addition to the settings in Table 3-3 and Table 3-4.

**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, HP Systems Insight Manager and ParMgr rely on WBEM to communicate between hosts; `Sec30DMZ` blocks all incoming WBEM connections via IPFilter, though local and outbound communication is not blocked. In addition, some third-party installation scripts may not correctly handle the more conservative umask value of 027 set by the security levels.

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 *HP-UX System Administrator's Guide*, or the *HP-UX Bastille User's Guide* located on your system at:
`/opt/sec_mgmt/bastille/docs/user_guide.txt`

**Table 3-3 Host-based `Sec10Host` Install-time Security Settings[1]**

| Category | Actions |
|---|---|
| **Logins and Passwords** | Deny login unless home directory exists<br>Deny non-root logins if `/etc/nologin` file exists<br>Set a default path for `su` command<br>Disable root logins from network tty<br>Hide encrypted passwords<br>Disallow `ftpd` system account logins<br>Disable remote X logins |
| **File System, Network, and Kernel** | Modify `ndd` settings [2,3]<br>Restrict remote access to `swlist`<br>Set default `umask`<br>Enable kernel-based stack execute protection |
| **Daemons** | Disable `ptydaemon`<br>Disable `pwgrd`<br>Disable `rbootd`<br>Disable NFS client daemons<br>Disable NFS server<br>Disable NIS client programs<br>Disable NIS server programs<br>Disable `SNMPD` |
| **inetd Services** | Deactivate `bootp`<br>Deactivate `inetd`'s built-in services<br>Deactivate CDE helper services<br>Deactivate `finger`<br>Deactivate `ident`<br>Deactivate `klogin` and `kshell`<br>Deactivate `ntalk`<br>Deactivate `login`, `shell`, and `exec` services<br>Deactivate `swat`<br>Deactivate `printer`<br>Deactivate `recserv`<br>Deactivate `tftp`<br>Deactivate `time`<br>Deactivate `uucp`<br>Deactivates Event Monitoring Services (EMS) network communication<br>Enable logging for all `inetd` connections |

**Table 3-3 Host-based `Sec10Host` Install-time Security Settings[1] (Continued)**

| Category | Actions |
|---|---|
| **sendmail** | Run `sendmail` via `cron` to process queue<br>Stop `sendmail` from running in daemon mode<br>Disable `vrfy` and `expn` commands |
| **Other Settings** | Deactivate HP Apache 2.x Web Server[4]<br>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 `ndd` 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 3-4 Additional `Sec20MngDMZ` Install-time Security Settings[1]**

| Category | Actions |
|---|---|
| **inetd Services** | Includes all disabled `inetd` services in Table 3-3 and:<br>Deactivate `ftp`<br>Deactivate `telnet` |
| **IPFilter Configuration[2]** | Block incoming DNS query connections<br>Block incoming HIDS administration connections[3,4]<br>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], ICMP echo. |

1. Applies all security configuration settings in Table 3-3
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 3-5 Additional `Sec30DMZ` Install-time Security Settings[1]**

| Category | Actions |
|---|---|
| **IPFilter Configuration**[2] | Includes all IPFilter settings in Table 3-4 and:<br>Block incoming HIDS agent connections[3,4]<br>Block incoming WBEM connections[5]<br>Block incoming web admin connections<br>Block incoming web admin autostart connections<br>Block all traffic except HP-UX Secure Shell<br>Block ICMP echo |

1. Applies all security configuration settings in Table 3-3 and Table 3-4
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 HP Systems Insight Manager and ParMgr

# Online Diagnostics

The diagnostics software, which is installed with HP-UX 11i v3, consists of two product bundles:

- `OnlineDiag`
- `SysFaultMgmt`

These bundles include many tools to help verify, troubleshoot, and monitor PA-RISC and Itanium-based system hardware such as processors, memory, power supplies, fans, interface cards and mass storage devices.

The `OnlineDiag` bundle includes the following tools:

- Support Tools Manager (STM)

  STM provides access to a complete set of support tools for use in verifying and troubleshooting system hardware. STM also provides a a set of daemons that proactively monitor the system for errors. This information is used by the EMS Hardware Monitors.

- EMS Hardware Monitors

  EMS hardware monitors help detect unusual activities, such as events, occurring on various hardware resources, thereby preventing hardware failure. Monitors also provide information about events that provide recommended solutions to hardware.

The `SysFaultMgmt` bundle includes the System Fault Management (SFM) software. The SFM software includes the following tools:

- SFM Providers

  SFM monitors the health of HP servers and retrieves information about hardware such as memory, processors, power supplies, and cooling devices. SFM operates in the Web-based Enterprise Management (WBEM) environment.

- EVWEB

  EVWEB is packaged with SFM and can be used to view and administer WBEM indications generated on the HP-UX 11i v3 system.

- EMT

  EMT enables you to view most errors that can occur on HP-UX 11i v3 systems. It also provides probable cause for errors, and recommended actions.

**CAUTION**

Removing the `OnlineDiag` bundle or the `SysFaultMgmt` bundle, or both, prevents products with dependencies on the diagnostics from functioning correctly. If the `OnlineDiag` bundle or the `SysFaultMgmt` bundle are not installed, protections from some hardware failures are removed. Without these bundles installed on your system, it is much harder to troubleshoot and fix problems when a hardware failure occurs. To ensure the reliability of your computer system, HP highly recommends that you install the `OnlineDiag` and `SysFaultMgmt` bundles with HP-UX 11i v3. With a media install, the `OnlineDiag` and `SysFaultMgmt` bundles are installed by default with any HP-UX 11i Operating Environment.

The following lists the uses of tools contained in `OnlineDiag` and `SysFaultMgmt` bundles:

- Protects your system from hardware failures, for example, memory problems.
- Includes EMS Hardware Monitors that notifies you of hardware events.
- Maintains logs that help you determine the cause of failures.
- Enables you to troubleshoot system problems with the system online.

On most systems, no special configuration of Online Diagnostics is necessary. For complete information, refer to the diagnostics products documents available at:

**`http://docs.hp.com/en/diag.html`**

# Offline Diagnostics

Offline Diagnostic Environment (ODE) includes a set of offline support tools that enables you to troubleshoot a system that is running without an operating system.

ODE is available on the following media:

- HP 9000 PA-RISC Offline Diagnostics CD, for PA-RISC systems.
- HP Itanium-Processor Family (IPF) Offline Diagnostics and Utilities CD, for IPF systems.

HP highly recommends that you get the latest CD and update the Offline Diagnostics for improved functionality. Note that the CD-ROMs are OS independent and ordered separately from each other and of any operating system media.

You can order for the latest CD-ROM for your PA-RISC or IPF system from one of the following Web sites:

Software Depot:

**http://www.hp.com/go/softwaredepot**

Biz Support for IPF systems:

**http://www.hp.com/support/Itaniumservers**

Biz Support for HP 9000 systems:

**http://h20000.www2.hp.com/bizsupport/TechSupport/Product.jsp?lang=en&cc=us&prodTypeId=15351&prodCatId=321931**

For more information on ODE, refer to the Offline Diagnostics section on the following Web site:

**http://docs.hp.com/en/diag.html**

# The Next Step

After deciding which method to use to install HP-UX 11i v3, you can start preparing your system for either cold-install or update. Proceed to Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63.

**IMPORTANT** Make sure you review the *Read Before Installing or Updating to HP-UX 11i v3* DVD booklet for situations not discussed in Chapter 3, “Choosing an Installation Method,” on page 39 that may apply to your system.

# 4 Preparing to Cold-Install or Update to HP-UX 11i v3

This chapter details the preparation tasks required to cold-install or update to HP-UX 11i v3.

### What You Will Find in This Chapter


- "Cold-Install Tasks" on page 64
- "Update Tasks" on page 70
- "Backing Up Your System" on page 72
- "Locating Source Media and Codewords" on page 76
- "The Next Step" on page 77


**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 v3, 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 use Ignite-UX to cold-install HP-UX 11i v3 on more than one system, update your Ignite-UX server.
- Locate source media and codewords.

## Task 1: Selecting Your HP-UX Console for Itanium-based Systems

**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 68.

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 chosen for you, but you may want to change these default console selections. 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 v3 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, do the following:

   - 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 and the HP Integrity rx5670 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
```

### Understanding Interface Differences Between Itanium-based Systems

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 and Other Consoles Types

In the example menu shown above, the first four entries are identical except for their `VenMsg` section, meaning 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.

Serial port, Management Processor (MP) and VGA device paths can vary between each Itanium-based system. Please refer to the appropriate platform documentation for your product for information on determining the device paths.

### Selecting a Console on the HP Integrity rx2600, rx5670 Systems

On the HP Integrity rx2600 and the HP Integrity rx5670 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 Device**.
4. Select the correct standard error device and deselect others.

   The device displays important firmware messages reporting errors.
5. Select **Save to NVRAM** and then select **Cold Reset** to 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.
- The EFI command, `conconfig`, may also be used to configure console devices. When using `conconfig` to select a console device, only one active console should be configured; otherwise, HP-UX may either fail to boot or boot with output directed to the wrong location.
- 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 v3 on a system that already has HP-UX installed, make sure to save the files that you want to reinstall, 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 file system. Mount it with `smh`. 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 72 for more information.

## Task 4: Updating Your Ignite-UX Server

If you intend to use the Ignite-UX server to cold-install HP-UX 11i v3 on more than one system, update your Ignite-UX server first.

The HP-UX 11i v3 DVD contains the complete Ignite-UX product. When you cold-install HP-UX 11i v3 from the media, a subset of Ignite-UX is used to perform the installation on a single system. Updating your Ignite-UX server and using it to update other systems ensures that:

- You keep consistent kernel configuration with specific drivers, daemons, and kernel tunables on all systems.
- You have the following commands to create an operating system recovery image: `make_net_recovery` and `make_tape_recovery`. Refer to the *make_net_recovery* (1M) and *make_tape_recovery* (1M) manpages for information.

For information on updating your Ignite-UX server, download the latest Ignite-UX software and documentation from the Ignite-UX Web site:

**`http://docs.hp.com/en/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 76 for instructions.

# Update Tasks

Prior to updating to HP-UX 11i v3, 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 operating system using the Ignite-UX `make_net_recovery` or `make_tape_recovery` command.
- Locate source media and codewords.

## Task 1: Identifying Software Versions

**Step 1.** List the bundles and products installed on your system:

```
/usr/sbin/swlist -l bundle -l product> /tmp/software_list
```

**Step 2.** Check the list to determine which bundles and products you wish to update on your system. Make sure to save the output of the `swlist` command so you can reference it later.

**Step 3.** After updating to HP-UX 11i v3, run the `swlist` command again and compare the output to the output of the `swlist` command you saved in step 1 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 72 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 76 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. Backing up your system includes the following tasks:

- Task 1: Creating an Operating System Recovery Image
- Task 2: Backing Up Your Data Files

## Task 1: Creating an Operating System Recovery Image

To protect your system data, create an operating system recovery image to be used in the event of cold install or update problems. The Ignite-UX server has two commands you can use to create an operating system recovery image:

- `make_net_recovery`

  Use this command to create an operating system recovery image and store it on an Ignite-UX server on the network. This command works on any system that has Ignite-UX installed.

- `make_tape_recovery`

  Use this command to create an operating system recovery image on a bootable recovery tape. This command works on any system that has a local tape drive and Ignite-UX installed.

**NOTE** The Ignite-UX recovery tools are intended to be used in conjunction with data recovery applications to create a means of total system recovery. HP does not recommend using Ignite-UX recovery tools to backup and recover data other than essential system data.

### Using make_net_recovery

The Ignite-UX product has the `make_net_recovery` command to create an operating system recovery image on another system on the network. The image 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 operating system recovery image.

The contents of the operating system recovery image always includes 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 to add or remove other data from the image 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*. The guide is available at the HP Technical Documentation Web site:

**http://docs.hp.com/en/oshpux11iv3.html**

You can also locate the *Ignite-UX Administration Guide* at the Ignite-UX Information Library:

**http://www.docs.hp.com/en/IUX/infolib.html**

### Using make_tape_recovery

The Ignite-UX product's `make_tape_recovery` command creates a bootable operating system recovery tape for a 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` locally on the system from which you are trying to make an operating system 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 an operating system 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 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 Technical Documentation Web site:

**http://docs.hp.com/en/oshpux11iv3.html**

You can also locate the *Ignite-UX Administration Guide* at the Ignite-UX Information Library:

**http://www.docs.hp.com/en/IUX/infolib.html**

## Task 2: Backing Up Your Data Files

There are a number of different backup methods you may wish to choose from depending on your system backup needs and your configurations. Some recommended backup methods are:

- HP OpenView Storage Data Protector
- HP-UX `fbackup`/`frecover` utilities

### Choosing HP Storage Data Protector for Backup

If you are backing up large numbers of systems, the HP Storage Data Protector software product can be particularly useful. HP Data Protector is faster than other backup methods and provides for unattended backup as well. It allows you to efficiently centralize and administer backup procedures.

Using HP Data Protector involves setting up a database server and running software that directs and records the backup process for clients. For more information, see the HP OpenView Storage Data Protector Web site at:

**`http://h18006.www1.hp.com/products/storage/software/dataprotector/`**

### Choosing HP-UX fbackup/frecover utilities

Use the `fbackup` and `frecover` commands to selectively back up and recover files. The `fbackup` command can do the following:

- Indicate specific files or directories to include or exclude from a backup
- Specify different levels of backup on a daily, a weekly, or monthly basis
- Create an online index file

The `frecover` command restores backup files made using the `fbackup` utility. The `-r` option to the `frecover` command is generally used for recovering all files from your backup; the `-x` option is used for restoring individual files to your system. For complete details, see the `frecover` (1M) and `fbackup` (1M) manpages for examples.

# Locating Source Media and Codewords

Now that you have backed up your system and important data files, locate the source media needed for the cold-install or update. See the section called, “Media Kit Contents” on page 24 for more information.

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<br>(Inside Japan)<br>0426.48.9310<br>(Inside Japan)<br>+81.426.48.9312<br>(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 License 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 v3.

- **To cold-install:** see Chapter 5, “Cold-Installing HP-UX 11i v3,” on page 79.
- **To update:** see Chapter 6, “Updating to HP-UX 11i v3,” on page 105.

# 5 Cold-Installing HP-UX 11i v3

This chapter describes cold-installing HP-UX 11i v3.

### What You Will Find in This Chapter


- "Before You Begin" on page 80
- "Reviewing the Cold-Install Process" on page 81
- "Cold-installing HP-UX 11i v3" on page 83
- "Post-Install Tasks" on page 100
- "The Next Step" on page 103


**Time Estimate for This Chapter**: Approximately 2-3 hours, depending on your system.

**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 Chapter 8, "Verifying System Install or Update," on page 137.

**CAUTION** The cold-install process overwrites everything on all disks selected to participate in the install. Make sure you completed backups in "Backing Up Your System" on page 72.

# Before You Begin

Before you cold-install HP-UX 11i v3, make sure that:

- Your system meets the system requirements to install and operate HP-UX 11i v3. For more details see Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 27.
- You have completed the preparation tasks required to cold-install your system. Most importantly, make sure you created an operating system recovery image to protect your data in the event of a system crash. For more information see Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63.
- You have available networking information and other data that you need to collect as described in the section, “Before You Begin” on page 84.

# Reviewing the Cold-Install Process

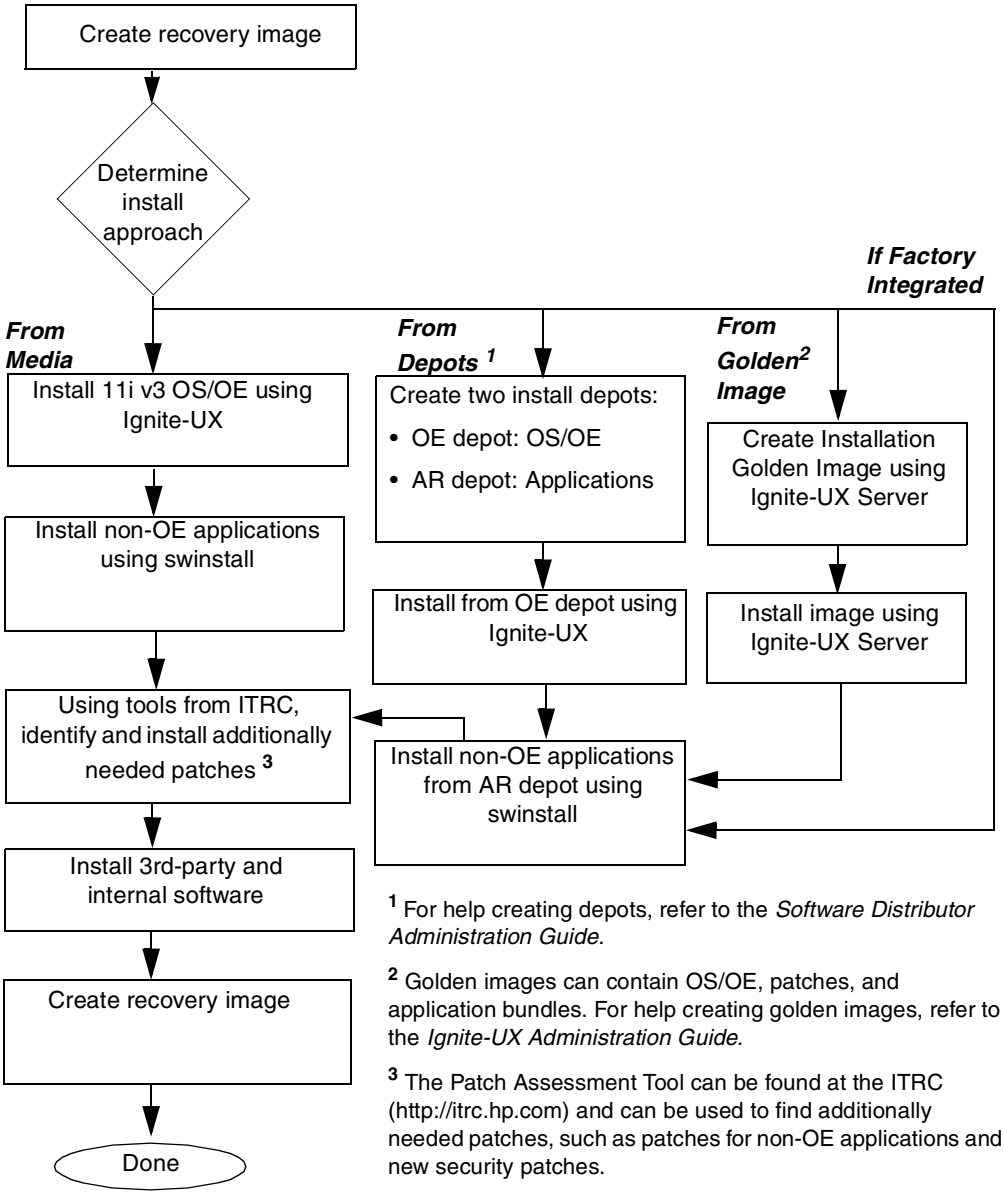
Figure 5-1 on page 82 shows the overall process, along with alternative methods of cold-installing HP-UX 11i v3.

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 *swcopy* (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 installation method with your HP Customer Engineer.

**Figure 5-1 Cold-installing HP-UX 11i v3**




[1] For help creating depots, refer to the *Software Distributor Administration Guide.*

[2] Golden images can contain OS/OE, patches, and application bundles. For help creating golden images, refer to the *Ignite-UX Administration Guide.*

[3] The Patch Assessment Tool can be found at the ITRC (http://itrc.hp.com) and can be used to find additionally needed patches, such as patches for non-OE applications and new security patches.

# Cold-installing HP-UX 11i v3

This section describes cold-installing from the HP-UX 11i v3 DVDs.

Before you begin, review Appendix A, “Known Problems and Troubleshooting,” on page 143 for any installation issues that apply to your system.

This section contains the following tasks:


- “Task 1: Booting Your Machine” on page 87
- “Task 2: Selecting Your Installation Type” on page 90
- “Task 3: Configuring Your Installation” on page 92
- “Task 5: Finishing Your Installation” on page 99


### Required Media

Have these DVDs ready from the HP-UX 11i v3 media kit:

- HP-UX 11i v3 DVDs
- HP-UX 11i v3 Applications DVD

**CAUTION** Cold-installing overwrites everything on the target disk(s).

## Before You Begin

Before you cold-install HP-UX 11i v3, you need to collect information about your existing system. This section contains tables where you can record information. Then, when you are installing HP-UX 11i v3, you use information from the Miscellaneous Data and Network Data collection tables when needed.

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 Advanced Installation also gives you more control over file system configuration. 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.

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

**NOTE**

During an installation, Ignite-UX configures the root, dump, and swap devices with the new HP-UX 11i v3 mass storage stack agile addressing representation. This means that, after installing, the commands that display the boot, dump, and swap devices will show them using the agile form. During a cold-install of HP-UX 11i v3, both legacy and persistent DSFs are automatically created. By default, the installation process will configure system devices like the boot, root, swap, and dump devices to use persistent DSFs. For more information on the new mass storage stack, see the white paper called, "*The Next Generation Mass Storage Stack: HP-UX 11i v3*" at: **`http://docs.hp.com/`**

### Miscellaneous Data Collection Table

Table 5-1 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 5-1 Miscellaneous Data**

| Type of Data | Your Specific Data |
|---|---|
| Root Disk Path<br>**NOTE**: Your root disk will typically display a legacy style Path name. However, HP-UX 11i v3 contains a new naming scheme for Root Disks. Please refer to the white paper called, *The Next Generation Mass Storage Stack: HP-UX 11i v3,* for information on how to identify your legacy root disk device name in the agile HP-UX 11i v3 naming scheme. You can display the legacy hardware path using the **More Info** screen to show details on a specific lunpath hardware path. | |
| Root Swap Space | |
| Filesystem Type<br>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 or mirrored?) | |
| Select additional software | |
| Pre-Installed Disk Information<br>(Is overwritten during the install disk; see Root Disk Path) | |

### Network Data Collection Table

Table 5-2 provides HP-UX commands that you can use after the install to confirm specific information.

**Table 5-2 Network Data**

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

## 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 the section called, Booting Your Itanium-based System below. If you want to boot a PA-RISC system, follow the instructions in “Booting Your PA-RISC System” on page 88.

### Booting Your Itanium-based System

**Step 1.** Make sure any external devices that need to be configured at cold-install are connected to the target system and are turned on and operational.

**Step 2.** Insert the HP-UX 11i v3 DVD (Disk 1) 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. At the EFI shell prompt, specify the device name (for example, fs1:) for the DVD-ROM and then enter the EFI install command, as in the following example

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 that need to be configured at cold-install are connected to the target system and are turned on and operational.

**Step 2.** Insert the HP-UX 11i v3 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.

**NOTE** The **search** or **sea** command will only display legacy hardware paths and will not display agile hardware paths. You will see the agile hardware path after booting your system. Please note that both forms of hardware paths are supported (legacy and agile) and you can specify either hardware path in the `Boot` command. However, only the legacy hardware path can be displayed from the `Search` command.

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

Please note that if you know the agile hardware path, you may enter it as well, however it requires a specific format compatible with the BCH interface limited to 32-bit elements. Use the command, `ioscan -e` to display the boot path format to be used here to enter a lunpath hardware path in the `BOOT` command.

For an agile hardware path, boot from the DVD drive using the full agile hardware path name: **`BOOT <full hardware path>`**

For more information on agile hardware paths, refer to the white paper called, "*The Next Generation Mass Storage Stack: HP-UX 11i v3*" at the HP Technical Documentation Web site:

**`http://docs.hp.com/`**

**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 **Enter** key to select an item. Pressing **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 PS2 or USB 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.

```
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
27) USB_PS2_DIN_US_English_Euro
```

**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**.

**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 from one of the three choices shown in **Source Location Options**:
  - **Media only installation** is the default setting for installing from a DVD.
  - **Media with network enabled** is recommended when you want basic networking enabled during installation so you can load software from a network depot (when an Ignite-UX server is not available).
  - **Ignite-UX server based installation** is recommended if you have an Ignite-UX server configured on your network and you want to supply custom configurations during the installation.
- Select from one of the choices shown in **User Interface Options**:
  - **Guided Installation** is recommended for basic installations (where default parameters are sufficient) and 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** is recommended if you want to fully customize your system such as configuring multiple disks and adjusting file system sizes. 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 the **Advanced Installation** screens, refer to the *Ignite-UX Administration Guide*.
  - **No User Interface** is recommended if you want to accept all the default installation parameters and you do not need to verify the configuration using the user interface.

The remaining sections take you through the **Media only installation** option and 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 **Next** to accept the default option, `HP-UX B.11.31 Default`. The system displays the **System Environment** screen.

**Step 2.** From the **System Environment** screen, select the type of operating environment you want to install on your system. Press **Enter** to view the choices. Press **Next** to accept your selection and proceed to the **Root Disk** screen.

Please note that you can select additional software to install from the **Select Additional Software** screen, described in "Task 4: Selecting and Deselecting Software Bundles" on page 96.

**Step 3.** On the **Root Disk** screen select the disk to store your root file system. For HP-UX 11i v3, the root disk must be at least 9 GB. 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.

HP-UX 11i v3 contains a new naming scheme for Root Disks. Please note that the **Root Disk** screen displays the lunpath hardware path instead of the legacy hardware path. You can select **More Info** to view the legacy hardware path for the root disk selected.

For more information, refer to the *Ignite-UX Administration Guide* available at the HP Technical Documentation Web site:
**`http://docs.hp.com/en/oshpux11iv3.html`**

Press **Next** to accept your selection and proceed to the **Root Swap Space** screen.

**NOTE** The lunpath hardware path selected is used only to identify the Root Disk itself, and any available path to that disk may then be used as boot path. Therefore, it is normal to see a different lunpath hardware path to the disk used as boot path.

**Step 4.** On the **Root Swap Space** screen, specify the amount of disk space you need to reserve for root swap. 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.

Press **Next** to accept your selection and proceed to the **File System Type** screen.

**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. Press **Next** to accept your selection and proceed to the **Root Disk/Volume Group Disks** screen.

---

**NOTE** If you select VxVM or LVM, the root disk cannot 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 Disk/Volume Group Disks** screen, specify how many disks you want placed into the root volume group. If you have more than one disk, you may select **Yes** to choose the Striping option. Please note that if you need to select which disks to use, you must cancel the Guided Installation and use the Advanced Installation interface.

Press **Next** to accept your selection and proceed to the **Languages** screen.

**Step 7.** On the **Languages** screen, make sure **HPUXLocales(OE)** is marked **Yes**. In addition, make sure the default language shown on this screen is the language you wish to install. Press **Enter** to view the choices.

The locale settings that were previously in HP-UX 11i v2 and located in the CDE language bundle are now located in the `HPUXLocales` bundle. The `HPUXLocales` bundle contains internationalization support for many languages. This support includes date and time formats, currency, sorting methods, and so on.

Press **Next** to accept your selection and proceed to the **Additional Software**.

**NOTE** CDE is an optional product in HP-UX 11i v3. If you require it, you must explicitly select the CDE bundle (`CDE-XXX`). This applies if you need `dtterm`, which is located in CDE. For some localization situations, `dtterm` is required, therefore CDE must be selected. CDE is listed in Table C-3, "Optional Software," in Appendix C, "HP-UX 11i v3 Software Bundles," on page 155.

**Step 8.** On the **Additional Software** screen, you can deselect the software bundles that are recommended and select optional software *not* installed by default. Browse the product list, marking your selections, then press **Next** to accept your selections and proceed to the **Security Choices** screen.

HP-UX 11i v3 offers several product categories from which you can select additional software. In addition, each product category contains software components that are marked as *required*, *recommended*, or *optional* software components. See "Task 4: Selecting and Deselecting Software Bundles" on page 96 for more information on these product categories and *required*, *recommended*, and *optional* software components.

HP recommends that you do not deselect recommended bundles or remove them from your system unless you know for certain that the software contained in these bundles are not required for your operating environment.

**Step 9.** On the **Security Choices** screen, select the appropriate security setting for your system based on the information in the section called, "Security Considerations" on page 48. Please note that four security levels are displayed. By default, `Sec00Tools` is selected.

Press **Next** to accept your selection and proceed to the **Pre-Install Disk Information** screen.

**Step 10.** On the **Pre-Install Disk Information** screen, 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, **press Next** to proceed to the **Pre-Install Check Information** screen.

**Step 11.** On the **Pre-Install Check Information** screen, review any errors, warnings, or notes. Warnings are simply informational. If any errors are displayed, they will need to be resolved before you can continue the installation.

Press **Next** to proceed to the **System Summary** screen.

**Step 12.** On the **System Summary** screen, tab to **Show Summary** and press **Enter** to 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 screen) to begin the cold-install process. You can **Cancel** at this time. If you cancel, you can start again.

## Task 4: Selecting and Deselecting Software Bundles

If you use the `Guided Installation` or `Advanced Installations`, then you can deselect the software bundles that are installed by default and select optional software *not* installed by default. From the Software tab you can select products from a list of categories to build your operating system. (If you choose the **No User Interface** option, then you *cannot* deselect the default-installed software bundles.)

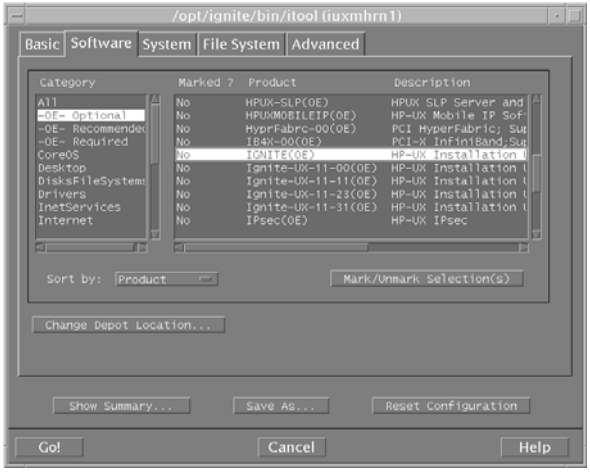
HP-UX 11i v3 has a new OE structure that provides more flexibility in managing what products you wish to install on your system. The OE structure for HP-UX 11i v3 separates software components into several product categories making it easier and more reliable for you to incrementally update your system with OE software components.

**CAUTION**

HP recommends that you do **not** deselect recommended software bundles or remove them from your system unless you know for certain that the software contained in these bundles is not required for your operating environment. In addition, software may have unstated dependencies. Deselecting software may prevent products with dependencies on the software you deselected from functioning correctly.

**Step 1.** In the `Guided Installation` or `Advanced Installation` windows, select the **Software Tab** tab.

**Figure 5-2: Software Tab**



**Step 2.** To improve the software selection process, HP-UX 11i v3 offers the following product categories from which you can select:

**Table 5-3 HP-UX 11i v3 Software Product Categories**

| Software Category | Description |
|---|---|
| CompilersDevelopment | Compilers and Development Tools |
| CoreOS | Core HP-UX Functionality |
| Desktop | Desktop Environments |
| DisksFileSystems | File Systems and Volume Mgmt |
| Drivers | I/O Drivers |
| HighAvailability | High Availability |
| InetServices | Internet Services |
| Internet | Internet Software Tools |
| Interoperability | Computing Interoperability Tools |
| Java | Java Tools and Utilities |
| Localization | Localization |
| Manuals | HP-UX Manual Pages |
| Migration | Migration to HP-UX Tools |
| Networking | Networking Infrastructure |
| Obsolescence | Product Obsolescence |
| Performance | Performance Tools |
| Security | Security Tools |
| SecurityChoices | Security Level Choices |
| SupportTools | Diagnostic and Support Tools |
| SystemManagement | System Management Tools |
| Utilities | Miscellaneous Utilities |
| OE Optional | All optional bundles in the OE |
| OE Recommended | All recommended bundles in the OE |
| OE Required | All required bundles in the OE |

Each of the product categories listed above contain software bundles that are further separated into the following categories:

- *OE Required*: Software that is required and is always installed with the operating system. Software in this category cannot be deselected.
- *OE Recommended*: Software that is recommended and should be installed because it fulfills the required software dependencies, if any exist. Software in this category can be deselected.
- *OE Optional*: Software that does not have to be installed.You can choose to select the desired software bundles prior to installing your system.

  Using these categories allow you to easily select and deselect all items of that type.

**Step 3.** Use the arrow keys to select a bundle and the spacebar to change the option.

**Step 4.** To install a minimal operating system configuration (base OS) you can deselect the recommended bundles. Only the minimal core OS will be installed on your system when you deselect the recommended bundles. You can use the *OE Recommended* software product category to select or deselect all recommended items.

HP recommends that you do not deselect recommended bundles or remove them from your system unless you know for certain that the software contained in these bundles are not required for your operating environment.

For information about the software bundles, see Appendix C, “HP-UX 11i v3 Software Bundles,” on page 155.

## Task 5: 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 v3 installs a minimum set of default networking drivers that apply to the system. Refer to the *HP-UX 11i v3 Release Notes* available at:

**`http://docs.hp.com/en/oshpux11iv3.html`**

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

**Step 1.** If your system has a PS2 or USB 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 (see “Before You Begin” on page 84) 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 Table 5-1, “Miscellaneous Data,” 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.

# Post-Install Tasks

### Task 1: Configuring OE Applications

After updating to an HP-UX 11i v3 Operating Environment (OE), some OE products need post-installation configuration to make them functional. This need may be indicated by a message logged in `/var/opt/swm/swm.log`.

Refer to each product's installation instructions for details. The location of OE product documentation is listed in the *HP-UX 11i v3 Release Notes,* available on the Instant Information DVD and at the HP Technical Documentation Web site:

**`http://docs.hp.com`**

### Task 2: Migrating to the Agile Mass Storage Stack (Optional)

In HP-UX 11i v3 there are two types of DSFs for mass storage: legacy DSFs and persistent DSFs. Both can be used to access a given mass storage device independently and can coexist on a given system. The new mass storage stack for HP-UX 11i v3 is intended to supersede the existing mass storage stack. However, in HP-UX 11i v3 they can exist in parallel. Existing legacy DSFs will continue to work as before; they are completely backward compatible, and will not be affected by any persistent DSFs on the same server.

If you cold-install HP-UX 11i v3, both legacy and persistent DSFs are automatically created. By default, the installation process will configure system devices like the boot, root, swap, and dump devices to use persistent DSFs. This means that configuration files such as `/etc/fstab`, `/etc/lvmtab`, and others will contain references to persistent DSFs.

You may choose to migrate to the new agile mass storage stack or you can continue to use the legacy mass storage stack. If you want to use the new features of the agile mass storage stack and are not affected by existing limitations, you may want to migrate to the new mass storage stack.

For more information on the new mass storage stack and to migrate from the legacy view to the agile view refer to the white paper called, "*The Next Generation Mass Storage Stack: HP-UX 11i v3*" and the white paper called "*HP-UX 11i v3 Persistent DSF Migration Guide*" at:

**`http://docs.hp.com/`**

### Task 3: 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. 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 *HP-UX System Administrator's Guide* 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,” on page 131.

# 6 Updating to HP-UX 11i v3

This chapter describes updating your system to HP-UX 11i v3 using Update-UX.

### What You Will Find in This Chapter


- "Before You Begin" on page 106
- "Reviewing the Update Process" on page 107
- "Updating Tips" on page 109
- "Updating to HP-UX 11i v3 Using the Terminal User Interface" on page 114
- "Updating to HP-UX 11i v3 Using the Command Line Interface" on page 126
- "Post-Update Tasks" on page 129
- "The Next Step" on page 130


**Time Estimate for This Chapter**: Approximately 3-4 hours, depending on your system.

# Before You Begin

Before you update to HP-UX 11i v3, make sure that:

- You are updating from a supported migration path. See “Supported Update Paths to HP-UX 11i v3” on page 41.
- Your system meets the system requirements to update and operate HP-UX 11i v3. For more details see Chapter 2, “System Requirements for Cold-Installing and Updating,” on page 27.
- You have completed the preparation tasks required to update your system. For more information see Chapter 4, “Preparing to Cold-Install or Update to HP-UX 11i v3,” on page 63.

**NOTE**

Updating from a release of HP-UX to a version of HP-UX that was released earlier in time is not supported. This could cause system incompatibilities and unpredictable results. If you attempt to update to an earlier version of HP-UX, the update process will stop without making any changes to your system and you will get the following error message:

```
ERROR: You are attempting to update from your release
of HP-UX to a version of HP-UX that was released earlier in
time.  This is not supported.  The update process has stopped
without making any changes to your system.  Please see the
'Supported Update Paths' section of the HP-UX 11i v3
Installation and Update Guide for more information.
```

# Reviewing the Update Process

This section describes updating to HP-UX 11i v3 using `update-ux` to selectively overwrite the operating system and application software from a media or network source depot.

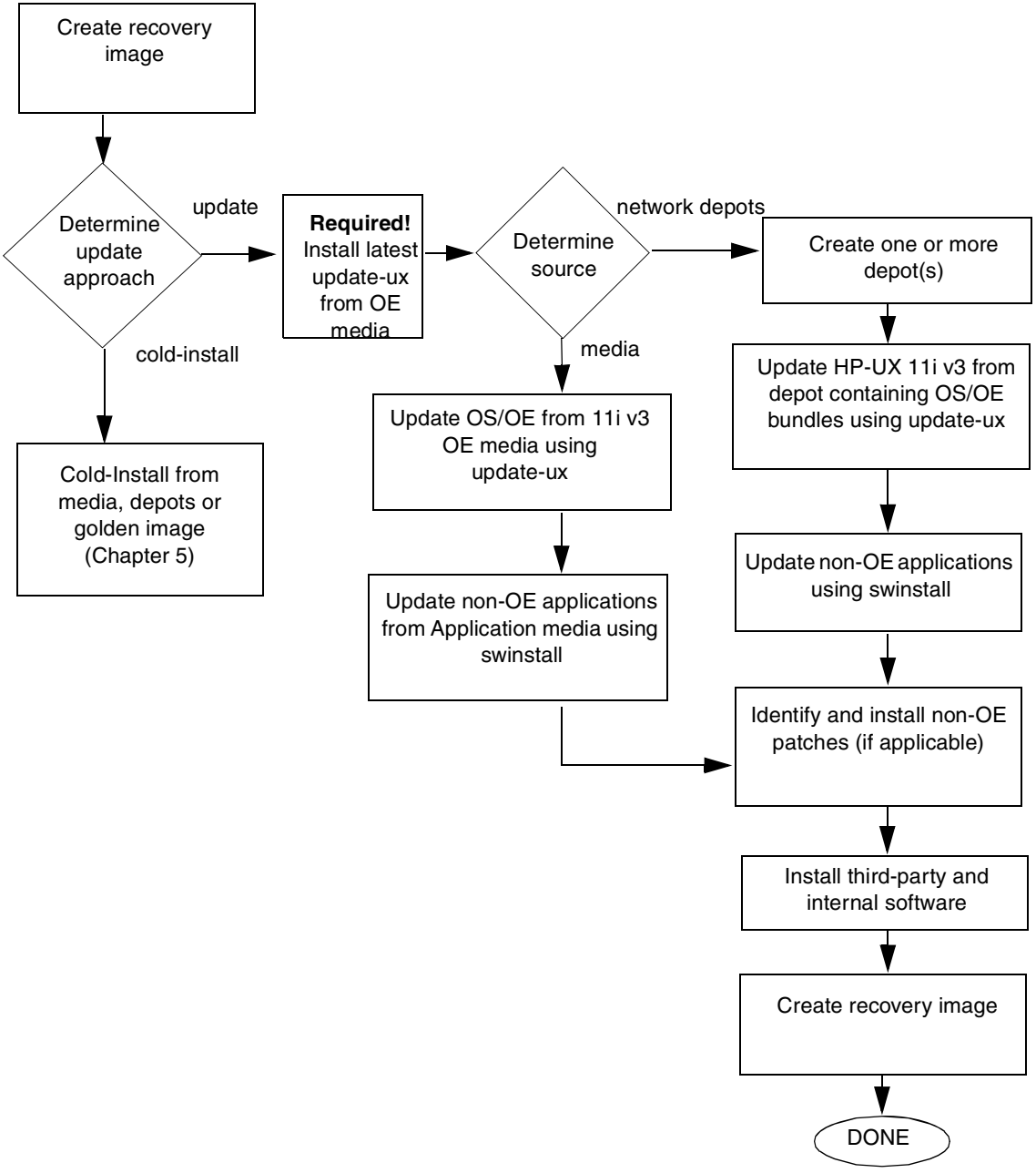
Figure 6-1 on page 108 shows the overall update process. You can update your system using one of the following methods:

- From a network depot — Use Software Distributor commands to create depots containing OS, OE, and other software bundles, then update from the depot using the `update-ux` terminal user interface or command line interface. For help with this method, refer to the *swcopy* (1M) manpage, the *Software Distributor Administration Guide,* and the *Ignite-UX Administration Guide*.
- From DVD media — Use either the `update-ux` terminal user interface described in "Updating to HP-UX 11i v3 Using the Terminal User Interface" on page 114 or the `update-ux` command line interface described in "Updating to HP-UX 11i v3 Using the Command Line Interface" on page 126.

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

**IMPORTANT** You **must install** the latest version of Update-UX prior to updating your system. The latest version of Update-UX allows you to use the preview (-p) option, which is new for HP-UX 11i v3. Failure to install the latest version of Update-UX may cause the update to fail. For instructions, see "Task 2: Install the Latest Update-UX Bundle" on page 113.

**Figure 6-1 Updating to HP-UX 11i v3**



# 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 |
|---|---|
| **Running Other Commands** | During the update process, be careful when running other commands; doing so may cause the commands to function improperly. |
| **All Software Does Not Get Updated** | Update-UX updates the HP-UX OS and any software specified in additional software bundles available on the source media or depot. Update-UX may not automatically update software that is not contained in an Operating Environment. In addition, Update-UX may not automatically update optional software bundles that have changed names since the last release.<br>In addition, software products that are no longer supported on HP-UX 11i v3 may be either automatically removed during the update, or the system may generate messages that warns users that these unsupported software products must be removed before beginning the update process. |
| **In Case of Trouble** | The update-ux command returns an error value when it is not successful:<br>`1 - Error during execution; update aborted.`<br>`2 - Update aborted via user action (keyboard press)`<br>Messages are recorded in `/var/opt/swm/swm.log` and `/var/adm/sw/update-ux.log`.<br>If you encounter a problem during the update process, review Appendix A, “Known Problems and Troubleshooting,” on page 143 for possible solutions. |

# Updating to HP-UX 11i v3

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

- **Task 1: Create a network depot (optional).**

  Create a network depot only if you intend to update other systems on the network. If you are not creating a network depot, you can skip this task. See "Task 1: Create a Network Depot (Optional)" on page 111.

- **Task 2: Install the latest version of `update-ux`.**

  See "Task 2: Install the Latest Update-UX Bundle" on page 113.

- **Task 3: Update your system using `update-ux`.**

  You can choose two different methods to update to HP-UX 11i v3 on a supported system: 1) by the using the `update-ux` terminal user interface; 2) by using the `update-ux` command line interface. See "Task 3: Update Your System Using update-ux" on page 114.

After updating to HP-UX 11i v3, you might need to configure OE Applications to make your system fully functional. See "Post-Update Tasks" on page 129 for instructions.

**NOTE**

In HP-UX 11i v3, there are two types of DSFs for mass storage: legacy DSFs and persistent DSFs. Both can be used to access a given mass storage device independently and can coexist on a given system. During an update from HP-UX 11i v2 to 11i v3, existing legacy DSFs are retained and persistent DSFs will be created. Configuration files will not be modified, so system devices will continue to use the existing legacy DSFs. For more information on the new mass storage stack, see the white paper called, *The Next Generation Mass Storage Stack: HP-UX 11i v3* available at the following web site:

**`http://docs.hp.com/`**

**NOTE** Secure Path is no longer supported on HP-UX 11i v3. The new mass storage stack in HP-UX 11i v3 provides integrated Native Multipathing capability. For more information on migrating from Secure Path to Native Multipathing in HP-UX 11i v3, see the *Migrating from HP StorageWorks Secure Path for Active-Active Disk Arrays to Native Multipathing in HP-UX 11i v3* available at:

**http://docs.hp.com/**

## Task 1: Create a Network Depot (Optional)

Create a network depot **only** if you intend to update other systems on the network using a depot. This allows you to update all systems on the network without having to move media from system to system. It also allows you to use the preview (`-p`) option, which is new for HP-UX 11i v3. You can use the preview (`-p`) option with either a depot or media. If you are not creating a network depot, you can skip this task.

As root, follow this procedure to create a network depot from the HP-UX 11i v3 two-DVD set onto a depot server:

**NOTE** Make sure you copy all products from both HP-UX 11i v3 DVDs to your target depot.

**Step 1.** Verify that you have at least 6 GB of free space to create the network depot on another system in your network. If this space is not available, use `smh` either to create a new volume group or to extend an existing volume group. For help, refer to either `SMH` help or the *HP-UX System Administrator's Guide*.

**Step 2.** The HP-UX 11i v3 operating system comes as a two DVD set. Insert the first DVD into the drive.

**Step 3.** Find the DVD-ROM device file name:

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

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

**Step 4.** Create the directory under root (/):

```
mkdir /dvdrom
```

**Step 5.** Mount the *first* DVD onto the new directory as a file system, for example:

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

**Step 6.** Create the directory that will contain the network depot you want to create, for example:

```
mkdir /var/11iv3
```

**Step 7.** Copy all products on the mounted DVD to the target depot. For example, to copy the contents of the *first* DVD to the target depot called `update-depot` type the following command:

```
swcopy -s /dvdrom \* @ /var/11iv3/update-depot
```

**Step 8.** Unmount the *first* DVD from its directory:

```
umount /dvdrom
```

**Step 9.** Mount the *second* DVD onto the new directory as a file system, for example:

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

**Step 10.** Copy all products on the mounted DVD to the same target depot. For example, to copy the contents of the *second* DVD to the target depot called `update-depot` type the following command:

```
swcopy -s /dvdrom \* @ /var/11iv3/update-depot
```

**Step 11.** Unmount the *second* DVD from its directory:

```
umount /dvdrom
```

The network depot is now ready to update your system to HP-UX 11i v3. Continue with “Task 2: Install the Latest Update-UX Bundle” on page 113.

## Task 2: Install the Latest Update-UX Bundle

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

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

### From the DVD Media

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

```
ioscan -C disk -f -n -k | 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 `swinstall`, 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).

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

### From a Depot

The depot example uses the following syntax: *depot_server*:*depot_path*. For example:

```
swinstall -s depot_server:/var/11iv3/update-depot Update-UX
```

## Task 3: Update Your System Using update-ux

After you have installed the UPDATE-UX bundle on the target system and, optionally, created a network depot containing all software to be installed, you can update your target system. You can update to HP-UX 11i v3 using one of the following methods:

- update-ux terminal user interface. See "Updating to HP-UX 11i v3 Using the Terminal User Interface" on page 114.
- update-ux command line interface. See "Updating to HP-UX 11i v3 Using the Command Line Interface" on page 126.

**NOTE**

Before you update your system to HP-UX 11i v3, review the known problems in Appendix A, "Known Problems and Troubleshooting," on page 143. Make sure to resolve any applicable issues before starting an update from HP-UX 11i v2 to HP-UX 11iv3.

### Updating to HP-UX 11i v3 Using the Terminal User Interface

This section describes how to update your system using the update-ux Terminal User Interface (TUI).

With the TUI, you use the **Arrow**, **Tab**, **Space**, and **Return** keys to navigate.

There are seven steps in the TUI update-ux process:

**Table 6-2 TUI update-ux Steps**

| | |
|---|---|
| **1. Start-Up** | Start the update-ux TUI. |
| **2. Select Source** | Provide the location of the software depot from which the software will be installed. |
| **3. Select OE** | Select the OE that you wish to update to. |
| **4. Select Software** | Choose the software in the OE you selected to update. |
| **5. Analysis (Preview)** | Analyze (preview) the update selections to determine if the selected software can be updated successfully. |
| **6. Update** | Perform the actual software update. |
| **7. Verify Update** | Verify that the software update was successful. |

**Step 1: Start-Up**

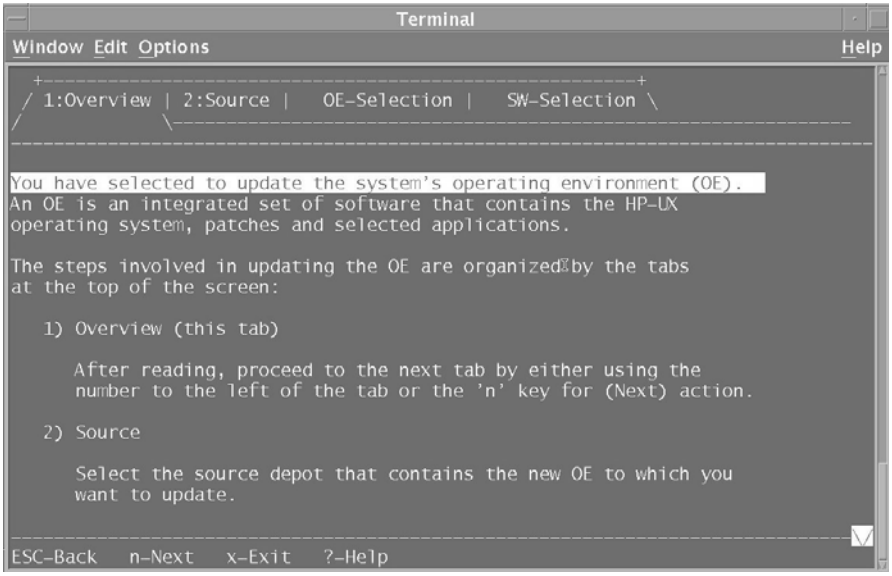
1. To start the TUI for an update session, type:

   ```
   update-ux -i -s /dvdrom
   ```

   The TUI is automatically invoked and the Update-UX Overview tab appears. If any screen other than the Overview tab appears, press **1** to display the Overview tab. This tab provides an overview of the update process. Follow the numbered tabs to update the OE.

   Use the navigation legend at the bottom of each screen to navigate and select options on this terminal interface.

**Figure 6-2: Overview Screen**

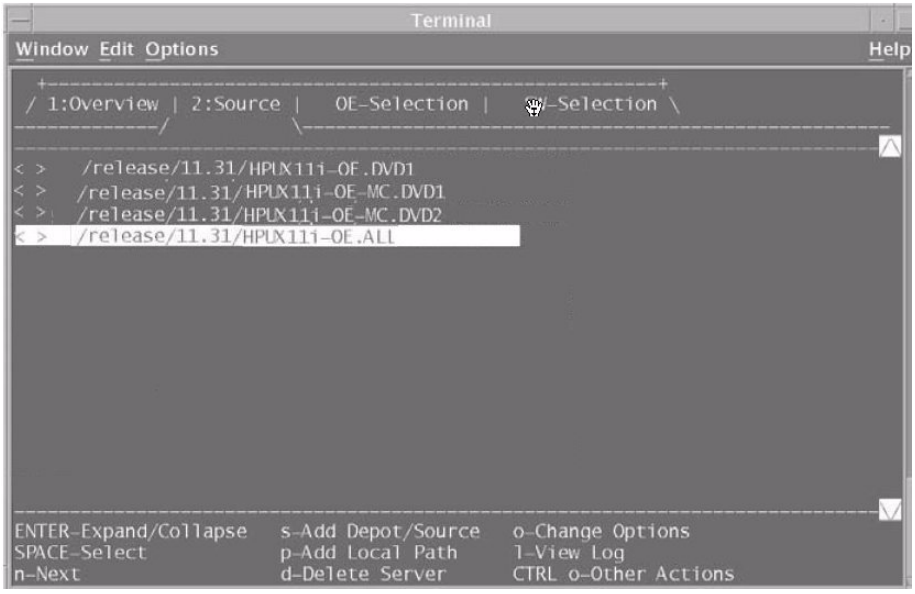



2. After reviewing the information on the Update-UX Overview tab, type **n** (next) to proceed to the Source Selection tab.

**Step 2: Select Source**

The Source Selection tab appears. The Source Selection tab displays a list of registered source depots on the local host system.

**Figure 6-3: Select Source Tab**




1. Specify the source depot that contains the new OE that you want to use to update your target system. The system automatically selects the local host and default depot path.

   You can expand any entry that is preceded by the + sign. This allows you to view the available depots on the server.

2. If the depot containing the software you want to install does not appear in the list, you can do one of the following:

   - Add another host system to the list of registered source depots, by typing **s** (**`Add Server/Depot`**) and then typing the name of the new source host; or
   - You can also remove a host system from the list of registered source depots, by typing **d** (**`Delete Server`**).

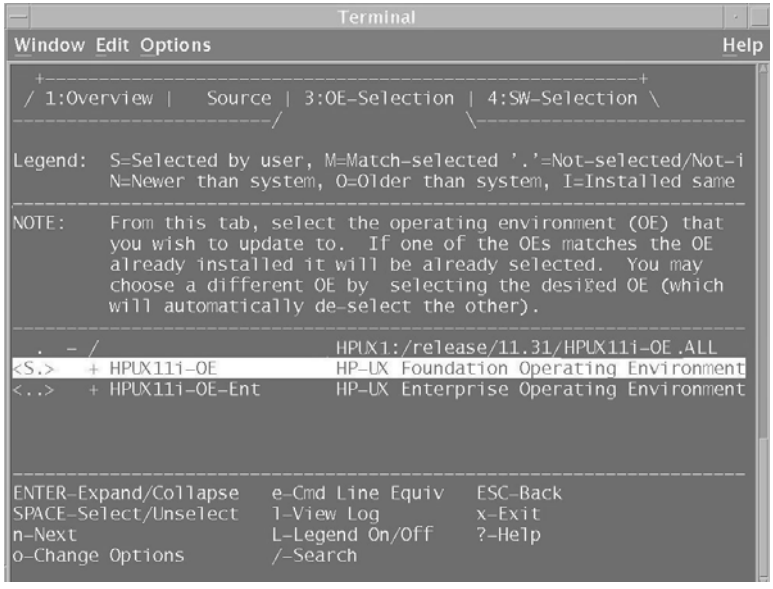
3. Press **Enter**. The system retrieves all the depots available for the host name specified and displays a list of registered depots on the source host.
4. Use the spacebar to select the depot containing the software you want to install.
5. Type **n** (next) to confirm your selection and proceed to the OE Selection tab. (The system displays the message "`Reading Data from Source`" before displaying the next tab.)

**Step 3: Select OE**

The OE Selection tab appears. An Operating Environment (OE) is an integrated set of software that contains the HP-UX operating system, and selected applications.

The OE Selection tab displays the list of OEs to which you can update. The OE that matches the one currently installed on your system is automatically selected. You may choose a different OE by selecting it (which will automatically deselect the other).

**Figure 6-4: OE Selection Tab**




1. Use this screen to select and review the contents of the OE you want to update. There are three categories in the OE that you can review: `optional`, `required`, and `recommended`. Highlight the category you would like to review and press **Enter** to expand and view its contents.

   On this tab you can review the software contents included within the OE. The software that matches what is currently installed on your system is automatically selected on the Software Selection tab.

**NOTE**

You *cannot* select or deselect any software on the **3:OE Selection** tab. This is a view-only tab. Use the **4:SW-Software Selection** tab to select and deselect software.

You can expand the list of OE software to display the following categories:

- *Required*: Software and administration tools needed to create a minimally bootable and maintainable system. Only drivers for basic hardware are included in this category. You may need to install additional drivers to use all hardware components. Software in this category *cannot* be deselected.
- *Recommended*: Software bundles that HP recommends you install because it fulfills software dependencies, if any exist. You can, however, manually de-select the bundles before you install or update your system.
- *Optional*: Software bundles that are not installed or updated by default.You must manually select these bundles before you install or update your system.

2. Press the Spacebar to select the OE you want to update; then select **n** (next) to confirm your selection and proceed to the Software Selection tab.

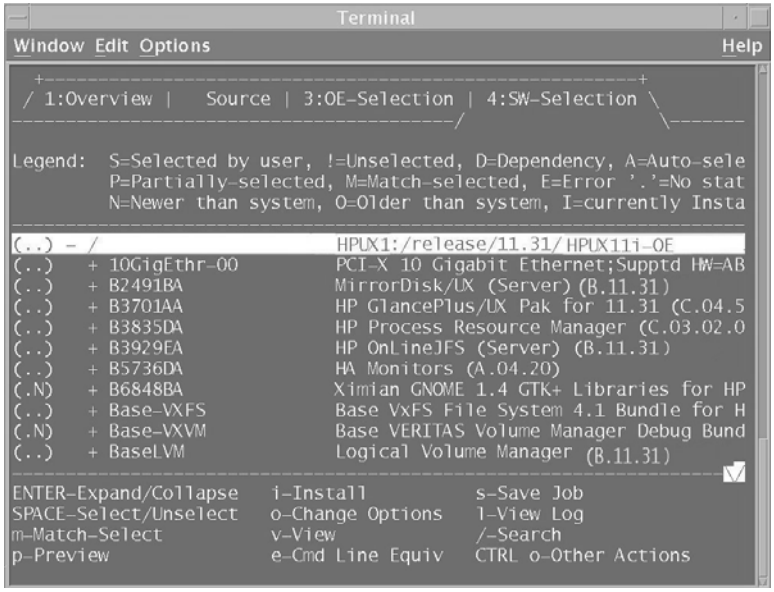
   The system displays the message: `Working...Loading *temporary* update tools that do not affect the running system and will be removed when the OE update is finished.`

**Step 4: Select Software**

The Software Selection tab appears. The Software Selection tab displays the software contents of the OE you selected on the OE Selection tab. This tab displays only the software that is compatible with the current system release. On this tab you can adjust the software contents you want to include within the OE. The software that matches what is currently installed on your system is automatically selected.

You can select optional software or deselect recommended software you do not want to update. Deselecting recommended software will deselect standalone software, network and storage drivers, and recommended software that is common to all operating environments.

**Figure 6-5: Software Selection Tab**




**CAUTION**

HP recommends that you do **not** deselect recommended software bundles or remove them from your system unless you know for certain that the software contained in these bundles is not required for your operating environment. If you deselect recommended software during the update, the old version of the software you deselected will remain on your system. The old version may or may not be compatible with the newly updated HP-UX 11i v3 operating system. In addition, software may have unstated dependencies. Deselecting software may prevent products with dependencies on the software you deselected from functioning correctly.

1. Use the spacebar to select or deselect software from the list.

   The flag `M` (Match) appears when software has been matched to software currently installed on your system. The flag `P` (Partial) may appear if you select only a component of a software object or if such components are automatically selected due to dependencies.

   The software products in each category have an associated flag that is displayed in the left-hand column and are described below:

   - `S` is selected by the user.
   - `!` is unselected by the user
   - `D` is a dependency
   - `A` is automatically selected
   - `P` is partially selected
   - `M` is selected because it matches software installed on your system
   - `E` an error has occurred when selecting this item
   - `.` has no status; is not selected or installed
   - `N` is newer than the software on the system
   - `O` is older than the software on the system
   - `I` is currently installed on the system.

2. After selecting the software you wish to install, type **p** (preview) to preview the actions that will occur for the update without modifying the system.

   The output window appears and begins displaying messages beginning with: `Analyzing software to be installed`.

**Step 5: Analysis (Preview)**

In this step, the update-ux TUI analyzes the software you have selected.

The Analysis window displays status information about the analysis process. If the preview shows problems these will be displayed in the Analysis window.

When the analysis is complete press **Enter** to return to the Software Selection tab and start the actual update process (see “Step 6: Update” on page 123).

**Figure 6-6 Analysis Dialog**

1. If you started a preview session, the preview stops after the analysis. Press **Enter** to return to the Software Selection tab.
2. After returning to the Software Selection tab, type **l** (log) to view the log file, which presents a view of detailed install information.
3. Review any errors, warnings, or notes. Warnings are simply informational. If there are any errors, they will need to be resolved before the update can continue.

**Step 6: Update** In this step, the system proceeds with the actual update. At the Software Selection tab type **i** (install) to start the update process. After the update has started, the system will typically execute a reboot.

**Step 7: Verify Update** After your system has completed its reboot, you will be prompted to change media when needed. Use the following steps to verify that the update completed successfully:

1. Verify that no errors were encountered before the update began by viewing the contents of the log file: `/var/adm/sw/update-ux.log`. You should see output similar to the following:

```
BEGIN update-ux
Command entered: update-ux -s
HPUX1:/release/11.31/HPUX11i-OE

NOTE:    Output is logged to '/var/adm/sw/update-ux.log'
* Obtaining some information from the source depot. cp
/usr/lbin/swagent /var/adm/sw/tmp/update-ux compress
/var/adm/sw/tmp/update-ux/swagent uncompress
/var/adm/sw/tmp/update-ux/swagent.Z chmod +x
/var/adm/sw/tmp/update-ux/swagent
* Copying an SD agent from the source depot
/usr/sbin/swagentd -k /usr/sbin/swagentd -r
/usr/sbin/swcopy -s
HPUX1:/release/11.31/HPUX11i-OE -x
logfile=/var/adm/sw/tmp/update-ux/swcopy.log -x
autoselect_dependencies=false -x
enforce_dependencies=false -x mount_all_filesystems=false
-x register_new_depot=false -x uncompress_files=true -x
reinstall=true SW-DIST.SD-AGENT @
/usr/sbin/swagentd -k /usr/sbin/swagentd -r rm -f
/var/adm/sw/tmp/update-ux/orig_swagent.log rm -f
/var/adm/sw/tmp/update-ux/tmp_swagent.log
/usr/sbin/swagentd -k
update-ux.log (15%)
```

2. Verify that all appropriate software was updated successfully by viewing the contents of the logfile: `/var/opt/swm/swm.log`.

   You may view the contents of the `swm.log` interactively by typing the following command:

   ```
   swm job -i
   ```

   The system displays a log screen that displays contents of the log file `/var/opt/swm/smd.log`.

**Figure 6-7 Log Screen**

This log screen provides multiple ways of viewing the information recorded in the log file. You can filter out the messages by verbosity levels, using the action keys at the bottom of the screen.

Table 6-3 lists the log files that are generated during an update:

**Table 6-3 Log Files Generated During Update**

| Log File | Description |
|---|---|
| /var/opt/swm/swm.log | This log file contains the output from the software selection, analysis and installation phases of the software update. In addition, this log file includes output from all control scripts that run during the update.<br>The swm.log file is the primary log file that you should reference for the results of the update process. |
| /var/adm/sw/update-ux.log | This log file contains the output from the update-ux script. The update-ux script ensures that the right tools are installed before performing the update. |
| /var/adm/sw/swagent.log | This log file contains the detailed output from the software installation, including control scripts that run during the update. Please note that the swm.log file is a superset of the information found in the swagent.log file. |
| /var/adm/sw/swagentd.log<br>/var/adm/sw/swconfig.log<br>/var/adm/sw/swinstall.log<br>/var/adm/sw/swmodify.log<br>/var/adm/sw/swreg.log<br>/var/adm/sw/swremove.log<br>/var/adm/sw/swverify.log | These are log files for individual commands that run during the update.<br>Success or failure and output from these commands is recorded in the swm.log. Unless directed by a message in another log file, there is no need to refer to these log files. |

### Updating to HP-UX 11i v3 Using the Command Line Interface

Use the following syntax to run the `update-ux` command:

**`update-ux -s source_location [-?] [-i] [-p] [-v] [-f selection_file] [-x option=value] [sw_spec...]`**

**Table 6-4 Update-UX Commands**

| Update-UX Command | Description |
|---|---|
| `-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.<br><br>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. |
| `-p` | Previews an update task by running the session through the analysis phase only. |
| `-v` | Turns on verbose output to `stdout`. |
| `-f selection_file` | Reads the list of software selections from *selection_file* instead of (or in addition to) the command line. This option enables you to select and update optional software or to deselect recommended software. |
| `-x option=value` | Specifies `-x` verbose options to be applied during the update. For a typical update, no `-x` options are required. For information on `-x` options, refer to the `swm`(1M) manpage or the *Software Distributor Administration Guide*. |

**Table 6-4 Update-UX Commands (Continued)**

| Update-UX Command | Description |
|---|---|
| *sw_spec* | Software selections support the same syntax as the `swinstall` command plus the syntax described in the selection syntax section below. The following syntax is supported for `sw_spec`:<br>`bundle[,`*version*`]product[.subproduct] [.fileset][,version]!selectionbundle]/ [%match] pattern-matching-expression`<br>where *version* can be:<br>`[,r <op> revision][,a <op> arch] [,v <op> vendor] [,c <op> category] [,q=qualifier][,l=location] [,fr <op> revision][,fa <op> arch]`<br>where *op* can be:<br>`=, ==, >=, <=, <, >, or !=`<br>The = (equals) relational operator lets you specify selections with the shell wildcard and pattern-matching-expressions:<br>`[ ], *, ?`<br>The syntax `!selection` causes that selection to be deselected even if it was listed on the command line as part of other selections. |

**NOTE** Make sure to read "Supported Update Paths to HP-UX 11i v3" on page 41 to ensure that you are updating your system from a supported update path.

### Adding and Removing Operating Environments From the Command Line

An Operating Environment (OE) represents a specific HP-UX release that can be installed on a system. The OE names include:

`HPUX11i-OE` HP-UX 11i v3 Foundation OE

`HPUX11i-OE-Ent` HP-UX 11i v3 Enterprise OE

`HPUX11i-OE-MC` HP-UX 11i v3 Mission Critical OE

`HPUX11i-TCOE` HP-UX 11i v3 Technical Computing OE

To update to HP-UX 11i v3 and include a specific HP-UX 11i v3 OE, you need to specify the OE name in the `update-ux` command. For example, to update to HP-UX 11i v3 and install the HP-UX 11i v3 Foundation OE, insert the HP-UX 11i v3 DVD in the local drive mounted at `/dvdrom`. As root, enter:

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

Make sure you install all *new* optional software included in the OE collection that you want at the same time that you do your update.

### Updating Optional Software From the Command Line

To update to HP-UX 11i v3 and specify additional optional software bundles on the command line, follow these steps:

**Step 1.** If you want to install additional optional software included with the HP-UX 11i v3 Foundation OE collection, enter:

```
/usr/sbin/update-ux -s /dvdrom HPUX11-OE
<optional_software_bundle_name>
```

**Step 2.** Complete any configuration for HP software explained in the *HP-UX 11i v3 Release Notes* available on the Instant Information DVD and at **http://docs.hp.com/en/oshpux11iv3.html**

# Post-Update Tasks

### Task 1: Configuring OE Applications

After updating to an HP-UX 11i v3 Operating Environment (OE), some OE products need post-installation configuration to make them functional. This need may be indicated by a message logged in `/var/opt/swm/swm.log`.

Refer to each product's installation instructions for details. The location of OE product documentation is listed in the *HP-UX 11i v3 Release Notes,* available on the Instant Information DVD and at the HP Technical Documentation Web site:

**`http://docs.hp.com`**

### Task 2: Migrating to the Agile Mass Storage Stack (Optional)

In HP-UX 11i v3, there are two types of DSFs for mass storage: legacy DSFs and persistent DSFs. Both can be used to access a given mass storage device independently and can coexist on a given system. The new mass storage stack for HP-UX 11i v3 is intended to supersede the existing mass storage stack. However, in HP-UX 11i v3 they can exist in parallel. Existing legacy DSFs will continue to work as before; they are completely backward compatible, and will not be affected by any persistent DSFs on the same server.

When you update from HP-UX 11i v2 to 11i v3, existing legacy DSFs are retained, and persistent DSFs will be created. Configuration files are not updated, so system devices will continue to use the existing legacy DSFs.

You may choose to migrate to the new agile mass storage stack or you can continue to use the legacy mass storage stack. If you want to use the new features of the agile mass storage stack and are not affected by existing limitations, you may want to migrate to the new mass storage stack.

For more information on the new mass storage stack and to migrate from the legacy view to the agile view refer to the white paper called, "*The Next Generation Mass Storage Stack: HP-UX 11i v3*" and the white paper called "*HP-UX 11i v3 Persistent DSF Migration Guide*" at:

**`http://docs.hp.com/`**

# The Next Step

Continue with the Chapter 7, “Installing HP Applications,” on page 131.

# 7 Installing HP Applications

This chapter describes how to install HP applications from the Applications DVD. 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 132
- "The Next Step" on page 135


**Time Estimate for This Chapter**: Approximately 1-2 hours per application.

# Installing HP-UX Applications

Your HP-UX 11i v3 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 or update the existing development tools and system management software on your system.

**TIP**

You can find the complete list of applications included in the HP-UX 11i v3 release on the HP Software Releases and Media site:

**http://www.hp.com/softwarereleases/releases-media2/index.html**

## Tips for Installing or Updating HP Applications

Here are some tips for installing or updating HP applications:

- The HP-UX Applications DVD has an ASCII file 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**

## Installing HP-UX Applications from the DVD

Before you begin, review Appendix A, “Known Problems and Troubleshooting,” on page 143 for any installation issues that apply to your system.

### Required Media

Have the HP-UX 11i v3 Applications DVD ready from the HP-UX 11i v3 media kit.

You must boot HP-UX 11i v3 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 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 v3 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 `/dvdrom` directory is used. If this directory does not exist, create it using the `mkdir /dvdrom` 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 `/dvdrom` directory:

```
mount /dev/dsk/c1t0d0 /dvdrom
```

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 `/dvdrom`:

```
swinstall -i -s /dvdrom
```

Refer to the *swinstall* (1M) manpage for details. The `swinstall` program presents an interface for selecting and installing software from the DVD.

**Step 5.** Unmount and eject the Applications DVD.

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

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

# The Next Step

Continue with Chapter 8, “Verifying System Install or Update,” on page 137.

# 8 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 v3.

### What You Will Find in This Chapter


- "Verifying the HP-UX Cold-Install or Update" on page 138
- "Backing Up the System" on page 140
- "The Next Step" on page 141


**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 and update 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 v3 was installed or updated successfully, use the Software Distributor commands `swlist` and `swverify`, as described in this section. In addition, you can view the results of your update in the log file `/var/opt/swm/swm.log`. Refer to “Step 6: Update” on page 123 for more information.

**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/en/oshpux11iv3.html**

## Task 1: Listing all Software Installed on Your System

**Step 1.** List the bundles and products installed on your system:

```
/usr/sbin/swlist -l bundle -l product> /tmp/software_list
```

**Step 2.** Check the list to see that it contains the bundles and products you wish to have installed on your system.

**Step 3.** For a cold install, you may want to compare the output of the `swlist` command above with the contents of the HP-UX 11i v3 Operating Environment DVD and the Applications DVD. To see the contents of a DVD, issue the following command:

```
/usr/sbin/swlist -l bundle -l product -s /dvdrom \
> /tmp/dvdcontent
```

## Task 2: Verifying the Installed Software

You can verify that all software was successfully installed on your system by typing the following command:

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

The message “Verification succeeded” should be displayed on the console at the end of the operation. Further messages from the verification process can be found in the log files: `/var/adm/sw/swverify.log` and `/var/adm/sw/swagent.log`

# 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.

For more information, see “Backing Up Your System” on page 72.

# The Next Step

Now that you have installed or updated your system and have all the HP applications that you need, you may want to configure additional hardware or file systems.

You can find many configuration tasks in *HP-UX System Administrator's Guide*. The guide is available at the HP Technical Documentation Web site:

**`http://docs.hp.com/en/oshpux11iv3.html`**

# A 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 144
- "Uninstalling HP-UX 11i v3" on page 148


**NOTE**

While the HP-UX 11i v3 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:

| | |
|---|---|
| `ERROR` | Indicates a serious problem, usually requiring action from you so that the installation can proceed. |
| `WARNING` | Indicates something out of the ordinary, but *not* fatal. The warning *may* require action from you. |
| `NOTE` | Indicates useful information you should take note of, but *not* fatal. The note *does not* require action from you. |

# Known Install and Update Problems

Table A-1 describes problems known to occur in the HP-UX 11i v3 release.

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

| Problem | Description/Action |
|---|---|
| **HP Service Control Manager (SCM) not supported on HP-UX 11i v3** | The HP Service Control Manager (HP SCM) is not supported on HP-UX 11i v3. If your system is running SCM, you must migrate to HP System Insight Manager (HP SIM) version 4.2 BEFORE updating to HP-UX 11iv3; otherwise the update may fail.<br>**What To Do**<br>Remove HP SCM before updating to HP-UX 11iv3. If you are updating your system to HP-UX 11i v3 and HP SCM is installed on your current system and you do not want to run it in the future, you must remove the HP SCM product before you update to HP-UX 11i v3.<br>Uninstall HP Servicecontrol Manager using the following command: `swremove -x enforce_dependencies=false ID`<br>where ID is the product or bundle ID as shown in the following example syntax:<br>`swremove -x enforce_dependencies=false B8339BA`<br>Remove the old product sub-directories by executing the following command: `rm -fr /opt/mx /etc/opt/mx`<br>You can also remove the database for Service Control Manager, mysql, by executing the following command: `swremove mysql`<br>You may also choose to migrate HP SCM version 3.0 to HP SIM version 4.2 before updating to HP-UX 11iv3. You must be running HP SCM version 3.0 to perform this update. If you are running an earlier version you will need to update HP SCM to version 3.0 before updating to HP SIM version 4.2.<br>For more information on migrating from HP SCM to HP SIM version 4.2 please see the *HP Systems Insight Manager 5.0 Installation and User Guide*. |

**Table A-1 Known Install and Update Problems (Continued)**

| Problem | Description/Action |
|---|---|
| **Secure Path not supported on HP-UX 11i v3** | Secure Path is not supported on HP-UX 11i v3. If your system is running Secure Path, upon update to HP-UX 11i v3, a migration script will execute and perform the following actions:<br>• Uninstall the HP StorageWorks Secure Path driver for Active-Passive disk arrays<br>• Uninstall the HP StorageWorks Secure Path driver for Active-Active disk arrays<br>• Map the pseudo DSFs provided to LUNs by Secure Path (for Active-Passive disk arrays) to their corresponding LUN WWN<br>• Map the virtual aliases provided to the LUNs by Secure Path 3.0F SP2 (for Active-Active disk arrays) to their corresponding HP-UX 11i v3 disk device special file<br>• Update the `/etc/fstab` with HP-UX 11i v3 disk device special file by replacing the virtual aliases provided by Secure Path 3.0F SP2 (Active-Active disk arrays), but the filesystems will not be automatically mounted<br>• Update all the Secure Path virtual aliases with the new style device special files<br>If the virtual aliases provided by Secure Path 3.0F SP2 (Active-Active disk arrays) are used in the `/etc/fstab` file, the entries are automatically replaced with the corresponding new style dsfs. Only active-active disk arrays supported by the version of Secure Path (active/active) installed on the system will be migrated. For example, if Secure Path for HP-UX 3.0F is installed, EVA-GL (active/active) LUNs cannot be migrated because EVA-GL is supported only from Secure Path for HP-UX 3.0F SP1.<br>**What To Do**<br>After the cold-install or update to HP-UX 11i v3 is complete, manually mount the file systems. For more information, see the white paper called, *Migrating from HP StorageWorks Secure Path for Active-Active Disk Arrays to Native Multipathing in HP-UX 11i v3* available at:<br>**`http://docs.hp.com`** |

**Table A-1 Known Install and Update Problems (Continued)**

| Problem | Description/Action |
|---|---|
| **NIS+ not supported on HP-UX 11i v3** | The NIS+ product is not supported on HP-UX 11iv3. If a system is running NIS+, you must migrate to LDAP BEFORE updating to HP-UX 11iv3; otherwise the update may fail.<br>The NIS+ to LDAP-UX migration tool uses NIS+ commands and utilities for migration. Since the NIS+ commands and utilities will not be available on HP-UX 11iv3, the migration tools will not run on a system that has been updated to HP-UX 11iv3.<br>**What To Do**<br>Migrate NIS+ servers and clients to LDAP before updating to HP-UX 11iv3. |
| **Third-Party Product Installation Scripts Fail to Launch** | For some third-party product installation scripts, `dtksh` is required for scripts to launch license-acceptance dialogs for Mozilla.<br>**What To Do**<br>• Either install CDE to enable the script to run as expected, or execute `/opt/mozilla/mozilla` and manually accept the Mozilla license. |
| **Warning Message When Performing swlist or swverify** | If you perform a `swlist or swverify` on the HP-UX 11i v3 software depots, you may encounter the following warning message:<br>`WARNING: [20002] Ignoring duplicate information for the keyword "dynamic_module" at line.`<br>**What To Do**<br>You can safely ignore this message. |
| **Updating to HP-UX 11i v3 from HP-UX 11iv2 with VxFS 5.0** | If VxFS 5.0 has been used to create file systems with disk layout version 7, those disks will not be readable by the VxFS 4.1 for HP-UX 11iv3.<br>**What To Do**<br>Make sure you copy data from your DLV 7 file systems onto file systems created at layout version 5 or 6 before updating to HP-UX 11iv3. |

**Table A-1 Known Install and Update Problems (Continued)**

| Problem | Description/Action |
|---|---|
| **Updating to HP-UX 11i v3 from HP-UX 11iv2 with VxFS 4.1** | If you have created any VxFS file system with disk layout version 2 or version 3, these file systems cannot be mounted under VxFS 4.1 on HP-UX 11i v3.<br>**What To Do**<br>Use the `vxfsconvert` command to upgrade the disk layout to version 4 before upgrading to VxFS 4.1 on HP-UX 11i Version3. See the *Veritas 4.1 Installation Guide* for more information on VxFS 4.1. |
| **Third-Party Storage** | If third-party (non-HP) storage will be connected to your HP-UX 11i v3 system, HP recommends that you contact your third-party storage vendor to determine the compatibility of the storage with HP-UX 11i v3. Check with your third-party storage vendor for information about any pre-requisites and limitations with the storage on HP-UX 11i v3. |

# Uninstalling HP-UX 11i v3

If you cannot resolve problems after installing HP-UX 11i v3, then you may want to un-install it. The process depends upon the install process you followed:

- If you previously created an operating system recovery image with either `make_net_recovery` or `make_tape_recovery` 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 operating system recovery image:

  — 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.

# B Controlling Memory Utilization of VxFS 4.1 on HP-UX 11i v3

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 150
- "Controlling the inode Cache" on page 151
- "Controlling the Buffer Cache" on page 152
- "Conclusion" on page 153

# Introduction

VxFS 4.1 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 4.1 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 (having typically 1 GB/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 a minimum value as specified below based on the memory configuration.

| Physical Memory or Kernel Available Memory | VxFS inode Cache (number of inodes) |
|---|---|
| 1 GB | 16384 |
| 2 GB | 32768 |
| 3 GB | 65536 |
| > 3 GB | 131072 |

**NOTE** Default values are set at boot time and the values are not automatically adjusted when memory is added, removed or migrated at run time.

# Controlling the Buffer Cache

VxFS 4.1 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 1 GB/CPU) 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 6 MB.

# 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.

# C HP-UX 11i v3 Software Bundles

This appendix describes the software bundles included in the HP-UX 11i v3 media contents.

HP-UX 11i v3 has a new OE structure that provides more flexibility in managing the products you wish to install and update on your system. The new OE structure makes it easier and more reliable to incrementally update your system with OE software components. HP-UX 11i v3 contains three types of OE software components:

- *Required*: Software and administration tools needed to create a minimally bootable and maintainable system. Only drivers for basic hardware are included in this category. You may need to install additional drivers to use all hardware components. Software in this category *cannot* be deselected.
- *Recommended*: Software bundles that HP recommends you install because it fulfills software dependencies, if any exist. You can, however, manually de-select the bundles before you install or update your system.
- *Optional*: Software bundles that are not installed or updated by default.You must manually select these bundles before you install or update your system.

### What You Will Find in This Appendix


- "Required Software" on page 156
- "Recommended Software" on page 158
- "Optional Software" on page 164

# Required Software

The software listed in Table C-1 is required and always installed with the HP-UX 11i v3 operating system.

**Table C-1 Required Software**

| Description | Bundle Name |
|---|---|
| HP-UX 11i v3 operating system software. This is a core bundle. | HPUXMinRuntime |
| Contains user tools and utilities used for administering HP-UX, including:<br>• nPartition Provider (nParProvider)<br>• HP-UX WBEM SCSI Provider (SCSIProvider)<br>• Disks and File Systems (FileSystems)<br>• HP-UX Accounts for Users and Groups (UserGroups)<br>• HP-UX Security Attributes Configuration (SecConfig)<br>• Common System Management Enablers (SysMgmtBASE)<br>• Network Configuration (NetworkConf)<br>• Online Provider (OLOSProvider)<br>• OPENSSL (OpenSSL)<br>• HP-UX Peripheral Device Tool (PeriphDev)<br>• Judy Libraries (Judy)<br>• HP-UX Update-UX (UPDATE-UX)<br>• HP WBEM Services for HP-UX (WBEMSvcs)<br>• HP-UX Kernel Configuration (Casey)<br>• Event Monitoring Service (EventMonitoring)<br>• HP-UX WBEM LAN Provider for Ethernet Interfaces (WBEMP-LAN-00)<br>• Instant Capacity (iCAP) for HP 9000 and HP Integrity Servers (B9073BA) | SysMgmtMin |

**Table C-1 Required Software (Continued)**

| Description | Bundle Name |
|---|---|
| HP-UX Software Management Tools<br>• HP-UX Software Distributor (SW-DIST)<br>• Minimal HP-UX Software Assistant Functionality (SwaMin) | SwMgmtMin |
| Base Logical Volume Manager | BaseLVM |
| HP-UX Mail Server | HPUX-MailServer |
| nPartition Provider commands | NParCmds |
| HP-UX 11i v3 Online Diagnostics including System Fault Management (SFM) | OnlineDiag and SysFaultMgmt |
| Obsolescence bundle<br>**NOTE:** The Obsolescence product is required during an OE update to remove products that are obsolete or unsupported in HP-UX 11i v3. The Obsolescence product is automatically removed from the system at the end of the OE update process. The Obsolescence product is not needed and not installed during a cold install. | OBSOLESCENCE |
| ONC/NFS; Network-File System, Information Services, Utilities | ONCplus |
| Gbe PCI 100BT | GigEther-00 |
| Dual Gbe SW | GigEther-01 |
| Dual Port Ethernet adapter | IEther-00 |
| SCSI U320 | scsiU320-00 |
| USB Driver | USB-00 |
| Common Driver Bundle | CommonIO |
| Serial SCSI | SerialSCSI-00 |

# Recommended Software

The software bundles listed in Table C-2 are installed or updated by default. You can deselect any of these bundles before you install or update your system; however make sure that any bundle you select or deselect does not have a dependency. For example, you may deselect a software bundle that is necessary for another program to work correctly.

**CAUTION**

HP recommends that you do **not** deselect recommended software bundles or remove them from your system unless you know for certain that the software contained in these bundles is not required for your operating environment.

If you deselect recommended software during the update, the old version of the software you deselected will remain on your system. The old version may or may not be compatible with the newly updated HP-UX 11i v3 operating system. In addition, software may have unstated dependencies. Deselecting software may prevent products with dependencies on the software you deslected from functioning correctly.

**Table C-2 Recommended Software**

| Description | Bundle Name |
|---|---|
| Contains operating system software that is required by most HP-UX users.<br>**NOTE**: Make sure you do not de-select this bundle or remove it from your system unless you know for certain that the software contained in this bundle is not required for your operating environment. | `HPUXEssential` |
| Openview SNMP Agent | `OVsnmpAgent` |
| Contains internationalization support for many languages. | `HPUXLocales` |

**Table C-2 Recommended Software (Continued)**

| Description | Bundle Name |
|---|---|
| HP-UX message catalogs that contain localized language message catalogs for functionality in the HPUXMinRuntime and HPUXEssentials bundles. | HPUXMsgs-Jpn<br>HPUXMsgs-Fre<br>HPUXMsgs-Ger<br>HPUXMsgs-Ita<br>HPUXMsgs-Kor<br>HPUXMsgs-SCh<br>HPUXMsgs-Spa<br>HPUXMsgs-Swe<br>HPUXMsgs-TCh |
| HP-UX manual pages that contain language-specific manpages for functionality in the HPUXMinRuntime and HPUXEssentials bundles. | HPUXMan-Eng<br>HPUXMan-Jpn |
| Contains language-specific input methods, printer and terminal support, fonts and utilities. | HPUXExtns-Jpn<br>HPUXExtns-Kor<br>HPUXExtns-SCh<br>HPUXExtns-TCh |
| Base VXFS 4.1 | Base-VXFS |
| Distributed Systems Administration Utilities | DSAUtilities |
| File System Provider | FileSysProvider |
| Trial Global Workload Manager (gWLM) Agent | T2743AA |
| GTK+ Libraries | B6848BA |
| HP-UX Bastille Security Tool | HPUXBastille |
| HP CIFS Client | CIFS-CLIENT |

**Table C-2 Recommended Software (Continued)**

| Description | Bundle Name |
|---|---|
| HP CIFS Server | CIFS-SERVER |
| HP-UX IPFilter | IPFilter |
| HP FTP Server | HPUX-FTPServer |
| HPUX DHCPv4 Server<br>This is a core bundle. | HPUX-DHCPv4 |
| HPUX DHCPv6 Server<br>This is a core bundle. | HPUX-DHCPv6 |
| HPUX NTP Server<br>This is a core bundle. | HPUX-NTP |
| HPUX IPv6 routing Server<br>This is a core bundle. | HPUX-RAMD |
| HPUX TCPWrapper daemon<br>This is a core bundle. | HPUX-TCPWRAP |
| HP Name Server | HPUX-NameServer |
| HP-UX Secure Shell | SecureShell |
| HP-UX WBEM Fibre Channel Provider | FCProvider |
| HP-UX Gated and Mrouted Server<br>This is a core bundle. | HPUXGatedMrouted |
| Install-Time Security Infrastructure | Sec00Tools |
| LDAP-UX | LDAPUX |
| Mozilla Application Suite | MOZILLA |
| Mozilla Source Distribution | MOZILLAsrc |
| PAM Kerberos | PAMKerberos |
| Partition Manager | ParMgr |

**Table C-2 Recommended Software (Continued)**

| Description | Bundle Name |
|---|---|
| Perl Programming Language | perl |
| PRM Libraries<br>(**Not available on the TCOE**) | PRMLibraries |
| PRM Kernel Software<br>(**Not available on the TCOE**) | PRMKernelSW |
| Security Patch Check | SecPatchCk |
| System Management Homepage | SysMgmtWeb |
| Utilization Provider | UtilProvider |
| VMGuest<br>(HP Integrity Servers Only) | VMGuestLib |
| HP Integrity Virtual Machines Provider<br>(HP Integrity Servers Only) | VMProvider |
| Veritas Volume Manager | Base-VXVM |
| vPartition Provider | vParProvider |
| **HP-UX Web Server Suite** | |
| HP-UX Apache-based Web Server | hpuxwsApache |
| HP-UX Tomcat-based Servlet Engine | hpuxwsTomcat |
| HP-UX Webmin-based Admin | hpuxwsWebmin |
| HP-UX XML Web Server Tools | hpuxwsXml |

**Table C-2 Recommended Software (Continued)**

| Description | Bundle Name |
|---|---|
| **Java™ Bundles** | |
| Runtime Environment (v1.5) for Java | Java15JRE |
| Java Runtime Environment Add-On (v1.5) | Java15JREadd |
| Java Development Kit (v1.5) | Java15JDK |
| Java Development Kit for HP-UX Add-On (v1.5) | Java15JDKadd |
| Runtime Environment (v1.4) for Java | T1457AA |
| Java Runtime Environment for HP-UX Add-On | T1457AAaddon |
| Software Development Kit/Runtime Environment (v1.4) for the Java Platform | T1456AA |
| Java SDK for HP-UX Add-On | T1456AAaddon |
| Java 2 JPI (v1.4) | T1458AA |
| **Drivers** | |
| RAID SA | RAID-01 |
| XL2 PCI | FibrChanl-00 |
| FCD SW | FibrChanl-01 |
| **MCOE Only** | |
| Enterprise Cluster Master (ECM) Toolkit | T1909BA |
| HP Serviceguard | T1905CA |
| HP Serviceguard NFS Toolkit | B5140BA |
| Workload Manager | B8843CA |
| Workload Manager Toolkits | WLMToolkits |

**Table C-2 Recommended Software (Continued)**

| Description | Bundle Name |
|---|---|
| **EOE and MCOE Only** | |
| GlancePlus Pak | B3701AA |
| High Availability (HA) Monitors | B5736DA |
| MirrorDisk/UX LT | B2491BA |
| OnlineJFS 4.1 | B3929EA |
| Process Resource Manager | B3835DA |
| **TCOE Only** | |
| 3D Graphics Development Kit (DK) and Runtime Environment (RTE) for OpenGL | Graphics |
| HP MLIB Mathematical Software Library | B6061AA |
| HP Message Passing Interface (MPI) | B6060BA |
| Technical System Configuration | TechSysConf |

# Optional Software

The bundles listed in Table C-3 are *not* installed or updated by default. You must select the desired optional software bundles prior to installing or updating your system.

**Table C-3 Optional Software**

| Description | Bundle Name |
|---|---|
| Common Desktop Environment (CDE) bundle (xxx is language variable).<br>**NOTE:** CDE is an optional product in HP-UX 11i v3. If you require it, you must explicitly select the CDE bundle (`CDE-XXX`). This applies if you need `dtterm`, which is located in CDE. For some localization situations, `dtterm` is required, therefore CDE must be selected. | `CDE-xxx` |
| HP-UX Host Intrusion Detection System<br>(**Not available on the TCOE**) | `HPUX-HIDS` |
| HP Systems Insight Manager (HPSIM) | `HPSIM-HP-UX` |
| HP-UX Installation Utilities (Ignite-UX) | `IGNITE` |
| HP-UX IPsec | `IPsec` |
| HP-UX Internet Service *This is a core bundle*. | `HPUX-SLP` |
| Java Out-of-box Utility | `JavaOOB` |
| MobileIPv6 HA/CN | `HPUXMOBILEIP` |
| Netscape Directory Server Version 7 | `NSDirSvr7` |
| Pay Per Use | `T2351AA` |
| Software Package Builder | `SwPkgBuilder` |
| Security Level 10 | `Sec10Host` |
| Security Level 20 | `Sec20MngDMZ` |
| Security Level 30 | `Sec30DMZ` |

**Table C-3 Optional Software (Continued)**

| Description | Bundle Name |
|---|---|
| **Drivers** | |
| 10GigEthr | 10GigEther-00 |
| HyperFabric | HyprFabrc-00 |
| InfiBand | IB4X-00 |
| PCIMux | PCIMUX-00 |
| PCIMux | TERMIO-00 |

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