

# **HP-UX 11i Version 3 Release Notes**

## **HP 9000 and HP Integrity Servers**



**Manufacturing Part Number: 5991-6469**

**February 2007**

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### Acknowledgements

This product includes software developed by the Apache Software Foundation. This documentation is based on information from the Apache Software Foundation (<http://www.apache.org>).

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org>).

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

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

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

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## Publication History

This document is part one of a series. Each document in the series describes what is new, changed, deprecated, or obsoleted since the previous release of HP-UX 11i v3 (or, in the case of the initial release, since the September release of HP-UX 11i v1 and the June 2006 release of HP-UX 11i v2).

For the most recent documents in this series, as well as the most recent version of this document, see the HP-UX 11i v3 documentation at <http://docs.hp.com/en/oshpux11iv3.html>. Documents in this series are also available on the Instant Information media.

To ensure that you receive any new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

### Current Document in This Series

- *HP-UX 11i Version 3 Release Notes*  
December 2006, Edition 1, MPN 5991-6469

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#### NOTE

Revisions to this document are contained in the *HP-UX 11i v3 Release Notes Errata* (MPN 5991-7585), located at <http://docs.hp.com/en/oshpux11iv3.html> (navigate to **Release Notes**).

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Please direct comments regarding this guide to:

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HP-UX Learning Products  
3404 East Harmony Road  
Fort Collins, Colorado 80528-9599

Or, use the form at the following Web site to send us feedback:

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

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## Typographic Conventions

We use the following typographical conventions.

<i>audit</i> (5)	An HP-UX manpage. <i>audit</i> is the name and <i>5</i> is the section in the <i>HP-UX Reference</i> . On the Web and on the Instant Information media, it may be a hot link to the manpage itself. From the HP-UX command line, enter “man audit” or “man 5 audit” to view the manpage. See <i>man</i> (1).
<i>Book Title</i>	The title of a book. On the Web and on the Instant Information media, it may be a hot link to the book itself.
<i>Emphasis</i>	Text that is emphasized.
<b>Emphasis</b>	Text that is strongly emphasized.
ComputerOut	Text displayed by the computer.
Command	A command name or qualified command phrase.
Computer	Computer font indicates literal items displayed by the computer. For example: file not found
Filename	Text that shows a filename and/or filepath.
<b>User Input</b>	Commands and other text that you type.
<i>Variable</i>	The name of a variable that you may replace in a command or function or information in a display that represents several possible values.
[ ]	The contents are optional in formats and command descriptions.
{ }	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.

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**What is in This Chapter?**

This chapter will help you use these release notes effectively. The following topics are covered in this overview:

- What is the Purpose of the HP-UX 11i Version 3 Release Notes? (see page 12)
- Where Should I Begin? (see page 13)
  - What is in the Remaining Chapters? (see page 13)
- Related Information (see page 15)
  - Other Sources of Information about This Release (see page 15)
  - Locating Release Notes for Previous Versions of HP-UX (see page 16)

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**NOTE**

Revisions to this document are contained in the *HP-UX 11i v3 Release Notes Errata*, located at <http://docs.hp.com/en/oshpux11iv3.html> (navigate to **Release Notes**).

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## What is the Purpose of the HP-UX 11i Version 3 Release Notes?

The *HP-UX 11i Version 3 Release Notes* describes what is new, has changed, or has been deprecated or obsoleted in HP-UX 11i v3 since the following two releases:

- HP-UX 11i v1 September 2005 Operating Environment Update Release
- HP-UX 11i v2 June 2006 Operating Environment Update Release

The *HP-UX 11i Version 3 Release Notes* addresses two sets of customers: those who are migrating from the HP-UX 11i v1 September 2005 release; and those are migrating from the HP-UX 11i v2 June 2006 release.

These release notes are organized accordingly. In Chapter 3, “What is New at a Glance,” for instance, you will find one set of change-summaries just for customers migrating from HP-UX 11i v1, and you will find another set of change-summaries just for customers migrating from HP-UX 11i v2.

In the remainder of the book, which is organized by product or feature, you will find that each product or feature has documented its changes from two perspectives: from HP-UX 11i v1-to-HP-UX 11i v3 and from HP-UX 11i v2-to-HP-UX 11i v3.

As with other HP-UX release notes, the *HP-UX 11i Version 3 Release Notes* does not completely document all the features of this release. Instead, it contains high-level information and pointers to more detailed product-specific documentation. Where appropriate, it also notes changes in the support of products.

These release notes generally apply only to features that are delivered on the HP-UX 11i v3 Operating Environments (OE) media and, where specified, the Software Pack (SPK) media.

Information about known problems, defect fixes, and work-arounds are not normally documented in these release notes. Instead, you are provided with pointers to the product’s own documentation where you can find such information. Installation-related known problems can also be found in the *HP-UX 11i Version 3 Installation and Update Guide* and *HP-UX 11i v3 Read Before Installing or Updating*, available on the Instant Information DVD and on the Web at

<http://docs.hp.com/en/oshpux11iv3.html>

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### NOTE

Revisions to this document are contained in the *HP-UX 11i v3 Release Notes Errata*, located at <http://docs.hp.com/en/oshpux11iv3.html> (navigate to **Release Notes**).

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## Where Should I Begin?

This book is organized in such a way that you need only read Chapter 3, “What is New at a Glance,” on page 37 for a quick overview of what is new, has changed, and has been deprecated or obsoleted in the HP-UX 11i v3 release.

Chapter 3 contains two sets of summaries: one for customers migrating from HP-UX 11i v1 and one for customers migrating from HP-UX 11i v2. Choose the set that is most appropriate to your own situation.

Each summary in the set contains a very high-level sampling of the changes for a single product or feature. If you wish to learn more about the changes to the product or feature, follow the cross-reference to the section in the remainder in the book where more details are provided.

Each product/feature section in the remainder of the document is divided into the following subsections:

- Description of the Product/Feature
- Summary of Change
  - What’s New for Customers Migrating from HP-UX 11i v1 September 2005?
  - What’s New for Customers of HP-UX 11i v2 June 2006?
- Impact
- Compatibility
- Performance
- Documentation
- Obsolescence

## What is in the Remaining Chapters?

The remaining chapters of these release notes are as follows:

- Chapter 2, “Introduction to HP-UX 11i Version 3,” on page 19, provides an overview of the Operating Environments, along with information compatibility and compatibility issues.
- Chapter 3, “What is New at a Glance,” on page 37, furnishes a quick overview of what is new, has changed, or has been deprecated or obsoleted in this release.
- Chapter 4, “Hardware-Specific Information,” on page 73, presents information regarding supported systems, networking and mass storage cards and drivers, as well as other information that is hardware-specific.
- Chapter 5, “General System Administration,” on page 115, includes information of particular interest to system administrators.
- Chapter 6, “Disk and File Management,” on page 199, presents information regarding directory, file system, and disk management.

- Chapter 7, “Internet and Networking,” on page 237, covers changes to networking functionality and Internet services.
- Chapter 8, “Security,” on page 279, covers changes and enhancements to security services.
- Chapter 9, “Commands and System Calls,” on page 307, includes information about new and changed commands and system calls.
- Chapter 10, “Libraries and Programming,” on page 349, provides information of particular interest to programmers, including changes to compilers, editors, and libraries.
- Chapter 11, “Internationalization,” on page 383, presents information about text fonts and converters relating to various international languages.
- Chapter 12, “Other Functionality,” on page 407, includes additional applications or functionality in the Operating Environments.

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## Related Information

HP offers information on a wide variety of subjects. The following Web sites may be of interest.

- HP Software Depot:  
<http://hp.com/go/softwaredepot>
- IT Resource Center (ITRC):  
<http://itrc.hp.com>
- Dev Resource Central:  
<http://devresource.hp.com>
- Developer & Solution Partner Program (DSPP):  
<http://www.hp.com/dspp>
- HP Software Releases and Media:  
<http://www.hp.com/software/releases/releases-media2/index.html>
- HP Servers:  
<http://hp.com/go/servers>
- HP Workstations:  
<http://hp.com/go/workstations>
- Enterprise Servers, Workstations, and Systems Hardware Documentation:  
<http://docs.hp.com/hpux/hw/>

## Other Sources of Information about This Release

In addition to these release notes, many other sources of information related to the HP-UX 11i v3 release are available on the Web at

<http://docs.hp.com/en/oshpux11iv3.html>

Of particular interest at the above Web site are the following documents:

- *HP-UX 11i Version 3 Installation and Update Guide*
- *HP-UX 11i v3 Read Before Installing or Updating*
- *The HP-UX System Administrator's Guide*

Beginning with HP-UX 11i v3, a new multi-volume set of manuals, collectively known as *The HP-UX System Administrator's Guide*, replaces *Managing Systems and Workgroups* as the primary source of information on HP-UX system administration tasks and concepts. *The HP-UX System Administrator's Guide* covers an expanded set of topics, logically organized to guide you to the correct volume with minimal searching. While some material in *The HP-UX System Administrator's Guide* may apply to previous releases of HP-UX 11i, the new set focuses on HP-UX 11i v3.

Other sources of information include the following:

- **HP Documentation Web Site**  
HP provides a Web site where the latest HP-UX documentation and updates are available:  
<http://www.docs.hp.com/>
- **HP-UX 11i v2 Instant Information Media**  
The Instant Information media provides HP-UX documentation on DVD. With this DVD, you can view documentation supporting the release before you install the software. The Instant Information DVD provides improved online presentation, print quality, and search capabilities.
- **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 under the title HP-UX Reference, through the use of the `man` command, and on the Web at  
[http://www.docs.hp.com/en/hpuxman\\_pages.html](http://www.docs.hp.com/en/hpuxman_pages.html)
- **README Documents**  
README (or *Read Before Installing*) documents are media booklets that contain information about the installation process that may not appear in the *HP-UX 11i Version 3 Installation and Update Guide*. Any product contained in the release may have a README document, so several README documents may be included. The README document specific to HP-UX 11i v3 is included with your media kit.
- **White Papers on HP-UX**  
You can locate a collection of white papers on various topics related to the HP-UX 11i v3 release at  
[www.hp.com/go/hpux11iv3resources](http://www.hp.com/go/hpux11iv3resources)  
White papers on various topics related to HP-UX can also be found at the HP Documentation Web site at  
<http://www.docs.hp.com/>

## Locating Release Notes for Previous Versions of HP-UX

Release notes for previous versions of HP-UX can be found at the following Web sites:

- **HP-UX 11.0:**  
<http://www.docs.hp.com/en/oshpux11.0.html>
- **HP-UX 11i v1.5:**  
<http://docs.hp.com/en/hpuxos11iv1.5.html>
- **HP-UX 11i v1.6:**  
<http://www.docs.hp.com/en/oshpux11iv1.6.html>
- **HP-UX 11i v1:**  
<http://www.docs.hp.com/en/oshpux11i.html>



- HP-UX 11i v2:  
<http://www.docs.hp.com/en/oshpux11iv2.html>



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**What is in This Chapter?**

This chapter provides an introduction to HP-UX 11i v3 and the Operating Environments, along with information about compatibility and compatibility issues.

- Welcome to HP-UX 11i Version 3 (see page 20)
- HP-UX 11i Release Names and Release Identifiers (see page 21)
- New HP-UX 11i v3 Operating Environment Structure (see page 22)
  - HP-UX 11i v3 Software Bundles (see page 22)
- HP-UX 11i v3 Operating Environments (see page 23)
  - HP-UX 11i v3 Foundation Operating Environment (see page 23)
  - HP-UX 11i v3 Enterprise Operating Environment (see page 26)
  - HP-UX 11i v3 Mission Critical Operating Environment (see page 27)
  - HP-UX 11i v3 Technical Computing Operating Environment (see page 28)
- HP-UX 11i Compatibility Between HP-UX Releases Across Hardware Platforms (see page 29)
- Compatibility Issues or Exceptions in the Initial Release of HP-UX 11i v3 (see page 34)

## **Welcome to HP-UX 11i Version 3**

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.

Some key highlights of HP-UX 11i v3 include: advancements in performance, integrated multi-pathing, new security and availability offerings which provide increased resiliency, layered security and in-depth protection, Hyper-Threading (HT) Technology support using Dynamic LCPU, and multi-OS management across HP-UX and other HP supported OS's. HP-UX 11i and Virtual Server Environment (VSE) solutions accelerate deployment times.

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## HP-UX 11i Release Names and Release Identifiers

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. The following table shows the releases available for HP-UX 11i:

**Table 2-1**      **HP-UX 11i Releases**

Release Name	Release Identifier	Supported Processor Architecture
HP-UX 11i v1	B.11.11	PA-RISC
HP-UX 11i v1.5	B.11.20	Intel® Itanium®
HP-UX 11i v1.6	B.11.22	Intel® Itanium®
HP-UX 11i v2	B.11.23	Intel® Itanium® PA-RISC <sup>a</sup>
HP-UX 11i v3	B.11.31	Intel® Itanium® PA-RISC

a. PA-RISC is supported on HP-UX 11i v2 starting with the September 2004 release.

## New HP-UX 11i v3 Operating Environment Structure

HP-UX 11i v3 has a new Operating Environment (OE) structure that provides more flexibility in managing the products you wish to install and update on your system. The new 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.

For more information about installation with this new OE structure, see the *HP-UX 11i Version 3 Installation and Update Guide*, available at <http://docs.hp.com/en/oshpux11iv3.html>.

### HP-UX 11i v3 Software Bundles

HP-UX 11i v3 contains three types of OE software components:

- *Required:* Software and network driver bundles that are required and is always installed with the operating system. Software in this category cannot be deselected.
- *Recommended:* Software bundles that are recommended and should be installed because it fulfills the required software dependencies, if any exist. You can manually de-select the bundles before you install or update 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.

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 is not required for your operating environment.

For a detailed list of the required, recommended, and optional software bundles, see the *HP-UX 11i Version 3 Installation and Update Guide*, available at <http://docs.hp.com/en/oshpux11iv3.html>.

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## HP-UX 11i v3 Operating Environments

### Overview

Operating Environments (OEs) are tested and integrated application bundles designed to work with the operating system and provide the functionality needed for your system's purpose. The following lists the currently available HP-UX 11i v3 OEs:

- **HP-UX 11i v3 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 for HP-UX, and Mozilla Application Suite. This OE is bundled as `HPUX11i-OE`. For more details, see “HP-UX 11i v3 Foundation Operating Environment” on page 23.
- **HP-UX 11i v3 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`. For more details, see “HP-UX 11i v3 Enterprise Operating Environment” on page 26.
- **HP-UX 11i v3 Mission Critical OE (MCOE)** — Designed for the large, powerful back-end application servers and database servers that access customer files and handle transaction processing, this OE contains the Enterprise OE bundles, plus applications such as HP Serviceguard and Workload Manager to enable a mission-critical server. This OE is bundled as `HPUX11i-OE-MC`. For more details, see “HP-UX 11i v3 Mission Critical Operating Environment” on page 27.
- **HP-UX 11i v3 Technical Computing OE (TCOE)** — This OE contains extensive graphics applications and Math Libraries. This OE is bundled as `HPUX11i-TCOE`. For more details, see “HP-UX 11i v3 Technical Computing Operating Environment” on page 28.

### HP-UX 11i v3 Foundation Operating Environment

The HP-UX 11i v3 Foundation Operating Environment is the standard OE from which the Enterprise OE and Mission Critical OE have been derived by adding appropriate applications. The HP-UX 11i v3 Foundation OE includes the Base 64-bit HP-UX operating system, plus the following features.

For a description of the bundles that are in the Base OS, see the *HP-UX 11i Version 3 Installation and Update Guide*, available at <http://docs.hp.com/en/oshpux11iv3.html>.

For an overview of the features that are new or have changed in this release, see “What is New at a Glance” on page 37.

#### Required Features<sup>1</sup>

- CommonIO
- Disks and File Systems (`fsweb`)

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1. For definitions of *required*, *recommended*, and *optional*, see “HP-UX 11i v3 Software Bundles” on page 22.

- Event Monitoring Service
- GigEther-00
- GigEther-01
- HP Instant Capacity (iCAP, formerly iCOD)
- HP WBEM Services for HP-UX
- HP-UX Accounts for Users and Groups
- HP-UX Kernel Configuration
- HP-UX Peripheral Device Tool
- HP-UX Security Attributes Configuration
- HP-UX WBEM LAN Provider for Ethernet Interfaces (WBEM-LAN-00)
- HP-UX WBEM SCSI Provider
- iEther
- Judy Libraries
- Logical Volume Manager (LVM)
- Network Interfaces & Network Services Configuration (Ncweb)
- nPartition Commands
- nPartition Provider
- Obsolescence Bundle (for Updates only)
- ONC+ (NFS/AutoFS/CacheFS/NIS/RPC)
- Online Diagnostics
- OpenSSL
- scsiU320-00
- Sendmail
- SerialSCSI-00
- SWGETTOOLS
- SysMgmtBASE
- SwMgmtMin (contains Software Distributor)
- System Fault Management
- Update-UX
- USB-00

#### **Recommended Features**

- Base-VXVM 4.1
- Base-VXFS 4.1
- BIND
- Distributed Systems Administration Utilities



- FibrChanl-00
- FibrChanl-01
- GTK+ Libraries
- HP CIFS Client
- HP CIFS Server
- HP Global Workload Manager Agent (Trial version)
- HP Integrity Virtual Machines Provider (VMProvider)
- HP Integrity VM Support Library (VMGuestLib)
- HP System Management Homepage
- HP-UX Bastille
- HP-UX IPFilter
- HP-UX Java Runtime Environment (JRE) 5.0 (1.5)
- HP-UX Java Development Kit (JDK) for the Java™ 2 Platform Standard Edition (J2SE) 5.0 (1.5)
- HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition v1.4
- HP-UX Secure Shell
- HP-UX Web Server Suite (including HP-UX Apache-based Web Server, HP-UX Tomcat-based Servlet Engine, HP-UX Webmin-based Admin, and HP-UX XML Web Server Tools)
- HP-UX WBEM Fibre Channel Provider
- HP-UX WBEM File System Provider
- Java for HP-UX Add-On C++ Libraries for SDK/JDK and RTE/JRE 1.4 and 5.0
- Java Runtime Plug-in (JPI) for HP-UX 1.4
- LDAP-UX
- Mozilla Application Suite
- Mozilla Source
- PAM Kerberos
- Partition Manager
- Perl
- PRMKernelSW (Not in TCOE)
- PRMLibraries (Not in TCOE)
- RAID-01
- Sec00 Security Tools
- Security Patch Check
- SysMgmtWeb
- TFTP

- Utilization Provider
- vPar Provider

#### Optional Features

- 10GigEther-00
- Common Desktop Environment (all languages)
- HP Pay per use
- HP Systems Insight Manager
- HP-UX Host Intrusion Detection System (HIDS) (not in TCOE)
- HP-UX IPSec
- HyprFabrc-00
- Ignite-UX
- Infiniband HA/Core
- Mobile IPv6
- Netscape Directory Server
- PCIMUX-00
- Java Out-of-Box
- Security Level 10
- Security Level 20
- Security Level 30
- Software Package Builder
- TermIO-00

### HP-UX 11i v3 Enterprise Operating Environment

The HP-UX 11i v3 Enterprise Operating Environment is targeted especially for database application servers and logic servers. In addition to the features found in the HP-UX 11i v3 Foundation OE (described on page 23), the Enterprise OE includes the following additional features.

For an overview of the features that are new or have changed in this release, see “What is New at a Glance” on page 37.

#### Required Features<sup>1</sup>

- See the list of **required features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

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1. For definitions of *required*, *recommended*, and *optional*, see “HP-UX 11i v3 Software Bundles” on page 22.

### Recommended Features

- High Availability Monitors
- MirrorDisk/UX
- GlancePlus Pak
- HP OnlineJFS 4.1 (B3929EA)
- HP Process Resource Manager
- Plus the list of **recommended features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

### Optional Features

- See the list of **optional features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

## HP-UX 11i v3 Mission Critical Operating Environment

The HP-UX 11i v3 Mission Critical Operating Environment is a high-availability Operating Environment for HP servers. In addition to the features found in the Foundation and Enterprise OEs, the Mission Critical OE includes the following features.

For an overview of the features that are new or have changed in this release, see “What is New at a Glance” on page 37.

### Required Features<sup>1</sup>

- See the list of **required features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

### Recommended Features

- Enterprise Cluster Master Toolkit
- HP Serviceguard
- HP Serviceguard NFS Toolkit
- HP-UX Workload Manager
- HP-UX Workload Manager Toolkits
- Plus the list of **recommended features** in “HP-UX 11i v3 Enterprise Operating Environment” on page 26
- Plus the list of **recommended features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

### Optional Features

- See the list of **optional features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

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1. For definitions of *required*, *recommended*, and *optional*, see “HP-UX 11i v3 Software Bundles” on page 22.

## HP-UX 11i v3 Technical Computing Operating Environment

The Technical Computing Operating Environment contains all the base functionality that is common to the other three OEs, including the base 64-bit HP-UX operating system, network drivers, and other always-installed functionality. The Technical Computing OE for HP-UX 11i v3 is available only for technical servers.

The HP-UX 11i v3 Technical Computing OE includes the following features.

For an overview of the features that are new or have changed in this release, see “What is New at a Glance” on page 37.

### Required Features<sup>1</sup>

- See the list of **required features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

### Recommended Features

- HP 3D Technology for the Java 2 Standard Edition Platform (Itanium®-based systems only)
- HP MLIB
- HP MPI
- Technical System Configuration
- Plus the list of **recommended features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

### Optional Features

- See the list of **optional features** in “HP-UX 11i v3 Foundation Operating Environment” on page 23

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1. For definitions of *required*, *recommended*, and *optional*, see “HP-UX 11i v3 Software Bundles” on page 22.

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## HP-UX 11i Compatibility Between HP-UX Releases Across Hardware Platforms

Hewlett-Packard (HP) understands the need for investment protection. HP-UX provides the most comprehensive investment protection in the industry including:

- Binary and source code compatibility across operating system releases
- Binary and source code compatibility across architectures, hardware platforms & virtual machines
- ISV application availability across architectures

### Compatibility Across Operating System Releases

HP provides forward binary compatibility for “well-behaved” applications between versions of HP-UX 11i.

A “well-behaved” application is an application that adheres to the following characteristics:

- Uses only documented public APIs:
  - Documented interfaces are those found in the system manual (man) pages or at <http://docs.hp.com>
  - Applications that are kernel intrusive are NOT “well-behaved”
- Adheres to standard development practices:
  - For example: A shared library cannot be dependent on an archive library.
- Does not use features that are specifically documented as having platform architecture or configuration limitations
- Does not decompose an HP-UX product and then reuse the results of the decomposition
  - For example: Extracting and using a module from a system library, or copying a system library or command from one release to another is NOT supported

Within the “well-behaved” application context, the following is true:

- HP-UX 11.0 application programs run unmodified on HP-UX 11i v 1 (NOTE: Applications that are kernel intrusive or depend on internal proprietary data structures of HP-UX 11i version 1 may NOT be binary compatible).
- HP-UX 11i v2 supports both HP Integrity and HP 9000 servers. HP-UX 11i v2 provides application binary compatibility between HP-UX 11i v1 and HP-UX 11i v2 on HP 9000 servers. Additionally, applications developed for the original HP-UX 11i v2 release for HP Integrity servers (introduced and shipped in 2003) require no actions to run on an HP-UX 11i v2 Operating Environment Update Release (OEUR). Binary compatibility does not necessarily apply to kernel-intrusive applications or applications that rely on proprietary data structures inside HP-UX.

- 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.

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**NOTE**

- HP-UX 11i v3 returns “B.11.31” as the release identifier in the `uname -r` command.
- The C compiler standard C89 is supported on the HP 9000 (PA-RISC) while the C compiler standard C99 is supported on Integrity servers. This means that while C code developed on PA-RISC is forward compatible to Integrity the reverse is not necessarily true.
- HP-UX 11.0 applications that have been certified or proven to run correctly on HP-UX 11i v1 can also be considered to be compatible with HP-UX 11i v2 and HP-UX 11i v3 for the HP 9000. Compatibility details are fully documented in the Release Notes. Additionally, there is complete data compatibility between the architectures

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Compatibility features between HP 9000 and HP Integrity servers include the following:

- HP-UX 11i v3 on Integrity servers can transparently execute HP 9000 binaries. This is possible through the Aries dynamic code translation technology which is a built-in, integrated part of every copy of HP-UX 11i on Integrity servers. Performance in compatibility mode may be less than native mode, but binary compatibility ensures that all PA-RISC applications can be executed on the Integrity server's architecture without recompilation.
- HP-UX 11i v3 is built from the same source for both HP Integrity servers and HP 9000 servers. This means that HP-UX 11i v3 has the same look and feel and operates in a very similar fashion on both architectures.
- The system management, security, and high availability tools and products are the same for both HP-UX 11i v3 on HP Integrity servers and HP 9000 servers.
- HP-UX 11i v3 features application source code and application build environment compatibility across the HP 9000 and Integrity server architectures.
  - **Source Code Compatibility:** Application programs from HP-UX 11i on HP 9000 servers can be made into native HP Integrity server applications with recompilation; no source code modifications are necessary regardless of whether the application is 32 or 64 bits on PA-RISC (HP-UX 11i on HP Integrity servers supports both 32-bit and 64-bit applications even though Integrity servers are a 64-bit architecture). However, converting a 32-bit HP 9000 server application into a 64-bit HP Integrity server application may require some source code changes.

- Application Build Environment Compatibility: HP-UX 11i also features Application Build Environment compatibility across the HP 9000 and Integrity server architectures. This means that HP 9000 application build environments (makefiles, script files, etc.) can be moved to Integrity servers and will, without modification, function the same way that they did on HP 9000 servers.
- HP-UX 11i on Integrity servers has the same data formats as HP-UX 11i on HP 9000 servers. This means that there is complete data compatibility between the two architectures. This interoperability allows the seamless integration of HP-UX 11i Integrity servers into a network of HP-UX 11i HP 9000 systems.

### **Binary and Source Code Compatibility Across Hardware Platforms**

Hewlett-Packard maintains application binary compatibility across all hardware platforms of the same family which are supported by the same version of HP-UX. This binary compatibility requires that application software uses only externally documented and supported software interfaces. In other words, binary compatibility across the members of a hardware family (such as PA-RISC) is provided if the following conditions apply:

- The hardware platforms are members of the same family, e.g. they are all PA-RISC-based.
- The application has used only externally documented and supported software interfaces (e.g. does not use undocumented interfaces).
- The application software has no dependencies on specific types of hardware (e.g. specific mass storage devices or specific I/O or networking adapters).

Hewlett-Packard has an excellent record of introducing new processors that provide complete software binary compatibility with previous processors, thus protecting customer and partner investments and allowing support for new processors with a minimum of risk and investment. HP has always recognized that software binary compatibility with new processors is an important partner and customer requirement.

### **PA-8800/PA-8900 Binary Compatibility**

Applications and software developed for systems with the earlier generation PA 8x00 processors run correctly and without modification on the PA-8800 and PA-8900 processors. These processors differ from previous ones by providing two cores within a single processor (dual-core).

### **Recompiling 32-Bit HP 9000 Applications for Native Execution on Integrity servers**

In nearly all cases, 32-bit HP 9000 applications can be recompiled for native execution on Integrity servers without source code modifications. This is true because the HP compilers for Integrity servers support both 32-bit and 64-bit data models. 32-bit applications use a data model known as ILP32 in which integers, long integers, and pointers are all 32 bits. 64-bit applications use a data model known as LP64 in which integers are 32 bits but long integers and pointers are 64 bits. HP compilers for Integrity servers support both data models. In the case of a 32-bit HP 9000 application that is being recompiled for native execution on Integrity servers, the compiler emits instructions that cause the application to behave as though it is a 32-bit application executing on a 32-bit architecture even though the underlying architecture is 64 bits. This is transparent to the application; it has no awareness that it is actually executing

on a 64-bit architecture. It is this feature of the HP compilers for Integrity servers that allow the vast majority of 32-bit HP 9000 applications to be recompiled without source code modification for native execution on the Integrity server architecture.

### Exceptions to HP 9000/Integrity server Binary Compatibility

In nearly all cases HP 9000 applications can execute under the Aries dynamic code translator which is included as an integrated component in every copy of HP-UX 11i for Integrity servers. The following list documents the exceptions to binary compatibility.

HP's Aries dynamic code translator does not support the following:

- binary mixed mode between HP 9000 and Integrity servers; application must be all PA-RISC, all 32 bits or all 64 bits
- applications compiled on HP-UX 8.x or earlier
- PA-RISC privileged instructions
- applications that depend on kernel data structures
- timing-dependent applications
- signaling via floating point NaNs (Not a Number)
- applications or debuggers that use *ptrace*, *ttrace*, and *profil* system calls
- core dumps for HP 9000 applications that abort
- applications that read the B-bit in the PSW (Process Status Word)
- applications that use maximum virtual memory (because the dynamic translator itself consumes a small amount of the virtual memory of a process)
- applications that rely on differences between *vfork* and *fork* system calls
- the emulation of debugging tools that have architectural dependencies on the PA-RISC architecture

**ISV Application Availability Across Architectures** With the source, data, and binary compatibility that HP provides from HP 9000 servers to Integrity servers, it is expected that the vast majority of independent software vendors (ISVs) that support applications on HP 9000 servers are able to readily transition these applications to HP-UX 11i on Integrity servers. This means that not only does HP-UX 11i and its layered system management, security, and high availability products have a common “look and feel” on the two architectures, it also means that application products have a common “look and feel” across the two architectures, thus eliminating the need to retrain users for new applications.

Great care has been taken with HP-UX 11i to maintain binary compatibility with legacy features. Existing application binaries will continue to execute without modification on HP-UX 11i v3 using legacy feature sets.

Applications that take advantage of new features in HP-UX 11i v3 may be required to make code changes in order to fully utilize these new features.

Please verify with your ISVs that you have the appropriate and supported version needed if you wish to take full advantage of the new features available with HP-UX 11i v3.

**Help for ISVs** ISVs (Independent Software Vendors) whose:



- HP-UX 11i v1 or HP-UX 11i v2 application meets the criteria for binary compatibility (i.e., not kernel intrusive, etc.) and fails to function on HP-UX 11i v3 for HP 9000 servers as it functioned previously.

OR

- HP-UX 11i v2 or HP-UX 11i v3 Integrity server native application, limited to the devices currently virtualized by Integrity VM, fails to function in a virtual machine as it functions outside of the virtual machine

can contact HP through a special support line (for North America) at 1-800-249-3294 and use option 2. Help is also available alternatively by sending an e-mail to [spp@cup.hp.com](mailto:spp@cup.hp.com). When calling this number or sending an e-mail, identify the problem as a “compatibility failure” and the support staff will help you with the situation.

### **Application Binary Compatibility with HP-UX 11i Virtual Partitions (vPars)**

HP-UX Virtual Partitions (vPars) is engineered to provide application binary compatibility between native HP-UX 11i applications and the same applications running within virtual partitions (vPars). No changes, recompilation or re-certification are required in order for HP-UX native applications to run within virtual partitions.

### **Application Binary Compatibility with HP Integrity Virtual Machines (Integrity VM)**

HP Integrity VM is engineered to provide application binary compatibility between native HP-UX 11i v2 and HP-UX 11i v3 Integrity server applications and the same applications running within virtual machines. This binary compatibility applies to applications with no specific device dependencies and to applications that depend only on devices currently virtualized by Integrity VM. Most applications do not have specific device dependencies. However if your application has specific device dependencies, please refer to the *HP Integrity Virtual Machines QuickSpecs*, available at <http://hp.com>, for details.

For more information, go to

[www.hp.com/go/hpux11i](http://www.hp.com/go/hpux11i)

[www.hp.com/go/integrity](http://www.hp.com/go/integrity)

## **Compatibility Issues or Exceptions in the Initial Release of HP-UX 11i v3**

Compatibility issues or exceptions have been noted for the following products or features in the initial release of HP-UX 11i v3. For details, see the indicated pages.

### **Chapter 4: Hardware-Specific Information (see page 73)**

- Enhancements to IO Forwarding (see page 75)
- HP StorageWorks Secure Path Migration from HP-UX 11i v1 and 11i v2 and Obsolescence for HP-UX 11i v3 (see page 82)
- Mass Storage Stack (see page 85)
- PCI Error Recovery (see page 103)
- USB-00 (see page 101)
- HP Instant Capacity (see page 109)

### **Chapter 5: General System Administration (see page 115)**

- Disks and File Systems (fsweb) (see page 120)
- HP Serviceguard (see page 150)
- HP Serviceguard NFS Toolkit (see page 151)
- HP WBEM Services for HP-UX (see page 157)
- HP-UX Accounts for Users and Groups (see page 160)
- HP-UX Large PID (see page 164)
- HP-UX System V IPC Message Queues (see page 166)
- Ignite-UX (see page 173)
- Livedump (see page 176)
- Long Username / Groupname (see page 177)
- Node and Host Name Expansion (see page 180)
- Obsolescence Bundle (see page 182)
- Virtual Memory Kernel Tunables (see page 196)

### **Chapter 6: Disk and File Management (see page 199)**

- HP-UX File Systems Architecture Enhancements (see page 206)
- Logical Volume Manager and MirrorDisk/UX (see page 212)
- Cache File System (see page 219)
- Network File System (NFS) Services (see page 223)
- Network Information Service (NIS) (see page 227)
- VERITAS File System (see page 232)

- VERITAS Volume Manager (see page 234)

**Chapter 7: Internet and Networking (see page 237)**

- ARPA Transport (see page 238)
- HP Data Link Provider Interface (DLPI) (see page 243)

**Chapter 8: Security (see page 279)**

- HP-UX Auditing System (see page 281)
- HP-UX Bastille (see page 284)
- HP-UX Host Intrusion Detection System (see page 286)
- HP-UX IPSec (see page 290)
- Install-Time Security (see page 298)

**Chapter 9: Commands and System Calls (see page 307)**

- core Format Implementation Change (see page 312)
- csh Command Language Interpreter (see page 313)
- getgroups, setgroups System Calls (see page 316)
- mmap() System Call (see page 325)
- setboot Command (see page 338)

**Chapter 10: Libraries and Programming (see page 349)**

- Bundled C Compiler (see page 350)
- HP-UX Color-Curses: libcur\_colr Library and Commands (Obsolete) (see page 357)
- HP-UX C library (libc) - UNIX 2003 Standard Compliance (see page 359)
- HP-UX C library (libc) - Other Changes (see page 360)
- libIO Library (see page 371)
- Perl (see page 376)
- Unwind Library (libunwind) (see page 380)

**Chapter 11: Internationalization (see page 383)**

- Unicode 5.0 Support (see page 384)
- New Locales - Baltic/Russia/Ukraine/Latin America (see page 389)
- New Locale Versioning: localedef/libc UNIX 2003-related I18N changes (see page 391)
- UNIX 2003 Support in localedef, locale, and iconv (see page 393)

**Chapter 12: Other Functionality (see page 407)**

- Common Desktop Environment (see page 408)



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**What is in This Chapter?**

This chapter provides two overviews of what is new, has changed, and has been deprecated or obsoleted since two previous releases: the HP-UX 11i v1 September 2005 release and the HP-UX 11i v2 June 2006 release. Each overview is located as indicated below:

- What is New for Customers Migrating from HP-UX 11i v1 September 2005? (see page 38)
- What is New for Customers Migrating from HP-UX 11i v2 June 2006? (see page 56)

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**NOTE**

Revisions to this document are contained in the *HP-UX 11i v3 Release Notes Errata*, located at <http://docs.hp.com/en/oshpux11iv3.html> (navigate to **Release Notes**).

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## What is New for Customers Migrating from HP-UX 11i v1 September 2005?

In the following summaries, you can obtain a general picture of how the current release of HP-UX 11i v3 differs from the September 2005 release of HP-UX 11i v1. For further details, see the indicated sections in the remainder of this document.

In addition, you may want to review the list “What is New for Customers Migrating from HP-UX 11i v2 June 2006?” on page 56 for a general picture of how the current release of HP-UX 11i v3 differs from the June 2006 release of HP-UX 11i v2.

### Chapter 4: “Hardware-Specific Information” (see page 73)

- Enhancements to IO Forwarding: The *IO forwarding* interrupt comes under the purview of Detect & Strobe and is enhanced. (See “Enhancements to IO Forwarding” on page 75.)
- **New:** estape Tape and eschgr Autochanger Drivers: New with HP-UX 11i v3. *ssrfc* driver no longer available. (See “estape Tape and eschgr Autochanger Drivers” on page 76.)
- Graphics: HP-UX 11i v3 is not supported on workstations, and the PEX graphics API is not supported on HP-UX 11i v3. (See “Graphics Bundle” on page 79.)
- HP-UX 11i v3 Driver Development Kit (DDK): Enhanced for HP-UX 11i v3. Provides documentation, sample code, build environment and development tools for 3rd-party developers, ISVs and IHVs to develop and test drivers on HP-UX 11i v3 PA-RISC and Itanium®-based platforms. (See “HP-UX 11i v3 Driver Development Kit” on page 80.)
- Enterprise Virtual Array (EVA): There is an issue with LUN WWIDs and HP-UX 11i v3. (See “Enterprise Virtual Array (EVA) on HP-UX 11i v3” on page 80.)
- HP StorageWorks Secure Path: Obsolete. (See “HP StorageWorks Secure Path Migration from HP-UX 11i v1 and 11i v2 and Obsolescence for HP-UX 11i v3” on page 82.)
- I/O Subsystem: Several new I/O commands help manage the I/O subsystem, and existing commands have new options and functionality to support the next generation mass storage stack. (See “I/O Subsystem” on page 83.)
- **New:** The Next Generation Mass Storage Stack manages I/O devices, such as SCSI logical units (LUNs). In this release, the mass storage stack delivers functionality designed to enhance server scalability, adaptability, and performance while retaining backward compatibility. New features include agile addressing, native multi-pathing, and increased parallelization. (See “Mass Storage Stack” on page 85.)
- Networking and Mass Storage Drivers (see page 89)
  - Gigabit Ethernet: The *igelan*, *gelan* and *btlan* products are enhanced with new features, including online deletion (OLD) and module packaging. (See “GigEther-00, GigEther-01, and IEther-00 (Gigabit Ethernet)” on page 89.)
  - *HyprFabrbc-00*: Supports only Peripheral Component Interconnect (PCI) HF2 cards. HF1 Cards will not be supported. (See “HyprFabrbc-00” on page 92.)

- **New:** InfiniBand: Now provides support for Network Interfaces and Network Services Configuration. (See “InfiniBand Clustering System” on page 93.)
- PCIMUX-00: The PCIMUX-00 bundle delivers the `pci-mux1` driver, which supports the AD278A and AD279A PCI MUX adapters. (See “PCIMUX-00” on page 94.)
- TermIO-00: The TermIO-00 driver bundle delivers the `pci_mux0` driver, which supports the A6748A and A6749A PCI MUX adapters. (See “TermIO-00” on page 96.)
- FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver for HP-UX 11i v3: Supports new Mass Storage Stack, Agile addressing, Soft Zoning, PCI Online deletion, PCI error detection and recovery. (See “FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver” on page 97.)
- FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3: Supports new mass storage stack, Agile addressing, Soft Zoning, PCI Online deletion, and PCI error detection and recovery. (See “FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3” on page 98.)
- HP PCI Ultra160 SCSI (c8xx): Supports new mass storage stack, PCI OnLine Deletion (OLD), PCI error detection and recovery, HBA Device Special Files (DSF). Termination of support for Ultra2 HBAs. (See “HP PCI Ultra160 SCSI Driver” on page 100.)
- USB-00: The USB stack and drivers delivered in USB-00 replace the legacy USB stack delivered in drivers `hcd`, `hub`, `hid`, and `usbd`, with additional functionality. (See “USB-00” on page 101.)
- **New:** PCI Error Recovery: Provides the ability to detect, isolate, and automatically recover from a PCI error, avoiding a system crash. (See “PCI Error Recovery” on page 103.)
- **New:** PCI Card Online Deletion (OLD): The PCI OL\* feature has been enhanced to allow HP-UX 11i v3 administrators to delete PCI cards and their associated drivers online without requiring a system reboot. (See “PCI Card Online Deletion (OLD)” on page 105.)
- Utility Pricing Solutions (see page 109)
  - HP Instant Capacity: Updated to version B.11.31.08.01 to include modifications to the installation procedure; support for Global Instant Capacity (GiCAP) and hyperthreading; changes to GiCAP grouping rules and `icapstatus` command output; and more. (See “HP Instant Capacity” on page 109.)
  - HP Pay per use: Updated to version B.11.31.08.01.00 with support for hyperthreading features included in HP-UX 11i v3. Includes error fixes. (See “HP Pay Per Use (PPU)” on page 110.)
- Xserver: Radeon 7500 is supported on rp34x0 and rp44x0 servers in HP-UX 11iv3. (See “Xserver” on page 112.)

### Chapter 5: “General System Administration” (see page 115)

- `asyncdsk` Driver Kernel Tunable `max_async_ports`: `max_async_ports` is now a dynamic tunable; default value changed to 4096 and maximum value is 4194304. (See “`asyncdsk` Driver Kernel Tunable `max_async_ports`” on page 117.)

- **New:** Concurrent Dump: You can now configure your machine to perform a distributed parallel dump, thereby improving the dump throughput and reducing dump time. (See “Concurrent Dump” on page 118.)
- Daylight Savings Time (DST). Changes for US DST rules. (See “Daylight Savings Time Changes for US in 2007 (Note)” on page 119)
- **New:** Detect and Strobe: Core-kernel functionality used to limit the amount of time spent in servicing interrupts to a user-defined maximum. Note: Detect and Strobe was previously delivered as patch for HP-UX 11i v1. (See “Detect and Strobe” on page 119.)
- **New:** Disks and File Systems (*fsweb*): Provides a web-based graphical user interface (GUI) and text user interface (TUI) for File System and Disks system administration tasks. (See “Disks and File Systems (*fsweb*)” on page 120.)
- **New:** Distributed Systems Administration Utilities: Provides tools that simplify managing groups of systems and Serviceguard clusters. (See “Distributed Systems Administration Utilities” on page 122.)
- **New:** Enhanced User Core File Naming: New command, *coreadm*, introduced to uniquely name application core files created by abnormally terminating user processes. (See “Enhanced User Core File Naming” on page 123.)
- Enterprise Cluster Master Toolkit: Includes scripts for Oracle, enhancements to the Oracle Toolkit, support for VERITAS Cluster File System (CFS) in a Serviceguard A.11.17 environment, support for Serviceguard 11.17.01 (non-CFS) for Tomcat, Apache, Oracle 10g, and more. (See “Enterprise Cluster Master Toolkit Version” on page 124.)
- **New:** Event Manager: A comprehensive mechanism for posting, distributing, storing, and reviewing event information. Composed of a kernel component, user libraries (*libevm.so*) and a set of commands. (See “Event Manager” on page 126.)
- Event Monitoring Service: Now enhanced to send WBEM indications, which can be viewed from the EVWEB tool. (See “Event Monitoring Service” on page 128.)
- **New:** High Resolution Timer Support: Enhances select timer-related system calls and APIs to provide a resolution finer than the default 10 millisecond resolution. (See “High Resolution Timer Support” on page 129.)
- HP OpenView GlancePlus Pak: Updated to version C.04.55 with support for large process IDs; enhancement to record the Logical Volume (LV) metrics for VERITAS Volume Manager, versions VxVM 4.1 and VxVM 5.0; new metrics for monitoring the UFC; and other changes. (See “HP OpenView GlancePlus Pak” on page 130.)
- HP Partitioning and Virtual Server Environment (see page 132)
  - **New:** Dynamic LCPU: Provides the ability to enable and disable Logical Processors (LCPU) dynamically at the processor set boundary. Supported only on systems with the Hyper-Threading feature available and enabled. (See “Dynamic LCPU” on page 132.)
  - HP Global Workload Manager: Updated to version A.02.50.00.x with support for Linux managed nodes, support for Windows virtual machine guests, nested partitions, and many other changes. (See “HP Global Workload Manager” on page 134.)



- HP Process Resource Manager: Updated with features including ability to manage shared memory, integration with HP Integrity Virtual Machines, integration with HP System Management Homepage, ability to map Unix groups to PRM groups, and several other features. (See “HP Process Resource Manager” on page 138.)
- HP-UX 11i v3 Patch Bundles and Software Pack: The initial release of HP-UX 11i v3 will not include the standard Quality Pack (QPK) and Hardware Enablement (HWE) patch bundles or the Software Pack that delivers optional new core enhancements. The delivery of these patch bundles and the Software Pack is planned for the first update release of HP-UX 11i v3.
- HP-UX Virtual Partitions: Updated to version A.05.01 with online memory migration, mixing A.04.02 and A.05.01 virtual partitions in the same vPars environment, and hyperthreading. Purchased separately. (See “HP-UX Virtual Partitions” on page 140.)
- Integrity VM Note: The host for Integrity VM is not supported on 11i v3. However, the virtual machines of the host can run 11i v3. (See “Integrity VM (Virtual Machines) for 11i v3” on page 141.)
- HP-UX Workload Manager: Updated to version A.03.02.02. Changes include Process Resource Manager no longer included in bundle; supports HP Integrity Virtual Machines; communications now secure by default; supports finer granularity for minimum allocations to FSS groups; supports a maximum of 256 FSS groups; and several other changes. (See “HP-UX Workload Manager” on page 142.)
- HP-UX Workload Manager Toolkits: Updated to version A.01.10.01. Provides the new HP-UX WLM SAP Toolkit, which identifies SAP processes based on user-defined criteria and uses WLM’s process maps feature to place the SAP processes in specific workload groups. PPUTK obsoleted; SASTK and DMTK deprecated. (See “HP-UX Workload Manager Toolkits” on page 144.)
- Partition Manager: Updated to v2.0 (version B.31.02.03.01) with the ability to enable and disable Hyper-Threading for nPartitions whose cells have processors that are Hyper-Threading capable. (See “Partition Manager” on page 146.)
- nPartition Provider: Updated to version B.31.01.07.01 with support for WBEM Services version 2.5 and support for systems based on the HP sx2000 chipset. (See “nPartition Provider” on page 147.)
- **New:** Utilization Provider: Lightweight daemon (`utild`) that records system-utilization data on a 5-minute interval; data recorded includes CPU, memory, disk, and network utilization; also includes a WBEM provider for access to the data. (See “Utilization Provider” on page 148.)
- vPar Provider: WBEM provider displays information about virtual partitions. Read-only; clients cannot modify virtual partition configurations with it. (See “vPar Provider” on page 149.)
- HP Serviceguard: Updated to version A.11.17.01 with support for persistent DSF naming and dynamic multipathing, large PID, identification of networking interfaces (NICs) that are part of the Serviceguard cluster configuration, and other features. VERITAS Cluster File System (CFS) and Cluster Volume Manager (CVM) not supported in initial release of HP-UX 11i v3. RS232 serial line as cluster heartbeat is obsolete. (See “HP Serviceguard” on page 150.)

- HP Serviceguard Network File Server (NFS) Toolkit: Updated to version A.11.31.02 with new control script template and a defect fix. Can work with Serviceguard A.11.17.01, but does not support some Serviceguard A.11.17.01 and NFS HP-UX 11i v3 features. Customers who need VERITAS Cluster File System (CFS) should not upgrade to HP-UX 11i v3 until CFS is available on that platform. (See “HP Serviceguard NFS Toolkit” on page 151.)
- HP System Management Homepage: Updated to version A.2.2.5 to incorporate defect fixes. In addition, many more system management tools are integrated in HP SHM for HP-UX 11i v3 then HP-UX 11i v1 September 2005. (See “HP System Management Homepage” on page 153.)
- HP Systems Insight Manager: Updated to “HP SIM 5.0 with Update 2 - HP-UX” with support for HP BladeSystem c-Class blade and enclosure, and onboard administrator; HP BladeSystem Integrated Manager 2.1 with updated functionality; minimum system memory configuration to run HP SIM on HP-UX 11i v3 is now 3GB, and defect fixes. (See “HP Systems Insight Manager” on page 155.)
- HP WBEM Services for HP-UX: Updated to version A.02.05 with association providers, internationalization support for CIM operations, CIM schema upgrade, and other major changes. (See “HP WBEM Services for HP-UX” on page 157.)
- HP-UX Accounts for Users and Groups: New TUI in place of the legacy SAM interface; new Web-based GUI; improved performance with the new TUI interface; supports long username and groups. (See “HP-UX Accounts for Users and Groups” on page 160.)
- HP-UX Kernel Configuration: New TUI in place of the legacy SAM interface; New Web-based GUI; Error Management Technology support; critical defect fixes. (See “HP-UX Kernel Configuration” on page 161.)
- **New:** HP-UX Large NPROC: The HP-UX 11i v3 system can support more processes running concurrently than previous releases, changing from 30,000 to 60,000. (See “HP-UX Large NPROC” on page 163.)
- **New:** HP-UX Large PID: The range of Process Identifiers (PID) the kernel can generate in a stand-alone HP-UX system has been expanded from 0 ~ 30,000 to 0 ~ 2<sup>30</sup>-1 (1,073,741,823). (See “HP-UX Large PID” on page 164.)
- HP-UX Peripheral Devices Manager: Enhanced to support the Agile Hardware Path Addressing and Persistent Device Special Files; enhanced to allow for Online deletion of OLRAD cards; now reads the detailed CRA report from the log file in which the report is logged after the change in the CRA behavior; and more. (See “HP-UX Peripheral Devices Manager” on page 165.)
- HP-UX System V IPC Message Queues: Enhanced with dynamic tuning capabilities. Tunables *msgmax*, *msgssz*, *msgmap*, *msgseg* are obsolete. Added new dynamic tunable *msgmbs*; indicates maximum kernel memory to be used for messages waiting to be received. Tunables *msgmni*, *msgtql* are made dynamic. (See “HP-UX System V IPC Message Queues” on page 166.)
- **New:** HP-UX WBEM Fibre Channel Provider: Client applications can use this provider to get information about HP-UX Fibre Channel HBAs on the system. (See “HP-UX WBEM Fibre Channel Provider” on page 167.)
- **New:** HP-UX WBEM File System Provider: Makes available file system information; instruments the *HPUX\_HFS*, *HP\_LOFS*, *HP\_CDFS*, *HP\_VxFS*, *HP\_NFS*, *HP\_MountPoint* and *HPUX\_Mount* classes. (See “HP-UX WBEM File System Provider” on page 168.)

- **New:** HP-UX WBEM IOTree Provider: Client applications can use HP-UX WBEM IOTree provider to get information about HP-UX IOTree host-bus adapters (HBAs) on the system. (See “HP-UX WBEM IOTree Provider” on page 169.)
- **New:** HP-UX WBEM LAN Provider for Ethernet Interfaces (*WBEMP-LAN-00*): Is a CIM Provider for Ethernet-based LAN technologies on HP-UX. Client applications can use this provider to determine all Ethernet LAN links available on the system (registered and known to HP-UX DLPI) and collect information about them. (See “HP-UX WBEM LAN Provider for Ethernet Interfaces” on page 170.)
- **New:** HP-UX WBEM Online Operations Service Provider: Not currently supported; intended to support features in future releases of HP-UX 11i v3. (See “HP-UX WBEM Online Operations Service Provider” on page 171.)
- **New:** HP-UX WBEM SCSI Provider: Client Applications can use this provider to get information about HP-UX SCSI host-bus adapters (HBAs) on the system. (See “HP-UX WBEM SCSI Provider” on page 172.)
- **Ignite-UX:** Updated to version C.7.0.x with multipath-awareness, new approach for addressing I/O, automatic management of the system boot path for multiple path configurations, user-selectable format for recovery archives and golden archives, and other changes. (See “Ignite-UX” on page 173.)
- **New:** Kernel Tunable Values Reset From Boot Prompt: HP-UX 11i v3 release provides a new feature in which kernel tunable values can be reset from the boot prompt. (See “Kernel Tunable Values Reset From Boot Prompt” on page 175.)
- **New:** Livedump: Provides the ability to take a crashdump on a live system without a forced shutdown or panic of that system. Implemented for Itanium®-based platforms only. (See “Livedump” on page 176.)
- **New:** Long Username / Groupname: Current limit enhanced from 8 to 255 bytes. By default 8 is still the limit. With an enabler this limit can be enhanced to 255. Once enabled, cannot be disabled in the future. Not supported for trusted systems. (See “Long Username / Groupname” on page 177.)
- **New:** Node and Host Name Expansion: Provides the ability to set node and host names up to 255 bytes. (See “Node and Host Name Expansion” on page 180.)
- **Obsolescence Bundle:** Used during an update when obsolete software on the system needs to be removed; automatically selected for updates. Will remove several obsolete or incompatible products and/or drivers. (See “Obsolescence Bundle” on page 182.)
- **Online Diagnostics product:** Introduced for the `map` command, is a new option, `page`, which displays a paginated output of the system `map`. (See “Online Diagnostics” on page 183.)
- **SCSI Kernel Tunables:** *scsi\_maxphys*, *scsi\_max\_qdepth* and *default\_disk\_ir* kernel tunables are obsolete. (See “SCSI Kernel Tunables (Obsolete)” on page 185.)
- **Software Distributor:** Updated to version 11.31 with support for HP-UX 11i v3-unique features including large pid, long usernames and group names; and improved support for high level software deployment tools such as Software Manager, `update-ux`, and future tools. Includes defect fixes. (See “Software Distributor” on page 186.)

- **Software Package Builder:** Added new policy files that include the expansion of the acceptable category tags, the addition of the *is\_oe* attribute, and changes to the architecture and *os\_release* attribute rules. (See “Software Package Builder” on page 187.)
- **System Administration Manager (SAM):** Deprecated. The *smh* command is recommended, but *sam* command will continue to be available. Some functional areas previously available are obsolete. (See “System Administration Manager (SAM)” on page 189.)
- **System Administration Manager (SAM) Auditing and Security Functional Area:** System Security Policies subarea of SAM is replaced with the HP-UX Security Attributes Configuration tool; Audited NIS+ Users subarea is obsolete. (See “System Administration Manager (SAM) Auditing and Security” on page 190.)
- **System Administration Manager (SAM) Printers and Plotters Functional Area:** Launch point in X/ObAM-based GUI mode is now via the HP System Management Homepage. (See “System Administration Manager (SAM) Printers and Plotters” on page 191.)
- **System Administration Management Tool Changes: SAM and HP System Management Homepage:** System Administration Manager (SAM) is deprecated in HP-UX 11i v3. HP System Management Homepage (HP SMH) is the system administration tool for managing HP-UX 11i. HP SMH provides Web-based systems management functionality, at-a-glance monitoring of system component health, and consolidated log viewing. HP SMH also provides Terminal User Interfaces (TUIs). (See “System Administration Management Tool Changes: SAM and HP System Management Homepage” on page 192.)
- **New: System Fault Management:** Collection of tools used to monitor the health of HP servers and receive information about hardware such as memory, CPU, power supplies, and cooling devices. Operates in the WBEM environment. (See “System Fault Management” on page 193.)
- **Update-UX and SW-GETTOOLS:** The *update-ux* command now uses Software Manager, a new application that provides features including support for preview; interactive TUI; better support for multiple media, including more accurate disk space analysis, dependency selection across media; and improved logging capabilities. (See “Update-UX and SW-GETTOOLS” on page 194.)
- **Virtual Memory Kernel Tunables:** The *eqmem\_limit* (only on PA-RISC systems) has been added. Several tunables has been removed. See section for details. (See “Virtual Memory Kernel Tunables” on page 196.)

#### Chapter 6: “Disk and File Management” (see page 199)

- **HFS (also known as UFS) File System Type:** Now deprecated. Will be removed from the OS in a future release, to be determined. (See “HFS File System Type (Deprecated)” on page 200.)
- **HFS file system and backup commands:** To work on file sizes larger than 2TB. (See “HFS Filesystem and Backup Commands for Files >2TB” on page 200.)
- **HP CIFS Client:** Updated to version A.02.02.01 with support for MS Distributed File System (DFS) and DLKM feature and other changes. (See “HP CIFS Client” on page 201.)

- HP CIFS Server: Updated to 3.0f version A.02.03: Redesign of Winbind code; File Locking Interoperation Functionality; support for long user and group names; support for TDB Memory Map; and other changes. (See “HP CIFS Server” on page 204.)
- HP-UX File Systems Architecture Enhancements: Numerous enhancements include VFS stacking capabilities; `fsdaemon` user level daemon; large file systems and large files support; improved file systems `syncer`; performance improvement of `aio_reap` (2); support of larger files and long link names in backup utility; and several other enhancements. (See “HP-UX File Systems Architecture Enhancements” on page 206.)
- Logical Volume Manager and MirrorDisk/UX: Delivers significant scalability and availability enhancements. Supports the next generation mass storage stack, and is integrated with the mass storage stack’s load balancing and dynamic LUN expansion features; enhanced to support larger logical volumes, temporary suspension of volume groups, striping with mirroring, and dynamic LUN expansion; enables online modification of a volume group, as well as a new script to simplify the replacement of a failing disk. (See “Logical Volume Manager and MirrorDisk/UX” on page 212.)
- Open Network Computing (ONC) (see page 217)
  - AutoFS/Automounter: Updated with support for LDAP name service to store AutoFS maps; the ability to browse the list of potential mount points in an indirect AutoFS map without mounting the filesystems; the ability to configure AutoFS through the `/etc/default/autofs` file; and other features. (See “AutoFS” on page 217.)
  - Cache File System (CacheFS): New features include long file name support, `cachefspack`, and support for largefiles and large file system. (See “Cache File System” on page 219.)
  - Library RPC: Library routines support several new datatypes, add support for IPv6, and more. (See “Library RPC” on page 220.)
  - Network File System (NFS) Services: Provides numerous enhancements, including `pcnfsd` daemon, which is multithreaded and supports shadow password and Secure RPC; new user mode daemon generates and validates API security tokens, and maps the GSSAPI principal names to the local user and group IDs; additional security mechanisms, such as Secure NFS that supports Kerberos through GSSAPI; NFS access using a firewall; and many other features. (See “Network File System (NFS) Services” on page 223.)
  - Network Information Service (NIS): Provides several new features including support for shadow mode; support for enabling DNS forwarding mode; support for long `uname`, `hostname`, and `username`; and other features. (See “Network Information Service (NIS)” on page 227.)
  - NIS+: Obsoleted. (See “NIS+ (Obsoleted)” on page 229.)
  - PCNFSD: `pcnfsd` daemon is multithreaded. Support for shadow password and secure RPC; `wtmp` entries can hold usernames up to the PCNFSD protocol limitation of 32 characters and client hostnames up to the PCNFSD protocol limitation of 64; support for printer names up to the PCNFSD protocol limitation of 64 characters. (See “PCNFSD” on page 230.)

- **New:** Unified File Cache: Integrates the page cache and buffer cache to provide coherency for file access. Serves as a key enabler for VxFS 4.1 and ONC+2.3. Improves source compatibility with Solaris, Tru64, and Linux applications that depend on coherency of page and buffer cache. Potential performance improvement of applications that depend on coherency of page and buffer cache. (See “Unified File Cache” on page 231.)
- VERITAS File System (VxFS): Features in version 4.1 include support for 1024 ACLs; support for large filesystem (up to 32 TB) and large file size (up to 16 TB); VxFS filesystem as a DLKM; multi-device filesystems; and other features. Cluster File System (CFS) is not supported in the initial release of HP-UX 11i v3. (See “VERITAS File System” on page 232.)
- VERITAS Volume Manager (VxVM): Features in version 4.1 include support for Volume Sets and VxFS MDS; Cross-Platform Data Sharing; Device Discovery Layer Phase 2; Serial Split Brain; and other features. Cluster Volume Manager (CVM), a part of VxVM that is enabled by a separate license, is not being provided with the current 4.1 HP-UX 11i v3 release. (See “VERITAS Volume Manager” on page 234.)

### Chapter 7: “Internet and Networking” (see page 237)

- **New:** ARPA Transport: Many enhancements to ARPA Transport include Security Containment, sendfile/UFC, UNIX 2003 Conformance, large `hostname` support, and Tru64 Application migration to HP-UX/Itanium®-based. (See “ARPA Transport” on page 238.)
- Browsers: Mozilla is updated with defect fixes. Includes improved Asian font support on HP-UX and the Japanese Language Pack. (See “Browsers” on page 242.)
- **New:** HP Data Link Provider Interface (DLPI): Enhancements include *NOSYNC STREAMS* synchronization level for improved performance and scalability for high speed links, online deletion (OLD) of I/O card instances, and dynamic loading and unloading of LAN drivers without reboot. (See “HP Data Link Provider Interface (DLPI)” on page 243.)
- HP-UX PPPv6: Incorporates defect fixes. (See “HP-UX PPPv6” on page 244.)
- HP-UX VLAN: New features include support for HP-UX VLANs over APA aggregates and LAN-monitor failover groups, SMH-Network Interface Configuration support for Web-based VLAN configuration, and `nwmgr` support for HP-UX VLAN. (See “HP-UX VLAN” on page 245.)
- HP-UX Web Server Suite (see page 247)
  - HP-UX Apache-based Web Server: Updated to version 2.0.58.00 as primarily a bug fix release. (See “HP-UX Apache-based Web Server” on page 248.)
  - HP-UX Tomcat-based Servlet Engine: Upgraded to 5.5.9.04. Implements the Servlet 2.4 and JavaServer Pages 2.0 specifications. Designed to run on JDK 1.5 and later versions. (See “HP-UX Tomcat-based Servlet Engine” on page 249.)
  - HP-UX Webmin-based Admin: Upgraded to 1.070.08 as primarily a defect fix release. (See “HP-UX Webmin-based Admin” on page 250.)
- Internet Services: You can now deselect individual Internet Services during installation or remove filesets later. (See “Internet Services” on page 251.)

- **BIND:** BIND 9.3 includes many new features, including transition support for IPv4 and IPv6. With HP-UX 11i v3, `NAMED` and `NAMED_ARGS` variables are moved to `/etc/rc.config.d/namesvrs`. (See “BIND” on page 252.)
- **DHCPv4 (bootpd):** New option `sa` configures the `tftp` server, providing control of the `siaddr` field of the `dhcp` packet. New configuration option for the subnet selection option in the `/etc/dhcptab` file allows `bootpd` to assign a network address even if `bootpd` is not part of that network. Support for PXE clients is added. (See “DHCPv4 (bootpd)” on page 254.)
- **DHCPv6:** Now available in the core operating system. (See “DHCPv6” on page 255.)
- **inetd Command:** Two new command line options, `-p` (limit number of processes invoked by `inetd`) and `-a` (enable user level auditing of processes). Support for large hostnames and large PIDs. (See “inetd” on page 256.)
- **libc:** Numerous changes in APIs. (See “libc” on page 257.)
- **Mailx, Elm, and Talk:** `elm` (1M) and `mailx` (1M) are long-user-name compliant. (See “Mailx, Elm and Talk” on page 260.)
- **R-commands:** long username is supported. (See “R-commands (Remote Commands)” on page 261)
- **New:** Sendmail: Version 8.13.3 has numerous new features. (See “Sendmail” on page 262.)
- **New:** TFTP: **tftpd** (server) and **tftp** (client) now support IPv6 addresses. New command line options specify upper and lower port range limits for data transfer. (See “TFTP” on page 264.)
- **WU-FTPD:** Version 2.6.1 supports long usernames. Adds several new features and is backward compatible with WU-FTPD 2.4. (See “WU-FTPD” on page 264.)
- **LAN Administration Commands:** `lanadmin` now supports an IPoIB interface, 64-bit MIB, and native and non-native drivers developed by independent hardware vendors; `lanscan` and `linkloop` now support IPoIB interfaces. (See “LAN Administration Commands” on page 266.)
- **LDAP-UX Integration Product:** This release includes the new LDAP-UX version B.04.00.10. (See “LDAP-UX Integration Product” on page 267.)
- **New:** Mobile IPv6: Uses a fixed IP address for extended periods to allow mobile nodes to change network access points while remaining accessible with no disruption of network continuity. Supports IPv6 addresses. (See “Mobile IPv6” on page 269.)
- **New:** Network Interface Management Command Line Interface: The `nwmgr` command is used to manage LAN-based and IB-based network interfaces; a single tool for performing all network interface-related tasks. (See “Network Interface Management Command Line Interface” on page 270.)
- **New:** Network Interfaces Configuration and Network Services Configuration: These tools in the HP System Management Homepage replace the Networking and Communications functions of the System Administration Manager (SAM), which are no longer available. (See “Network Interfaces Configuration and Network Services Configuration (ncweb)” on page 271.)
- **New:** Red Hat Directory Server for HP-UX: Provides an industry-standard centralized directory service to build your intranet or extranet on. Your Red Hat servers and other directory-enabled applications use the directory service as a

common, network-accessible location for storing shared data, such as user and group identification, server identification, and access control information. (See “Red Hat Directory Server for HP-UX” on page 273.)

- **STREAMS:** *NOSYNC* feature allows multiple instances of a `put` procedure for a queue and the service routine for that queue to run concurrently. All references to the global variable `uniprocessor` have been removed. (See “STREAMS” on page 275.)
- **NetTL - Network Tracing and Logging:** The `nettl` command is enhanced with formatting support for IPoIB the header, command-line option to configure trace buffer value, pre-capture trace values, and new options to manage trace filters. (See “NetTL - Network Tracing and Logging” on page 277.)

#### Chapter 8: “Security” (see page 279)

- **New:** HP-UX 11i Security Containment: Provides compartments, which isolate unrelated resources on a system to prevent catastrophic system damage if one compartment is penetrated. When configured in a compartment, an application (processes, binaries, data files and communication channels used) has restricted access to resources outside its compartment. Also provides fine-grained privileges, which allow you to grant privileges to processes needed for the task and, optionally, only for the time needed to complete the task. (See “HP-UX 11i Security Containment” on page 280.)
- **HP-UX Auditing System:** Enhanced in several ways, including: auditing subsystem is now working without converting the system to trusted mode; standard mode audit user selection information is stored in a per-user configuration user database; `userdbset` command specifies which users are to be audited in standard mode; and several other enhancements. (See “HP-UX Auditing System” on page 281.)
- **New:** HP-UX Bastille: Although Bastille has been available on the Web (and on the HP-UX 11i v2 OEs) for some time, it is now available on the HP-UX 11i v3 OEs for the first time for customers migrating from HP-UX 11i v1 and includes several enhancements. (See “HP-UX Bastille” on page 284.)
- **HP-UX Host Intrusion Detection System:** Updated to release 4.0 with features including reducing alert volume by aggregation; reducing alert volume by monitoring only critical files; configuring critical users; supporting specification of usernames and user IDs; and measuring the event rate. (See “HP-UX Host Intrusion Detection System” on page 286.)
- **HP-UX IPFilter:** Updated to version A.03.05.13 with defect fixes and enhancements including filtering on X.25 interfaces, filtering on 10GigE interfaces; IPFilter not plumbed into the networking stack by default; no reboot required to enable IPFilter. (See “HP-UX IPFilter” on page 288.)
- **New:** HP-UX IPSec: Previously only available on the AR media. Now delivered on the HP-UX 11i v3 Operating Environments. Provides an infrastructure to allow secure communications (authentication, integrity, confidentiality) over IP networks between systems and devices that implement the IPsec protocol suite. (For update details, see “HP-UX IPSec” on page 290.)
- **HP-UX Secure Shell:** Updated to version A.04.40.005 with many new features including high performance enabled SSH/SCP patch; configuration directives in the server; auth selection patch; increase in the default size of RSA and DSA keys; delayed compression; and many other features, as well as defect fixes. (See “HP-UX Secure Shell A.04.40.005” on page 292.)



- HP-UX Security Attributes Configuration tool (*secweb*): Updated to support long user name. (See “HP-UX Security Attributes Configuration (*secweb*)” on page 295.)
- **New:** HP-UX Standard Mode Security Extensions: Enhances the security of systems running in standard mode by providing security features that were previously available only on systems that had been converted to trusted mode. (See “HP-UX Standard Mode Security Extensions” on page 296.)
- **New:** Install-Time Security: Adds a security step to the install/update process that allows you to run the Bastille security lockdown engine during system installation with one of four configurations ranging from default security to “DMZ.” (See “Install-Time Security” on page 298.)
- Kerberos Client: Updated to version 1.3.5.03 with new features including support for powerful cryptographic algorithms like 3DES, RC4, and AES; support for IPv6; support for TCP; and defect fixes. (See “Kerberos Client” on page 299.)
- OpenSSL: Updated to version A.00.09.08d.001 with support (in default version) for several hardware ENGINES (see section for specifics); support for elliptic curve cryptography; and EVP, the library of which provides a high-level interface to cryptographic functions. Other provided versions include other features. (See “OpenSSL” on page 301.)
- PAM Kerberos: Enhanced to issue a warning if *rc\_host\_0* is owned by anyone other than root when a user tries to *rlogin* into a system; will also issue a warning if the keytable entry is not found for the host service principal on the client but present at the KDC. (See “PAM Kerberos” on page 302.)
- **New:** Security Patch Check: Analyzes the currency of a system with respect to security bulletins. Recommends actions for security vulnerabilities that have not been fixed by patches, updates, or logged manual actions currently applied to the system. (See “Security Patch Check” on page 304.)

### Chapter 9: “Commands and System Calls” (see page 307)

- */etc/skel/.profile* shell script: *.* (current path) in *\$PATH* is deprecated. (See “*/etc/skel/.profile* shell script” on page 309.)
- 32-bit *pstat* System Call (Deprecated): When compiling a 32-bit application that uses the *pstat()* system call, the compiler option *\_D\_PSTAT64* must now be specified. This causes *pstat()* to use 64-bit fields rather than 32-bit fields. The application still remains a 32-bit application. (See “32-bit *pstat* System Call (Deprecated)” on page 309.)
- *at*, *cron*, and *batch* Commands: New features include support for queueing multiple jobs at the same time, support for queueing of more than 100 jobs, and ability to schedule jobs up to the *njob* limit specified for every queue in *queuedefs* (4). (See “*at*, *cron*, and *batch* Commands” on page 310.)
- *core* Format Implementation Change: The true version string has replaced the *utsname* struct in the *CORE\_KERNEL* segment. A work-around has been provided for applications which reversed-engineered the *core* file format and depend on *utsname* being in it. This new *core* file format is the default format. (See “*core* Format Implementation Change” on page 312.)
- *csh* Command Line Interpreter: The non-interactive invocation of *csh* will not source the *~/.history* file by default. (See “*csh* Command Language Interpreter” on page 313.)

- **File Systems Backup and Recovery Commands** `fbackup`, `frecover`, and `ftio`: Deprecated; will be obsolete in a future HP-UX release. You should prepare by migrating to the favorable replacement `pax`. Support will be continued for archive retrieval. (See “File Systems Backup and Recovery Commands `fbackup`, `frecover`, and `ftio` (Deprecated)” on page 314.)
- **New: `gcore` Command**: creates a core image of each specified process. (See “`gcore` Command” on page 315.)
- `getgroups()`, `setgroups()`: no longer limited by the `NGROUPS_MAX`. (See “`getgroups`, `setgroups` System Calls” on page 316.)
- `getty` Command: Enhanced to configure the default setting for special control characters (erase, kill, etc.) by the user. (See “`getty` Command” on page 318.)
- **HP-UX Kernel Configuration Commands**: HP-UX 11i v1 kernel configuration commands has been removed in favor of new commands for HP-UX 11i v3. In addition, there are changes to the location of kernels and related files on disk; to the manner in which a kernel configuration is chosen at boot time; and to the manner in which the system automatically maintains a backup kernel configuration. (See “HP-UX Kernel Configuration Commands” on page 319.)
- `iostat`: Enhanced to report activity for each active lunpath to the LUNs. Also, the new option `-L` has been added, which lists active lunpath statistics. (See “`iostat` Command” on page 320.)
- **Long `hostname`, `uname`, and `setuname` Commands**: The limits of these commands can now be expanded to 255 bytes. (See “Long `hostname`, `uname`, and `setuname`” on page 321.)
- **New: Long Username Support by HFS `ff`, VxFS 4.1 `ff`, `repquota`, `quotacheck`**: Enhanced to support the username up to 255 bytes. (See “Long Username Support by HFS `ff`, VxFS 4.1 `ff`, `repquota`, `quotacheck`” on page 323.)
- `lp`, `lpadmin`, `lpfence`, `lpmove`, and `lpsched` Commands: Printers can now be added/removed/modified without bringing down the `lp` scheduler; line printer spooler enhanced to support printer/class names up to 250 characters from the previous limit of 14 characters; support also extended to remote destination names. (See “`lp`, `lpadmin`, `lpfence`, `lpmove`, and `lpsched` Commands” on page 324.)
- `mmap()` System Call: Enhanced to support mapping file with read-only permission with `PROT_EXEC` and implicit `mmap()` with `MAP_FIXED` (See “`mmap()` System Call” on page 325.)
- `pax` Command: Enhanced to conform to the Unix 2003 Standard. You will now be able to use `pax` to archive files having a size greater than or equal to 8GB; long user name/group name; large UID/GID greater than 2097151; long pathname or link name. (See “`pax` Command” on page 326.)
- **PFS Commands**: Obsolete. (See “PFS (Portable File System) Commands (Obsolete)” on page 328.)
- `pipcs` Command: Enhanced to provide details regarding processes using the various POSIX Message Queues, as well as creation time and last modification time of the POSIX Message Queues. (See “`pipcs` Command” on page 328.)
- `ps` Command: Enhanced to display maximum of 1020 characters in the `COMMAND` field. (See “`ps` Command” on page 329.)

- **New:** `pselect()` System Call: Added to meet the UNIX 2003 Standard. Provides additional parameter options to users of the `select()` system call. Timeout granularity may be specified in seconds and nanoseconds. A new signal mask parameter is also available to be used for the duration of system call. (See “`pselect()` System Call” on page 330.)
- `psrset` Command: Enhanced to manage the Real Time Extension processor set; enhanced to support one more PSET attribute type called LCPU. (See “`psrset` Command” on page 331.)
- `pstat_getstatic()` System Call: Information returned by `pstat_getstatic()` may now change between reboots due to manually or automatically generated administrative changes in the associated kernel tunables, online addition/deletion of resources, or other events. Likelihood of it changing is infrequent. (See “`pstat_getstatic()` System Call” on page 332.)
- **New:** Ptools Process Management Tools: New set of process management tools that support easy process tracking and debugging. Consists of the following commands: `pmap`, `pfiles`, `pgrep`, `pkill`, `ptree`. (See “Ptools Process Management Tools Command” on page 333.)
- `ptrace()` System Call: Obsolete in HP-UX 11i v3. (See “`ptrace()` System Call (Obsolete)” on page 335.)
- `rc` Shell Script: When a system needs reboot for some reason, messages in the file `/etc/rc.bootmsg` will be displayed before the system is rebooted. (See “`rc` Shell Script” on page 335.)
- `sar` Command: Enhanced to report activity for each HBA and Tape device. (See “`sar` Command” on page 337.)
- `setboot` Command: Enhanced to provide support for setting the High Availability (HA) Alternate boot path; supports the setting of a firmware test for the next boot on the Itanium®-based platform; modified to take a persistent DSF or a lunpath hardware path as valid input to set the bootpath for next boot;; enhanced to enable or disable hyperthreading environment for the next boot on a Dual-Core Intel® Itanium® 2 platform. (See “`setboot` Command” on page 338.)
- `sigblock(2)`, `sigsetmask(2)`, `sigstack(2)`, `sigvector(2)`, and `bsd_signal(3C)`: Manpages are obsolete. (See “`sigblock(2)`, `sigsetmask(2)`, `sigstack(2)`, `sigvector(2)`, `bsd_signal(3C)` Manpages (Obsolescence)” on page 340.)
- `spray` Command: Provides two new options: `-d`, which specifies how many microseconds to pause between sending each packet, and `-t`, which specifies class of transports. (See “`spray` Command” on page 341.)
- **New:** `swapctl()` System Call: Allows you to configure primary swap to take effect on the next boot. Previously this could only be done via the commands `lvlboot` and `vxvmboot.` `()` system call is deprecated. (See “`swapctl()` and `swapon()` System Calls” on page 342.)
- `swapon` and `swapinfo` Commands: `swapon` command enhanced to support setting/unsetting of primary swap device for next boot; `swapinfo` command supports new `-s` option to display settings of primary swap for next boot. (See “`swapon` and `swapinfo` Commands” on page 343.)
- `sysdef` Command: Deprecated. Reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`. (See “`sysdef` Command (Deprecated)” on page 344.)

- `syslogd` Command: Enhanced to continue logging to log files even after the size of the log file grows beyond 2GB; enhanced to log multibyte message strings correctly. (See “`syslogd` Command” on page 345.)
- `usermod` has been modified to selectively prevent the movement of home directories with `-m` option. (See “`usermod` Command” on page 346.)
- UNIX 2003 Compliance: All commands are modified/enhanced to conform to UNIX 2003 Standards. The UNIX 2003 changes which do not affect HP-UX compatibility are available by default. Otherwise, in order to get Unix 2003 behavior, the variable `UNIX_STD` has to be defined in the environment. (See “UNIX 2003 Standards Compliance Commands” on page 347.)

## Chapter 10: “Libraries and Programming” (see page 349)

- Bundled C Compiler: Updated to version A.06.12 on Itanium®-based servers and B.11.11.16 on PA-RISC. Highly compatible with previous versions; diagnostic messages have changed; more erroneous and suspicious source constructs are diagnosed. (See “Bundled C Compiler” on page 350.)
- aC++ Run Time Library: Includes the `-AA -D_HP_NONSTD_FAST_Iostream` performance improvement macro, C++ Standard Library TC1 compliance change, and USA 2007 Daylight Savings Time legislation support. (See “aC++ Run Time Library” on page 351.)
- Dynamic Loader (`dld.so`): Since patch PHSS-32864, September 2005, `dld.so` has enabled large kernel page size, support for loading unaligned shared libraries and executables, and other changes. (See “Dynamic Loader (`dld.so`)” on page 353.)
- FirstBoot: As part of Transition links (a.k.a. Upgrade), HP used to create a symbolic link `/etc/set_parms -> /sbin/set_parms`. Transition links are obsoleted in HP-UX 11i v3 and `set_parms` is available to the user as `/sbin/set_parms`. So HP-UX 11i v3 will not support the symbolic link `/etc/set_parms`. (See “FirstBoot” on page 353.)
- HP MLIB: Updated to version 9.5 with the addition of two new libraries, VECLIBSC8 and LAPACKSC8, which are 64-bit address libraries with 64-bit integer values that use calling conventions similar to those found in Cray’s SCILIB math library. (See “HP MLIB” on page 354.)
- HP MPI: Updated to version 2.2 with several new features, including C++ bindings, new `mpirun` command line launch options, MPI-2 supported ROMIO, and other new features. (See “HP MPI” on page 355.)
- HP-UX C Library (`libc`) (see page 359)
  - HP-UX C library (`libc`) - UNIX 2003 Standard Compliance: `libc` library enhanced to comply with UNIX 2003 standards. A number of APIs have been added, while some APIs have been modified. (See “HP-UX C library (`libc`) - UNIX 2003 Standard Compliance” on page 359.)
  - HP-UX C library (`libc`) - Other Changes: New features include support for large PID, large `uname` and `hostname`, Tru64 API migration, `malloc` (3C) thread local cache enhancements, long `username` and `groupname`. (See “HP-UX C library (`libc`) - Other Changes” on page 360.)

- **libc.1 Library: Deprecated.** Is a HP-UX 10.20 compatibility “C” library available in HP-UX 11i. No immediate impact in HP-UX 11i v3. When the `libc.1` library is obsoleted, all programs linking to this library will not work. Hence you are encouraged to start migrating your programs from `libc.1` to `libc.2` library. (See “libc.1 Library (Deprecated)” on page 366.)
- **Networking libc APIs: Networking APIs `getnameinfo()` and `getaddrinfo()` now look into the repositories specified with the `hosts` directive of the `/etc/nsswitch.conf` file, as well as those specified in the `inodes` directive, to resolve an IPv4 address. Includes additional changes.** (See “Networking libc APIs” on page 367.)
- **HP-UX Color-Curses: `libcur_colr` Library and Commands: Obsolete.** Were declared deprecated in HP-UX 10.30 and are not available in HP-UX 11i v3 PA-RISC. (See “HP-UX Color-Curses: `libcur_colr` Library and Commands (Obsolete)” on page 357.)
- **Java 2 Platform (see page 369)**
  - **Java JDK/JRE for HP-UX: HP-UX 11i v3 does not include Java 1.3 and Java 3D (J3D 1.4). SDK/RTE version 5.0 has been updated to incorporate defect fixes.** (See “Java JDK/JRE for HP-UX” on page 369.)
  - **Java Out-of-Box: Updated to incorporate defect fixes.** (See “Java OOB” on page 370.)
- **New: libIO Library: `libIO.so` (for Itanium®-based systems) or `libIO.sl` (for PA-RISC systems) is a shared library, which provides APIs for accessing the HP-UX I/O subsystem information. The library will reduce the dependency on other HP-UX commands for I/O information.** (See “libIO Library” on page 371.)
- **libpthread Library: Added new API, `pthread_setschedprio()`, to set scheduling priority of target thread.** (See “libpthread Library” on page 372.)
- **Link Editor (`ld`): Additional options and other changes since patch PHSS\_32864, September 2005.** (See “Link Editor (`ld`)” on page 373.)
- **New: Mercury Library (`libhg`): Provides high performance interfaces between the user programs and the kernel making it possible to transfer key pieces of information back and forth at high speeds.** (See “Mercury Library (`libhg`)” on page 375.)
- **Software Transition Kit (STK): Designed to help transition HP-UX applications from earlier versions of HP-UX to the latest version of HP-UX. Will not be available for HP-UX 11i v3.**
- **Threads Renice facility: Two new `pthread` APIs to change `nice` value of a thread in a multi-threaded process.** (See “Threads Renice facility” on page 378.)
- **UNIX 2003 Standard Profile Conformance: New functions and compiler conformance as defined in Single UNIX Specification version 3. The Precision Architecture (PA) systems will have most of the UNIX 2003 features available for applications. Since the C99 compiler will not be available on PA, full UNIX 2003 branding is not supported. Itanium®-based systems will fully conform and will be branded to UNIX 2003.** (See “UNIX 2003 Standard Profile Conformance” on page 379.)

### Chapter 11: “Internationalization” (see page 383)

- **Unicode 5.0:** Now supported. Unicode 5.0 is an extension to the previously supported Unicode 3.0 character set standard. (See “Unicode 5.0 Support” on page 384.)
- **New: JISX0213 Standard:** Now supported. (See “JIS X 0213 Standard Support” on page 385.)
- **New: KS X 1001 Standard:** Now supported. (See “KS X 1001 Standard Support” on page 386.)
- **New: Big5-2003 and CNS11643 Standards:** Now supported. (See “Big5-2003 and CNS11643-2004 Standard Support” on page 387.)
- **New: HKSCS-2004 (Hong Kong Supplementary Character Set):** Now supported. (See “HKSCS-2004 Support” on page 388.)
- **New: Locales - Baltic/Russia/Ukraine/Latin America:** Now supported. (See “New Locales - Baltic/Russia/Ukraine/Latin America” on page 389.)
- **New: Locale Versioning: localedef/libc UNIX 2003-related I18N changes.** New locale version “locales.3” has been generated for all system supported locale binaries. This has been provided to protect older PA-RISC-based archived applications from unexpected systems behavior in order to fully support the UNIX 2003 standard. (See “New Locale Versioning: localedef/libc UNIX 2003-related I18N changes” on page 391.)
- **UNIX 2003 Support:** The `localedef`, `locale` and `iconv` commands and the associated C library APIs, locale databases and `iconv` converters have been updated to align with the UNIX 2003 standard. (See “UNIX 2003 Support in localedef, locale, and iconv” on page 393.)
- **Alternate Width Properties for Unicode Codesets:** Now supported for Asian locales. (See “Alternate Width Properties for Unicode Codesets” on page 394.)
- **New: Messaging Commands: `mkcatdefs`, `dspmsg`, and `dspcat`.** Added to HP-UX for compatibility with Tru64 UNIX. (See “New Messaging Commands: `mkcatdefs`, `dspmsg`, and `dspcat`” on page 395.)
- **New: Iconv Codeset Converter Config File Changes:** `system.config.iconv`. New `system.config.iconv` file provided to separate the HP-UX core OS `iconv` mapping table information from the layered third-party and user-specific `iconv` mapping table information. (See “Iconv Codeset Converter Config File Changes: `system.config.iconv`” on page 396.)
- **Japanese Mainframe Character Set:** `iconv` now supports an extended area of Japanese mainframe character sets. (See “Japanese Mainframe Character Set Converter” on page 398.)
- **New: Internationalized PostScript Printing Support: `psfontpf`:** New PostScript printer filter `psfontpf` enables printing of non-English international characters in text files and web pages. (See “Internationalized PostScript Printing Support: `psfontpf`” on page 398.)
- **Asian Printing:** Asian `lp` model files and filters have been enhanced to support important Asian national standards and ISO 10646. (See “Asian Printing” on page 399.)

- **TrueType Fonts for European Codesets:** Provides additional TrueType fonts support to cover the glyph patterns for ASCII, Latin-1 Supplement, Latin Extended-A, Latin-Extended-B, Greek, Cyrillic, and currency symbols. (See “TrueType Fonts for European Codesets” on page 401.)
- **Asian TrueType Fonts:** Enhanced to support the latest national standards and ISO10646. New typefaces are provided for Japanese, Simplified Chinese, and Traditional Chinese fonts. (See “Asian TrueType Fonts” on page 402.)
- **Asian Bitmap Fonts:** Enhanced to support the latest national standards and ISO 10646. (See “Asian Bitmap Fonts” on page 403.)
- **Fallback Font Support:** For text-based GUI applications, in the event there are no glyphs, the application will display “?” or “: :” characters. (See “Fallback Font Support” on page 405.)
- **Asian Functionality (Obsoleted and Deprecated):** Several legacy functions are obsolete and have been removed. Also, certain Asian printer lp models, utility/library routines, and dot bitmap fonts have been deprecated. (See “Asian Obsoleted and Deprecated Functionality” on page 406.)

#### **Chapter 12: “Other Functionality” (see page 407)**

- **Common Desktop Environment:** Updated to version 2.1. Now includes native Itanium®-based 32-bit and 64-bit X/Motif libraries; delivers 64-bit PA-RISC and Itanium®-based libraries for the first time in HP-UX 11i v3; supports Node and Host Name Expansion feature and expanded username feature; and includes many other changes. (See “Common Desktop Environment” on page 408.)
- **Distributed Computing Environment (DCE) Client and Integrated Login:** Default permissions of 3 files have changed; several new filesets are available on PA-RISC and Itanium®-based systems; several products are not available with DCE Client; Integrated Login has 2 new filesets. (See “Distributed Computing Environment (DCE) Client and Integrated Login” on page 414.)

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## What is New for Customers Migrating from HP-UX 11i v2 June 2006?

In the following summaries, you can obtain a general picture of how the current release of HP-UX 11i v3 differs from the June 2006 release of HP-UX 11i v2. For further details, see the indicated sections in the remainder of this document.

In addition, you may want to review the list “What is New for Customers Migrating from HP-UX 11i v1 September 2005?” on page 38 for a general picture of how the current release of HP-UX 11i v3 differs from the September 2005 release of HP-UX 11i v1.

### Chapter 4: “Hardware-Specific Information” (see page 73)

- **Enhancements to IO Forwarding:** The *IO forwarding* interrupt comes under the purview of Detect & Strobe and is enhanced. (See “Enhancements to IO Forwarding” on page 75.)
- **New:** estape Tape and eschgr Autochanger Drivers: New with HP-UX 11i v3. *ssrfc* driver no longer available. (See “estape Tape and eschgr Autochanger Drivers” on page 76.)
- **HP-UX 11i v3 Driver Development Kit (DDK):** Enhanced for HP-UX 11i v3. Provides documentation, sample code, build environment and development tools for 3rd-party developers, ISVs and IHVs to develop and test drivers on HP-UX 11i v3 PA-RISC and Itanium®-based platforms. (See “HP-UX 11i v3 Driver Development Kit” on page 80.)
- **Enterprise Virtual Array (EVA):** There is an issue with LUN WWIDs and HP-UX 11i v3. (See “Enterprise Virtual Array (EVA) on HP-UX 11i v3” on page 80.)
- **HP StorageWorks Secure Path:** Obsolete. (See “HP StorageWorks Secure Path Migration from HP-UX 11i v1 and 11i v2 and Obsolescence for HP-UX 11i v3” on page 82.)
- **I/O Subsystem:** Several new I/O commands help manage the I/O subsystem, and existing commands have new options and functionality to support the next generation mass storage stack. (See “I/O Subsystem” on page 83.)
- **New:** The Next Generation Mass Storage Stack manages I/O devices, such as SCSI logical units (LUNs). In this release, the mass storage stack delivers functionality designed to enhance server scalability, adaptability, and performance while retaining backward compatibility. New features include agile addressing, native multi-pathing, and increased parallelization. (See “Mass Storage Stack” on page 85.)
- **Networking and Mass Storage Drivers** (see page 89)
  - **Gigabit Ethernet:** The *igelan*, *gelan* and *btlan* products are enhanced with new features, including online deletion (OLD) and module packaging. (See “GigEther-00, GigEther-01, and IEther-00 (Gigabit Ethernet)” on page 89.)
  - **HyprFabrcc-00:** Supports only Peripheral Component Interconnect (PCI) HF2 cards. HF1 Cards will not be supported. (See “HyprFabrcc-00” on page 92.)



- **New:** InfiniBand: An industry-standard high-speed, packet-based interconnect for node-to-node communications, provides higher speed and lower network latency and uses less CPU than other industry standard protocols. (See “InfiniBand Clustering System” on page 93.)
- PCIMUX-00: The PCIMUX-00 bundle delivers the `pci-mux1` driver, which supports the AD278A and AD279A PCI MUX adapters. (See “PCIMUX-00” on page 94.)
- TermIO-00: The TermIO-00 driver bundle delivers the `pci_mux0` driver, which supports the A6748A and A6749A PCI MUX adapters. (See “TermIO-00” on page 96.)
- FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver for HP-UX 11i v3: Supports new Mass Storage Stack, Agile addressing, Soft Zoning, PCI Online deletion, PCI error detection and recovery. (See “FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver” on page 97.)
- FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3: Supports new mass storage stack, Agile addressing, Soft Zoning, PCI Online deletion, and PCI error detection and recovery. (See “FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3” on page 98.)
- HP PCI Ultra160 SCSI (c8xx): Supports new mass storage stack, PCI OnLine Deletion (OLD), PCI error detection and recovery, HBA Device Special Files (DSF). Termination of support for Ultra2 HBAs. (See “HP PCI Ultra160 SCSI Driver” on page 100.)
- USB-00: Includes various quality improvements from previous releases, a dynamically managed device file system enabled by default, multi-layered USB mass storage encryption support, and device tracking. (See “USB-00” on page 101.)
- **New:** PCI Error Recovery: Provides the ability to detect, isolate, and automatically recover from a PCI error, avoiding a system crash. (See “PCI Error Recovery” on page 103.)
- **New:** PCI Card Online Deletion (OLD): The PCI OL\* feature has been enhanced to allow HP-UX 11i v3 administrators to delete PCI cards and their associated drivers online without requiring a system reboot. (See “PCI Card Online Deletion (OLD)” on page 105.)
- Utility Pricing Solutions (see page 109)
  - HP Instant Capacity: Updated to version B.11.31.08.01 to include modifications to the installation procedure; support for Global Instant Capacity (GiCAP) and hyperthreading; changes to GiCAP grouping rules and `icapstatus` command output; and more. (See “HP Instant Capacity” on page 109.)
  - HP Pay per use: Updated to version B.11.31.08.01.00 with support for hyperthreading features included in HP-UX 11i v3. (See “HP Pay Per Use (PPU)” on page 110.)
- Xserver: The Xserver’s configuration tool is available via the HP SMH interface. (See “Xserver” on page 112.)

**Chapter 5: “General System Administration” (see page 115)**

- **asyncdsk Driver Kernel Tunable `max_async_ports`:** `max_async_ports` is now a dynamic tunable; default value changed to 4096 and maximum value is 4194304. (See “asyncdsk Driver Kernel Tunable `max_async_ports`” on page 117.)
- **New: Concurrent Dump:** You can now configure your machine to perform a distributed parallel dump, thereby improving the dump throughput and reducing dump time. (See “Concurrent Dump” on page 118.)
- **Daylight Savings Time (DST).** Changes for US DST rules. (See “Daylight Savings Time Changes for US in 2007 (Note)” on page 119)
- **Detect and Strobe:** Disabled when any system configuration altering activity is in progress. Functionality enabled by default (value set at 80%). (See “Detect and Strobe” on page 119.)
- **Disks and File Systems (`fsweb`):** Disks and File Systems (`fsweb`): Provides a web-based graphical user interface (GUI) and text user interface (TUI) for File System and Disks system administration tasks. (See “Disks and File Systems (`fsweb`)” on page 120.)
- **New: Distributed Systems Administration Utilities:** Includes an interface expansion, providing long username and long `hostnames`. (See “Distributed Systems Administration Utilities” on page 122.)
- **New: Enhanced User Core File Naming:** New command, `coreadm`, introduced to uniquely name application core files created by abnormally terminating user processes. (See “Enhanced User Core File Naming” on page 123.)
- **Enterprise Cluster Master Toolkit:** Includes support for VERITAS Cluster File System (CFS) in a Serviceguard A.11.17 environment, support for Serviceguard 11.17.01 (non-CFS) for CIFS, Tomcat, Apache, Oracle 10g, and more. (See “Enterprise Cluster Master Toolkit Version” on page 124.)
- **New: Event Manager:** A comprehensive mechanism for posting, distributing, storing, and reviewing event information. Composed of a kernel component, user libraries (`libevm.so`) and a set of commands. (See “Event Manager” on page 126.)
- **Event Monitoring Service:** Now enhanced to send WBEM indications, which can be viewed from the EVWEB tool. (See “Event Monitoring Service” on page 128.)
- **New: High Resolution Timer Support:** Enhances select timer-related system calls and APIs to provide a resolution finer than the default 10 millisecond resolution. (See “High Resolution Timer Support” on page 129.)
- **HP OpenView GlancePlus Pak:** Updated to version C.04.55 with support for large process IDs; enhancement to record the Logical Volume (LV) metrics for Veritas Volume Manager, versions VxVM 4.1 and VxVM 5.0; new metrics for monitoring the UFC; and other changes. (See “HP OpenView GlancePlus Pak” on page 130.)
- **HP Partitioning and Virtual Server Environment (see page 132)**
  - **New: Dynamic LCPU:** Provides the ability to enable and disable Logical Processors (LCPU) dynamically at the processor set boundary. Supported only on systems with the Hyper-Threading feature available and enabled. (See “Dynamic LCPU” on page 132.)

- HP Global Workload Manager: Updated to version A.02.50.00.x with support for Linux managed nodes, support for Windows virtual machine guests, nested partitions, and many other changes. (See “HP Global Workload Manager” on page 134.)
- HP Process Resource Manager: Updated with features including integration with HP System Management Homepage, ability to map Unix groups to PRM groups, ability to cap PRM group CPU consumption on a per-group basis, support for Hyper-Threading in PSET PRM groups, and other features. (See “HP Process Resource Manager” on page 138.)
- HP-UX 11i v3 Patch Bundles and Software Pack: The initial release of HP-UX 11i v3 will not include the standard Quality Pack (QPK), Hardware Enablement (HWE) and FEATURE11i patch bundles or the Software Pack that delivers optional new core enhancements. The delivery of these patch bundles and the Software Pack is planned for the first update release of HP-UX 11i v3.
- HP-UX Virtual Partitions: Updated to version A.05.01 with online memory migration, mixing A.04.02 and A.05.01 virtual partitions in the same vPars environment, and hyperthreading. Purchased separately. (See “HP-UX Virtual Partitions” on page 140.)
- Integrity Virtual Machines (VM) Note: The host for Integrity VM is not supported on 11i v3. However, the virtual machines of the host can run 11i v3. (See “Integrity VM (Virtual Machines) for 11i v3” on page 141.)
- HP-UX Workload Manager: Updated to version A.03.02.02. Changes include ability to map Unix groups to workload groups; extended regular expressions in alternate names for application records; enhancements to `wlminfo` output; and other changes. (See “HP-UX Workload Manager” on page 142.)
- HP-UX Workload Manager Toolkits: Updated to version A.01.10.01. Product label changed from T1302AA to `WLMToolkits`. `PPUTK` obsoleted; `SASTK` and `DMTK` deprecated. (See “HP-UX Workload Manager Toolkits” on page 144.)
- Partition Manager: Updated to v2.0 (version B.31.02.03.01) with the ability to enable and disable Hyper-Threading for nPartitions whose cells have processors that are Hyper-Threading capable. (See “Partition Manager” on page 146.)
- nPartition Provider: Updated to version B.31.01.07.01 with support for WBEM Services version 2.5. (See “nPartition Provider” on page 147.)
- **New:** Utilization Provider: Lightweight daemon (`utild`) that records system-utilization data on a 5-minute interval; data recorded includes CPU, memory, disk, and network utilization; also includes a WBEM provider for access to the data. (See “Utilization Provider” on page 148.)
- vPar Provider: WBEM provider displays information about virtual partitions. Read-only; clients cannot modify virtual partition configurations with it. (See “vPar Provider” on page 149.)
- HP Serviceguard: Updated to version A.11.17.01 with support for persistent DSF naming and dynamic multipathing, large PID, identification of networking interfaces (NICs) that are part of the Serviceguard cluster configuration, and other features. VERITAS Cluster File System (CFS) and Cluster Volume Manager (CVM) not supported in initial release of HP-UX 11i v3. RS232 serial line as cluster heartbeat is obsolete. (See “HP Serviceguard” on page 150.)

- HP Serviceguard Network File Server (NFS) Toolkit: Updated to version A.11.31.02 with new control script template and a defect fix. Can work with Serviceguard A.11.17.01, but does not support some Serviceguard A.11.17.01 and NFS HP-UX 11i v3 features. Customers who need VERITAS Cluster File System (CFS) should not upgrade to HP-UX 11i v3 until CFS is available on that platform. (See “HP Serviceguard NFS Toolkit” on page 151.)
- HP System Management Homepage: Updated to version A.2.2.5 to incorporate defect fixes. In addition, is the addition of the new Web-based solutions for Networking and Communications (*ncweb*), and ServiceGuard complex management (*sgmgr*) being introduced for HP-UX 11i v3. (See “HP System Management Homepage” on page 153.)
- HP Systems Insight Manager: Updated to “HP SIM 5.0 with Update 2 - HP-UX” with support for HP BladeSystem c-Class blade and enclosure, and onboard administrator; HP BladeSystem Integrated Manager 2.1 with updated functionality; minimum system memory configuration to run HP SIM on HP-UX 11i v3 is now 3GB, and defect fixes. (See “HP Systems Insight Manager” on page 155.)
- HP WBEM Services for HP-UX: Updated to version A.02.05 with association providers, internationalization support for CIM operations, CIM schema upgrade, and other major changes. (See “HP WBEM Services for HP-UX” on page 157.)
- HP-UX Accounts for Users and Groups: New TUI in place of the legacy SAM interface; long user names and group names; NIS + Shadow mode can co-exist. (See “HP-UX Accounts for Users and Groups” on page 160.)
- HP-UX Kernel Configuration: Command preview support in TUI; TUI supports form-based inputs; supports Error Management Technology; includes critical defect fixes. (See “HP-UX Kernel Configuration” on page 161.)
- **New:** HP-UX Large NPROC: The HP-UX 11i v3 system can support more processes running concurrently than previous releases, changing from 30,000 to 60,000. (See “HP-UX Large NPROC” on page 163.)
- **New:** HP-UX Large PID: The range of Process Identifiers (PID) the kernel can generate in a stand-alone HP-UX system has been expanded from 0 ~ 30,000 to 0 ~ 2<sup>30</sup>-1 (1,073,741,823). (See “HP-UX Large PID” on page 164.)
- HP-UX Peripheral Devices Manager: Enhanced to support the Agile Hardware Path Addressing and Persistent Device Special Files; enhanced to allow for Online deletion of OLRAD cards; now reads the detailed CRA report from the log file in which the report is logged after the change in the CRA behavior; and more. (See “HP-UX Peripheral Devices Manager” on page 165.)
- HP-UX System V IPC Message Queues: Enhanced with dynamic tuning capabilities. Tunables *msgmax*, *msgssz*, *msgmap*, *msgseg* are obsolete. Added new dynamic tunable *msgmbs*; indicates maximum kernel memory to be used for messages waiting to be received. Tunables *msgmni*, *msgtql* are made dynamic. (See “HP-UX System V IPC Message Queues” on page 166.)
- HP-UX WBEM Fibre Channel Provider: Updated to version 11.31.01. All functionalities for association classes are now implemented. (See “HP-UX WBEM Fibre Channel Provider” on page 167.)
- **New:** HP-UX WBEM File System Provider: Makes available file system information; instruments the *HPUX\_HFS*, *HP\_LOFS*, *HP\_CDFS*, *HP\_VxFS*, *HP\_NFS*, *HP\_MountPoint* and *HPUX\_Mount* classes. (See “HP-UX WBEM File System Provider” on page 168.)

- HP-UX WBEM IOTree Provider: Now displays information about all slots on HP-UX 11i v3 system. (See “HP-UX WBEM IOTree Provider” on page 169.)
- **New:** HP-UX WBEM Online Operations Service Provider: Not currently supported; intended to support features in future releases of HP-UX 11i v3. (See “HP-UX WBEM Online Operations Service Provider” on page 171.)
- HP-UX WBEM SCSI Provider: Updated to version 11.31.01, but no new feature changes. (See “HP-UX WBEM SCSI Provider” on page 172.)
- Ignite-UX: Updated to version C.7.0.x with multipath-awareness, new approach for addressing I/O, automatic management of the system boot path for multiple path configurations, user-selectable format for recovery archives and golden archives, and other changes. (See “Ignite-UX” on page 173.)
- **New:** Kernel Tunable Values Reset From Boot Prompt: HP-UX 11i v3 release provides a new feature in which kernel tunable values can be reset from the boot prompt. (See “Kernel Tunable Values Reset From Boot Prompt” on page 175.)
- **New:** Livedump: Provides the ability to take a crashdump on a live system without a forced shutdown or panic of that system. Implemented for Itanium®-based platforms only. (See “Livedump” on page 176.)
- **New:** Long Username / Groupname: Current limit enhanced from 8 to 255 bytes. By default 8 is still the limit. With an enabler this limit can be enhanced to 255. Once enabled, cannot be disabled in the future. Not supported for trusted systems. (See “Long Username / Groupname” on page 177.)
- **New:** Node and Host Name Expansion: Provides the ability to set node and host names up to 255 bytes. (See “Node and Host Name Expansion” on page 180.)
- Obsolescence Bundle: Used during an update when obsolete software on the system needs to be removed; automatically selected for updates. Will remove several obsolete or incompatible products and/or drivers. (See “Obsolescence Bundle” on page 182.)
- Online Diagnostics product: Includes several enhancements and features, including support for the Interface Expansion Program (IEP) for large username, groupname, PIDs, and `nproc`; support of additional features of HP-UX Virtual Partitions (vPars), such as support for notification of events due to dynamic CPU migration; support for agile view of devices, for reporting extended hardware path of devices, for reporting recovered Machine Check Aborts; and other features and changes. (See “Online Diagnostics” on page 183.)
- SCSI Kernel Tunables: `scsi_maxphys`, `scsi_max_qdepth` and `default_disk_ir` kernel tunables are obsolete. (See “SCSI Kernel Tunables (Obsolete)” on page 185.)
- Software Distributor: Updated to version 11.31 with support for HP-UX 11i v3-unique features including large pid, long usernames and group names; and improved support for high level software deployment tools such as Software Manager, `update-ux`, and future tools. Includes defect fixes. (See “Software Distributor” on page 186.)
- Software Package Builder: Added new policy files that include the expansion of the acceptable category tags, the addition of the `is_oe` attribute, and changes to the architecture and `os_release` attribute rules. (See “Software Package Builder” on page 187.)

- System Administration Manager (SAM): Deprecated. The `smh` command is recommended, but `sam` command will continue to be available. Some functional areas previously available are obsoleted. (See “System Administration Manager (SAM)” on page 189.)
- System Administration Manager (SAM) Auditing and Security Functional Area: System Security Policies subarea of SAM is replaced with the HP-UX Security Attributes Configuration tool; Audited NIS+ Users subarea is obsolete. (See “System Administration Manager (SAM) Auditing and Security” on page 190.)
- System Administration Manager (SAM) Printers and Plotters Functional Area: Launch point in X/ObAM-based GUI mode is now via the HP System Management Homepage. (See “System Administration Manager (SAM) Printers and Plotters” on page 191.)
- System Administration Management Tool Changes: SAM and HP System Management Homepage: System Administration Manager (SAM) is deprecated in HP-UX 11i v3. HP System Management Homepage (HP SMH) is the system administration tool for managing HP-UX 11i. HP SMH provides web-based systems management functionality, at-a-glance monitoring of system component health, and consolidated log viewing. HP SMH also provides Terminal User Interfaces (TUIs). (See “System Administration Management Tool Changes: SAM and HP System Management Homepage” on page 192.)
- System Fault Management: Features include Event Manager-Common Information Model Provider and Error Management Technology. SFMIndicationProvider and Log Viewer not available; other changes included. (See “System Fault Management” on page 193.)
- Update-UX and SW-GETTOOLS: The `update-ux` command now uses Software Manager, a new application that provides features including support for preview; interactive TUI; better support for multiple media, including more accurate disk space analysis, dependency selection across media; and improved logging capabilities. (See “Update-UX and SW-GETTOOLS” on page 194.)
- Virtual Memory Kernel Tunable `physical_io_buffers`: Now obsolete. Was used in HP-UX 11i v1.6 and v2 to size a shared buffer pool for physical I/O operations in the kernel. As of HP-UX 11i v3 and later, the kernel automatically manages the pool size. (See “Virtual Memory Kernel Tunable `physical_io_buffers` (Obsolete)” on page 195.)
- Virtual Memory Kernel Tunables: The `eqmem_limit` (only on PA-RISC systems) has been added. Several tunables has been removed. See section for details. (See “Virtual Memory Kernel Tunables” on page 196.)

#### Chapter 6: “Disk and File Management” (see page 199)

- HFS (also known as UFS) File System Type: Now deprecated. Will be removed from the OS in a future release, to be determined. (See “HFS File System Type (Deprecated)” on page 200.)
- HFS file system and backup commands: To work on file sizes larger than 2TB. (See “HFS Filesystem and Backup Commands for Files >2TB” on page 200.)
- HP CIFS Client: Updated to version A.02.02.01 with support for MS Distributed File System (DFS) and DLKM feature and other changes. (See “HP CIFS Client” on page 201.)

- HP CIFS Server: Updated to 3.0f version A.02.03: Redesign of Winbind code; File Locking Interoperation Functionality; support for long user and group names; support for TDB Memory Map. (See “HP CIFS Server” on page 204.)
- HP-UX File Systems Architecture Enhancements: Numerous enhancements include VFS stacking capabilities; `fsdaemon` user level daemon; large file systems and large files support; improved file systems syncer; performance improvement of `aioreap` (2); support of larger files and long link names in backup utility; and several other enhancements. (See “HP-UX File Systems Architecture Enhancements” on page 206.)
- Logical Volume Manager and MirrorDisk/UX: Delivers significant scalability and availability enhancements. Supports the next generation mass storage stack, and is integrated with the mass storage stack’s load balancing and dynamic LUN expansion features; enhanced to support larger logical volumes, temporary suspension of volume groups, striping with mirroring, and dynamic LUN expansion; enables online modification of a volume group, as well as a new script to simplify the replacement of a failing disk. (See “Logical Volume Manager and MirrorDisk/UX” on page 212.)
- Open Network Computing (ONC) (see page 217)
  - AutoFS/Automounter: Updated with the ability to configure AutoFS through the `/etc/default/autofs` file; a new startup/shutdown script for product (no longer controlled by the NFS client startup/shutdown script); support for NFSv4, SecureNFS, and IPv6. (See “AutoFS” on page 217.)
  - Cache File System (CacheFS): New features include long file name support, `cachefspack`, and support for largefiles and large file system. (See “Cache File System” on page 219.)
  - Library RPC: Library routines support several new datatypes, add support for IPv6, and more. (See “Library RPC” on page 220.)
  - Network File System (NFS) Services: Provides numerous enhancements, including `pcnfsd` daemon, which is multithreaded and supports shadow password and Secure RPC; new user mode daemon generates and validates API security tokens, and maps the GSSAPI principal names to the local user and group IDs; additional security mechanisms, such as Secure NFS that supports Kerberos through GSSAPI; NFS access using a firewall; and many other features. (See “Network File System (NFS) Services” on page 223.)
  - Network Information Service (NIS): Provides several new features including support for shadow mode; support for enabling DNS forwarding mode; support for long `uname`, `hostname`, and `username`; and other features. (See “Network Information Service (NIS)” on page 227.)
  - NIS+: Obsoleted. (See “NIS+ (Obsoleted)” on page 229.)
  - PCNFSD: `pcnfsd` daemon is multithreaded. Support for shadow password and secure RPC; support for printer names up to the PCNFSD protocol limitation of 64 characters. (See “PCNFSD” on page 230.)
- **New:** Unified File Cache: Integrates the page cache and buffer cache to provide coherency for file access. Serves as a key enabler for VxFS 4.1 and ONC+2.3. Improves source compatibility with Solaris, Tru64, and Linux applications that

depend on coherency of page and buffer cache. Potential performance improvement of applications that depend on coherency of page and buffer cache. (See “Unified File Cache” on page 231.)

- VERITAS File System (VxFS): Features in version 4.1 include VxFS filesystem as a DLKM; multi-device filesystems; checkpoint enhancements; portable data enhancements; and other features. Cluster File System (CFS) is not supported in the initial release of HP-UX 11i v3. (See “VERITAS File System” on page 232.)
- VERITAS Volume Manager (VxVM): Features in version 4.1 include support for Volume Sets and VxFS MDS; Cross-Platform Data Sharing; Device Discovery Layer Phase 2; Serial Split Brain; and other features. Cluster Volume Manager (CVM), a part of VxVM that is enabled by a separate license, is not being provided with the current 4.1 HP-UX 11i v3 release. (See “VERITAS Volume Manager” on page 234.)

### Chapter 7: “Internet and Networking” (see page 237)

- ARPA Transport: Many enhancements to ARPA Transport include Security Containment, sendfile/UFC, UNIX 2003 Conformance, large `hostname` support, and Tru64 Application migration to HP-UX/Itanium®-based. (See “ARPA Transport” on page 238.)
- Browsers: Mozilla is updated with defect fixes. Includes improved Asian font support on HP-UX and the Japanese Language Pack. (See “Browsers” on page 242.)
- HP Data Link Provider Interface (DLPI): Enhancements include `NOSYNC STREAMS` synchronization level for improved performance and scalability for high speed links, online deletion (OLD) of I/O card instances, and dynamic loading and unloading of LAN drivers without reboot. (See “HP Data Link Provider Interface (DLPI)” on page 243.)
- HP-UX PPPv6: Incorporates defect fixes. (See “HP-UX PPPv6” on page 244.)
- HP-UX VLAN: New features include support for HP-UX VLANs over APA aggregates and LAN-monitor failover groups, SMH-Network Interface Configuration support for Web-based VLAN configuration, and `nwmgr` support for HP-UX VLANs. (See “HP-UX VLAN” on page 245.)
- HP-UX Web Server Suite (see page 247)
  - HP-UX Apache-based Web Server: Updated to version 2.0.58.00 as primarily a bug fix release. (See “HP-UX Apache-based Web Server” on page 248.)
  - HP-UX Webmin-based Admin: Upgraded to 1.070.08 as primarily a defect fix release. (See “HP-UX Webmin-based Admin” on page 250.)
- Internet Services: You can now deselect individual Internet Services during installation or remove filesets later. (See “Internet Services” on page 251.)
- BIND: BIND 9.3 includes many new features, including transition support for IPv4 and IPv6. With HP-UX 11i v3, `NAMED` and `NAMED_ARGS` variables are moved to `/etc/rc.config.d/namesvrs`. (See “BIND” on page 252.)
- DHCPv4 (bootpd): New option `sa` configures the `tftp` server, providing control of the `siaddr` field of the `dhcp` packet. New configuration option for the `subnet` selection option in the `/etc/dhcptab` file allows `bootpd` to assign a network address even if `bootpd` is not part of that network. Support for PXE clients is added. (See “DHCPv4 (bootpd)” on page 254.)
- DHCPv6: Now available in the core operating system. (See “DHCPv6” on page 255.)



- *inetd* (1): Two new command line options, `-p` (limit number of processes invoked by *inetd*) and `-a` (enable user level auditing of processes). Support for large hostnames and large PIDs. (See “*inetd*” on page 256.)
- *libc*: Numerous changes in APIs. (See “*libc*” on page 257.)
- Mailx, Elm, and Talk: *elm* (1M) and *mailx* (1M) are long-user-name compliant. (See “Mailx, Elm and Talk” on page 260.)
- R-commands: long username is supported. (See “R-commands (Remote Commands)” on page 261)
- Sendmail: Version 8.13.3 has numerous new features. (See “Sendmail” on page 262.)
- TFTP: **tftpd** (server) and **tftp** (client) now support IPv6 addresses. New command line options specify upper and lower port range limits for data transfer. (See “TFTP” on page 264.)
- WU-FTPD: Version 2.6.1 supports long usernames. This release introduces a new feature, *ascii count* in the *ftpaccess* (4) file by which *ftpf* can be made to reset the timeout alarm of the data connection. (See “WU-FTPD” on page 264.)
- LAN Administration Commands: *lanadmin* now supports an IPoIB interface, 64-bit MIB, and native and non-native drivers developed by independent hardware vendors; *lanscan* and *linkloop* now support IPoIB interfaces. (See “LAN Administration Commands” on page 266.)
- LDAP-UX Integration Product: This release includes the new LDAP-UX version B.04.00.10. (See “LDAP-UX Integration Product” on page 267.)
- **New:** Network Interface Management Command Line Interface: The *nwmgr* command is used to manage LAN-based and IB-based network interfaces; a single tool for performing all network interface-related tasks. (See “Network Interface Management Command Line Interface” on page 270.)
- **New:** Network Interfaces Configuration and Network Services Configuration: These tools in the HP System Management Homepage replace the Networking and Communications functions of the System Administration Manager (SAM), which are no longer available. (See “Network Interfaces Configuration and Network Services Configuration (ncweb)” on page 271.)
- Red Hat Directory Server for HP-UX: Updated to version B.07.10.20 to incorporate defect fixes. (See “Red Hat Directory Server for HP-UX” on page 273.)
- STREAMS: *NOSYNC* feature allows multiple instances of a *put* procedure for a queue and the service routine for that queue to run concurrently. All references to the global variable *uniprocessor* have been removed. (See “STREAMS” on page 275.)
- NetTL - Network Tracing and Logging: The *nettl* command is enhanced with formatting support for IPoIB header, new command-line option to configure trace buffer timer value, support for pre-capture trace filters, and new command-line options to manage trace filters. (See “NetTL - Network Tracing and Logging” on page 277.)

### Chapter 8: “Security” (see page 279)

- HP-UX 11i Security Containment: Fine-grained privileges and compartments are now part of the core. (See “HP-UX 11i Security Containment” on page 280.)

- **HP-UX Auditing System:** Enhanced in several ways, including: Standard Mode Auditing now part of core products; multi-threaded kernel audit daemon is now dedicated in logging the data into configurable number of files for better performance; collected audit data are more comprehensive; and several other enhancements. (See “HP-UX Auditing System” on page 281.)
- **HP-UX Bastille:** With version 3.0.x, new enhancements, capabilities, features, and benefits (including `bastille_drift` analysis) represent additional items that Bastille will be able to lock down, additional usability improvements, and a new ability for Bastille to ensure that each cluster node has a consistent set of security settings. (See “HP-UX Bastille” on page 284.)
- **HP-UX IPFilter:** Updated to version A.03.05.13 with defect fixes and enhancements including filtering on X.25 interfaces, filtering on 10GigE interfaces; IPFilter not plumbed into the networking stack by default; no reboot required to enable IPFilter. (See “HP-UX IPFilter” on page 288.)
- **New:** **HP-UX IPsec:** Previously only available on the AR media. Now delivered on the HP-UX 11i v3 Operating Environments. Provides an infrastructure to allow secure communications (authentication, integrity, confidentiality) over IP networks between systems and devices that implement the IPsec protocol suite. (For update details, see “HP-UX IPsec” on page 290.)
- **HP-UX Secure Shell:** Updated to version A.04.40.005 with new features including an `sftp` only solution in a `chroot` environment; TCP wrappers support for IPv6; Standard Mode Security Extensions (SMSE) enhanced to provide the “Audit all users and events” feature; and other features, as well as defect fixes. (See “HP-UX Secure Shell A.04.40.005” on page 292.)
- **HP-UX Security Attributes Configuration tool (`secweb`):** Updated to support long user name. (See “HP-UX Security Attributes Configuration (`secweb`)” on page 295.)
- **New:** **HP-UX Standard Mode Security Extensions:** Now part of the core OS; provides a new command and new library functions. Shadow passwords are now also supported with NIS. (See “HP-UX Standard Mode Security Extensions” on page 296.)
- **Install-Time Security:** Updated to version 1.0.4 with new questions/configuration, diagnostic daemon configure to local-only use (not network), and `syslog` local-only. (See “Install-Time Security” on page 298.)
- **Kerberos Client:** Updated to version 1.3.5.03 with new features including support for powerful cryptographic algorithms like 3DES, RC4, and AES; support for IPv6; support for TCP; and defect fixes. (See “Kerberos Client” on page 299.)
- **OpenSSL:** Updated to version A.00.09.08b.09.07j with support (in default version) for several hardware ENGINES (see section for specifics); support for elliptic curve cryptography; and EVP, the library of which provides a high-level interface to cryptographic functions. Other provided versions include other features. (See “OpenSSL” on page 301.)
- **PAM Kerberos:** Enhanced to issue a warning if `rc_host_0` is owned by anyone other than root when a user tries to rlogin into a system; will also issue a warning if the keytable entry is not found for the host service principal on the client but present at the KDC. (See “PAM Kerberos” on page 302.)
- **Security Patch Check:** Updated to incorporate defect fixes. (See “Security Patch Check” on page 304.)

**Chapter 9: “Commands and System Calls” (see page 307)**

- `/etc/skel/.profile` shell script: `.` (current path) in `$PATH` is deprecated. (See “`/etc/skel/.profile` shell script” on page 309.)
- 32-bit `pstat` System Call (Deprecated): When compiling a 32-bit application that uses the `pstat()` system call, the compiler option `_D_PSTAT64` must now be specified. This causes `pstat()` to use 64-bit fields rather than 32-bit fields. The application still remains a 32-bit application. (See “32-bit `pstat` System Call (Deprecated)” on page 309.)
- `at`, `cron`, and `batch` Commands: New features include support for queueing multiple jobs at the same time, support for queueing of more than 100 jobs, and ability to schedule jobs up to the `njob` limit specified for every queue in `queuedefs(4)`. (See “`at`, `cron`, and `batch` Commands” on page 310.)
- `core` Format Implementation Change: The true version string has replaced the `utsname` struct in the `CORE_KERNEL` segment. A work-around has been provided for applications which reversed-engineered the `core` file format and depend on `utsname` being in it. This new `core` file format is now the default format. (See “`core` Format Implementation Change” on page 312.)
- `cs` Command Line Interpreter: The non-interactive invocation of `cs` will not source the `~/.history` file by default. (See “`cs` Command Language Interpreter” on page 313.)
- File Systems Backup and Recovery Commands `fbackup`, `frecover`, and `ftio`: Deprecated; will be obsolete in a future HP-UX release. You should prepare by migrating to the favorable replacement `pax`. Support will be continued for archive retrieval. (See “File Systems Backup and Recovery Commands `fbackup`, `frecover`, and `ftio` (Deprecated)” on page 314.)
- **New:** `gcore` Command: creates a core image of each specified process. (See “`gcore` Command” on page 315.)
- `getgroups()`, `setgroups()`: no longer limited by the `NGROUPS_MAX`. (See “`getgroups`, `setgroups` System Calls” on page 316.)
- `getty` Command: Enhanced to configure the default setting for special control characters (erase, kill, etc.) by the user. (See “`getty` Command” on page 318.)
- HP-UX Kernel Configuration Commands: Includes several significant changes including revision of error, warning, and note messages for clarity; new options for `kconfig`, `kcmodule`, and `kctune` for control of automatic configuration backups; 2 new options for `kctune` command; `kctune` now allows some tunable values to be specified in terms of the percentage of some system resource; changes have been made to the kernel configuration commands to improve resiliency and performance; tunable parameter values may now be overridden on the boot loader command line; and several other changes, including some obsolescences. (See “HP-UX Kernel Configuration Commands” on page 319.)
- `iostat` Command: Enhanced to report activity for each active lunpath to the LUNs. Also, the new option `-L` has been added, which lists active lunpath statistics. (See “`iostat` Command” on page 320.)
- Long `hostname`, `uname`, and `setuname`: The limits of these commands can now be expanded to 255 bytes. (See “Long `hostname`, `uname`, and `setuname`” on page 321.)

- **New:** Long Username Support by HFS ff, VxFS 4.1 ff, repquota, quotacheck: Enhanced to support the username up to 255 bytes. (See “Long Username Support by HFS ff, VxFS 4.1 ff, repquota, quotacheck” on page 323.)
- lp, lpadmin, lpfence, lpmove, and lpsched Commands: Printers can now be added/removed/modified without bringing down the lp scheduler; line printer spooler enhanced to support printer/class names up to 250 characters from the previous limit of 14 characters; support also extended to remote destination names. (See “lp, lpadmin, lpfence, lpmove, and lpsched Commands” on page 324.)
- mmap() System Call: Enhanced to support mapping file with read only permission with PROT\_EXEC and implicit mmap with MAP\_FIXED (See “mmap() System Call” on page 325.)
- pax Command: Enhanced to conform to the Unix 2003 Standard. You will now be able to use pax to archive files having a size greater than or equal to 8GB; long user name/group name; large UID/GID greater than 2097151; long pathname or link name. (See “pax Command” on page 326.)
- PFS Commands: Obsolete. (See “PFS (Portable File System) Commands (Obsolete)” on page 328.)
- pipcs Command: Enhanced to provide details regarding processes using the various POSIX Message Queues, as well as creation time and last modification time of the POSIX Message Queues. (See “pipcs Command” on page 328.)
- ps Command: Enhanced to display maximum of 1020 characters in the COMMAND field. (See “ps Command” on page 329.)
- **New:** pselect() System Call: Added to meet the UNIX 2003 Standard. Provides additional parameter options to users of the select() system call. Timeout granularity may be specified in seconds and nanoseconds. A new signal mask parameter is also available to be used for the duration of system call. (See “pselect() System Call” on page 330.)
- psrset Command: Enhanced to support one more PSET attribute type called LCPU. (See “psrset Command” on page 331.)
- pstat\_getstatic() System Call: Information returned by pstat\_getstatic() may now change between reboots due to manually or automatically generated administrative changes in the associated kernel tunables, online addition/deletion of resources, or other events. Likelihood of it changing is infrequent. (See “pstat\_getstatic() System Call” on page 332.)
- **New:** Ptools Process Management Tools: New set of process management tools that support easy process tracking and debugging. Consists of the following commands: pmap, pfiles, pgrep, pkill, ptree. (See “Ptools Process Management Tools Command” on page 333.)
- ptrace() System Call: Obsolete in HP-UX 11i v3. (See “ptrace() System Call (Obsolete)” on page 335.)
- sar Command: Enhanced to report activity for each HBA and Tape device. (See “sar Command” on page 337.)
- setboot Command: modified to take a persistent DSF or a lunpath hardware path as valid input to set the bootpath for next boot; enhanced to enable or disable hyperthreading environment for the next boot on a Dual-Core Intel® Itanium® 2 platform. (See “setboot Command” on page 338.)

- `sigblock(2)`, `sigsetmask(2)`, `sigstack(2)`, `sigvector(2)`, `bsd_signal(3C)`: Manpages are obsolete. (See “`sigblock(2)`, `sigsetmask(2)`, `sigstack(2)`, `sigvector(2)`, `bsd_signal(3C)` Manpages (Obsolescence)” on page 340.)
- `spray` Command: Provides two new options: `-d`, which specifies how many microseconds to pause between sending each packet, and `-t`, which specifies class of transports. (See “`spray` Command” on page 341.)
- **New:** `swapctl()` System Call: Allows you to configure primary swap to take effect on the next boot. Previously this could only be done via the commands `lvlnboot` and `vxvmbboot`. `swapon()` system call is deprecated. (See “`swapctl()` and `swapon()` System Calls” on page 342.)
- `swapon` and `swapinfo` Commands: `swapon` command enhanced to support setting/unsetting of primary swap device for next boot; `swapinfo` command supports new `-s` option to display settings of the primary swap for next boot. (See “`swapon` and `swapinfo` Commands” on page 343.)
- `sysdef` Command: Deprecated. Reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`. (See “`sysdef` Command (Deprecated)” on page 344.)
- `syslogd` Command: Enhanced to log multibyte message strings correctly. (See “`syslogd` Command” on page 345.)
- `usermod` has been modified to selectively prevent the movement of home directories with `-m` option. (See “`usermod` Command” on page 346.)
- UNIX 2003 Compliance: All commands are modified/enhanced to conform to UNIX 2003 Standards. The UNIX 2003 changes which do not affect HP-UX compatibility are available by default. Otherwise, in order to get Unix 2003 behavior, the variable `UNIX_STD` has to be defined in the environment. (See “UNIX 2003 Standards Compliance Commands” on page 347.)

#### Chapter 10: “Libraries and Programming” (see page 349)

- Bundled C Compiler: Updated to version A.06.12 on Integrity Servers and B.11.11.16 on PA-RISC. Highly compatible with previous versions; diagnostic messages have changed; more erroneous and suspicious source constructs are diagnosed. (See “Bundled C Compiler” on page 350.)
- aC++ Run Time Library: Includes the `-AA -D_HP_NONSTD_FAST_IOSTREAM` performance improvement macro, C++ Standard Library TC1 compliance change, and USA 2007 Daylight Savings Time legislation support. (See “aC++ Run Time Library” on page 351.)
- FirstBoot: As part of Transition links (a.k.a. Upgrade), HP used to create a symbolic link `/etc/set_parms`  $\rightarrow$  `/sbin/set_parms`. Transition links are obsoleted in HP-UX 11i v3 and `set_parms` is available to the user as `/sbin/set_parms`. So HP-UX 11i v3 will not support the symbolic link `/etc/set_parms`. (See “FirstBoot” on page 353.)
- HP MLIB: Updated to version 9.5 with the addition of two new libraries, `VECLIBSC8` and `LAPACKSC8`, which are 64-bit address libraries with 64-bit integer values that use calling conventions similar to those found in Cray’s `SCILIB` math library. (See “HP MLIB” on page 354.)
- HP-UX C Library (`libc`) (see page 359)

- HP-UX C library (`libc`) - UNIX 2003 Standard Compliance: `libc` library enhanced to comply with UNIX 2003 standards. A number of APIs have been added, while some APIs have been modified. (See “HP-UX C library (`libc`) - UNIX 2003 Standard Compliance” on page 359.)
- HP-UX C library (`libc`) - Other Changes: New features include Tru64 API migration, `malloc` (3C) thread local cache enhancements, long username and groupname. (See “HP-UX C library (`libc`) - Other Changes” on page 360.)
- `libc` (1) Library: Deprecated. Is a HP-UX 10.20 compatibility “C” library available in HP-UX 11i. No immediate impact in HP-UX 11i v3. When the `libc` (1) library is obsoleted, all programs linking to this library will not work. Hence you are encouraged to start migrating your programs from `libc` (1) to `libc` (2) library. (See “`libc`.1 Library (Deprecated)” on page 366.)
- Networking `libc` APIs: The return value of the `gai_strerror` (3N) API has changed from `char` to `const char`. Includes other changes as well. (See “Networking `libc` APIs” on page 367.)
- HP-UX Color-Curses: `libcur_colr` Library and Commands: Obsolete. Were declared deprecated in HP-UX 10.30 and are not available in HP-UX 11i v3 PA-RISC. (See “HP-UX Color-Curses: `libcur_colr` Library and Commands (Obsolete)” on page 357.)
- Java 2 Platform (see page 369)
  - Java JDK/JRE for HP-UX: HP-UX 11i v3 does not include Java 1.3 and Java 3D (J3D 1.4). SDK/RTE version 5.0 has been updated to incorporate defect fixes. (See “Java JDK/JRE for HP-UX” on page 369.)
  - Java Out-of-Box: Updated to incorporate defect fixes. (See “Java OOB” on page 370.)
- **New:** `libIO` Library: `libIO.so` (for Itanium®-based systems) or `libIO.sl` (for PA-RISC systems) is a shared library, which provides APIs for accessing the HP-UX I/O subsystem information. The library will reduce the dependency on other HP-UX commands for I/O information. (See “`libIO` Library” on page 371.)
- `libpthread` Library: Added new API, `pthread_setschedprio()`, to set scheduling priority of target thread. (See “`libpthread` Library” on page 372.)
- Link Editor (`ld`): Additional linker options introduced since patch PHSS\_34440, June 2006, and other changes. (See “Link Editor (`ld`)” on page 373.)
- Mercury Library (`libhg`): Provides high performance interfaces between the user programs and the kernel making it possible to transfer key pieces of information back and forth at high speeds. (See “Mercury Library (`libhg`)” on page 375.)
- Software Transition Kit (STK): Designed to help transition HP-UX applications from earlier versions of HP-UX to the latest version of HP-UX. Will not be available for HP-UX 11i v3.
- Threads Renice facility: Two new `pthread` APIs to change `nice` value of a thread in a multi-threaded process. (See “Threads Renice facility” on page 378.)
- UNIX 2003 Standard Profile Conformance: New functions and compiler conformance as defined in Single UNIX Specification version 3. The Precision Architecture (PA) systems have most of the UNIX 2003 features available for applications. Since the

C99 compiler will not be available on PA, full UNIX 2003 branding is not supported. Itanium®-based systems fully conform and are branded to UNIX 2003. (See “UNIX 2003 Standard Profile Conformance” on page 379.)

- Unwind Library (libunwind): Updated to version 1.48. Performance of the unwind express APIs has been improved substantially; `U_STACK_TRACE (3X)` and `_UNW_STACK_TRACE (3X)` APIs have been enhanced; new APIs have been added to the unwind express portion of the library. (See “Unwind Library (libunwind)” on page 380.)

#### Chapter 11: “Internationalization” (see page 383)

- Unicode 5.0: Now supported. Unicode 5.0 is an extension to the previously supported Unicode 3.0 character set standard. (See “Unicode 5.0 Support” on page 384.)
- **New:** JISX0213 Standard: Now supported. (See “JIS X 0213 Standard Support” on page 385.)
- **New:** KS X 1001 Standard: Now supported. (See “KS X 1001 Standard Support” on page 386.)
- **New:** Big5-2003 and CNS11643 Standards: Now supported. (See “Big5-2003 and CNS11643-2004 Standard Support” on page 387.)
- **New:** HKSCS-2004 (Hong Kong Supplementary Character Set): Now supported. (See “HKSCS-2004 Support” on page 388.)
- **New:** Locales - Baltic/Russia/Ukraine/Latin America: Now supported. (See “New Locales - Baltic/Russia/Ukraine/Latin America” on page 389.)
- **New:** Locale Versioning: `localedef/libc` UNIX 2003-related I18N changes. New locale version “`locales.3`” has been generated for all system supported locale binaries. This has been provided to protect older PA-RISC-based archived applications from unexpected systems behavior in order to fully support the UNIX 2003 standard. (See “New Locale Versioning: `localedef/libc` UNIX 2003-related I18N changes” on page 391.)
- UNIX 2003 Support: The `localedef`, `locale` and `iconv` commands and the associated C library APIs, locale databases and `iconv` converters have been updated to align with the UNIX 2003 standard. (See “UNIX 2003 Support in `localedef`, `locale`, and `iconv`” on page 393.)
- Alternate Width Properties for Unicode Codesets: Now supported for Asian locales. (See “Alternate Width Properties for Unicode Codesets” on page 394.)
- **New:** Messaging Commands: `mkcatdefs`, `dspmsg`, and `dspcat`. Added to HP-UX for compatibility with Tru64 UNIX. (See “New Messaging Commands: `mkcatdefs`, `dspmsg`, and `dspcat`” on page 395.)
- **New:** Iconv Codeset Converter Config File Changes: `system.config.iconv`. New `system.config.iconv` file provided to separate the HP-UX core OS `iconv` mapping table information from the layered third-party and user-specific `iconv` mapping table information. (See “Iconv Codeset Converter Config File Changes: `system.config.iconv`” on page 396.)
- Japanese Mainframe Character Set: `iconv` now supports an extended area of Japanese mainframe character sets. (See “Japanese Mainframe Character Set Converter” on page 398.)

- **New: Internationalized PostScript Printing Support:** `psfontpf`: New PostScript printer filter `psfontpf` enables printing of non-English international characters in text files and web pages. (See “Internationalized PostScript Printing Support: `psfontpf`” on page 398.)
- **Asian Printing:** Asian `lp` model files and filters have been enhanced to support important Asian national standards and ISO 10646. (See “Asian Printing” on page 399.)
- **TrueType Fonts for European Codesets:** Provides additional TrueType fonts support to cover the glyph patterns for ASCII, Latin-1 Supplement, Latin Extended-A, Latin-Extended-B, Greek, Cyrillic, and currency symbols. (See “TrueType Fonts for European Codesets” on page 401.)
- **Asian TrueType Fonts:** Enhanced to support the latest national standards and ISO10646. New typefaces are provided for Japanese, Simplified Chinese, and Traditional Chinese fonts. (See “Asian TrueType Fonts” on page 402.)
- **Asian Bitmap Fonts:** Enhanced to support the latest national standards and ISO 10646. (See “Asian Bitmap Fonts” on page 403.)
- **Fallback Font Support:** For text-based GUI applications, in the event there are no glyphs, the application will display “?” or “:.” characters. (See “Fallback Font Support” on page 405.)
- **Asian Functionality (Obsoleted):** Several legacy functions are obsolete and have been removed. Also, certain Asian printer `lp` models, utility/library routines, and dot bitmap fonts have been deprecated. (See “Asian Obsoleted and Deprecated Functionality” on page 406.)

#### Chapter 12: “Other Functionality” (see page 407)

- **Common Desktop Environment:** Updated to version 2.1. now includes native Itanium®-based 32-bit CDE binaries, 32-bit Xclients, and other features; delivers 64-bit PA-RISC and Itanium®-based libraries for the first time in HP-UX 11i v3; supports Node and Host Name Expansion feature and expanded username feature; and includes several other changes. (See “Common Desktop Environment” on page 408.)
- **Distributed Computing Environment (DCE) Client and Integrated Login:** Several filesets have been removed; several products are not available with DCE Client; Integrated Login has introduced a new library. (See “Distributed Computing Environment (DCE) Client and Integrated Login” on page 414.)

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#### NOTE

Revisions to this document are contained in the *HP-UX 11i v3 Release Notes Errata*, located at <http://docs.hp.com/en/oshpux11iv3.html> (navigate to **Release Notes**).

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## What's in This Chapter?

This chapter provides information about hardware supported by the HP-UX 11i v3 release. It includes the following sections:

- Enhancements to IO Forwarding (see page 75)
- estape Tape and eschgr Autochanger Drivers (see page 76)
- Graphics Bundle (see page 79)
- HP-UX 11i v3 Driver Development Kit (see page 80)
- Enterprise Virtual Array (EVA) on HP-UX 11i v3 (see page 80)
- HP StorageWorks Secure Path Migration from HP-UX 11i v1 and 11i v2 and Obsolescence for HP-UX 11i v3 (see page 82)
- I/O Subsystem (see page 83)
- Mass Storage Stack (see page 85)
- Networking and Mass Storage Drivers (see page 89)
  - Required Networking Drivers (see page 89)
    - GigEther-00, GigEther-01, and IEther-00 (Gigabit Ethernet) (see page 89)
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    - 10 Gigabit Ethernet (see page 91)
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    - TermIO-00 (see page 96)
  - Required Mass Storage Drivers (see page 97)
    - FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver (see page 97)
    - FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3 (see page 98)
    - HP PCI Ultra160 SCSI Driver (see page 100)
    - USB-00 (see page 101)
- PCI Error Recovery (see page 103)
- PCI Card Online Deletion (OLD) (see page 105)
- Supported Systems (see page 106)
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**What's in This Chapter?**

- **Supported and Unsupported HP-UX I/O Cards** (see page 108)
- **Utility Pricing Solutions** (see page 109)
  - HP Instant Capacity (see page 109)
  - HP Pay Per Use (PPU) (see page 110)
- **Xserver** (see page 112)

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## Enhancements to IO Forwarding

IO Forwarding is a functionality available in HP-UX, from 10.x onwards, by which I/O requests are forwarded to the processor assigned to handle the associated device interrupt, so as to eliminate cache-to-cache synchronization and thereby improve performance.

The following enhancements to IO Forwarding in HP-UX integrate with Detect & Strobe functionality. (For information on Detect & Strobe, see “Detect and Strobe” on page 119.)

### Summary of Change

#### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

These enhancements include:

- HP-UX 11i v3 no longer includes the tunable for *ioforw\_timeout*, which was introduced as part of a patch.
- IO Forwarding has been brought under the purview of Detect and Strobe.

#### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

- HP-UX 11i v3 no longer includes the tunable for *ioforw\_timeout*.
- IO Forwarding has been brought under the purview of Detect and Strobe.

### Impact

When Detect & Strobe is enabled, you see an improvement in overall system performance when the system is experiencing heavy IO Forwarding activity. This could lead to a slight drop in the rate of IO request processing and affect the throughput of high frequency interrupt generating IO-bound jobs.

### Compatibility

Retraction of tunable for *ioforw\_timeout*. Enablement of the throttling mechanism by default (interrupt throttling accomplished using Detect & Strobe).

### Performance

You may experience some performance degradation for IO bound processes only with extremely high rate of interrupt generation. However, you should see overall system performance improvement under heavy interrupt activity.

### Documentation

Beyond this section, there is no separate documentation for IO Forwarding in HP-UX 11i v3. For information about IO Forwarding when it was first introduced (during the HP-UX v10.0 to 10.30 era), see the following:

- <http://docs.hp.com/en/5965-4406/ch05s11.html>

- <http://docs.hp.com/en/B3782-90716/ch05s15.html>

## Obsolescence

This product was first developed as an enhancement over HP-UX 11i v1, integrated into the pre-release base kernel code in HP-UX 11i v2, and added into the pre-release base kernel code in HP-UX 11i v3. There are no current plans for obsolescence.

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## estape Tape and eschgr Autochanger Drivers

estape, version 11.31.01, is the new tape driver for HP-UX 11i v3.

eschgr, version 11.31.01, is the new driver for autochanger devices for HP-UX 11i v3.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- estape

estape is the new tape driver in HP-UX 11i v3.

The device special files (referred to as DSFs) for the estape driver have the following naming convention:

```
/dev/rtape/tape#_BEST[n][b]
```

There are four such files (referred to as persistent DSFs) corresponding to each of the four different permutations of the *n* and *b* options. These are claimed by the estape driver. See the *intro (7)* manpage for more details on persistent device special file names.

The minor number of the device ID (*dev\_t*) of persistent tape device special files no longer encode the tape device options (such as, density, style of access and so on). The files */dev/rtape/\** refer to specific raw tape drives controlled by the estape driver. The major number of these device special files is dynamically allocated and the minor number does not encode any device specific information. Hence the macros given below, that are defined in *<sys/mtio.h>* header file do not interpret the options correctly for persistent (agile) DSFs. The macros are:

- *M\_INSTANCE* (*dev*)
- *M\_TARGET* (*dev*)
- *M\_LUN* (*dev*)
- *M\_BERKELEY* (*dev*)
- *M\_NO\_REWIND* (*dev*)
- *M\_USER\_CONFIG* (*dev*)
- *M\_INDEX* (*dev*)

- *M\_INDEX\_PUT* (dev, index)
- *M\_DFLT\_DENSITY* (dev)
- *M\_DFLT\_DENSITY\_PUT* (dev, density)
- *M\_TRANSPARENT\_MODE* (dev)
- *M\_PROP\_TBL\_ACCESS* (dev)

These macros continue to work on the legacy DSFs as before. Please refer to *mt* (7) manpage for methods to decode tape device file options from persistent device files.

The files `/dev/rmt/*` continue to refer to specific raw tape drives controlled by the legacy stape driver, and the behavior of each given unit is specified in the major and minor numbers of the DSF as before. The legacy driver and DSFs are deprecated and will be removed in a future version of HP-UX.

`estape` by default enables support for some tape devices. This includes the BEST density and compression support for the drives. The drives that have these settings can be listed using the `scsimgr ddr_list` command. Please refer to *scsimgr* (1M) manpage for details. If a drive's VID/PID is enlisted in `scsimgr ddr_list` it means that the driver will choose optimal density and compression for these drives. It does not, however, entail support for these drives. For drives qualified and supported on HP-UX 11i v3 please refer to the support matrix.

Some old drives (listed below), do not have the support in the `estape` driver. However, these drives may work as a "Generic Tape Drive" with performance impacts. No guarantee is made for proper working of these drives.

The removed devices include:

- HP 7980S
- The HP HP354\* family of DDS drives
- The HP C15\* family of DDS drives
- HP C9264CB-VS80
- HP DLT VS80
- The EXABYTE EXB\* family of 8mm drives
- The ARCHIVE VIPER\* family of QIC drives
- Quantum DLT2\* and DLT4\* families of DLT drives
- SONY SDX-300
- WANGTEK 5525ES
- WANGTEK 51000
- FUJITSU M1016
- FUJITSU M2488
- STK SD-3

The tunables `st_large_recs` and `st_fail_overruns` have been removed in the HP-UX 11i v3 for `estape` driver.

- Driver `ssrfc` removal

The scsi surface driver provided rudimentary management of Magneto-optical (MO) libraries by providing DSFs for each side of each platter in an MO library. This driver is no longer available.

- eschgr

eschgr is the new driver in HP-UX 11i v3 that provides access to the medium changer device; eschgr is the current preferred method of access and schgr driver is provided for legacy compatibility. The mechanical changer device can be accessed via these drivers directly to move media within the autochanger. Persistent device file names have the form /dev/rchgr/autochx for character devices. The card instance, target address and LUN are no longer encoded in the persistent device file name itself (see *intro* (7)).

- Tape/Changer related man pages

*intro* (7), *mt* (7), *autochanger* (7), *scsimgr\_estape* (7), *scsimgr\_eschgr* (7), *scsi\_tape* (7), *st* (1M), *mc* (1M), *mt* (1M), *st\_ats\_enabled* (5)

### **What's New for Customers of HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

Driver support for some very old drives are being removed. However, these drives may continue to work as "generic tape devices" with performance impacts. The SCSI Surface Driver, provided for the management of Magneto Optical Libraries is no longer available. Others documented in the release notes.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance impacts.

### **Documentation**

For further information, see the following manpages:

*intro* (7), *mt* (7), *autochanger* (7), *scsimgr\_estape* (7), *scsimgr\_eschgr* (7), *scsi\_tape* (7), *st* (1M), *mc* (1M), *mt* (1M), *st\_ats\_enabled* (5)

### **Obsolescence**

Deprecated: *stape*, *schgr* drivers. Obsoleted: *ssrfc* driver.

---

## Graphics Bundle

The graphics bundle includes the following:

- OpenGL run-time and programming environment (GraphicsOpenGL)
- Starbase and HP-PHIGS run-time for shared library linking only (GraphicsLegacy)

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Supported products:

- HP-UX 11i v3 is not supported on workstations
- The PEX graphics API is not supported on HP-UX 11i v3.

New features:

There are no new features in the graphics bundle for HP-UX 11i v3.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Supported products:

- HP-UX 11i v3 is not supported on workstations
- The PEX graphics API is not supported on HP-UX 11i v3.

New features:

There are no new features in the graphics bundle for HP-UX 11i v3.

### Impact

There are no impacts other than those previously described.

### Compatibility

This product provides the same behavior and functionality as seen on previous HP-UX releases. The PA-RISC and Itanium®-based architectures offer different graphics devices (with differing capabilities), but those devices are compatible with their behavior on previous HP-UX releases.

### Performance

When comparing the same configurations, this product provides the same performance seen on previous HP-UX releases.

### Documentation

Manpages: *graphinfo* (10)

## Obsolescence

The Graphics product is deprecated in HP-UX 11i v3 and planned for future obsolescence.

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## HP-UX 11i v3 Driver Development Kit

The HP-UX 11i v3 Driver Development Kit (DDK) provides documentation, sample code, build environment and development tools for 3rd party developers, ISVs and IHVs to develop and test drivers on HP-UX 11i v3 PA-RISC and Itanium®-based platforms.

DDK has been enhanced with the following for the HP-UX 11i v3 release:

- Updates to existing documentation and addition of new documentation to provide information on latest HP-UX 11i v3 features and capabilities.
- Enhancements to existing sample code and addition of new sample code showing how to implement the latest HP-UX 11i v3 features and capabilities in drivers.
- Updates to sample makefiles for PA-RISC and Itanium®-based systems.
- Updates to driver build environment for both PA-RISC and Itanium®-based platforms.
- Updates to driver development and test tools for both PA-RISC and Itanium®-based systems.
- New release of HP-UX Device Driver Interface Compliance Tool (DDICT) for HP-UX 11i v3.
- Improved packaging to simplify download and installation.
- Defect fixes for HP-UX 11i v3 DDK.

HP-UX DDK can be downloaded from the following URL:

[http://www.hp.com/go/hpux\\_ddk](http://www.hp.com/go/hpux_ddk)

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## Enterprise Virtual Array (EVA) on HP-UX 11i v3

EVA (Enterprise Virtual Array) is used as a fault-tolerant data storage device that can be used for both boot and data.



## Summary of Change

### What is New for Customers Migrating from HP-UX 11i v1 September 2005?

When using EVA snapclones and snapshots, each snapclone or snapshot of a given device results in a new unique LUN WWID (world-wide identifier). On HP-UX 11i v3 (11.31), each new LUN WWID is created without old ones being removed. Over time, this can cause memory to be filled by the WWIDs. There is no tool to monitor this issue, but a reboot and cleanup can free the memory.

For more information, see the *HP StorageWorks EVA Replication Consolidated Release Notes XCS 6.0x* (see the following “Documentation” section).

### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What is New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

There are no impacts other than those previously described.

## Compatibility

There are no known compatibility issues.

## Performance

When using EVA snapclones and snapshots, each snapclone or snapshot of a given device results in a new unique LUN WWID (world-wide identifier). On HP-UX 11i v3 (11.31), each new LUN WWID is created without old ones being removed. Over time, this can cause memory to be filled by the WWIDs. There is no tool to monitor this issue, but a reboot and cleanup can free the memory.

## Documentation

See the *HP StorageWorks EVA Replication Consolidated Release Notes XCS 6.0x* at <http://www.hp.com/support/manuals>. Under Storage, click **Storage Software**. Then, under **Storage Replication Software**, select your product (either **HP StorageWorks Business Copy EVA Software** or **HP StorageWorks Continuous Access EVA Software**).

## Obsolescence

Not applicable.

## **HP StorageWorks Secure Path Migration from HP-UX 11i v1 and 11i v2 and Obsolescence for HP-UX 11i v3**

Migration: HP StorageWorks Secure Path is a server-based software product that enhances HP StorageWorks RAID array storage systems by providing automatic path recovery from server-to-storage-system connection failures. The current version of Secure Path is 3.0FSP2 Patch2.

Obsolescence: Secure Path is not supported from HP-UX 11i v3 (11.31) onwards.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

HP-UX 11.31 OS has native multi-pathing capability; thus, Secure Path is not supported from HP-UX 11i v3 onwards. The applications that are using SecurePath virtual aliases should start using the system device special files (DSF).

#### **What's New for Customers of HP-UX 11i v2 June 2006?**

HP-UX 11.31 OS has native multi-pathing capability; thus, Secure Path is not supported from HP-UX 11i v3 onwards. The applications that are using SecurePath virtual aliases should start using the system device special files (DSF).

### **Impact**

You will no longer be able to use Secure Path for multi-pathing on HP-UX 11i v3. If you are already using Secure Path on HP-UX 11i v2 and HP-UX 11i v1, you may experience problems when migrating to HP-UX 11i v3.

### **Compatibility**

You will no longer be able to use Secure Path for multi-pathing on HP-UX 11i v3. If you are already using Secure Path on HP-UX 11i v2 and HP-UX 11i v1, you may experience problems when migrating to HP-UX 11i v3.

### **Performance**

There are no known performance issues.

### **Documentation**

For more information, see the *Installation and Update Guide* for HP-UX 11i v3.

### **Obsolescence**

Discontinued. Customers will no longer be able to use Secure Path for multi-pathing on HP-UX 11i v3.

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## I/O Subsystem

The I/O subsystem has been enhanced to support the next generation mass storage stack, as described in “Mass Storage Stack” on page 85. This includes support for persistent device special files, as well as hardware paths for lunpaths and LUNs.

### Summary of Change

#### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

- Four new commands manage or transition to the agile view of mass storage.
- The existing `ioscan`, `insf`, `lssf`, `rmsf`, and `mksf` commands are updated to support the agile view.
- To support the agile view, new drivers `esdisk`, `estape`, and `eschgr` supersede the legacy drivers `sdisk`, `stape`, and `schgr`.

#### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

Several I/O commands have been introduced to manage the I/O subsystem. Existing commands support the next generation mass storage stack with new options and functionality, as described in their manpages. The four new commands are:

- `iobind` - change driver bound to a LUN
- `iofind` - help users migrate device special file names
- `io_redirect_dsf` - redirect device special file to a new device
- `scsimgr` - manage and troubleshoot mass storage.

The `ioscan` command introduces a number of new options. For details, see *ioscan (1M)*. Here is a summary:

- `-N`: display the agile view of the I/O system instead of the legacy versions
- `-P property_name`: display property
- `-m dsf`: display mapping of persistent device special file to legacy device special file(s)
- `-m hwpath`: display mapping of legacy hardware path to lunpath hardware path and LUN hardware path
- `-m lun`: display mapping of LUN to lunpath(s)
- `-e`: display Extensible Firmware Interface (EFI) format on HP Integrity servers and Boot Console Handler (BCH) format on HP 9000 systems
- `-s`: display stale I/O nodes
- `-b`: initiate deferred binding
- `-r`: reverse a deferred binding

- `-B`: list deferred bindings
- `-U`: scan all unclaimed I/O nodes

The `insf` command, when run without options, now creates both legacy and persistent device special files for all new devices. It now supports a `-L` option to create legacy device special files and enable legacy mode. To determine if legacy mode is enabled, use `insf -Lv`.

The `lssf` command now supports an `-s` option which displays “stale” mass storage device special files: device special files for which there appears to be no hardware. It also supports a new `-c` option which performs critical resource analysis on a device special file.

The `rmsf` command now supports three new options. The `-x` option removes “stale” entries from the I/O configuration. The `-u` option, when used with the `-H` option, attempts to unbind a driver from a given hardware path. The `-L` option disables legacy mode and removes legacy device special files and their entries in the I/O configuration.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For details on new or modified commands, please check their associated manpages. In particular, the following manpages are new:

- `iobind` (1M)
- `iofind` (1M)
- `io_redirect_dsf` (1M)
- `scsimgr` (1M)

Significant changes are also documented in:

- `ioscan` (1M)
- `insf` (1M)
- `lssf` (1M)
- `mksf` (1M)
- `rmsf` (1M)

## Obsolescence

Not applicable.

---

## Mass Storage Stack

The Next Generation Mass Storage Stack manages I/O devices, such as SCSI logical units (LUNs). In this release, the mass storage stack delivers functionality designed to enhance server scalability, adaptability, and performance while retaining backward compatibility. New features include:

- agile addressing
- native multi-pathing
- increased parallelization

### Overview

Release HP-UX 11i v3 introduces a new view of mass storage, called the agile view. This view includes:

- new persistent disk and tape device special files
- a new naming convention
- minor number format that supports much larger I/O configurations.

The agile view also represents hardware pathing to disk and tape devices in ways that support larger configurations and transparent multi-pathing.

By default, most commands show a legacy view of mass storage compatible with prior releases. Users select the agile view with command line options or GUI toggles, as documented for each command.

Several new terms have been introduced to describe hardware pathing and device special files.

### Hardware pathing:

In this release, there are three different types of paths to a device.

- legacy hardware path
- lunpath hardware path
- 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.

The legacy hardware path is a series of bus-nexus addresses separated by / (slash) characters, leading to a host bus adapter (HBA). Beneath the HBA, additional address elements are separated by . (period) characters. An example of a legacy hardware path is 0/0/2/0.1.7.0. This is the format printed in the legacy view and what has been presented in previous releases.

The lunpath hardware path is for mass storage devices, or LUNs. It is identical in format to a legacy hardware path up to the HBA. Elements beneath the HBA are in hexadecimal. The leading element(s) represent a transport-dependent target address. The final element is a LUN address, a 64-bit representation of the LUN identifier

reported by the target. This format is printed in the agile view. The strings `0/2/1/0.0x50001fe1500170ac.0x4017000000000000` and `0/1/1/0.0xd.0x0` are examples of lunpath hardware paths.

The LUN hardware path 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, there is a virtual bus-nexus (known as the virtual root node) with an address of 64000. Addressing beneath that virtual root node consists of a virtual bus address and a virtual LUN identifier, delimited by / (slash) characters. The string `64000/0xfa00/0x22` is an example of a LUN hardware path.

As a virtualized path, the LUN hardware path is only a handle to the LUN and does not represent the LUN's physical location. It is linked to the LUN's World Wide Identifier (WWID). Thus, it remains the same if new physical paths to the device are added, if existing physical paths are removed, or if any of the physical paths changes. This LUN binding persists across reboots, but it is not guaranteed to persist across installations. Reinstalling a system or installing an identically configured system may create a different set of LUN hardware paths.

### Device Special Files:

Similar to hardware paths, there are two types of device special files for mass storage:

- legacy device special files
- persistent device special files

Both can be used to access a given mass storage device independently and can coexist on the same system.

A legacy device special file is associated with the legacy view. It is locked to a particular physical hardware path and does not support agile addressing. Such a device special file contains hardware path information such as SCSI bus, target, and LUN in the device file name and minor number. It was the only type of mass storage device special file in prior releases.

Because of its naming convention and minor number format, the legacy device special file supports a maximum of 256 external buses and a maximum of 32768 LUNs. Systems with mass storage devices beyond those limits cannot address them using legacy device special files.

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, it transparently supports agile addressing and multipathing. A persistent device special file is unchanged if the LUN is moved from one HBA to another, moved from one switch/hub port to another, presented via a different target port to the host, or configured with multiple hardware paths. Like the LUN hardware path, the binding of device special file to device persists across reboots, but is not guaranteed to persist across installations.

The persistent device special file's minor number contains no hardware path information, and its name follows a simplified naming convention:

```
/dev/[subdir]/[class][instance]
```

where:

[*subdir*] is the subdirectory for the device class, such as `disk`, `tape`, `rdisk`, or `rtape`

[*class*] is the device class, either `disk` or `tape`

[*instance*] is the instance number assigned to the device.

Each class of device has its own set of instance numbers, so each combination of class and instance number refers to exactly one device.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

See "What's New for Customers Migrating from HP-UX 11i v2 June 2006?"

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The next generation mass storage stack enables the following features:

Scalability:

- Unlimited number of I/O busses, up from 256
- 16384 LUNs supported per system, up from 8192 active LUNs
- LUN size over 2TB
- 32 distinct I/O paths to a LUN, up from 8

Agile Addressing (sometimes referred to as Persistent LUN Binding):

- New *persistent* device special files that track a SCSI LUN regardless of hardware path changes or multi-pathing
- New naming convention for mass storage devices such as (/dev/disk/disk#, /dev/tape/tape#)
- New virtualized hardware paths for multi-pathing

Multi-Pathing

- Built-in multi-pathing with transparent load balancing, with a choice of load balancing algorithms
- Automatic detection and recovery of path failures

Adaptability

- Automatic detection of new SCSI LUNs or changes to SCSI LUNs
- Automatic creation of new device special files for new LUNs
- Asynchronous notification of changes to management software such as volume managers or file systems
- Health tracking of all mass storage devices

## Impact

Most commands that deal with I/O or mass storage have been updated to understand the agile view. They allow both persistent and legacy device special files and legacy, lunpath, and LUN hardware paths. As a rule, commands function in the legacy view unless the agile view is explicitly requested.

Some commands have more extensive changes than just support of the new mass storage stack and some commands may only function in the agile view. Such changes are covered in the section of this document that relates to the particular command (for example, LVM).

Updated commands and manpages include but are not limited to the following:

*intro* (7), *scsimgr* (1m), *scsictl* (1m), *diskinfo* (1m), *setboot* (1m), *crashconf* (1m), *fcmsutil* (1m), *scsimgr\_esdisk* (7), *scsimgr\_estape* (7), *scsimgr\_eschgr* (7), *scsi* (7), *disk* (7), *scsi\_ctl* (7), *scsi\_disk* (7), *scsi\_tape* (7), *ioscan* (1m), *insf* (1m), *mksf* (1m), *rmsf* (1m), *lssf* (1m), *ioinit* (1m), *io\_redirect\_dsf* (1m), *ioconfig* (4), *iofind* (1m), *sar* (1m), *pstat* (2), *mknod* (1m), *mt* (7), and *autochanger* (7)

## Compatibility

The next generation mass storage stack is intended to supersede the existing mass storage stack. However, both stacks exist in parallel. Existing legacy device special files work as before; they are completely backward compatible and are not affected by any persistent device special files on the same server. All commands are backward compatible as well and function with either legacy or persistent device special files.

One compatibility issue deals with multi-pathed devices accessed through legacy device special files. By default, multi-pathing is enabled along any hardware path to a LUN. In particular, even if legacy device special files are used for I/O, requests may still be routed through a different hardware path. This is done to maximize availability and parallelism. To force legacy device special files to use backward-compatible multi-pathing behavior, use the *scsimgr* command to configure a global device tunable called *leg\_mpath\_enable*.

## Performance

Features of the mass storage stack improve system performance in several ways:

- Native multi-pathing and load balancing increases I/O bandwidth
- Dramatic reduction of I/O scan times, both at boot time and in response to an *ioscan*: parallelized I/O reduces scan time to between 1/4 and 1/10 time
- Increased level of concurrent I/O operation
- Increased Max I/O size from 1MB to 2MB

## Documentation

For an overview of the Next Generation Mass Storage Stack, please see the white paper entitled *The Next Generation Mass Storage Stack* available at <http://docs.hp.com/en/netsys.html#Storage%20Area%20Management>.

For details on new or modified commands, please check their associated manpages or section(s) of this document.

## Obsolescence

As of this release, the legacy view is deprecated. Use of legacy device special files and legacy hardware pathing will be obsoleted in a future release.



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## Networking and Mass Storage Drivers

HP-UX 11i v3 includes drivers for networking and mass storage adapter cards. The drivers are described in the following sections:

- Required Networking Drivers (see page 89)
- Optional Networking Drivers (see page 91)
- Required Mass Storage Drivers (see page 97)

For the most current information on supported I/O cards, see the set of Support Matrixes available on the I/O Cards and Networking Software Web page at <http://www.docs.hp.com/en/netcom.html>. At the top of the page, click the link for the card technology you are interested in, then scroll down to the **Support Matrixes** heading. If a support matrix for your card technology is unavailable, check the card's user guide or release notes.

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## Required Networking Drivers

The following drivers are required, meaning they are automatically installed during HP-UX installation:

- GigEther-00, GigEther-01, and IEther-00 (Gigabit Ethernet) (see page 89)

---

## GigEther-00, GigEther-01, and IEther-00 (Gigabit Ethernet)

The Gigabit Ethernet bundles supply three drivers. The bundle names are followed by the driver names in parentheses:

- GigEther-00 (*gelan*)
- GigEther-01 (*igelan*)
- IEther-00 (*iether*)

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The *iether/igelan/gelan/btlan* products are enhanced to add the following new features (except as noted):

- Online deletion (OLD) allows removal of supported networking and I/O cards.

- Module packaging. The kernel code is partially pre-linked in order to speed up kernel link times and improve runtime performance. The pre-linking can do some sophisticated code optimization. (Not applicable to `btlan`.)
- PCI Error Handling and Recovery support.
- 64-bit management information base (MIB) statistics support. Directs the Data Link Service provider to return 64-bit statistics. (Not applicable to `btlan`.)
- Security containment support. For details, please refer to the *HP-UX 11i Security Containment Introduction* in the *HP-UX 11i Security Containment Administrator's Guide*. (See *Documentation* below.)
- EMT support. Error Management Technology provides a quick, easy method of accessing error/cause/action information on all system errors.
- Network Interfaces Configuration tool support for web-based networking configuration. This is a module within the HP System Management Homepage (HP SMH) tool that replaces the SAM tool.
- `nwmgr` support and associated manpage. `nwmgr` is the command-line based tool for configuring networking.

#### LANProvider:

The LAN Provider product is new for customers migrating from the September 2005 release of HP-UX 11i v1. You can use WBEM-based clients to access the LAN Provider and collect information about the Ethernet links on your system. For details on the LAN Provider, see “HP-UX WBEM LAN Provider for Ethernet Interfaces” on page 170.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

There are no impacts other than those previously described.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

See *HP-UX 11i Security Containment Introduction* in the *HP-UX 11i Security Containment Administrator's Guide*, available at <http://docs.hp.com/en/internet.html#Security%20Containment>

### **Obsolescence**

Not applicable.

---

## Optional Networking Drivers

The following drivers are optional, meaning they are not automatically installed, but they can be selected during installation:

- 10 Gigabit Ethernet (see page 91)
- HyprFabrc-00 (see page 92)
- InfiniBand Clustering System (see page 93)
- PCIMUX-00 (see page 94)
- TermIO-00 (see page 96)

---

## 10 Gigabit Ethernet

The 10GigEthr-00 bundle supplies the `ixgbe` driver. The product bundle is followed by the driver name in parentheses: 10GigEthr-00 (`ixgbe`)

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `ixgbe` product is enhanced to add the following new features:

- Online deletion (OLD) allows removal of supported networking and I/O cards.
- Module packaging. The kernel code is partially pre-linked to speed up kernel link times and improve runtime performance. Pre-linking can do some sophisticated code optimization.
- PCI Error Handling and Recovery support.
- 64-bit management information base (MIB) statistics support directs the Data Link Service provider to return 64-bit statistics.
- Security Containment support. For details, please refer to the *HP-UX 11i Security Containment Introduction -- HP-UX 11i Security Containment Administrator's Guide*. See "Documentation" below.
- Network Interfaces Configuration tool support for web-based networking configuration. This is a module within the HP System Management Homepage (HP SMH) tool. It replaces the SAM tool.
- `nwmgr` support and associated manpage. `nwmgr` is the command-line based tool for configuring networking.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The `ixgbe` product is enhanced to add the following new features:

- Online deletion (OLD) allows removal of supported networking and I/O cards.

- **Module packaging.** The kernel code is partially pre-linked to speed up kernel link times and improve runtime performance. Pre-linking can do some sophisticated code optimization.
- **PCI Error Recovery support.**
- **Network Interfaces Configuration tool support.** Network Interfaces Configuration tool is the web-based configuration module within the HP System Management Homepage tool. It replaces the SAM tool.
- **nwmgr support and associated manpage.** `nwmgr` is the command-line based tool for configuring networking.

## Impact

There are no impacts other than those previously described.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For further information, see the following document, available at <http://docs.hp.com>:

- *HP-UX 11i Security Containment Administrator's Guide*

## Obsolescence

Not applicable.

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## HyprFabr-c-00

HyperFabric is a High-Speed Cluster Interconnect that supports both the industry standard TCP/UDP over IP and HP's proprietary Hyper Messaging Protocol (HMP). HyperFabric extends the scalability and reliability of TCP/UDP by providing transparent load balancing of connection traffic across multiple network interface cards (NICs) and transparent failover of traffic from one card to another without invocation of HP Serviceguard. The HyperFabric NIC implements HP's Hyper Messaging Protocol and provides lower latency and lower host CPU utilization for standard TCP/UDP benchmarks when compared to gigabit Ethernet. HyperFabric products support clusters up to 64-nodes.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HyperFabric 11.31 supports only Peripheral Component Interconnect (PCI) HF2 (HyperFabric2) cards. HF1 (HyperFabric1) Cards will not be supported.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those previously described.

## Compatibility

There are no known compatibility issues.

## Performance

- Provides up to 2.5 Gb/s Full Duplex Bandwidth per card
- Latency of < 22  $\mu$ s for HF2 Card

## Documentation

HyperFabric documentation is available at

<http://docs.hp.com/en/netcom.html#HyperFabric>.

## Obsolescence

No support for Message Passing Interface (MPI) on HF2.

---

## InfiniBand Clustering System

InfiniBand is an industry-standard high-speed, packet-based interconnect for node-to-node communications. InfiniBand provides higher speed and lower network latency and uses less CPU than other industry standard protocols, such as Fibre Channel and Gigabit Ethernet. The software suite for InfiniBand is delivered on the IB4X-00 bundle with the driver files `libib_subsys.a` and `libib_tvr.a`.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Support is provided for the Network Interfaces and Network Services Configuration. InfiniBand information is displayed in the Network Interfaces Configuration (NIC) tool.

Support is added for `nwmgr`.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

InfiniBand offers customers high-performance technical and commercial application clustering and is the mid-to-high end cluster interconnect for the HP-UX port of TruClusters.

## Compatibility

InfiniBand is compatible with rx2600, rx5600, rx4640, rx7620, rx8620, and Itanium®-based Superdome.

## Performance

InfiniBand provides higher speed and lower network latency and uses less CPU than other industry standard protocols, such as Fibre Channel and Gigabit Ethernet.

## Documentation

The InfiniBand product documentation is available at <http://www.docs.hp.com> in the Networking & Communication section.

## Obsolescence

Not applicable.

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## PCIMUX-00

The HP AD278A/AD279A PCI MUX is a high-speed serial communication multiple port product. It combines various signals for transmission over a single channel and provides intelligent communication functions to off-load CPU serial communication processing tasks.

The AD278A/AD279A PCI MUX product supports the following components:

- AD278A PCI MUX 8-port adapter

- AD279A PCI MUX 64-port adapter
- A fan-out cable for AD278A PCI MUX 8-port adapter. This cable has eight DB-25 male connectors for peripheral device connection.
- Port modules (for a maximum of 64 ports) with AD279A PCI MUX 64-port adapter
- Power Supply for the port modules
- AD278A/AD279A PCI MUX adapter driver software.

For more information about platform support for AD278A and AD279A adapters, see the *Support Matrix* document at:

<http://www.docs.hp.com/en/netcom.html#Multiplexers>.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The PCIMUX-00 driver bundle, which delivers the `pci_mux1` driver, is added to the HP-UX 11i v3 Operating Environment to support the AD278A and AD279A adapters.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those previously described.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The following documents are available at

<http://docs.hp.com/en/netcom.html#Multiplexers>.

- *HP AD279A PCI 8-Port Serial Multiplexer Installation Guide*
- *HP AD279A PCI 64-Port Serial Multiplexer Installation Guide*
- *HP AD278A and AD279A PCI Multiplexer Release Notes*
- *HP AD278A and AD279A PCI Multiplexer Support Guide*.

Manpages:

- `pmux_stty` (1)

## Obsolescence

Not applicable.

## TermIO-00

The HP A6748A/A6749A PCI MUX is a high-speed serial communication multiple port product. It combines various signals for transmission over a single channel and provides intelligent communication functions to off-load CPU serial communication processing tasks.

The A6748A/A6749A PCI MUX product supports the following components:

- A6748A PCI MUX 8-port adapter
- A6749A PCI MUX 64-port adapter
- Fan Out Cable for PCI MUX 8-port adapter
- Port modules and power supply for the Port Modules
- RJ-45 to HP DB-25 Adapter and RJ-45 to HP RJ-45 Adapter
- A6748A/A6749A PCI MUX adapter driver software

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The TermIO-00 driver bundle, which delivers the `pci_mux` driver, is added to the HP-UX 11i v3 Operating Environment to support the A6748A and A6749A adapters.

HP-UX SAM support is discontinued with this release. Use the command-line interface `mknod` to create `pci_mux0` instead of HP-UX SAM to create the device files.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

Use the command-line interface `mknod` instead of HP-UX SAM to create `pci_mux0` device files on HP-UX 11i v3.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The following documents are available at <http://docs.hp.com/en/netcom.html#Multiplexers>:

- *HP PCI Multiplexer Family Cabling, Diagnostics and Troubleshooting Manual*
- *HP PCI MUX Release Note*



Manpages:

- *emux\_stty* (1)
- *emux\_diag* (1)

## Obsolescence

Not applicable.

---

## Required Mass Storage Drivers

These mass storage drivers are required, which means they are automatically installed during HP-UX installation:

- FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver (see page 97)
- FibrChanl-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3 (see page 98)
- HP PCI Ultra160 SCSI Driver (see page 100)
- USB-00 (see page 101)

---

## FibrChanl-00 HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver

The HP PCI Tachyon TL/TS/XL2 Fibre Channel (td) Driver manages the A5158A and A6795A PCI single port host bus adapters (HBAs) that utilize the Tachyon TL/TS and XL2 chips, respectively. It comes in the `FibrChanl-00` bundle.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The new features in HP PCI Tachyon TL/TS/XL2 Fibre Channel driver are as follows:

- Support for the new mass storage stack. The Tachyon TL/TS/XL2 Fibre Channel (td) Driver supports the new mass storage stack. For more information about the mass storage stack, see “Mass Storage Stack” on page 85.
- Support for Agile addressing. The Tachyon TL/TS/XL2 Fibre Channel (td) Driver now uses agile addressing to track an FC target, based on the unique port/node world-wide names (WWNs) of the target. Agile addressing simplifies the storage management by automatically dealing with changes in the SAN configuration.
- Support for Soft Zoning. The Tachyon TL/TS/XL2 Fibre Channel (td) Driver supports soft zoning in the fabric, based on WWN of the target port.

- Support for PCI Online deletion (OLD). The Tachyon TL/TS/XL2 Fibre Channel driver now supports online deletion of driver instances thereby facilitating online addition of any other type of HBA in the same PCI slot.
- Support for PCI error detection and recovery. The Tachyon TL/TS/XL2 Fibre Channel driver detects and recovers from PCI errors without manual intervention and system downtime..

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

There are no impacts other than those previously described.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

*FibrChan1-00 (td) HP PCI Tachyon TL/TS/XL2 Fibre Channel Driver Release Notes for HP-UX 11i v3*, February 2007 (part no. J2635-90029) available at <http://docs.hp.com/en/netcom.html#Fibre%20Channel>

### **Obsolescence**

Not applicable.

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## **FibrChan1-01 Fibre Channel Mass Storage Driver for HP-UX 11i v3**

The HP FCD Fibre Channel Driver (fcd) manages the following fibre channel host bus adapters (HBAs). It is part of the FibrChan1-01 bundle. It supports the A6826A, AB378A/AB378B, AB379A/AB379B, A9782A, A9784A, AB465A, AD193A, and AD194A cards.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The new features in HP FCD Fibre Channel driver are as follows:

- Support for the new mass storage stack. The FCD Fibre Channel Driver (fcd) supports the new mass storage stack. For more information about the mass storage stack, see “Mass Storage Stack” on page 85.
- Support for Agile addressing. The FCD Fibre Channel Driver (fcd) now uses agile addressing to track an FC target, based on the unique port/node world-wide names (WWNs) of the target. Agile addressing simplifies the storage management by automatically dealing with changes in the SAN configuration.
- Support for Soft Zoning. The FCD Fibre Channel Driver (fcd) supports soft zoning in the fabric, based on WWN of the target port.
- Support for PCI Online deletion (OLD). The FCD Fibre Channel Driver (fcd) facilitates online replacement of a Fibre Channel HBA with any other type of HBA in the same PCI slot.
- Support for PCI error detection and recovery. The FCD Fibre Channel Driver (fcd) detects and troubleshoots PCI errors without manual intervention and system downtime.

### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

There are no impacts other than those previously described.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For further information, see the following document, available at <http://docs.hp.com/en/netcom.html#Fibre%20Channel>:

- *FibrChanl-01 (fcd) Fibre Channel Mass Storage Driver for HP-UX 11i v3 Release Notes, February 2007* (part no. J6374-90051)

### **Obsolescence**

Not applicable.

## HP PCI Ultra160 SCSI Driver

The HP PCI Ultra160 SCSI driver manages the A6828A and A6829A Peripheral Component Interconnect (PCI) single and dual port Host Bus Adapters (HBAs).

The Ultra160 SCSI driver, `c8xx`, is delivered in the core bundle `HPUXMinRuntime`.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Support for the new mass storage stack. The Ultra160 SCSI driver supports the new mass storage stack. For more information about the mass storage stack, see “Mass Storage Stack” on page 85.
- Support for PCI OnLine Deletion (OLD). The Ultra160 SCSI driver facilitates online replacement of an Ultra160 SCSI HBA with any other type of HBA in the same PCI slot. For more information about PCI OLD, see “PCI Card Online Deletion (OLD)” on page 105.
- Support for PCI error detection and recovery. The Ultra160 SCSI driver detects and troubleshoots PCI errors without manual intervention and system downtime.
- Support for HBA Device Special Files (DSF). The Ultra160 SCSI driver supports Device Special Files for individual HBAs with the naming convention `/dev/c8xx<instance>`, where `<instance>` represents the instance number of the HBA. On these DSFs, the following existing IOCTLs are supported: `SIOC_GET_BUS_PARAMS`, `SIOC_GET_BUS_LIMITS`, `SIOC_RESET_BUS`, `SIOC_SET_TGT_LIMITS`, and `SIOC_SET_BUS_LIMITS`. The following new IOCTLs are supported on these DSFs: `PSIOC_GET_TGT_PARAMS`, `PSIOC_GET_TGT_LIMITS`, `PSIOC_RESET_DEV`, and `PDIOC_RSTCLR`.
- Termination of support for Ultra2 HBAs. An exception is when Ultra2 cards (A5149A, A5150A) are part of the core I/O on a system. On such systems, boot, data, and dump are supported on these cards.
- The following cards are supported for the sake of being core I/O.
  - These cards should never be added on to a system:
    - A4800A FWD SCSI
    - A5150A 2-port Ultra2 SCSI
    - A5159A 2-port FWD SCSI
    - A5159B 2-port FWD SCSI
    - A5838A 2-port Ultra2-SCSI + 2port 100T
  - The following cards can be core I/O or can be add-ons:
    - A6828A Single port Ultra160 SCSI
    - A6829A 2-port Ultra160 SCSI.

**What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

**Impact**

New and improved command improves usability.

**Compatibility**

There are no known compatibility issues

**Performance**

There are no known performance issues.

**Documentation**

Manpages:

- *scsictl* (1M)

Documents:

- Ultra160 SCSI Driver documentation is available at  
<http://docs.hp.com/en/netcom.html#SCSI%20Host%20Bus%20Adapters>

**Obsolescence**

From this release onwards, the Ultra160 SCSI driver does not support Ultra2 cards.

---

**USB-00**

The USB-00 product, version C.01.05.00, delivers the USB subsystem and device drivers.

**Summary of Change****What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The USB stack and drivers delivered in USB-00 replace the legacy USB stack delivered in drivers `hcd`, `hub`, `hid`, and `usbd`.

USB-00 delivers all the functionality of the legacy stack plus the following features:

- Support for plug-and-play of USB devices.
- USB Bulk Only protocol, SCSI pass-through mass storage driver (this includes but is not limited to USB CD-ROM/RW and DVD-ROM/+RW, and flash memory devices).
- Device file system for dynamic USB device special file creation/removal.

- Boot/install from a limited set of HP-branded USB DVD devices.
- Support for HP keychain drives.
- USB mass storage device encryption.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

USB-00, version C.01.05.00, includes various quality improvements from previous releases, a dynamically managed device file system enabled by default, multi-layered USB mass storage encryption support, and device tracking.

### **Impact**

All USB device special files will now appear in the device file system. Customer scripts and programs will need to be modified to use the new device special files.

### **Compatibility**

This USB product will not be compatible with any application that accesses human interface devices (HID) through the legacy HID device special files in `/dev/hid`. The device special file for USB-00 supported devices is located under `/dev/deviceFileSystem`. For more information, please refer to the *Device File System Users Guide* available at <http://docs.hp.com/en/7407/DevFSUsersGuide.pdf>

### **Performance**

The Device File System greatly improves total customer experience, as well as mitigating the risks associated with attaching a different USB mass storage device to an existing device special file collection.

### **Documentation**

For further information, refer to the following documentation:

- The manpage for USB encryption application, *usbencrypt* (1)
- *HP-UX USB Mass Storage Device Encryption User's Guide*, available at <http://docs.hp.com/en/7406/UsbEncryptionUsersGuide.pdf>
- *HP-UX Device Filesystem User's Guide*, available at <http://docs.hp.com/en/7407/DevFSUsersGuide.pdf>
- Detailed information on USB changes for HP-UX 11i v3, available at <http://docs.hp.com>

### **Obsolescence**

Not applicable.

---

## PCI Error Recovery

The PCI Error Recovery feature provides the ability to detect, isolate, and automatically recover from a PCI error, avoiding a system crash. It is included with the HP-UX 11i v3 operating system and it is enabled by default.

With the PCI Error Recovery feature enabled, if an error occurs on a PCI bus containing an I/O card that supports PCI Error Recovery:

1. The PCI bus is quarantined to isolate the system from further I/O and prevent the error from damaging the system.
2. The PCI Error Recovery feature will attempt to recover from the error and reinitialize the bus so I/O can resume.

If an error occurs during the automated error recovery process, the bus and I/O card will remain quiesced.

If the bus contains a card that supports online addition, replacement, or deletion (OL\*) and the card is in a hot-pluggable slot, you can use the `olrad` command (or the attention button) to manually recover from the error by replacing the card.

If the PCI Error Recovery feature is disabled and an error occurs on a PCI bus, a Machine Check Abort (MCA) or a High Priority Machine Check (HPMC) will occur, then the system will crash.

---

### CAUTION

If you use Serviceguard, HP recommends that you enable the PCI Error Recovery feature only if your storage devices are configured with multiple paths and you have not disabled HP-UX native multipathing. If PCI Error Recovery is enabled, but your storage devices are configured with only a single path, HP Serviceguard may not detect when connectivity is lost. HP Serviceguard will not cause a failover unless it detects a loss of connectivity. See the “Tunable Kernel Parameters” section in the *PCI Error Recovery Product Note* for instructions on using the `pci_eh_enable` tunable to disable PCI Error Recovery.

---

For information on OL\* operations, see the Interface Card OL\* Support Guide, available at <http://docs.hp.com>

To determine if OL\* is supported, see the I/O card documentation or support matrix available at <http://docs.hp.com>

### Summary of Change

#### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

PCI Error Recovery was never released on HP-UX 11i v1. It is new for customers migrating *from* HP-UX 11i v1.

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

PCI Error Recovery was never released on HP-UX 11i v2. A similar feature known as PCI Error Handling was released as a Software Pack on HP-UX 11i v2. PCI Error Handling is very similar to PCI Error Recovery. The main difference is that PCI Error Recovery automatically attempts to recover from a PCI error, but PCI Error Handling requires user intervention to attempt recovery from a PCI error.

## Impact

The PCI Error Recovery feature attempts to automatically avoid a system crash when a PCI error occurs.

## Compatibility

PCI Error Recovery is enabled by default. If you use Serviceguard, HP recommends the PCI Error Recovery feature only be enabled if your storage devices are configured with multiple paths and you have not disabled HP-UX native multipathing. If PCI Error Recovery is enabled, but your storage devices are configured with only a single path, Serviceguard may not detect when connectivity is lost. If Serviceguard does not detect loss of connectivity, it does not cause a failover. See the "Tunable Kernel Parameters" section in the *PCI Error Recovery Product Note* for instructions on using the `pci_ah_enable` tunable to disable PCI Error Recovery.

## Performance

There are no known performance issues.

## Documentation

- Manpages:
  - `pci_ah_enable` (5) manpage
  - `pci_error_tolerance_time` (5) manpage
  - Output from the `ioscan -P error_recovery` option listed in HP-UX 11i v3 `ioscan` manpage can be used to determine which drivers (and associated PCI cards) running on an HP-UX system support PCI Error Recovery.
- Documents:
  - *PCI Error Recovery Product Note in the High Availability category* on <http://docs.hp.com/en/ha.html#PCI%20Error%20Handling>.
  - *PCI Error Recovery Support Matrix* in the High Availability category on <http://docs.hp.com/en/ha.html#PCI%20Error%20Handling>.

## Obsolescence

Not applicable.



---

## PCI Card Online Deletion (OLD)

PCI card online deletion (OLD) allows HP-UX 11i v3 administrators to delete PCI cards and their associated drivers without requiring a system reboot.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

PCI Card Online Deletion (OLD) is new for customers migrating to HP-UX 11i v3. It was not previously delivered on the HP-UX 11i v1 September 2005 release.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

For HP-UX 11i v3, the PCI OL\* feature has been enhanced to include online deletion of PCI cards and associated drivers. For HP-UX 11i v2, the OL\* feature provided online addition and replacement of PCI cards.

### Impact

The OLD feature will allow customers to delete PCI cards and associated drivers from a running system without requiring a system reboot.

---

#### IMPORTANT

If a system is booted, or an Online Addition operation is completed, with the latch on a PCI slot in the open position, the slot may become unusable, requiring a boot to return the slot to a usable state.

The 3 scenarios where this may happen are:

1. Booting with the latch of an occupied PCI slot in the open position results in the card in that slot being unusable. The `ioscan` command will show the software state for the card in that slot as `UNUSABLE`. Also, a `PCIErrror Reported at <H/W path>` message will appear on the console.
2. Booting with the latch of an unoccupied slot in the open position, then adding a card to that slot and executing an `ioscan` command, will result in the card being in the `UNUSABLE` state (provided the `-k` option is not used and the `ioscan` is not restricted from covering the path to that slot). In this scenario, the card will become `UNUSABLE`, regardless of whether the latch is closed or left open, after the card is added to the slot.
3. Performing a PCI card online addition (OLA) operation using the `olrad` command or the `pdweb` GUI, and leaving the latch of the slot opened while bringing the card online, results in the card being in the `UNUSABLE` state.

This behavior is due to a firmware issue. Until a firmware fix is available, you can use the following procedure to recover:

1. Close the latch on the PCI slot that is in the `UNUSABLE` state.
2. Reboot the system; the slot will become usable again.

Scope:

This problem occurs under the following conditions:

- Operating System: HP-UX 11i v3
- HP 9000 servers: rp8420 or rp7420
- Firmware Version: PDC firmware version: 24.1

Note: To verify the PDC firmware version, you can run STM, or you can run the `sysrev` command from the management processor Command Menu (CM) prompt as follows:

```
MP:CM> sysrev
```

---

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Manpages:

- *olrad* (1M)

Documents:

- *Interface Card OL\* Support Guide, third edition* available at <http://docs.hp.com/en/ha.html#System%20Administration>

## Obsolescence

Not applicable.

---

## 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://hp.com/go/servers>

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**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. Further information about HP workstations can be found at the following web site:

<http://hp.com/go/workstations>

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Additional hardware documentation can be found at the following Enterprise Servers, Workstations, and Systems Hardware web site: <http://docs.hp.com/hpux/hw/>

**HP 9000 Servers**

- rp3410
- rp3440
- rp4410
- rp4440
- rp7405
- rp7410
- rp7420
- rp8400
- rp8420
- Superdome

**HP Integrity Servers**

- cx2600
- cx2620
- rx1600
- rx1620
- rx2600
- rx2620
- rx2660 (supports PCI-X IO backplane only)
- rx3600
- rx4640
- rx5670
- rx6600
- rx7620
- rx7640
- rx8640
- rx8620
- BL60p blade server
- Superdome

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## 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 PCI I/O adapters and HP-UX 11i 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>.

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**.

---

## Unsupported HP-UX Mass Storage Devices

Current information about unsupported mass storage devices can be found in the HP-UX Supported Mass Storage Devices Matrix, which is located at <http://docs.hp.com>. A script `msv2v3check` is provided on <http://www.hp.com/go/softwaredepot> to validate if the system is using any storage devices unsupported on HP-UX 11i v3. Please refer to the *HP-UX 11i v2 to 11i v3 Mass Storage Stack Update Guide* white paper on <http://docs.hp.com/en/netsys.html#Storage%20Area%20Management> for more details on this script.

---

## Supported and Unsupported HP-UX I/O Cards

Current information about supported and unsupported HP-UX I/O cards can be found in the HP-UX Supported I/O Cards Matrix, which is located on the I/O Cards and Networking Software Web page at <http://www.docs.hp.com/en/netcom.html> (navigate to **IO Cards**).

Additional details about the support of individual cards can also be found in the set of Support Matrixes available on the I/O Cards and Networking Software Web page at <http://www.docs.hp.com/en/netcom.html>. At the top of the page, click the link for the card technology you are interested in, then scroll down to the "Support Matrixes" heading. If a support matrix for your card technology is unavailable, check the card's user guide or release notes.

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## Utility Pricing Solutions

The HP Instant Capacity (iCAP) and HP Pay Per Use (PPU) software products are a part of the HP Utility Pricing Solutions program. iCAP is a purchase model in which capacity can be instantly increased to accommodate increasing demands. PPU is a lease model in which customers are charged only for actual processor usage.

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## HP Instant Capacity

The HP Instant Capacity (iCAP) version B.11.31.08.01 software (product number B9073BA) provides the ability to instantly increase or decrease processing capacity on specified HP Enterprise servers.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

iCAP has been updated to version B.11.31.08.01 to include the following new features and changes:

- support for HP-UX 11i v3
- modifications to the installation procedure
- support for Global Instant Capacity (GiCAP)
- support for HP rx7640 and rx8640 Integrity servers
- support for hyperthreading on HP-UX 11i v3 systems
- changes to GiCAP grouping rules and `icapstatus` command output
- incorporate several defect fixes

For further information, see the *HP Instant Capacity (iCAP) Release Notes* at <http://docs.hp.com> (navigate to **Network and Systems Management**, then to **Utility Pricing Solutions**).

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

iCAP has been updated to version B.11.31.08.01 to include the following new features and changes:

- support for HP-UX 11i v3
- modifications to the installation procedure
- full implementation of Global Instant Capacity (GiCAP)
- support for hyperthreading on HP-UX 11i v3 systems
- changes to GiCAP grouping rules and `icapstatus` command output
- incorporate several defect fixes

For further information, see the *HP Instant Capacity (iCAP) Release Notes* at <http://docs.hp.com> (navigate to **Network and Systems Management**, then to **Utility Pricing Solutions**).

## Impact

The GiCAP grouping rules file format and file name changed with this release; therefore the version 8.0 grouping rules file is not compatible with the iCAP version 8.01 software.

## Compatibility

Version 8.0 grouping rules file is not compatible with the iCAP version 8.01 software.

## Performance

There are no known performance issues.

## Documentation

- Manpages:
  - *icap* (5)
  - *icapmanage* (1M)
  - *icapmodify* (1M)
  - *icapnotify* (1M)
  - *icapstatus* (1M)
- Web Sites:
  - HP Software Depot: <http://hp.com/go/softwaredepot>
  - Technical Documentation: <http://docs.hp.com>

- Documents:

For details on the HP Instant Capacity software product, see the *Instant Capacity User's Guide* and *Release Notes* located on the HP web site: <http://docs.hp.com> (navigate to **Network and Systems Management**, then to **Utility Pricing Solutions**).

## Obsolescence

Not applicable.

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## HP Pay Per Use (PPU)

The HP Pay Per Use (PPU) program is a lease model in which customers are charged only for the computing capacity that they use. The PPU software (HP product T2351AA) provides services for metering resource utilization. The current version is B.11.31.08.01.00.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

PPU version 8.01 introduces the following new features:

- PPU is now supported in HP-UX 11i v3 systems
- PPU includes support for the hyperthreading features included in HP-UX 11i v3. However, PPU will continue to operate at the core level.
- Fixes for errors and incorrect reporting of TotalCPUs when cells are powered down.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

PPU version 8.01 introduces the following new features:

- PPU is now supported in HP-UX 11i v3 systems
- PPU includes support for the hyperthreading features included in HP-UX 11i v3. However, PPU will continue to operate at the core level.

## Impact

PPU version 8.01 is the only version of PPU supported for HP-UX 11i v3 systems.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- Manpages:
  - *ppu* (5)
  - *ppuconfig* (1M)
  - *ppud* (1M)
- Web Sites:
  - HP Software Depot: <http://hp.com/go/softwaredepot>
  - Technical Documentation: <http://docs.hp.com>
  - HP External: [http://www.hp.com/hpfinancialservices/pay\\_per\\_use.html](http://www.hp.com/hpfinancialservices/pay_per_use.html)

- Documents:

For details on the Pay Per Use software product, see the *Pay Per Use User's Guide* and *Release Notes* located on the HP web site: <http://docs.hp.com> (navigate to **Network and Systems Management**, then to **Utility Pricing Solutions**).

## Obsolescence

Not applicable.

## Xserver

The Xserver product is a component of the X Window System. The Xserver product acts as an intermediary between client applications and local hardware and input devices.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Supported Products:

- HP-UX 11i v1 was supported on PA-RISC workstations; HP-UX 11i v3 is not.
- Radeon 7500 is supported on rp34x0 and rp44x0 servers in HP-UX 11i v3.

Xserver's configuration tool is available via the HP SMH interface.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Xserver's configuration tool is available via the HP SMH interface.

### Impact

Xserver's integration into HP SMH enables graphics administration capabilities in a manner consistent with the overall HP SMH infrastructure.

### Compatibility

This product provides the same behavior and functionality as seen on previous HP-UX releases. The PA-RISC and Itanium®-based architectures offer different graphics devices (with differing capabilities), but those devices are compatible with their behavior on previous HP-UX releases.

### Performance

This product provides the same performance seen on previous HP-UX releases.

### Documentation

Manpages:

- *graphdiag* (1)
- *setmon* (1)
- *X* (1)
- *Xf86* (1)
- *Xhp* (1)
- *Xserver* (1)



## **Obsolescence**

Not applicable.



## What is in This Chapter?

This chapter presents information of particular interest to system administrators, including the following:

- `asyncdsk` Driver Kernel Tunable `max_async_ports` (see page 117)
- Concurrent Dump (see page 118)
- Daylight Savings Time Changes for US in 2007 (Note) (see page 119)
- Detect and Strobe (see page 119)
- Disks and File Systems (`fsweb`) (see page 120)
- Distributed Systems Administration Utilities (see page 122)
- Enhanced User Core File Naming (see page 123)
- Enterprise Cluster Master Toolkit Version (see page 124)
- Event Manager (see page 126)
- Event Monitoring Service (see page 128)
- High Resolution Timer Support (see page 129)
- HP OpenView GlancePlus Pak (see page 130)
- HP Partitioning and Virtual Server Environment (see page 132)
  - Dynamic LCPU (see page 132)
  - HP Global Workload Manager (see page 134)
  - HP Process Resource Manager (see page 138)
  - HP-UX Virtual Partitions (see page 140)
  - Integrity VM (Virtual Machines) for 11i v3 (see page 141)
  - HP-UX Workload Manager (see page 142)
  - HP-UX Workload Manager Toolkits (see page 144)
  - Partition Manager (see page 146)
  - nPartition Provider (see page 147)
  - Utilization Provider (see page 148)
  - vPar Provider (see page 149)
- HP Serviceguard (see page 150)
- HP Serviceguard NFS Toolkit (see page 151)
- HP System Management Homepage (see page 153)
- HP Systems Insight Manager (see page 155)
- HP WBEM Services for HP-UX (see page 157)
- HP-UX Accounts for Users and Groups (see page 160)

- HP-UX Kernel Configuration (see page 161)
- HP-UX Large NPROC (see page 163)
- HP-UX Large PID (see page 164)
- HP-UX Peripheral Devices Manager (see page 165)
- HP-UX System V IPC Message Queues (see page 166)
- HP-UX WBEM Fibre Channel Provider (see page 167)
- HP-UX WBEM File System Provider (see page 168)
- HP-UX WBEM IOTree Provider (see page 169)
- HP-UX WBEM LAN Provider for Ethernet Interfaces (see page 170)
- HP-UX WBEM Online Operations Service Provider (see page 171)
- HP-UX WBEM SCSI Provider (see page 172)
- Ignite-UX (see page 173)
- Kernel Tunable Values Reset From Boot Prompt (see page 175)
- Livedump (see page 176)
- Long Username / Groupname (see page 177)
- Node and Host Name Expansion (see page 180)
- Obsolescence Bundle (see page 182)
- Online Diagnostics (see page 183)
- SCSI Kernel Tunables (Obsolete) (see page 185)
- Software Distributor (see page 186)
- Software Package Builder (see page 187)
- System Administration Manager (SAM) (see page 189)
- System Administration Manager (SAM) Auditing and Security (see page 190)
- System Administration Manager (SAM) Printers and Plotters (see page 191)
- System Administration Management Tool Changes: SAM and HP System Management Homepage (see page 192)
- System Fault Management (see page 193)
- Update-UX and SW-GETTOOLS (see page 194)
- Virtual Memory Kernel Tunable `physical_io_buffers` (Obsolete) (see page 195)
- Virtual Memory Kernel Tunables (see page 196)

## asyncdsk Driver Kernel Tunable `max_async_ports`

The `asyncdsk` driver provides interfaces to perform asynchronous reads/writes to disk devices.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following are the changes for HP-UX 11i v3:

- The `max_async_ports` is now a dynamic tunable.
- The default value is changed to 4096 and the maximum value of this tunable is 4194304.

#### What's New for Customers of HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

In earlier releases the tunable value change required a system reboot. With HP-UX 11i v3, as this is a dynamic tunable, the tunable value can be changed without a reboot.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

The documentation for this tunable can be found in the `man (5) manpage`. A `man max_async_ports` will provide information on this tunable.

### Obsolescence

Not applicable.

## Concurrent Dump

Concurrent Dump is a new feature for HP-UX 11i v3 crash dump subsystem. This feature enhances performance scalability of the HP-UX crash dump subsystem with machine configuration if the customer follows recommended guidelines for dump device configuration. This solution is implemented for Itanium®-based platforms only.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This is a new functionality for HP-UX 11i v3, but it is only available for customers who will be migrating to Itanium®-based platforms. Using this functionality, you can configure your machine to perform a distributed parallel dump, thereby improving the dump throughput and reducing dump time.

HP-UX 11i v3 crash dumps can be done faster compared to HP-UX 11i v1 running on the same machine. This speed improvement can be seen only on HP Itanium®-based platforms.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

This is a new functionality for HP-UX 11i v3. Using this functionality, you can configure your machine to perform a distributed parallel dump, thereby improving the dump throughput and reducing dump time.

HP-UX 11i v3 crash dumps can be done faster compared to HP-UX 11i v2 running on the same machine. This speed improvement can be seen only on HP Itanium®-based platforms.

### Impact

If you add dump devices according to recommended configurations, you can see better performance.

### Compatibility

This feature shows performance improvements only on HP Itanium®-based platforms.

### Performance

If you enable this feature, you can see an improvement in dump speed. The improvement will depend upon the dump device configuration.

### Documentation

For further information, see the *crashconf*(1M) manpage.

### Obsolescence

Not applicable.

---

## Daylight Savings Time Changes for US in 2007 (Note)

The U.S. Government passed a law (Energy Policy Act) which alters the Daylight Saving Time (DST) start and stop dates by four weeks. Extended Daylight Saving Time will begin in March of 2007. The U.S. official DST changes will be:

- Start Date: Second Sunday of March
- End Date: First Sunday of November

OS: HP-UX 11i v3 does not require an update for DST.

Java: The HP Java Versions that include the new U.S. DST rules are:

- JDK 5.0.3 or later
- SDK 1.4.2.11 or later
- SDK 1.3.1 (planned in Q4, 2006)

HP is working with Sun to provide a time zone update tool for 1.4.2/5.0 JVM's. This tool is expected to be released in January, 2007. The HP announcement regarding the Java updates can be found at <http://www.hp.com/products1/unix/java/DST-US.html>

C++ runtime libraries: See “aC++ Run Time Library” on page 351.

DCE: For further details be see Doc Id 8606430960 (JAGaf90402) at <http://itrc.hp.com> for the latest information.

---

## Detect and Strobe

Detect and Strobe core-kernel functionality is used to limit the amount of time spent in servicing interrupts to a user-defined maximum.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Detect and Strobe was previously delivered as patch for HP-UX 11i v1. It is newly delivered in the Operating Environments for HP-UX 11i v3.

- Is disabled when any system configuration altering activity is in progress.
- Functionality enabled by default (default value set at 80%).

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Is disabled when any system configuration altering activity is in progress.
- Functionality enabled by default (default value set at 80%).

## Impact

When enabled, you will see a dramatic improvement in system performance when the system is experiencing excessive interrupt loads.

## Compatibility

Functionality enabled by default on both PA-RISC and Itanium®-based systems (tunable set at 80 by default).

## Performance

Performance degradation up to 5% during regular use. However, user performance improvement is achieved when the system is under excessive interrupt activity.

## Documentation

For further information, see the *intr\_strobe\_ics\_pct* (5) manpage.

## Obsolescence

Not applicable.

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## Disks and File Systems (fsweb)

The Disks & File Systems (`fsweb`) tool is the primary interface for File System and Disks system administration tasks. The tool provides both web-based Graphical User Interface (GUI) and Text User Interface (TUI). The Disks & File Systems tool can be launched from the HP System Management Homepage (HP SMH) and HP Systems Insight Manager (HP SIM). In the 11i v3 release, the tool can also be launched using the `fsweb` command.

The Disks & File Systems tool supports system administration tasks, including management of logical volumes and volume groups, disk management tasks, and file system tasks. The tool supports these file systems: Cache File System (CacheFS), Compact Disc File System (CDFS), Common Internet File System (CIFS), Hierarchical File System (HFS), Network File System (NFS), and Veritas File System (VxFS).

The Disks & File Systems tool is available on the HP-UX 11i v2 (B.11.23) and HP-UX 11i v3 (B.11.31) Operating Environments. It is not supported on Linux and Windows operating systems.

In the 11i v3 release, the Disks & File Systems tool completely replaces the File System and Disks functional area in the HP-UX Systems Administration Manager (SAM) application. HP SAM is deprecated in the HP-UX 11i v3 (B.11.31) release. HP SMH provides an extended graphical user interface (GUI) to manage the Disks and File Systems tasks for HP-UX. For more information on the HP System Administration and HP System Management Homepage, see the respective sections in these release notes.



The name of the `fsweb` bundle is `FileSystems`. The `FileSystems` bundle is available on the Operating Environment DVD and the Applications DVD. When you install an HP-UX 11i v3 Operating Environment, HP recommends that you install `FileSystems`.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The HP-UX 11i v1 (B.11.11) Operating Environments do not support the Disks & File Systems (`fsweb`) tool. The Disks & File Systems (`fsweb`) tool is new for customers migrating from HP-UX 11i v1 (B.11.11) to HP-UX 11i v3 (B.11.31).

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The first release of the Disks & File Systems (`fsweb`) tool was in the HP-UX 11i v2 (B.11.23) December 2005 release. The differences between the first release and the HP-UX 11i v3 (B.11.31) Enterprise Release are as follows:

- A new Text User Interface (TUI) replaces the legacy SAM interface.
- Supports use of the `fsweb` command to directly launch the Disks & File Systems (`fsweb`) tool.
- Supports new mass storage stack
- Provides additional Logical Volume Manager (LVM) support
- Provides Volume Group (VG) Distribute and Undistribute functionality for Service Guard support
- Provides Disk Operations such as setting and displaying disk attributes, setting the view for a mass storage stack, viewing disk statistics, and setting the disk device ID.
- Supports localized version of the tool in different European and Asian languages.

## Impact

The 11i v3 release provides significant performance improvements over SAM, better reliability, ease of use, improved visualization, command preview, and new features.

## Compatibility

The known compatibility issues are as follows:

- In 11i v3 a new Text User Interface (TUI) is provided in place of the legacy SAM. In the TUI the tasks are available under different headings such as Disks, Volume Groups, Logical Volumes, and File Systems. This means, unlike in the legacy SAM, the user must perform each task separately by navigating to the appropriate heading. For example, in the legacy SAM, the user could navigate to Disks and create volume groups, logical volumes and even file systems. In the new TUI, the user must navigate to Volume Groups to create a volume group, navigate to Logical Volumes to create a logical volume, and so on.
- Disk Array maintenance is not supported in this release of 11i v3.

- Hot spare administration, Convert vg to vxvm disk group, and Replace Hot Pluggable Disk are not supported.
- Configuring Swap functionality is not supported.

## Performance

There are no known performance issues.

## Documentation

- Disks and File Systems Online Help
- *fsweb* (1M), *sam* (1M) and *smh* (1M) manpages

## Obsolescence

Not applicable.

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# Distributed Systems Administration Utilities

Distributed Systems Administration Utilities (DSAU) V1.3 provides tools that simplify managing groups of systems and Serviceguard clusters. DSAU is based on open source tools *cfengine*, *pdsh*, and *syslog-ng*. DSAU adds several commands and provides extensive documentation for use of DSAU in a Serviceguard environment or on standalone systems. Wizards can be launched from HP SMH/SIM.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

DSAU was not shipped on HP-UX 11i v1, so it is new for customers migrating to HP-UX 11i v3.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

DSAU includes an interface expansion, providing long usernames and long hostnames.

## Impact

The change for HP-UX 11i v3 extends the capability of the product.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

DSAU documentation is provided in the *Distributed Systems Administration Utilities User's Guide* and the *Distributed Systems Administration Utilities V1.3 Release Notes for HP-UX 11i v3*. These documents are available on <http://docs.hp.com> in the **Network and Systems Management** collection, among the **System Administration** products. DSAU manpages are available in the 1M and 1 manual page volumes, as follows:

- Volume 1M: cexec, cwall, clog\_wizard, clog, csync\_wizard
- Volume 1: ccp, cexec, **kill**, cps, csshsetup, cuptime

Open source manpages for cfengine, pdsh and syslog-ng are available on `/opt/dsau/doc` with the installed product.

## Obsolescence

Not applicable.

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## Enhanced User Core File Naming

The *coreadm* (1M) command can be used to uniquely name application core files created by abnormally terminating user processes.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The *coreadm* (1M) is a new command introduced in HP-UX 11i v3 to uniquely name application core files created by abnormally terminating user processes.

Legacy behavior in HP-UX is to create a core file under the name "core" for an abnormally terminating processes.

A potential problem with that behavior is that abnormally terminating applications which share the same working directory can overwrite each other's core files. By uniquely naming core file names, application core files will not be overwritten.

The *coreadm* (1M) command offers the following features:

- Core file names can be differentiated by
  - Machine name (as stated by `uname`)
  - PID
  - Time stamp
  - Node name

- Executable file
- UID/GID
- Processor ID of the running thread when core was generated
- Directory where the core file is placed
- System wide and per-process level control to enable or disable core file creation.
- The default is legacy behavior. (File name is “core.”)

### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

By default, this feature will not be turned on. System-wide core file naming can only be set by the super-user. Normal users can override core file settings for processes that they own.

### **Compatibility**

The default is still the legacy behavior which creates the core file under the name “core.”

### **Performance**

Core file creation is not a performance-sensitive code path; therefore, this feature shouldn’t affect performance.

### **Documentation**

For further information, see the *coreadm* (1M) and *coreadm* (2) manpages.

### **Obsolescence**

Not applicable.

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## **Enterprise Cluster Master Toolkit Version**

The Enterprise Cluster Master Toolkit (ECMT) is a set of templates and scripts that allow you to configure Serviceguard packages for the HP Internet servers as well as for third party database management systems. This unified set of high availability tools is being released on HP-UX 11i v3.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- ECMT Version B.02.20 on HP-UX 11i v1:
  - Support for HP 9000 servers
  - Scripts for Oracle (9i and 10g database applications), HP Apache and HP CIFS/9000
  - Enhancements to the Oracle Toolkit:
    - Support for both Oracle 9i and Oracle 10g database application.
    - Improved documentation.
    - Performance Enhancement occurs at package start-up by checking for the availability of the DB instance, and returning a success/failure code. If the instance cannot be successfully accessed, a failure will be returned to Serviceguard's package manager to halt any additional attempts to bring up the package.
    - Assurance that all Oracle Toolkit scripts are owned and executed by "root".
- What's changed in ECMT Version B.04.00 with SG 11.17.01 on HP-UX 11i v3:
  - Support for Serviceguard 11.17.01 (non-CFS) for
    - Tomcat and Apache
    - Oracle 10g R2
- Defect Fixes

For details, see the *Enterprise Cluster Master Toolkit Version B.04.00 Release Notes*, available at [http://docs/hp/com/hpux/ha](http://docs.hp.com/hpux/ha).
- Known Problem and Workarounds

Oracle Toolkit cannot handle password protected listeners. For detailed information on this issue refer to the *Enterprise Cluster Master Toolkit Version B.04.00 Release Notes*.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- ECMT Version B.03.00 on HP-UX 11i v2:
  - Support for VERITAS Cluster File System (CFS) in a Serviceguard A.11.17 environment.
  - Enhancements to the README file of each toolkit in the ECMTbundle.
- What's changed in ECMT Version B.04.00 with SG 11.17.01 on HP-UX 11i v3:
  - Support for Serviceguard 11.17.01 (non-CFS) for
    - CIFS
    - Tomcat and Apache
    - Oracle 10g R2
- Defect Fixes

For details, see the *Enterprise Cluster Master Toolkit Version B.04.00 Release Notes*, available at <http://docs/hp/com/hpux/ha>.

- **Known Problem and Workarounds**

Oracle Toolkit cannot handle password protected listeners. For detailed information on this issue refer to the *Enterprise Cluster Master Toolkit Version B.04.00 Release Notes*.

## **Impact**

There are no impacts other than those previously listed.

## **Compatibility**

There are no known compatibility issues.

## **Performance**

There are no known performance issues.

## **Documentation**

For further information, see the following document, available at <http://docs/hp/com/hpux/ha>:

- *Enterprise Cluster Master Toolkit Version B.03.00 Release Notes*

## **Obsolescence**

Not applicable.

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## **Event Manager**

Event Manager (EVM) is a comprehensive event management system which enables you to post, receive, store, retrieve and monitor events. EVM consists of kernel components, user libraries (`libevm.so`), and a set of command line utilities.

The main components of EVM are as follows:

- The Evm Daemon (`evmd`) - Receives events from posting clients and distributes them to the subscribing clients, that is, clients that have subscribed for the events.
- The Evm Logger - Receives events from the daemon and writes them to each of the logs if the filter string matches. The `evmllogger` command also serves as an event forwarding agent that you can configure to take an action when required. The Event Manager daemon automatically starts the logger.

- The Evm Channel Manager - Executes the periodic functions defined for any channel. The Event Manager daemon starts the channel manager (`evmchmgr`) automatically.
- The Evm Command Line Utilities - Event Manager provides command line utilities to administer the Event Manager system and to post or obtain events.
- The Evm Application Programming Interface - Event Manager API library, `libevm.so`, contains an extensive range of event management functions. The API functions enable programs to post events, send requests and notifications to the daemon, or receive responses and information from the daemon.

The command line utilities are as follows:

- `evmpost` - Accepts a file or a stream of events in text format, and posts them to the Event Manager daemon for distribution
- `evmshow` - Accepts one or more Event Manager events and outputs them in the specified format
- `evmsort` - Reads a stream of events, and sorts the events according to the specified criteria
- `evmwatch` - Subscribes to the specified events and outputs them as they arrive
- `evmget` - Retrieves stored events from a configured set of log files and event channels, using channel-specific retrieval functions
- `evmreload` - Posts control events, which instruct the Event Manager components to reload the configuration files. You must use this command to load the new configuration, when you modify any EVM configuration file.

The EVM system offers the following features:

- Enables users and applications to post, receive, store, retrieve, and monitor events
- Supports creation and customization of event channels
- Facilitates users to select summary or detailed event data
- Provides users with a full set of command line utilities that can be used to post and handle events from the command line
- Supports configurable event logger that enables you to control event logging
- Supports configurable event forwarding that enables you to automatically notify other system entities of selected events
- Supports configurable authorization for posting or accessing events
- Supports log file management that automatically archives and purges log files
- Provides application programming interface (API) library for programmers to handle events

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Event Manager is introduced and supported only on HP-UX 11i v3.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

Event Manager is introduced and supported only on HP-UX 11i v3.

### **Impact**

With Event Manager, you can post, receive, store, retrieve and monitor events. EVM consists of kernel components, user libraries (`libevm.so`), and a set of command line utilities.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For further information, see the Event Manager manpage, *evm* (5), which includes references to most of the other EVM-related manpages. In addition, see the following documents, available at <http://docs.hp.com>:

- *Event Manager Administrator's Guide*
- *Event Manager Programmer's Guide*

### **Obsolescence**

Not applicable.

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## **Event Monitoring Service**

The Event Monitoring Service (EMS) is a framework for monitoring system resources which includes configuring, checking resource status, and sending notification when configured conditions are met.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

In addition to existing notification methods EMS supports, EMS is now enhanced to send WBEM indications, and these WBEM indications can be viewed from the EVWEB tool.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"



## Impact

In addition to existing notification methods EMS supports, EMS is now enhanced to send WBEM indications, and these WBEM indications can be viewed from the EVWEB tool.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Refer to the following EMS documentation, available at <http://docs.hp.com/en/ha.html#Event%20Monitoring%20Service%20and%20HA%20Monitors>:

- *Using Event Monitoring Service*
- *Using High Availability Monitors*

## Obsolescence

Not applicable.

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## High Resolution Timer Support

This product enhances select timer-related system calls and APIs to provide a resolution finer than the default 10 millisecond resolution. It is part of the core OS.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This product enhances select timer-related system calls and APIs to provide a resolution finer than the default 10 millisecond resolution.

The affected APIs are as follows:

- `timer_settime()`
- `setitimer()`
- `nanosleep()`
- `sigtimedwait()`
- `ualarm()`
- `usleep()`

- `pthread_cond_timedwait()`
- `semtimedop()`

This product is controlled by the tunable *hires\_timeout\_enable*.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

Many applications desire a finer resolution than the current clock tick resolution of 10 milliseconds for these APIs. To achieve this, the tunable *hires\_timeout\_enable* can be set to 1. This will modify system-wide behavior of the aforementioned APIs to give a finer resolution.

### **Compatibility**

There are no known compatibility issues with prior releases and no difference in behavior across PA-RISC and Itanium®-based architectures. A new dynamic tunable *hires\_timeout\_enable* is provided to enable or disable the enhancement. By default, the enhancement is not enabled.

### **Performance**

Turning on the tunable may lead to an increase in the number of timer-related interrupts. Turning off the tunable may lead to a decrease in the number of timer-related interrupts.

### **Documentation**

For further information, see the *hires\_timeout\_enable* (5) manpage.

### **Obsolescence**

Not applicable.

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## **HP OpenView GlancePlus Pak**

GlancePlus Pak, version C.04.55, integrates the HP OpenView GlancePlus and HP OpenView Performance Agent for HP-UX (OVPA) products into a single tool to help customers better manage the performance and availability of their servers.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This release includes the following enhancements:

- For both OVPA and GlancePlus:
  - This release of HP OpenView GlancePlus Pak is supported on HP-UX 11i v3
  - Support for large process IDs
  - Enhancement to record the Logical Volume (LV) metrics for Veritas Volume Manager, versions VxVM 4.1 and VxVM 5.0
  - The following new metrics are included for monitoring the Unified File Cache (UFC):
    - *GBL\_MEM\_FILE\_PAGE\_CACHE*
    - *GBL\_MEM\_FILE\_PAGE\_CACHE\_UTIL*
  - The following new disk metrics have been included to record the Service time and Queue time for the disks:
    - *BYDSK\_AVG\_QUEUE\_TIME*
    - *BYDSK\_AVG\_READ\_QUEUE\_TIME*
    - *BYDSK\_AVG\_WRITE\_QUEUE\_TIME*
    - *BYDSK\_AVG\_WRITE\_SERVICE\_TIME*
    - *BYDSK\_AVG\_READ\_SERVICE\_TIME*
- For GlancePlus

This release of GlancePlus is enhanced to monitor and report the performance statistics of Host Bus Adaptor (HBA) cards. A new class of metrics, "BYHBA" is added to record the performance of HBA cards. For more information, refer to the *Dictionary of Performance Metrics* available in the location `/opt/perf/paperdocs/C/gp/gp-metrics.txt`

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

Refer to the Release Notes of each product (GlancePlus and OpenView Performance Agent) in `/opt/perf/ReleaseNotes/`, or at the following Web site:  
[http://ovweb.external.hp.com/lpe/doc\\_serv/](http://ovweb.external.hp.com/lpe/doc_serv/).

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Please refer to the release notes of each product (GlancePlus and OpenView Performance Agent) in `/opt/perf/ReleaseNotes/`, or at the following site:  
[http://ovweb.external.hp.com/lpe/doc\\_serv/](http://ovweb.external.hp.com/lpe/doc_serv/)

## Obsolescence

Not applicable.

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## HP Partitioning and Virtual Server Environment

HP offers a full line of hardware and software partitioning capabilities, including nPartitions, virtual partitions, and HP Integrity Virtual Machines. The HP Virtual Server Environment (VSE) builds on HP partitioning products and the VSE Management Software to help you maximize the use of your server resources in response to changing business needs.

The HP-UX Operating Environments include WBEM providers and agent software that enable your systems to operate in the VSE. The VSE Management Software is not included in the Operating Environments, but is available for download from the following Web site:

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

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## Dynamic LCPU

The new generation of the Intel® Itanium® 2 processor incorporates several advanced features and improvements, including multiple cores per processor and multiple hardware threads per core. The HP-UX 11i v3 operating system is enhanced to support the new multiple hardware thread feature called the Hyper-Threading (HT) Technology.

The new generation of the Intel® Itanium® 2 processor supports two-way hardware multi-threading where the core resources are shared between two hardware threads (two independent streams of instructions). Each hardware thread appears as a complete processor to the user applications and to the operating system.

The HT Technology increases the functional and instructional throughput by making use of the underutilized core resources and idling cycles caused by the memory stalls. However, the out-of-box performance of applications on HT can vary greatly due to various factors. Therefore, the HT Technology is integrated with the HP-UX's existing partitioning technology, specifically the processor set, as a way to offer simultaneous availability of processors with HT enabled and disabled dynamically at the processor set boundary. This feature is called the Dynamic LCPU.

The definition of HP-UX processor sets is expanded to include a new attribute - LCPU attribute. This allows dynamically enable or disable all LCPUs within a pset. Disabling LCPU renders the processor cores as a single-threaded processor. In this model, the processor set provides a “quarantine zone” for applications that do not perform well with HTs by allowing the applications to run on processors without hardware threading. Other applications that perform well with HTs can run in processor sets with LCPUs enabled.

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

The following existing system calls have been expanded to support the Itanium® 2 Hyper-Threading Feature and Dynamic LCPU:

- *mpctl* (2) - additional command options to query the physical processor core topology at either the system or processor set level.
- *pset\_ctl* (2) - additional command options to query the physical processor core topology at the processor set boundary level.
- *pstat\_getprocessor* (2) - new fields to report sibling logical processors which belongs to the same physical processor core.
- *pset\_setattr* (2) - new command option to dynamically enable or disable LCPU attribute of a non-default processor set.
- *\_\_pset\_rtctl* (2) - new command option to dynamically enable or disable LCPU attribute of an RTE processor set.

A new dynamic attribute is introduced to control the LCPU attribute of the default processor set:

- *lcpu\_attr* (5) - dynamic kernel tunable value to enable or disable LCPU attribute of the default processor set.

### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

The Dynamic LCPU feature impacts customers using the Itanium® 2 with the Hyper-Threading feature.

## Compatibility

There is no impact with binary compatibility.

## Performance

Some applications may benefit from Hyper-Threading. Refer to the “Dynamic Logical Processors for Hyper-Threading on HP-UX 11i V3” white paper, available on <http://docs.hp.com>, for further details on application considerations on HT.

## Documentation

The “Dynamic Logical Processors for Hyper-Threading on HP-UX 11i V3” white paper is available on <http://docs.hp.com>.

The following manpages are available for further information:

- *lcpu\_attr* (5), *pset\_create* (2), *pset\_destroy* (2), *pset\_setattr* (2), *pset\_ctl* (2), *mpctl* (2), *pstat\_getprocessor* (2), *\_\_pset\_rtctl* (2)

## Obsolescence

Not applicable.

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# HP Global Workload Manager

HP Global Workload Manager (gWLM), a component of the HP Virtual Server Environment (VSE) Suite, allows you to centrally define resource-sharing policies that you can use across multiple HP servers. These policies increase system utilization and facilitate controlled sharing of system resources. In addition, gWLM provides both real-time and historical monitoring of the resource allocation.

gWLM has three components:

- VSE Central Management Server, or CMS (VSEMgmt)

You can obtain the VSEMgmt bundle from <http://hp.com/go/softwaredepot>. It is not available on the Operating Environments (OE) or Application Release (AR) media.

You configure gWLM and monitor your workloads on the system where the CMS software is installed. This system must also have HP Systems Insight Manager 5.x installed. The CMS is not available on HP-UX 11i v3. However, you can use a CMS on other systems (running HP-UX 11i v1 or HP-UX 11i v2) to control HP-UX 11i v3 managed nodes.

- Trial Agent (T2743AA)

The gWLM agent is default-installed on the OE media and is also available from the AR media.

Install the gWLM agent software on each system where you have workloads you want gWLM to manage. These systems are known as managed nodes. (Agents on HP-UX 11i v3 do not support Hyper-Threading enablement or online cell operations.)

On HP-UX managed nodes, you place each workload in an nPartition (npar), a virtual partition (vpar), a virtual machine (created using HP Integrity Virtual Machines), a processor set (pset), or an fss group. (Up to 1024 fss groups are supported.) On Linux managed nodes, you place each workload in a pset (created using a CPU affinity mask.)

gWLM manages your workloads by controlling the resource allocations to the npars, vpars, virtual machines, psets, or fss groups.

- License to Use, or LTU (T2762AA)

You can obtain the CMS and the agent free of charge. The A.02.50.00.x agent works for a period of 120 days. After the 120 days, the agent:

- Cannot be restarted once it is stopped
- Refuses changes to deployed SRD configurations
- Refuses to deploy new SRD configurations

To continue using gWLM agents after a free-use period has ended, you must install a license on each managed node. This license is available on the AR media. It is also available as part of the VSE LTU (T2786AC), which enables you to use gWLM and all the other components of the VSE suite.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Since September 2005, gWLM has been updated to version A.02.50.00.x.

The following changes occurred at version A.01.01.02:

- gWLM now assumes a constant size for each shared resource domain
- License agreement is displayed when you first run the gWLM agent
- gWLM history truncation deletes configuration data in addition to historical data
- HP-UX Systems running the gWLM agent only need the JRE (The JDK is no longer needed.)

The following changes occurred at version A.02.00.00.x:

- gWLM is now part of the HP Virtual Server Environment (VSE) Management Software
- `gwlminitconfig` was replaced by `vseinitconfig`
- The gWLM CMS bundle (T2412AA) is no longer available; instead, use the VSE CMS bundle (VSEMgrt)
- gWLM can now manage virtual machines created using the HP Integrity Virtual Machines software
- gWLM can take advantage of Temporary Instant Capacity
- All policy types can now be combined in a single shared resource domain (SRD)
- OwnBorrow policy: weight value now defaults to the “owned” value—unless you explicitly give a weight value
- Valid names have been expanded to include a colon and start with a number
- The “Manage Workloads” wizard and “Unmanage Workloads” wizard have been integrated into the new Manage Systems and Workloads wizard
- Support for mixed-architecture servers
- Compatibility with OpenVMS
- Resources are now allocated in the following order to satisfy:

1. Compartment minimum values (without regard to priority)
  2. Policy minimum values (without regard to priority)
  3. Requests that are less than a policy's owned value (without regard to priority)
  4. Requests that are less than a policy's maximum value (based on priority)
  5. Policy maximum values
  6. Compartment maximum values
- High availability behavior when non-master loses communication was modified
  - Host-based authorizations
  - New reports available through `gwlmmreport`: abnormal utilization report; extract report to collect data for use with OpenView Performance Agent (OVPA)
  - Reports from `gwlmmreport` available through HP Systems Insight Manager (SIM)
  - New `gwlmmreport` extract options (`--columnhelp`, `--columns`, `--datestamps`)
  - `--outputpath` now available with the `resourceaudit` and `topborrowersreports` from `gwlmmreport` to specify the path for report output
  - New `gwlmm export --all` option to export the entire configuration repository with a single command
  - Changed behavior for `gwlmm history --truncate=CCYY/MM/DD`

The following changes occurred at version A.02.50.00.x:

- Support for Linux managed nodes
- Support for Windows virtual machine guests
- Nested partitions
- Default interval differs based on the type of compartment being managed
- Convergence rate now applies to OwnBorrow and utilization policies
- `gwlmmreport config` command generates a report showing the history of configuration changes
- Changes to `gwlmm` command
- New `gwlmm license --host` option
- New `gwlmm history --purge` option
- New `gwlmm` subcommands
  - `gwlmm agentinfo`
  - `gwlmm reset`
- New `gwlmm monitor --nested` option
- `gwlmm manage --id` option is no longer required
- Automated security certificate distribution
- Treatment of Temporary Instant Capacity (TiCAP) resources has been modified
- User-configurable log file size and number of log files
- Advisory mode no longer available for psets and fss groups



## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

gWLM has been updated to version A.02.50.00.x with the following changes:

- Support for Linux managed nodes
- Support for Windows virtual machine guests
- Nested partitions
- Default interval differs based on the type of compartment being managed
- Convergence rate now applies to OwnBorrow and utilization policies
- `gwlmmreport config` command generates a report showing the history of configuration changes
- Changes to `gwlmm` command
- New `gwlmm license --host` option
- New `gwlmm history --purge` option
- New `gwlmm` subcommands
  - `gwlmm agentinfo`
  - `gwlmm reset`
- New `gwlmm monitor --nested` option
- `gwlmm manage --id` option is no longer required
- Automated security certificate distribution
- Treatment of Temporary Instant Capacity (TiCAP) resources has been modified
- User-configurable log file size and number of log files
- Advisory mode no longer available for psets and fss groups

## Impact

gWLM A.02.50.00.x provides more flexibility in managing your HP-UX 11i v3 systems.

## Compatibility

There are no known compatibility issues.

## Performance

gWLM improves performance system utilization when properly configured.

## Documentation

For further information, refer to the following:

- Manpages:
  - `/opt/gwlm/man/man1m.Z/gwlm.1m`
  - `/opt/gwlm/man/man1m.Z/gwlmmcmsd.1m`
  - `/opt/gwlm/man/man1m.Z/gwlmmplace.1m`

- /opt/gwlm/man/man1m.Z/gwlmreport.lm
  - /opt/gwlm/man/man1m.Z/gwlmsend.lm
  - /opt/gwlm/man/man1m.Z/gwlmsslconfig.lm
  - /opt/gwlm/man/man4.Z/gwlmxml.4
  - /opt/gwlm/man/man5.Z/gwlm.5
- Web site:
    - <http://www.hp.com/go/gwlm>
  - Documents (available at <http://docs.hp.com/en/netsys.html#HP%20Global%20Workload%20Manager>):
    - *Getting Started with HP Integrity Essentials Global Workload Manager*
    - *HP Integrity Essentials Global Workload Manager Administrator's Guide*
    - *VSE Management Software Installation and Update Guide*
    - *VSE Management Software Quick Start Guide*

## Obsolescence

Not applicable.

---

## HP Process Resource Manager

HP Process Resource Manager (PRM) C.03.02.02 provides an efficient and flexible way to manage resource allocation at times of peak system load. It gives the system administrator the ability to group users or processes together and guarantee each group minimum amounts of the total CPU, real memory, and disk bandwidth available.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Ability to manage shared memory
- Integration with HP Integrity Virtual Machines
- User-space memory manager `prm0d` was removed
- Integration with HP System Management Homepage
- Ability to map Unix groups to PRM groups
- Ability to cap PRM group CPU consumption on a per-group basis
- Support for Hyper-Threading in PSET PRM groups

PRM sets the Hyper-Threading state for the default PSET, where FSS PRM groups are created, to optimize workload performance.
- Terminology change: Now use “core” in place of “CPU”
- Extended regular expressions in alternate names for application records

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Integration with HP System Management Homepage
- Ability to map Unix groups to PRM groups
- Ability to cap PRM group CPU consumption on a per-group basis
- Support for Hyper-Threading in PSET PRM groups  
PRM sets the Hyper-Threading state for the default PSET, where FSS PRM groups are created, to optimize workload performance.
- Terminology change: Now use “core” in place of “CPU”
- Extended regular expressions in alternate names for application records

## Impact

There are no impacts other than those previously listed.

## Compatibility

There are no known compatibility issues.

## Performance

PRM is designed to set resource allocations (CPU, memory, disk bandwidth) for applications. Misconfiguration can result in degradation.

## Documentation

- The *prm* (5) manpage provides an overview of PRM and points to all the other manpages.
- See also the PRM Web site at <http://www.hp.com/go/prm> (the “Information library” provides white papers).
- The following documents are available at <http://docs.hp.com/hpux/ha/index.html#Process%20Resource%20Manager>:
  - *HP Process Resource Manager User's Guide*
  - *HP PRM Version C.03.02.xx Release Notes for HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3*

## Obsolescence

Not applicable.

## HP-UX Virtual Partitions

HP-UX Virtual Partitions (vPars) A.05.01 enables multiple instances of the HP-UX 11i v3 Operating Environment (OE) to run simultaneously on one server or within one nPartition, with each OE instance hosting its own set of applications in a isolated environment.

When vPars A.05.01 is available, it can be purchased at the HP-UX Virtual Partitions (T1335CC) Web site at HP Software Depot:

<http://software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=T1335CC>

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

vPars A.05.01 includes the following additions to the current vPars features:

- online memory migration
- mixing A.04.02 and A.05.01 virtual partitions in the same vPars environment
- support for hyperthreading on CPUs and OSs that support hyperthreading
- ability to cancel pending CPU and memory migrations

---

#### NOTE

##### Mass Storage Stack Formats

Although the new mass storage stack formats (SCSI-3 formats, virtual hardware path format, and the new device special file formats) are supported within the HP-UX 11i v3 OS virtual partitions, they are not supported for use on the vPars command line or vPars stdout/stderr. You should continue to use the legacy `ioscan` format that existed in previous vPars releases when using the vPars commands; for HP-UX 11i v3 (11.31), `ioscan`'s default output will continue to show the legacy format.

However, wherever the new formats are supported by other HP-UX 11i v3 HP-UX commands and tools, you can use these new formats within the virtual partitions running HP-UX 11i v3. For information on using the new mass storage stack formats, multipathing, and agile addressing, see the whitepaper *The Next Generation Mass Storage Stack* and the manual *HP-UX System Administrator's Guide*, available at <http://docs.hp.com>.

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For detailed information, please see the *HP-UX Virtual Partitions Release Notes* for A.05.01.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those listed previously.

## Compatibility

Please see the *HP-UX Virtual Partitions Release Notes* for A.05.01 available at <http://docs.hp.com/en/hpux11iv3.html#Virtual%20Partitions>

## Performance

There are no known performance issues.

## Documentation

For further information, see the following:

- HP-UX Virtual Partitions (T1335CC) Web site at HP Software Depot:  
<http://software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=T1335CC>
- vPars Documents for HP-UX 11i v3:  
<http://docs.hp.com/en/hpux11iv3.html#Virtual%20Partitions>

## Obsolescence

Not applicable.

---

## Integrity VM (Virtual Machines) for 11i v3

HP Integrity Virtual Machines is a soft partitioning technology that provides operating systems isolation with sub-CPU allocation granularity and shared I/O.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX 11i v3 is supported in an Integrity virtual machine guest. The underlying HP-UX Foundation Operating Environment (FOE) in the Integrity VM host does not require HP-UX 11i v3 to support HP Integrity virtual machine running HP-UX 11i v3, that means the underlying FOE in the Integrity VM host will remain HP-UX 11i v2 at this time.

For more information, please see the Integrity VM product documentation at <http://docs.hp.com>.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

#### **Impact**

There are no impacts other than those listed previously.

#### **Compatibility**

There are no compatibility issues other than those listed previously.

#### **Performance**

There are no known performance issues.

#### **Documentation**

See the Integrity VM documentation at <http://docs.hp.com>

#### **Obsolescence**

Not applicable.

---

## **HP-UX Workload Manager**

HP-UX Workload Manager (WLM) A.03.02.02 provides goal-based workload management. This management enables automatic resource allocation and application performance management through the use of prioritized service-level objectives (SLOs). It provides this functionality by automating features of HP-UX Virtual Partitions, nPartitions, Processor Sets, and HP Process Resource Manager (PRM).

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

HP-UX Workload Manager (WLM) A.03.02.02 includes the following changes:

- No longer includes Process Resource Manager (PRM) in the bundle
- Supports HP Integrity Virtual Machines
- Communications are now secure by default
- Supports finer granularity for minimum allocations to FSS groups
- Supports a maximum of 256 FSS groups
- Supports process placement using criteria you specify

- Supports management of PSET-based workload groups in configurations also simultaneously managing virtual partitions or nPartitions
- Now allows wildcards in both the file name and the alternate name in an application record
- Ability to map Unix groups to workload groups
- Extended regular expressions in alternate names for application records
- Enhancements to `wlminfo` output
- New keyword `utility_reserve_threshold` enables you to configure the minimum number of days of Temporary Instant Capacity that must be available for WLM to use that capacity
- Support for Hyper-Threading in PSET-based workload groups (WLM sets the Hyper-Threading state for the default PSET, where FSS workload groups are created, to optimize workload performance.)

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

HP-UX Workload Manager (WLM) A.03.02.02 includes the following changes:

- Ability to map Unix groups to workload groups
- Extended regular expressions in alternate names for application records
- Enhancements to `wlminfo` output
- New keyword `utility_reserve_threshold` enables you to configure the minimum number of days of Temporary Instant Capacity that must be available for WLM to use that capacity

### **Impact**

- With PRM no longer in the WLM bundle, you must install PRM separately to manage FSS and PSET-based workload groups
- Those accustomed to communications that are not secure will have to manually unset secure communications
- More flexibility in process placement

### **Compatibility**

There are no known compatibility issues.

### **Performance**

Performance is improved when WLM is used properly, but can degrade when WLM is not configured appropriately.

### **Documentation**

- The `wlm` (5) manpage provides a list of all the manpages in its SEE ALSO section.
- Further information is also available in the WLM Web site at <http://www.hp.com/go/wlm> (the "Information library" page provides white papers)

- The following documents are available at  
<http://docs.hp.com/hpux/netsys/index.html#HP-UX%20Workload%20Manager>:
  - *HP-UX Workload Manager User's Guide*
  - *HP-UX Workload Manager A.03.02.xx Release Notes for HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3*

## Obsolescence

Not applicable.

---

## HP-UX Workload Manager Toolkits

The Workload Manager Toolkits (WLMTK) product version A.01.10.01 enhances functionality provided by WLM and simplifies the integration of various products with WLM. These products include Apache, Oracle database instances, SAP, SAS, SNMP, and WebLogic.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Workload Manager Toolkits (WLMTK) product version A.01.10.01 includes the following changes:

- Provides the new HP-UX WLM SAP Toolkit, which includes the script `wlmsapmap` that identifies SAP processes based on user-defined criteria and uses WLM's process maps feature to place the SAP processes in specific workload groups
- Product label changed from T1302AA to WLMToolkits
- The Pay per use Toolkit (PPUTK) and the `utilitydc` command are no longer supported and have been removed from the product. Please use the simpler and more robust Temporary Instant Capacity (TiCAP)/Pay per use (PPU) solution available with `wlmpard`.
- WLM Toolkit for Base SAS Software (SASTK) will be deprecated in a future release  
However, a new and improved SASTK will be made available and will include a white paper and example configuration files.
- Duration Management Toolkit (DMTK) will be deprecated in a future release  
The toolkit, including its `wlmdurdc` command, will be deprecated in a future release. Support for the `wlmdurdc` command will be removed in a future release. In the meantime, for documentation, see the *wlmdurdc* (1M) manpage.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Workload Manager Toolkits (WLMTK) product version A.01.10.01 includes the following changes:



- Product label changed from T1302AA to WLMToolkits
- The Pay per use Toolkit (PPUTK) and the `utilitydc` command are no longer supported and have been removed from the product. Please use the simpler and more robust Temporary Instant Capacity (TiCAP)/Pay per use (PPU) solution available with `wlmpard`.
- WLM Toolkit for Base SAS Software (SASTK) will be deprecated in a future release  
However, a new and improved SASTK will be made available and will include a white paper and example configuration files.
- Duration Management Toolkit (DMTK) will be deprecated in a future release  
The toolkit, including its `wlmdurdc` command, will be deprecated in a future release. Support for the `wlmdurdc` command will be removed in a future release. In the meantime, for documentation, see the *wlmdurdc* (1M) manpage.

## Impact

Users of the PPUTK will have to migrate to the new solution. SASTK and DMTK users should be aware of the deprecation of those toolkits.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- The *wlmtk* (5) manpage provides an overview of the toolkits and lists all the other manpages.
- At the <http://www.hp.com/go/wlm> product Web site, the “Information library” page lists white papers.
- The following documents are available at <http://docs.hp.com/hpux/netsys/index.html#HP-UX%20Workload%20Manager>:
  - *HP-UX Workload Manager Toolkits User's Guide*
  - *HP-UX Workload Manager Toolkits Version A.01.10.01 Release Notes*

## Obsolescence

PPUTK is obsoleted, and SASTK and DMTK are deprecated.

## Partition Manager

Partition Manager (`parmgr`) v2.0, version B.31.02.03.01, provides system administrators with a convenient graphical user interface for configuration and management of nPartitions on HP server systems. In addition, Partition Manager enhances the reliability and performance of HP partitioning products by providing automatic detection of several types of configuration problems.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Partition Manager includes the ability to enable and disable Hyper-Threading for nPartitions whose cells have processors that are Hyper-Threading capable (such as dual-core Intel® Itanium® 2 processors).

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

This release includes support for online activation of cells.

The Activate Cell Online action enables you to integrate an inactive cell into an nPartition without rebooting the nPartition. The cell being activated must already be assigned to the nPartition. After the online activation, the cell is active and its resources are integrated to make them available to the OS running on the nPartition.

Online cell operations are supported only on servers based on the HP `sx1000` or `sx2000` chipset. The cell being activated must be assigned to an nPartition running HP-UX 11i v3.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

The primary documentation for this product consists of a set of HTML online help files. The online help is accessed through context-sensitive help links in Partition Manager.

The `parmgr` command is documented in the *parmgr* (1M) manpage that is included with the product. Both English and Japanese versions of the manpage are included.

Additional information about Partition Manager, including links to download all currently available versions, can be found at <http://docs.hp.com/en/PARMGR2/>

## Obsolescence

Not applicable.

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## nPartition Provider

The nPartition Provider, version B.31.01.07.01, is the HP-UX WBEM Services provider for nPartition-related information on partitionable systems. This product is used by Partition Manager and the partition commands to configure and manage HP systems that support nPartitions. With this component, partitionable systems can be managed both locally and remotely.

The nPartition Provider is only used through a WBEM interface. It is not invoked directly by the user.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This release adds support for WBEM Services version 2.5 and supports systems based on the HP sx2000 chipset.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

This release adds support for WBEM Services version 2.5.

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Complete information is in the nPartition provider product data sheet, installed as `/opt/nparprovider/doc/nParProviderDataSheet.html`.

## Obsolescence

Not applicable.

## Utilization Provider

The Utilization Provider version A.01.05.00.x is a lightweight daemon (`utild`) that records system-utilization data on a 5-minute interval. The data recorded includes CPU, memory, disk, and network utilization. This product also includes a WBEM provider for access to the data.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This is the first release of Utilization Provider on HP-UX 11i v3 (11.31). The Utilization Provider has been updated to a new version number to include defect fixes.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

This is the first release of Utilization Provider on HP-UX 11i v3 (11.31). The Utilization Provider has been updated to a new version number to include defect fixes.

### Impact

When Utilization Provider is installed, it launches the `utild` daemon, which consumes minimal CPU, memory, and disk resources. Only 30 days of utilization data are kept in data files in `/var/adm/util`. The total disk space used by these files should not exceed 5MB in the default `utild` installation.

The Virtual Server Environment (VSE) Management Software, running on an HP Systems Insight Manager Central Management Server, requires the Utilization Provider to be running on all managed systems. If the Utilization Provider is removed, the system cannot be managed by the VSE Management Software.

### Compatibility

This version of the Utilization Provider depends on HP WBEM Services for HP-UX version A.02.05 or later.

### Performance

The `utild` process wakes up every 5 minutes and discovers and records the four utilization metrics (CPU, memory, disk, and network). This discovery has minimal impact on system performance.

### Documentation

The `utild` daemon is described in the `utild(1M)` manpage. WBEM schema (MOF files) are installed in

`/opt/util/mof`

For more information about the VSE Management Software and Utilization Provider, see the VSE Management Software Web site at

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

## Obsolescence

Not applicable.

---

## vPar Provider

The HP-UX vPar Provider is a HP WBEM Services for HP-UX provider for extracting information about virtual partitions on a system. As it is a read-only provider, clients cannot modify virtual partition configurations. This provider can be used through a Web-based Enterprise Management (WBEM) interface.

The vPar Provider always gets the data from the default virtual partition database located at `/stand/vpdb` or from the database where virtual partitions are booted from. The vPar Provider talks to the nPar Provider to get information of I/O assigned to virtual partitions and to determine whether or not it is running on an nPar. If the nPar Provider is down, then it will not provide this information.

The vPar Provider uses the namespace `root/cimv2/vpar`. The vPar Provider library and Managed Object Format (MOF) files are stored under `/opt/vparprovider/lib` and `/opt/vparprovider/mof` directories respectively.

The vPar Provider is delivered as a library (`/opt/vparprovider/lib/libHPVParProvider.1`) through the vParProvider bundle. It depends on the HP WBEM Services for HP-UX product. This release of vPar Provider is supported on all HP server systems that support HP-UX Virtual Partitions (vPars).

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The vPar Provider has the following features:

- It is a WBEM vPar Provider, which displays information about virtual partitions.
- Clients cannot modify virtual partition configurations with it, as it is a read-only provider.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

You can use WBEM-based clients to access the HP-UX vPar Provider and collect information virtual partitions.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The `/opt/vparprovider/doc` directory contains the vPar Provider Release Notes and data sheet.

## Obsolescence

Not applicable.

---

## HP Serviceguard

HP Serviceguard is a high availability software product for protecting mission critical applications from a wide variety of hardware and software failures.

Serviceguard A.11.17.01 is being released for use with the HP-UX 11i v3 operating system (11.31).

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

See "What's New for Customers Migrating from HP-UX 11i v2 June 2006?"

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Support for HP-UX 11i v3, specifically:
  - persistent device special file (DSF) naming and dynamic multipathing
  - large PID
  - 39-character hostname
  - HP-UX `olrad -C` command identifies networking interfaces (NICs) that are part of the Serviceguard cluster configuration
  - new Serviceguard Manager GUI delivered as plug-in to HP System Management Homepage (HP SMH); old (standalone) Serviceguard Manager GUI still supported
- Not supported in the initial release of Serviceguard 11.17.01 on HP-UX 11i v3:
  - Veritas Cluster File System (CFS) and Cluster Volume Manager (CVM) from Symantec
- Obsolete as of Serviceguard 11.17.01 on HP-UX 11i v3:
  - support for RS232 serial line as cluster heartbeat

- support for version 3.5 of Veritas Volume Manager (VxVM) from Symantec (VxVM 4.1 *is* supported)

## Impact

- Customers who need VERITAS Cluster File System (CFS) or Cluster Volume Manager (CVM) should not upgrade to HP-UX 11i v3 until CFS and CVM are available on that platform
- Customers upgrading to HP-UX 11i v3 should read the *intro* (7) manpage and the relevant sections of *HP-UX System Administrator's Guide* to understand the capabilities of the new persistent device-file (DSF) naming protocol

## Compatibility

See “Impact” on page 151.

## Performance

There are no performance changes.

## Documentation

For further information, see the following documents, available at <http://docs.hp.com> (navigate to **High Availability**):

- *Managing Serviceguard (13th Edition)*
- *HP Serviceguard Version A.11.17 on HP-UX 11i v3 Release Notes*
- *HP Serviceguard Quorum Server Version A.02.00 Release Notes*

## Obsolescence

Not available.

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## HP Serviceguard NFS Toolkit

HP Serviceguard Network File Server (NFS) Toolkit (formerly MC/ServiceGuard NFS Toolkit) uses HP Serviceguard (formerly MC/ServiceGuard) to set up highly available NFS servers. An NFS server is a host that “exports” its local directories and makes them available for client hosts to mount using NFS. On the NFS client, these mounted directories look to users like part of the client's local file system. With HP Serviceguard NFS, the NFS server package containing the exported file systems can move to a different node in the cluster in the event of failure.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Serviceguard NFS Toolkit A.11.31.02 contains the following changes from the September 2005 release of HP-UX 11i v1:

- Serviceguard NFS Toolkit can work with Serviceguard A.11.17.01. Serviceguard A.11.17.01 is being released in the HP-UX 11i v3 (11.31) release.
- Serviceguard A.11.17.01 provides a new control script template. Serviceguard NFS Toolkit supports the new variable `HA_NFS_SCRIPT_EXTENSION` in the control script (`nfs.cnt1`). This new variable can be used to modify the name of the NFS specific control shell script (`hanfs.sh`) that is associated with a package.
- Serviceguard A.11.17.01 introduces a new `MULTI_NODE` package type which is not supported by Serviceguard NFS Toolkit. The only supported package type is `FAILOVER`.
- Serviceguard A.11.17.01 provides a new package configuration file template. The new package configuration file template introduces the following dependency variables:

- `DEPENDENCY_NAME`
- `DEPENDENCY_CONDITION`
- `DEPENDENCY_LOCATION`

The above parameters are not supported in Serviceguard NFS Toolkit A.11.31.02. By default, these variables are commented out in the `nfs.conf` file.

- Serviceguard NFS Toolkit version A.11.31.02 does not support the following NFS HP-UX 11i v3 features:
  - Secure NFS features, such as Kerberos and Diffie-Hellman public key.
  - NFS Version 4 protocol
- This release also provides a defect fix. See the product release notes for details.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

HP Serviceguard NFS Toolkit version A.11.31.02 provides the same functionality as the release version included in the June 2006 release of HP-UX 11i v2.

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

The `rpc.statd` process should not fail to restart if a highly-available NFS package is stopped. This problem has been fixed in this release.

## Compatibility

- Customers who need VERITAS Cluster File System (CFS) should not upgrade to HP-UX 11i v3 until CFS is available on that platform.



- Serviceguard A.11.17.01 introduces a new *MULTI\_NODE* package type which is not supported by Serviceguard NFS Toolkit. The only supported package type is *FAILOVER*.
- Serviceguard A.11.17.01 provides a new package configuration file template. The new package configuration file template introduces the following dependency variables:
  - *DEPENDENCY\_NAME*
  - *DEPENDENCY\_CONDITION*
  - *DEPENDENCY\_LOCATION*The above parameters are not supported in Serviceguard NFS Toolkit A.11.31.02. By default, these variables are commented out in the *nfs.conf* file.
- Serviceguard NFS Toolkit version A.11.31.02 does not support the following NFS HP-UX 11i v3 features:
  - Secure NFS features, such as Kerberos and Diffie-Hellman public key.
  - NFS Version 4 protocol

## Performance

There are no known performance issues.

## Documentation

Refer to the following documentation available at <http://docs.hp.com/en/ha.html>:

- *Serviceguard NFS Toolkit A.11.11.06, A.11.23.05 or A.11.31.02 Administrator's Guide*
- *Serviceguard NFS Serviceguard NFS Toolkit A.11.31.02 Release Notes*
- *Serviceguard A.11.17.01 Release Notes*

## Obsolescence

Not applicable.

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## HP System Management Homepage

HP System Management Homepage (HP SMH) is a Web-based interface that consolidates and simplifies single system management for HP servers on Windows, Linux, and HP-UX operating systems. HP System Management Homepage, version A.2.2.5, is the initial release of HP SMH for HP-UX 11i v3.

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**NOTE** Text-based HP SMH only supports the C (English) locale. HP recommends that you set your locale variables, such as *LANG* and *LC\_ALL*, to C. A majority of the applications in Web-based HP SMH support multibyte locales.

---

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

As an infrastructure for integrating system management tools, there is no difference between HP SMH for HP-UX 11i v1 and HP SMH for HP-UX 11i v3. The main differentiator is that many more system management tools are integrated in HP SMH for HP-UX 11i v3 than HP-UX 11i v1.

HP System Management Homepage for HP-UX 11i v3 has been updated to version A.2.2.5 to incorporate defect fixes. This is a minor roll of version A.2.2.1 released for the 0509 HP-UX 11i v1 release.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

As an infrastructure for integrating system management tools, there is no difference between HP SMH for HP-UX 11i v2 and HP SMH for HP-UX 11i v3. The main differentiator is the addition of the new Web-based solutions for Networking and Communications (*ncweb*), and ServiceGuard complex management (*sgmgr*) being introduced for HP-UX 11i v3.

HP System Management Homepage for HP-UX 11i v3 has been updated to version A.2.2.5 to incorporate defect fixes. This is a minor roll of version A.2.2.3 released for the 0606 HP-UX 11i v2 release.

## Impact

HP System Management Homepage for HP-UX provides the following key customer benefits:

- Host based authentication and tight integration with existing security infrastructure
- Management tools that consume minimal system resources
- Includes “start on demand” capabilities so that system resources are not used when tool is not in use
- Highly responsive user interface supporting “access from anywhere” via a browser
- Usable “out of the box” (default installed) by root with no user configuration
- Seamless, secure integration with HP System Insight Manager (HP SIM)

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**WARNING**

**You must use either the command sequence or HP SMH to perform any operation that HP SMH supports. Attempting to start an operation with commands and completing it with HP SMH can result in errors and possibly corrupt data or data structures.**

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## Compatibility

There are no compatibility issues for this release of HP SMH.

## Performance

HP SMH 2.2 is a high performance UI that responds rapidly. It also provides significant performance improvements over its predecessor (i.e., SAM).

## Documentation

- HP System Management Homepage manpages included with product:
  - *hpsmh* (1M)
  - *smhstartconfig* (1M)
- For further information, see the following documents, available at <http://docs.hp.com> (navigate to **Network and Systems Management System Administration**):
  - *HP System Management Homepage Release Notes*
  - *HP System Management Homepage Installation Guide*
  - “Next generation single-system management on HP-UX 11i v2 (B.11.23)” white paper
  - HP SMH Online Help included with the product

## Obsolescence

Not applicable.

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## HP Systems Insight Manager

HP Systems Insight Manager (HP SIM) is the foundation for HP's unified infrastructure management strategy. It provides hardware level management for HP ProLiant, Integrity, and HP 9000 servers; HP BladeSystems; and HP StorageWorks MSA, EVA, and XP storage arrays. HP SIM also provides management of non-HP gear through industry standards.

HP Systems Insight Manager alone is an effective unified infrastructure management tool. When used in conjunction with Essentials plug-ins, it becomes a comprehensive, easy-to-use platform that enables organizations to holistically control their Windows, HP-UX, and Linux environments.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- This release provides a full installation of “HP SIM 5.0 with Update 2 - HP-UX” as well as a full in-place upgrade from HP SIM 4.x or 5.x.
- Support for HP BladeSystem C-Class blade and enclosure, and onboard administrator support.
- HP BladeSystem Integrated Manager 2.1, an HP SIM plugin that enables you to manage blade systems, has been updated to add the “All c-Class Racks” collection and their components, including c-Class server blades, interconnect switches, and c-Class enclosures, Onboard Administrator, power supplies, and fans on the “All c-Class Racks” page.
- Minimum system memory configuration to run HP SIM on HP-UX 11i v3 is now 3GB.
- Fixed defect issues.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

There are no impacts other than those listed previously.

## Compatibility

For information about supported operating systems, go to the HP Systems Insight Manager “Information Library” at <http://h18013.www1.hp.com/products/servers/management/hpsim/infoLibrary.html>.

## Performance

There are no known performance issues.

## Documentation

All HP Systems Insight Manager documentation is available on the Web and bundled with the software.

- *HP Systems Insight Manager Installation and Configuration Guide for MS Windows*
- *HP Systems Insight Manager Installation and Configuration Guide for Linux*
- *HP Systems Insight Manager Installation and Configuration Guide for HP-UX*

These documents provide information about installing and getting started using HP Systems Insight Manager. These guides include an introduction to basic concepts, definitions, and functionality associated with HP Systems Insight Manager. These documents are available at <http://docs.hp.com/> or <http://www.hp.com/go/hpsim/>.

- *HP Systems Insight Manager Help System*

This help system provides a complete set of documentation for using, maintaining, and troubleshooting HP Systems Insight Manager. A PDF of the help system is available at <http://www.hp.com/go/hpsim/>.

- Additional information—including general product information, white papers, and support information—is available at <http://www.hp.com/go/hpsim/>.

## Obsolescence

HP Systems Insight Manager replaces Servicecontrol Manager 3.0.

---

## HP WBEM Services for HP-UX

Web-Based Enterprise Management (WBEM) (<http://www.dmtf.org/>) is a platform and resource independent Distributed Management Task Force (DMTF) standard that defines both a common model (i.e., description) and protocol (i.e., interface) for monitoring and controlling a diverse set of resources.

The HP WBEM Services for HP-UX version A.02.05 is the HP-UX implementation of the DMTF WBEM standard for release on HP-UX 11i v3.

This product is based on The Open Group (TOG) Pegasus Open Source Software (OSS) project (<http://www.openpegasus.org/>).

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP WBEM Services for HP-UX version A.02.05 is a major update to the HP WBEM Services for HP-UX version A.02.00 currently released with HP-UX 11i v1. HP WBEM Services for HP-UX version A.02.05 is based on OpenPegasus 2.5 source base and CIM Schema 2.9, whereas the HP WBEM Services for HP-UX version A.02.00 released with the September 2005 11i v1 OE is based on OpenPegasus 2.3.1 source base and CIM Schema 2.7.

The following are key differentiators from HP-UX 11i v1 to HP-UX 11i v3:

- Association providers
- Internationalization support for CIM operations
- CIM Schema Upgrade
- Out-of-Process Support

- Run-as-Requestor Support
- Certificate Based Authentication
- Email and Syslog indication handlers

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

HP WBEM Services for HP-UX version A.02.05 is a major update to the HP WBEM Services for HP-UX version A.02.00 currently released with HP-UX 11i v2. HP WBEM Services for HP-UX version A.02.05 is based on OpenPegasus 2.5 source base and CIM Schema 2.9, whereas the HP WBEM Services for HP-UX version A.02.00 released with the June 2006 11i v2 OE is based on OpenPegasus 2.4.2 source base and CIM Schema 2.7.

The following are key differentiators from HP-UX 11i v2 to HP-UX 11i v3:

- Association providers
- Internationalization support for CIM operations
- CIM Schema Upgrade
- Out-of-Process Support
- Run-as-Requestor Support
- Certificate Based Authentication
- Email and Syslog indication handlers

### **Impact**

HP WBEM Services for HP-UX allows customers to manage their HP-UX systems, providing integrated solutions that optimize a customer's infrastructure for greater operational efficiency.

### **Compatibility**

Starting with the A.02.05 release, HP WBEM Services for HP-UX will support an option that allows a WBEM Provider (i.e., the management instrumentation) to run as the user who issued the management request. Prior to this release, all WBEM Providers executed in a privileged context. With the release of HP-UX 11i v3, WBEM Providers will, by default, be invoked in the context of the user requesting an operation (i.e., "Run-As-Requestor"). This default setting can break backward compatibility for certain types of Providers.

This means that existing Providers that run in the user context of the CIM Server may break. To remedy this situation, developers have the following alternatives:

- a. To continue running their Provider in a privileged context, developers will need to explicitly register their Provider to run in a "Privileged User" context. This is a configuration file change and should not require a change to the Provider library. That is, developers will not be required to recompile/relink their providers to continue running in a privileged context.

To register their Provider to run in a "Privileged User" context, developers need to modify the *PG\_ProviderModule* instance definition in their Provider Registration mof as follows:

1. Change the **InterfaceVersion** from “2.1.0” to “2.5.0”
2. Add the new property **UserContext** = 2

Example using an updated *PG\_ProviderModule* instance definition for the OperatingSystem Provider Module:

```
instance of PG_ProviderModule
{
  Name = "OperatingSystemModule";
  Vendor = "OpenPegasus";
  Version = "2.0.0";
  InterfaceType = "C++Default";
  InterfaceVersion = "2.5.0";
  Location = "OSProvider";
  UserContext = 2;
};
```

- b. To support running in the “Requestor” context, developers need to ensure that their Provider has been written to allow multiple instances of the Provider to run at the same time (in different user contexts). In some cases, the Provider may need to coordinate the actions of the Provider instances. In cases where the Provider is simply a “pass-through” to a managed resource, no coordination may be necessary.

In addition, providers running in the “Requestor” context must only perform privileged operations if those operations are only expected/required to succeed when invoked by a user who already has the necessary privileges.

## Performance

There is no foreseen degradation in performance for this version of HP WBEM Services for HP-UX.

## Documentation

For further information, see the HP WBEM Services for HP-UX manpages included with product:

- *cimmof*(1)
- *cimprovider* (1)
- *osinfo* (1)
- *wbemexec* (1)
- *cimauth* (1M)
- *cimconfig* (1M)
- *cimserver* (1M)
- *ssltrustmgr* (1M)
- *cimserverd* (8)
- *cimtrust* (1M)

In addition, see the following documents, available at <http://docs.hp.com> (navigate to **Network and Systems Management**, then to **HP WBEM Services for HP-UX**):

- *HP WBEM Services for HP-UX Release Notes*
- *HP WBEM Services Software Developer's Kit Release Notes*
- *HP WBEM Services for HP-UX System Administrator's Guide*
- *HP WBEM Services Software Developer's Kit for HP-UX Provider and Client Developer's Guide*

## Obsolescence

Not applicable.

---

## HP-UX Accounts for Users and Groups

The Accounts for Users and Groups (`ugweb`) tool allows the user to manage local user accounts, NIS user accounts and group accounts. The Accounts for Users and Groups (`ugweb`) tool provides both a web-based Graphical User Interface (GUI) and Text User Interface (TUI).

In the 11i v3 release, the Managing Users and Groups functional area in the legacy HP-UX Systems Administration Manager (SAM) application is replaced with the new SMH Text User Interface.

You can use the HP-UX Accounts for Users and Groups tool for:

- Managing local user accounts
- Managing NIS user accounts
- Managing group accounts
- Managing user templates and task customization
- Viewing and modifying security attributes of local users and NIS users, as the tool is tightly integrated with the HP-UX Security Attributes Configuration tool (`secweb`).

The Accounts for Users and Groups tool (`ugweb`) can be launched from the HP System Management Homepage (HP SMH), or from the HP Systems Insight Manager (HP SIM). In HP-UX 11i v3, the tool can also be launched using the `ugweb` command.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The Accounts for Users and Groups tool has the following new features:

- New Text User Interface (TUI) in place of the legacy SAM interface
- New web-based Graphical User Interface (GUI)
- Improved performance with the new TUI interface
- Supports long username and groups

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The Accounts for Users and Groups tool has the following new features:

- New Text User Interface (TUI) in place of the legacy SAM interface
- Supports long user names and group names
- NIS and Shadow mode can co-exist



## Impact

There are no impacts other than those previously listed.

## Compatibility

The known compatibility issues in the 11i v3 release are as follows:

- The `/etc/sam/rmuser.excl` and `/etc/sam/rmfiles.excl` files are not supported. These files were used earlier to add users and directories that must be excluded from removal using the HP SAM application.
- UID and `passwd`s are passed as empty strings to task customization scripts.
- Currently, users cannot use the Accounts for Users and Groups (`ugweb`) tool to add/modify passwords of NIS users when the system is configured for alternate password files in NIS and Shadow mode. Users can use appropriate commands to manipulate the passwords of NIS users.
- Templates created using the legacy SAM application will not work with the Accounts for Users and Groups tool.

## Performance

There are no known performance issues.

## Documentation

- Accounts for Users and Groups Online Help
- `ugweb` (1M) manpage
- `sam` (1M) and `smh` (1M) manpages

## Obsolescence

Not applicable.

---

## HP-UX Kernel Configuration

The HP-UX Kernel Configuration tool allows the user to configure an HP-UX kernel and monitor consumption of kernel resources controlled by parameters. The Kernel Configuration tool provides Web-based graphical user interface (GUI) and Text User Interface (TUI).

Use the HP-UX Kernel Configuration tool for:

- Tuning the kernel tunables
- Loading and unloading kernel modules
- Configuring alarms

- Viewing change logs

You can launch the HP-UX Kernel Configuration tool (*kcweb*) from the HP System Management Homepage (HP SMH) and the HP Systems Insight Manager (HP SIM). You can also use the *kcweb* command to launch the Kernel Configuration tool.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The HP-UX Kernel Configuration tool has the following new features:

- New Text User Interface (TUI) in place of the legacy SAM interface
- New web-based Graphical User Interface (GUI)
- Error Management Technology support
- Critical Defect fixes

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The HP-UX Kernel Configuration tool provides the following support:

- Command preview support in Text User Interface (TUI). The user can preview the commands that will be executed for a task.
- The TUI supports form-based inputs. That is, unlike earlier, the user can see and enter all the data fields in a single form.
- Error Management Technology support
- Critical Defect fixes

## Impact

There are no impacts other than those previously listed.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- Kernel Configuration Online Help
- *kcweb* (1M) manpage
- *sam* (1M) and *smh* (1M) manpages
- Also see the *kcalarm* (1M), *kcmond* (1M), *kconfig* (5), *kconfig* (1M), *kcmodule* (5), *kctune* (1M), *kcllog* (1M), *kcpath* (1M), *kcusage* (1M), *system* (4) and manpages.

## Obsolescence

Not applicable.

---

## HP-UX Large NPROC

The large NPROC feature increases the number of processes the HP-UX system allows from 30,000 to 60,000.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The HP-UX 11i v1 release supports up to 30,000 processes system-wide. HP-UX 11i v3 supports up to 60,000 processes.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The HP-UX 11i v2 release supports up to 30,000 processes system-wide. HP-UX 11i v3 supports up to 60,000 processes.

### Impact

The system can now support more processes running concurrently, changing from 30,000 to 60,000.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For further information, see the *nproc* (5) manpage, as well as the whitepaper "Number of Processes and Process ID Values on HP-UX," available at <http://docs.hp.com>.

## Obsolescence

Not applicable.

## HP-UX Large PID

Large PID is feature of HP-UX 11i v3. The range of Process Identifiers (PID) the kernel can generate in a stand-alone HP-UX system has been expanded from 0 ~ 30,000 to 0 ~  $2^{30}-1$  (1,073,741,823).

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Max process ID can be as high as  $2^{30}-1$  (1,073,741,823) rather than 30,000. Two new kernel tunable parameters have been added to provide control over the values used by the system.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Max process ID can be as high as  $2^{30}-1$  (1,073,741,823) rather than 30,000. Two new kernel tunable parameters have been added to provide control over the values used by the system.

### Impact

HP-UX customers can use the kernel parameter tuning command, *ktune* (1M), with the new kernel parameters, *process\_id\_min* and *process\_id\_max*, to tune the range of process IDs.

If the feature is utilized, certain commands, such as *ps* (1) and *top* (1), that display process IDs will necessarily change the number of columns displayed to represent process IDs.

### Compatibility

Some applications may have built-in assumptions about the range of values for process IDs, or that specific values are assigned to some specific processes. These applications may exhibit undesired behaviors or fail if *process\_id\_min* and/or *process\_id\_max* are set to values higher than their defaults of 0 and 30,000, respectively. For more details, see the *process\_id\_max* (5) manpage and the whitepaper "Number of Processes and Process ID Values on HP-UX," available at <http://docs.hp.com>.

### Performance

There are no known performance issues.

### Documentation

For further information, see the *process\_id\_min* (5) and *process\_id\_max* (5) manpages and the whitepaper "Number of Processes and Process ID Values on HP-UX," available at <http://docs.hp.com>.

## Obsolescence

Not applicable.

---

## HP-UX Peripheral Devices Manager

The HP-UX Peripheral Devices Manager tool (`pdweb`), lists and manages the OLRAD capable PCI slots reported by `olrad` command and Peripheral Devices reported by `ioscan` command. On selecting a slot/device from the list, it displays details about the selected device/slot.

It allows a user to Add / Replace / Delete an OLRAD capable card online. The tool allows the user to view the devices reported by `ioscan` command and allows to re-install the Device Special Files where possible.

The name of the `pdweb` bundle is `PeriphDevWeb`.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The Peripheral Devices Manager (`pdweb`) tool is enhanced for the following:

- To support the Agile Hardware Path Addressing and Persistent Device Special Files. The tool provides for backward compatibility by providing a link to toggle between the Agile Addressing and Legacy Addressing.
- To allow for Online deletion of OLRAD Cards.
- To read the detailed CRA report from the log file in which the report is logged after the change in the CRA behavior.

In the 11i v3 release, the Peripheral Devices Manager (`pdweb`) tool is also enhanced to provide:

- A new Text User Interface (TUI)
- Error Management Technology support

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those previously listed.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- Peripheral Devices Manager Online Help
- *pdweb* (1M) manpage
- *sam* (1M) and *smh* (1M) manpages

## Obsolescence

Not applicable.

---

# HP-UX System V IPC Message Queues

A System V message is a sequence of bytes that can be passed between cooperating processes via a message queue.

HP-UX Sys V IPC message queues are enhanced with dynamic tuning capabilities.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX Sys V IPC message queues kernel tunable configuration parameters are enhanced with dynamic tuning capabilities.

- Tunables *msgmax*, *msgssz*, *msgmap*, *msgseg* are obsolete in HP-UX 11i v3.
- New dynamic tunable *msgmbs* is added, which indicates the maximum (in megabytes) kernel memory to be used for messages waiting to be received. This new tunable replaces the function of the obsolete *msgssz* and *msgseg* tunables. Lowering the tunable value has no effect on any active messages, even if the new tunable value is less than the total number of message bytes currently enqueued. However, no new messages may be queued until the total number of bytes falls below the setting of *msgmbs*.
- Tunables *msgmni*, *msgtql* are made dynamic. These tunables can be increased or decreased dynamically with out rebooting the machine. Lowering *msgtql* has no effect on any queued messages, even if the new tunable value is less than the number of queued messages. However, no new messages may be queued until the number of messages falls below the setting of *msgtql*. Lowering *msgmni* has no effect on any active message queues, even if the new tunable value is less than the number of queues created in the system. However, no new queues may be created until the number of active queues falls below the setting of *msgmni*.
- The tunable *msgmnb* is unchanged.

Dynamic tuning adjustments to *msgmbs*, *msgmni*, *msgtql* may be done using SAM or the kernel configuration command *kctune*.

---

**TIP**

To find information about obsoleted kernel tunables listed in this document, perform a search on the word “tunable”.

---

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

You will be able to change System V Message Queue parameters and have those changes effective immediately without the need to reboot the system.

### **Compatibility**

On system update, site-specific settings of *msgseg*, *msgssz* will be replaced with a site-specific setting of *msgmbs*. It is set to the value of  $(msgssz * msgseg)$  rounded to megabytes.

### **Performance**

There is no impact on performance.

### **Documentation**

For further information, see the manpages *msgmap* (5), *msgseg* (5), *msgssz* (5), *msgmax* (5), *mesg* (5), *msgmni* (5), *msgtql* (5), and *msgmbs* (5).

### **Obsolescence**

Not applicable.

---

## **HP-UX WBEM Fibre Channel Provider**

The FC Provider is the HP-UX WBEM provider for Fibre Channel host-bus adapters (HBAs). Client applications can use this provider to get information about HP-UX Fibre Channel HBAs on the system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The product is new for customers migrating from HP-UX September 2005 release, as the WBEM providers were not previously delivered on the September 2005 Operating Environments Update Release.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The latest product version number supported on HP-UX 11i v2 release is 11.23.0609.02. The product version number supported on HP-UX 11i v3 release is 11.31.01. All functionalities for association classes were not implemented in June 2006 HP-UX 11i v2 release, but are implemented in HP-UX 11i v3 release.

## Impact

There is no impact.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Complete product information is available in FC Provider product data sheet. The product data sheet is available in PDF format at <http://www.docs.hp.com> (navigate to **Network and Systems Management**).

## Obsolescence

Not applicable.

---

## HP-UX WBEM File System Provider

FSPProvider makes available file system information. The FSPProvider instruments the *HPUX\_HFS*, *HP\_LOFS*, *HP\_CDFS*, *HP\_VxFS*, *HP\_NFS*, *HP\_MountPoint* and *HPUX\_Mount* classes.



## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The product is new for customers migrating from HP-UX September 2005 release, as the WBEM providers were not previously delivered on the September 2005 Operating Environments Update Release.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The product is new for customers migrating from HP-UX June 2006 release, as the this WBEM provider was not previously delivered on the June 2006 Operating Environments Update Release.

### Impact

There is no impact.

### Compatibility

There is no known compatibility issue.

### Performance

There is no known performance issue.

### Documentation

Complete product information is available in FSPProvider product data sheet installed under `/opt/fsprovider/doc/HPUX_FSPProvider.pdf`

### Obsolescence

Not applicable.

---

## HP-UX WBEM IOTree Provider

The IOTreeProvider is a HP-UX WBEM provider. Client applications can use HP-UX WBEM IOTree provider to get information about HP-UX IOTree host-bus adapters (HBAs) on the system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The product is new for customers migrating from HP-UX September 2005 release, as the WBEM providers were not previously delivered on the September 2005 Operating Environments Update Release.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The IOTree provider displays information about all the slots on HP-UX 11i v3 system, but displays information only about hot pluggables on HP-UX 11i v2 system.

## Impact

There is no impact.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Complete product information is available in IOTreeProvider product data sheet. The data sheet is available in PDF format at <http://www.docs.hp.com> (navigate to **Network and Systems Management**).

## Obsolescence

Not applicable.

---

## HP-UX WBEM LAN Provider for Ethernet Interfaces

HP-UX WBEM LAN Provider for Ethernet Interfaces (WBEMP-LAN-00) is a CIM Provider for Ethernet-based LAN technologies on HP-UX operating system. Initial release B.11.31.01 is available in HP-UX 11i v3 Operating Environment media. Client applications can use this provider to determine all Ethernet LAN links available on the system (registered and known to HP-UX DLPI) and collect information about them. The LAN Provider uses CIM Schema v2.7 and supports the following classes:

- *HPUX\_EthernetPort* subclassed from *CIM\_EthernetPort*
- *HPUX\_EthernetLANEndpoint* subclassed from *CIM\_LANEndpoint*

- *HPUX\_EthernetPortImplementsLANEndpoint* subclassed from *CIM\_PortImplementsEndpoint*

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The LAN Provider product, version B.11.31.01, is new for customers migrating from the September 2005 release of HP-UX 11i v1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

There are no changes from HP-UX 11i v2.

## Impact

There is no impact.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Customers can look up the following document installed on their system to find out more information about the LAN Provider module:

`/opt/lanprovider/doc/HPUX_LANProvider.pdf`

## Obsolescence

Not applicable.

---

## HP-UX WBEM Online Operations Service Provider

The Online Operations Service (OLOS) Provider currently is not supported. It is intended to support features in future releases of HP-UX 11i v3.

This provider is delivered as the `olosProvider` product as part of the `SysMgmtMin` bundle.

To disable the OLOS Provider, use the following command:

```
cimprovider -d -m HP_OLOSProviderModule
```

For details, see the `cimprovider (1)` manpage.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This product is new for customers migrating from HP-UX 11iv1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

This product is new for customers migrating from HP-UX 11iv2.

## Impact

There is no impact.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

See the *cimprovider* (1) manpage

## Obsolescence

Not applicable.

---

## HP-UX WBEM SCSI Provider

The SCSI Provider is a HP-UX WBEM provider. Client Applications can use this provider to get information about HP-UX SCSI host-bus adapters (HBAs) on the system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The product is new for customers migrating from HP-UX September 2005 release, as the WBEM providers were not previously delivered on the September 2005 Operating Environments Update Release.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

There are no feature changes between June 2006 HP-UX 11i v2 release and HP-UX 11i v3 release. The latest product version number supported on HP-UX 11i v2 release is 11.23.050. The product version number supported on HP-UX 11i v3 release is 11.31.01.

### **Impact**

There is no customer impact.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Complete product information is available in SCSIProvider product data sheet. The data sheet is available in PDF format at <http://www.docs.hp.com> (navigate to **Network and Systems Management**).

### **Obsolescence**

Not applicable.

---

## **Ignite-UX**

The Ignite-UX product is an HP-UX administration toolset that helps you do the following:

- Install HP-UX 11.0, 11i v1 (B.11.11), v2 (B.11.23), and v3 (B.11.31) on multiple PA-RISC and/or Itanium-based clients on your network.
- Create custom installation configurations, or golden images, for use in multiple installations on clients.
- Recover HP-UX clients remotely.
- Create custom recovery media including tape, CD, and DVD.
- Manage and monitor multiple client installation sessions.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Ignite-UX version C.7.0.x includes the following changes:

- Multipath-Aware Ignite
  - HP-UX 11i v3 uses a new approach for addressing I/O. This means that Ignite-UX displays lunpath hardware paths for HP-UX 11i v3 installations. For 11i v2 and prior versions of HP-UX, Ignite-UX displays legacy hardware paths. For more information on the new device addressing, see the white paper “The Next Generation Mass Storage Stack” available at <http://docs.hp.com/en/netsys.html#Storage%20Area%20Management>.
  - To help with the transition from legacy hardware paths to lunpath hardware paths, and assist with identifying devices in larger multiple path configurations, Ignite-UX now has a “More Info” screen that shows all paths to devices, as well as device world-wide identifiers (WWIDs).
  - HP-UX 11i v3 Persistent DSFs of system devices will persist through system reboot and will normally persist through an Ignite-UX recovery, but will not typically persist from installation to installation.
  - Legacy DSFs are handled in HP-UX 11i v3 as in prior versions of Ignite-UX.
- Operating Environments are restructured in HP-UX 11i v3. Software products listed on the Software tab of the client installation configuration interface are now grouped as “Required,” “Recommended,” and “Optional,” and these groupings appear as selectable categories.
- Ignite-UX integrates with SWManager rather than SD-UX for software installation tasks on HP-UX 11i v3.
- HP-UX 11i v3 systems that support hyperthreading will have it enabled by default. The hyperthread state is preserved with recovery.
- The system boot path is automatically managed in HP-UX 11i v3 for multiple path configurations as paths change. The I/O subsystem will choose the best boot path and change boot paths as needed. See the white paper “The Next Generation Mass Storage Stack” available at <http://docs.hp.com/en/netsys.html#Storage%20Area%20Management>.
- I/O inventory information collection for installation and recovery is more complex, but more efficient. You may or may not see performance improvements.
- The details of how Ignite-UX interacts with the kernel have changed, resulting in new and changed messages being displayed and logged.
- Archive format for recovery archives and golden archives is now user selectable, and `pax` has been added as a format choice. There is one known issue with the `pax` format when the Ignite-UX server is not running HP-UX 11i v3. Check the Ignite-UX release notes for more information.
- Ignite-UX will check minimum memory requirements and will not permit installation or recovery to proceed if the system is below the memory limit. Warning messages may also be issued for minimum or near minimum memory size.

- The Ignite-UX bundle structure has been changed. The principle bundle tag of Ignite-UX is now `IGNITE` instead of the previous `B5725AA` bundle tag. The OS-specific bundle tags like `Ignite-UX-11-23` remain as is, and there is a new tag for `Ignite-UX-11-31`.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

There are no impacts other than those previously described.

### **Compatibility**

Ignite-UX does not support configurations that include more than one version of VxVM in the same image. Please make sure that your installation and recovery images contain only one version of the VxVM product.

### **Performance**

There are no known performance issues.

### **Documentation**

The Ignite-UX product Web site containing information and documentation has been updated for this release. It can be found at

<http://www.docs.hp.com/en/IUX/>

The following documents have been updated to reflect all changes to the product for this release. They can be found at

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

- *Ignite-UX Administration Guide*
- *Ignite-UX Custom Configuration Files*
- *Ignite-UX Reference*
- *Ignite-UX Release Notes*

### **Obsolescence**

Not applicable.

---

## **Kernel Tunable Values Reset From Boot Prompt**

The HP-UX 11i v3 release provides a new feature in which all kernel tunable values can be reset from the boot prompt.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

All kernel tunable values can be reset from the boot prompt. More than one tunable can be changed at a time using this method. Any changes to the tunable values made with this mechanism will be kept persistent.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

All kernel tunable values can be reset from the boot prompt. More than one tunable can be changes at a time using this method. Any changes to the tunable values made with this mechanism will be kept persistent.

## Impact

If a system seems to be in an unbootable condition due to bad tunable settings, they can be corrected on the boot prompt.

## Compatibility

This is a new feature. There are no known compatibility issues.

## Performance

There is no impact on performance.

## Documentation

For further information, see the *hpux* (1M) manpage.

## Obsolescence

Not applicable.

---

## Livedump

Livedump is a new feature for HP-UX 11i v3 that provides the ability to take a crashdump on a live system without a forced shutdown or panic of that system. This solution is implemented for Itanium®-based platforms only. Livedump can be used in a stable system and does not affect the stability of that system.



## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Livedump is a new feature for HP-UX 11i v3 on Itanium®-based platforms. This feature does not exist on HP-UX 11i v1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Livedump is a new feature for HP-UX 11i v3 on Itanium®-based platforms. This feature does not exist on HP-UX 11i v2.

## Impact

This is a feature for collecting a dump of a live running system. You may use this feature to provide a dump of the system for offline analysis of the system kernel state.

## Compatibility

This feature is implemented only for Itanium®-based platforms.

## Performance

Livedump saves the memory onto the filesystem in a format understood by kernel debuggers. Hence, the system will experience extra load during the live dump time.

## Documentation

For further information, see the *livedump* (1M) manpage.

## Obsolescence

Not applicable.

---

## Long Username / Groupname

The current limit on username / groupname has been enhanced from 8 to 255 bytes. By default HP-UX still has 8 as the limit for usernames / groupnames. With an enabler (`lugadmin -e`) this limit can be enhanced to 255. Long username / groupname once enabled cannot be disabled in the future. A disable option is not provided due to the impracticality of automatically finding all instances of stable storage that may contain names in excess of the default limits.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following sub-systems have been enhanced to support long usernames / groupnames:

- Commands:
  - *acct* (1M)
  - *acctcom* (1M)
  - *at* (1)
  - *cancel* (1)
  - *cron* (1M)
  - *crontab* (1)
  - *finger* (1)
  - *fwtmp* (1M)
  - *groupadd* (1M)
  - *groupdel* (1M)
  - *groupmod* (1M)
  - *groups* (1)
  - *ipcs* (1)
  - *last* (1)
  - *leave* (1)
  - *login* (1)
  - *lp* (1)
  - *lpadmin* (1M)
  - *lpalt* (1)
  - *lpsched* (1M)
  - *lpstat* (1)
  - *ls* (1)
  - *passwd* (1)
  - *pipcs* (1)
  - *ps* (1)
  - *pwgr* (1M)
  - *pwck* (1M)
  - *rcs* (1)
  - *reboot* (1M)
  - *rlpstat* (1M)

- *sccs* (1)
- *timex* (1)
- *top* (1)
- *uptime* (1)
- *useradd* (1M)
- *userdel* (1M)
- *usermod* (1M)
- *vipw* (1M)
- *who* (1)
- HP-UX C Library (*libc*):
  - *initgroups* (3C)
  - *sysconf* (2)

A new api *ug\_display\_width* (3C) is also provided for applications to query the display width. For more details please refer to “HP-UX C library (*libc*) - Other Changes” on page 360.

- File System Commands:
  - *ff* (1M) (HFS and VxFS)
  - *repquota* (1M) (HFS)
  - *quotacheck* (1M) (HFS)

For more details, please refer to “Long Username Support by HFS *ff*, VxFS 4.1 *ff*, *repquota*, *quotacheck*” on page 323.

- DCE - Client
- Host IDs
- IPFilter
- Kerberos Client
- Kerberos SSAPI Server
- PAM framework:
  - *libpam*
  - *pam\_unix* (5)
  - *pam\_hpsec* (5)
- HP-UX auditing subsystem (see *audit* (5))
- ONC+
- Internet Services
- Legacy SAM and HP-UX Accounts for Users and Groups (*ugweb*)
- CDE Desktop
- STM Diagnostics

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

You can have username / groupname up to 255 characters, in the above listed products. The *syslogd* (1M), *tsm* (1) and *shl* (1) commands currently do not support long user and group name and are planned for future release. In addition, once the long username / groupname is enabled, it cannot be disabled in future. A disable option is not provided due to the impracticality of automatically finding all instances of stable storage that may contain names in excess of the default limits.

### **Compatibility**

The changes are compatible with previous releases.

---

**NOTE** Long username/groupname is not supported for trusted systems.

---

### **Performance**

There is no impact on performance.

### **Documentation**

For further information, see the manpages *lugadmin* (1M) and *ug\_display\_width* (3C), as well as the white paper "Username and Groupname Sizes on HP-UX," available at <http://docs.hp.com>.

### **Obsolescence**

Not available.

---

## **Node and Host Name Expansion**

The Node and Host Name Expansion feature provides the ability for the system administrator to set node and host names up to 255 bytes. This capability was previously available only as an optional product for HP-UX 11i v2.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The product allows the customer to set longer node and host names (up to 255 bytes) for their HP-UX systems.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The product allows the customer to set longer node and host names (up to 255 bytes) for their HP-UX systems. This capability was previously available only as an optional product on HP-UX 11i v2 (Node and Host Name Expansion [NodeHostNameExpnd], revision B.11.23.01, product bundle).

## Impact

The product allows the customer to set longer node and host names (up to 255 bytes) for their HP-UX systems.

## Compatibility

The default HP-UX system parameters ensure that node and host names do not exceed the compatible lengths of 8 and 64 bytes, respectively. A new system tunable parameter, *expanded\_node\_host\_names*, has been added by which the administrator can enable the system to accept node and host names up to 255 bytes in length.

Setting node and host names longer than 8 or 64 bytes, respectively, can cause some applications which use the node and/or host names to exhibit anomalous behavior or fail. It is strongly recommended that all the documentation (manpages and the whitepaper) be understood before enabling the system to accept longer names.

## Performance

This product has no effect on system performance.

## Documentation

- The following manpages, and possibly others, have been updated:
  - *uname* (1)
  - *setuname* (1)
  - *hostname* (1)
  - *uname* (2)
  - *setuname* (2)
  - *gethostname* (2)
  - *sethostname* (2)
  - *sysconf* (2)
- The following manpages, and possibly others, are new:
  - *nodehostnamesize* (5)
  - *enable\_nodehostnamexpnd* (5)
  - *uname\_eoverflow* (5)

- The whitepaper “Node and Host Name Sizes on HP-UX: Using the Expanded Capabilities” is available at <http://docs.hp.com>.

## Obsolescence

Not applicable.

---

## Obsolescence Bundle

The Obsolescence Bundle product is used during an update when obsolete software on the system needs to be removed. This product is automatically selected for updates. During the update process the following obsolete or incompatible products and/or drivers are removed:

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**NOTE** Note that other products not listed here may also be removed upon update to HP-UX 11i v3.

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- HP-UX IPQoS

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**NOTE** HP-UX IPQoS for earlier HP-UX releases (HP-UX 11i v1 and v2) is incompatible with HP-UX 11i v3.

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- Obsolete HP ISEE
- Java3D for Java 1.4
- Obsolete HP DCE Core Admin
- HP DCE Security Server
- HP DCE CDS Server
- HP ISCSI-SWD Product
- HP-PCI ATM
- HP PCI TokenRing Driver
- Obsolete HP PCI FDDI Driver
- Netscape browsers
- HP-UX Visualize Conference Run Time Environment
- HP-UX Mobile IPv4 Product
- HP Frame Relay Link Software
- HP I2O RAID Product

- HP HPPB 100BaseT Driver
- HP EISA 100BaseT Driver
- HP EISA TokenRing Driver
- HP HPPB TokenRing Driver
- HP EISA FDDI Driver
- HP HPPB FDDI Driver
- HP HSC FDDI Driver
- HP-PB ATM Driver
- HP HSC ATM Driver
- SCR
- DMI
- ObAM
- Java 1.3 JDK/JRE/JPI/Java3D
- Java 1.2 JDK/JRE/JPI/Java3D

---

## Online Diagnostics

The Online Diagnostics product delivers the following tools:

- EMS Hardware Monitors - EMS Hardware Monitors enables you to monitor the operation of a wide variety of hardware products and be alerted of failure or any unusual activities.
- The Support Tools Manager (STM) - STM provides a set of online support tools, enabling you to verify and troubleshoot system hardware, and to examine system logs.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

A new option called `page` is introduced for the `map` command. When the user types `map` at the command prompt, the system `map` output is dumped on the screen. The system `map` output may run into pages and may not be user friendly. The `page` option will display a paginated output of the system `map`.

Type the following command at the `cstm` prompt to get a paginated output of the system `map`:

```
cstm> map page
```

---

**NOTE** The functionality of the `map` command is not altered. When you type `map` at the `ostm` prompt you will still see the system `map` output, which is not paginated.

---

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

- The kernel modules will not include compiler warnings.
- Online Diagnostics has been enhanced to include the Interface Expansion Program (IEP) for large username, groupname, PIDs, and `nproc`.
- Online Diagnostics is enhanced to support additional features of HP-UX Virtual Partitions (vPars), such as support for notification of events due to dynamic CPU migration.
- Online Diagnostics supports the following new features:
  - Diagnostics support for agile view of devices
  - Diagnostics support for reporting extended hardware path of devices
  - Diagnostics support for reporting recovered Machine Check Aborts (MCA)
  - Diagnostics support for rx7640, rx8640, SD16B, SD32B, SD64B, rx3600, and rx6600 based machines
- Online diagnostics supports the Automatic Error Recovery feature.
- Online diagnostics supports the PCI Online Addition and Deletion (PCI OL\*) operations.

### **Impact**

You will be able to use the new APOLLO host bridge adapter for legacy PCI functionality.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For further information, see the following documents, available at <http://www.docs.hp.com/en/diag.html>:

- EMS documentation
  - *Data Sheets*
  - *EMS Hardware Monitors Quick Reference Guide*
  - *EMS Hardware Monitors User's Guide*
  - *EMS HW Monitors for Hitachi Systems Running HP-UX*
  - *Event Descriptions*



- *Frequently Asked Questions (FAQs)*
- *Multiple-View (Predictive-Enabled) Monitors*
- *Overview*
- *Quick Start: Anatomy of a Monitor (Controlling and Learning About Monitors)*
- *Requirements and Supported Products*
- *Release Notes*
- **STM documentation**
  - *Frequently Asked Questions*
  - *Quick Reference*
  - *Release Notes*
  - *STM Online Help*
  - *STM Overview*
  - *STM Tutorial*

## Obsolescence

As of May 2005 (HP-UX 11i v2) and September 2005 (HP-UX 11i v1), tape drives are no longer supported. On HP-UX 11i v3, no tape drives are supported by Online Diagnostics. Although some of the Support Tools Manager (STM) tools may function with tape drives, they are not supported. The diagnostic tools and utilities that support these devices are HP StorageWorks Library and Tape Tools (L and TT). These tools are available at <http://www.hp.com/support/tapetools>.

---

## SCSI Kernel Tunables (Obsolete)

*scsi\_maxphys*: maximum allowed length of an I/O on all SCSI devices.

*scsi\_max\_qdepth*: maximum number of I/Os that target will queue up for execution

*default\_disk\_ir*: enable/disable the use of a device's write cache in the SCSI subsystem

---

### TIP

To find information about other obsoleted kernel tunables listed in this document, perform a search on the word “tunable”.

---

## Summary of Change

The following SCSI kernel tunables have been obsoleted:

- *scsi\_maxphys*: This tunable is replaced by the *escsi\_maxphys* attribute, which can be get and set through the *scsimgr* command. See *scsimgr* (1M).
- *scsi\_max\_qdepth*: This tunable is replaced by the *max\_q\_depth* attribute, which can be set through the *scsimgr* command. See *scsimgr* (1M).

- *default\_disk\_ir*: This tunable is replaced by the *disable\_flags* attribute, which can be set through the *scsimgr* command to enable or disable write cache of a set of block devices. See *scsimgr* (1M) and *scsimgr\_esdisk* (5). The *scsictl* command can also be used to enable or disable write cache for a specific disk device. See *scsictl* (1M).

---

## Software Distributor

Software Distributor (SD), version 11.31, is the standard tool suite for working with HP-UX software packages. SD is a group of software for packaging, installing, copying, listing, removing and verifying software.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

SD is built from a common set of sources for all OS releases. Hence, HP-UX 11i v3-unique functionality is typically either OS specific or recently added. Following is a list of new SD capabilities on HP-UX 11i v3 release:

- Support for HP-UX 11i v3-unique features including large pid, long usernames and group names.
- Improved support for high level software deployment tools such as Software Manager, *update-ux*, and future tools.

---

**NOTE**

Additional new features such as support for large files are available for HP-UX 11i v1 as well.

---

- Defect fixes.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

SD is built from a common set of sources for all OS releases. Hence, HP-UX 11i v3-unique functionality is typically either OS specific or recently added. Following is a list of new SD capabilities on HP-UX 11i v3 release:

- Support for HP-UX 11i v3-unique features including large pid, long usernames and group names.
- Improved support for high level software deployment tools such as Software Manager, *update-ux*, and future tools.

---

**NOTE**

Additional new features such as support for large files or dynamic root disk changes are available for HP-UX 11i v2 as well.

---

- Defect fixes.

## Impact

You can continue to reliably perform software deployment operations.

## Compatibility

SD remains compatible across all supported releases. The HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3 releases are built from a common set of sources.

## Performance

Performance is the same as previous releases.

## Documentation

For further information, see the SD customer Web site at <http://docs.hp.com/en/SD/>.

## Obsolescence

Not applicable.

---

# Software Package Builder

Software Package Builder (SPB) provides a visual method to create and edit software packages using the HP-UX Software Distributor (SD) package format. Once software is packaged, it can easily be transferred to a distribution medium, mass produced, and installed by administrators.

The SPB graphical user interface (GUI) provides a window into the software package structure, showing attributes that can be set for each package element. SPB dynamically loads packaging policies and validates software package attributes against these policies. The SPB command line interface (CLI) can also perform validation of software package attributes against policies and supports automated edits to the software package specification.

Whether you are new to packaging or experienced, SPB can help you. Features of SPB include the following:

- Create a product specification file (PSF) to organize files into products, filesets, and optionally, into bundles and subproducts.
- Set attribute values to define the software package characteristics such as revision, architecture, file permissions, and dependencies.
- Control scripts can further customize how the software is handled when installing or removing it on the destination system.
- Validate the PSF against packaging policies to ensure successful depot creation with the `swpackage` command and subsequent software installation.

- Edit and validate the PSF automatically as part of the nightly build process using SPB's CLI.

With SPB, developers and administrators can easily package software in SD format, making management of software with standard SD tools (such as `swinstall`, `swlist`, `swremove`) possible. For example, SPB makes it easy to put an SD wrapper around open source software. As a result, software inventory management and system administration get easier.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- A new HP-internal policy file, `1131Policies.xml`, was added to support packaging for the HP-UX 11i v3 release. These policies include the expansion of the acceptable category tags, and changes to the architecture and `os_release` attribute rules.
- The external packaging policy file, `113XPolicies_SD.xml`, was added to support packaging for the HP-UX 11i v3 release. This includes changes to the architecture and `os_release` attribute rules.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

If you are running HP-UX 11i v3, the new policy files will be selected automatically, transparent to the user. However, the `113XPolicies_SD.xml` file may be explicitly selected by the user from the SPB command line.

## Compatibility

SPB uses Java 1.4.0 or greater.

## Performance

Java Swing behavior may cause navigational inconsistencies when running SPB through an X emulator. If your mouse click behavior setting is too slow, it can prevent SPB from buffering all mouse clicks. This could potentially lead to data loss. The SPB product release notes contain a detailed procedure for correcting this performance issue. It is highly recommended that you complete the procedure prior to using SPB. For this and other troubleshooting topics, refer to the SPB Help system.

## Documentation

For further information on Software Package Builder, see the following:

- the `spb` manpage, `spb` (1M)
- the SPB Web site at <http://www.docs.hp.com/en/SPB/>
- the *Software Package Builder 2.0 User's Guide* found at <http://www.docs.hp.com>

## Obsolescence

Not applicable.

---

## System Administration Manager (SAM)

The System Administration Manager (SAM) was an HP-UX System Administration tool that provided various tools for performing system administration tasks.

In the 11i v3 release of HP-UX, System Administration Manager (SAM) is deprecated. HP System Management Homepage (HP SMH), an enhanced version of SAM, is introduced for managing HP-UX.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP System Management Homepage (an enhanced version of SAM) provides Graphical User Interface (GUI) and Text User Interface (TUI) for managing HP-UX. You can access these interfaces using the `smh` command (`/usr/sbin/smh`). However, you can also use the `sam` command. The `sam` command behaves the same as `smh` command except that the deprecation message is displayed in the beginning.

When you run either the `sam` or `smh` command and if the `DISPLAY` environment variable is set, HP SMH opens in the default web browser. If the `DISPLAY` environment variable is not set, HP SMH opens in the TUI.

Most of the applications for performing administration tasks are now available through a web-based GUI interface and an enhanced TUI. However, few applications continue to open in ObAM based X-windows or ObAM based TUI.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

You are recommended to use the `smh` (1M) command. However, the `sam` (1M) command will continue to be available and behave just as the `smh` (1M). Some of the functional areas previously available for system administration are obsoleted. These areas are listed under the following "Obsolescence" section.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

## Documentation

For more information see the *smh* (1M), *sam* (1M), and *samlog\_viewer* (1M) manpages. Also see the HP System Management Homepage (HP SMH) white paper and Terminals and Modems white paper available at <http://docs.hp.com>.

## Obsolescence

In the 11i v3 release of HP-UX, System Administration Manager (SAM) is deprecated. HP System Management Homepage (HP SMH), an enhanced version of SAM, is introduced for managing HP-UX. The following functional areas (earlier available in SAM) are obsoleted in the 11i v3 release of HP-UX:

- Backup and Recovery
- Terminals and Modems
- Uninterrupted Power Supplies
- Run SAM on Remote Systems
- Performance Monitors
- Tape Drives
- Instruments
- Process Management
- Routine Tasks

---

## System Administration Manager (SAM) Auditing and Security

The SAM Auditing and Security tool supports all administrative tasks related to setting up and managing a standard HP-UX trusted system, including auditing and other related functions. The Auditing and Security tool can be used in both standard mode as well as trusted mode. You can access the subareas Audited events and Audited System Calls from standard mode.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The System Security Policies subarea of SAM is replaced with the HP-UX Security Attributes Configuration tool.

The Audited NIS+ Users subarea is obsolete as NIS+ is obsolete.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The System Security Policies subarea of SAM is replaced with the HP- UX Security Attributes Configuration tool. The per user security policies can also be configured from the HP-UX Security Attributes Configuration tool. The Audited NIS+ Users subarea is obsolete as NIS+ is obsolete.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For more information, refer to the *sam* (1M) and *samlog\_viewer* (1M) manpages.

## Obsolescence

The Audited NIS+ Users subarea in the SAM Auditing and Security functional area is obsolete as NIS+ is obsolete.

---

# System Administration Manager (SAM) Printers and Plotters

The System Administration Manager (SAM) Printers and Plotters functional area is used to manage system and network printers and plotters known to the local system, and to control the flow and priorities of print jobs to system printers and plotters.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The launch point in X/ObAM-based GUI mode is now via the HP System Management Homepage (HP SMH).

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The launch point in X/ObAM-based GUI mode is via HP System Management Homepage (HP SMH).

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For more information, see the `sam(1M)` and `samlog_viewer(1M)` manpages.

## Obsolescence

System Administration Manager (SAM) is deprecated in the 11iv3 release of HP-UX. HP System Management Homepage (HP SMH), an enhanced version of SAM, is introduced for managing HP-UX. HP SMH provides Graphical User Interface (GUI), Terminal User Interface (TUI) and Command Line Interface (CLI) for managing HP-UX. You can access these interfaces using the `smh` command (`/usr/sbin/smh`). However, you can also use the `sam` (1M) command which behaves the same as `smh` (1M) command except that the deprecation message is displayed in the beginning. When you run either `sam` or `smh` and if the `DISPLAY` environment variable is set, HP SMH opens in the default Web browser. If the `DISPLAY` environment variable is not set, HP SMH opens in the TUI.

---

## System Administration Management Tool Changes: SAM and HP System Management Homepage

System Administration Manager (SAM) is deprecated in HP-UX 11i v3. HP System Management Homepage (HP SMH) is the system administration tool for managing HP-UX 11i. HP SMH provides Web-based systems management functionality, at-a-glance monitoring of system component health, and consolidated log viewing. HP SMH also provides Terminal User Interfaces (TUIs).

Some of the key changes are described below:

- The SAM Functional Area Launcher (FAL) is replaced by the HP SMH Web-based Graphical User Interface (GUI).
- The enhanced Terminal User Interface (TUI) offers improved look and feel, online viewing of manpages, command previews and other improvements.
- A new command, `/usr/sbin/smh` (`smh` (1M)) is introduced which is an enhanced version of `/usr/sbin/sam`.
- The SAM command `/usr/sbin/sam` is deprecated. Any invocation of `/usr/sbin/sam` will display the deprecation message and launch `/usr/sbin/smh` automatically.



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## System Fault Management

System Fault Management (SFM) is a collection of tools used to monitor the health of HP servers and receive information about hardware such as memory, CPU, power supplies, and cooling devices. SFM operates in the Web-Based Enterprise Management (WBEM) environment.

SFM is supported on all systems that support HP-UX 11i v3.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

SFM is new for customers migrating from HP-UX 11i v1. It was not previously delivered on the HP-UX 11i v1 September 2005 OE media.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Event Manager-Common Information Model (EVM-CIM) Provider is introduced.
- Error Management Technology (EMT) is introduced.
- SFMIndicationProvider is not available. However, you can continue to view indications equivalent to those generated by the SFMIndicationProvider, using the EVWEB Event Viewer.
- Log Viewer is not available.
- HP threshold indications equivalent to indications generated by High Availability Monitors are now supported. You can view HP threshold indications using the EVWEB Event Viewer.
- WBEM indications can be logged in `syslog` also.

### Impact

There are no impacts other than those previously listed.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For further information, see the following documents, available at <http://docs.hp.com/en/diag>:

- *System Fault Management Administrator's and User's Guide*
- *SFM Release Notes*
- *Frequently Asked Questions (FAQs)*

- *SFM Provider Data Sheets*
- *SFM Tables of Versions*

## Obsolescence

Not applicable.

---

## Update-UX and SW-GETTOOLS

The `update-ux` command updates the HP-UX operating system to a newer version.

The SW-GETTOOLS product contains a set of tools used by `update-ux`. It is automatically installed by `update-ux` and is removed on the next reboot.

Software Manager is a product used by Ignite-UX and Update-UX to perform software installation. Software Manager implements improvements for software selection, provides support for OEs, and provides update support for preview and a terminal user interface (TUI).

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `update-ux` command uses Software Manager to perform the update. Software Manager is a new application used by Update-UX and Ignite-UX. It provides the following new features:

- support for preview (`-p`)
- interactive terminal user interface (`-i`)
- better support for multiple media, including more accurate disk space analysis, dependency selection across media
- improved logging capabilities

The set of commands in SW-GETTOOLS has been updated with more up-to-date versions.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

In addition to the `update-ux` command line, you can use the new UPDATE-UX terminal user interface (TUI) to update your system.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For further information, see the following:

- The latest *HP-UX 11i v3 Installation and Update Guide*, available at <http://docs.hp.com/en/oshpux11iv3.html>
- The *update-ux* (1M) manpage
- The *swm-oeupdate* (1M) manpage
- The *swm* (1M) manpage

## Obsolescence

Not applicable.

---

## Virtual Memory Kernel Tunable `physical_io_buffers` (Obsolete)

The Virtual Memory kernel tunable `physical_io_buffers` is used to size a shared buffer pool for physical I/O operations in the kernel.

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**TIP** To find information about other obsoleted kernel tunables listed in this document, perform a search on the word “tunable”.

---

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

The Virtual Memory kernel tunable `physical_io_buffers` did not previously exist in any version of HP-UX 11i v1 and now will also not exist in HP-UX 11i v3.

### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

The Virtual Memory kernel tunable `physical_io_buffers` is now obsolete. This tunable was used in HP-UX 11i versions 1.6 and 2 to size a shared buffer pool for physical I/O operations in the kernel. As of HP-UX 11i version 3 and later, the kernel automatically manages the pool size. The `physical_io_buffers` tunable is no longer needed.

## Impact

The Virtual Memory kernel tunable is no longer available to you. The functionality controlled by this tunable is now handled automatically by the kernel.

## Compatibility

HP-UX kernel tunables may be obsoleted or have their meaning changed in any release. No compatibility issues are expected from this change.

## Performance

This change should provide similar performance to all settings of the tunable without requiring you to manually calculate optimum values.

## Documentation

The *physical\_io\_buffers* (5) manpage has been updated to reflect the status of the obsoleted tunable. This manpage will be removed entirely from future releases.

See also “Virtual Memory Kernel Tunables” on page 196.

## Obsolescence

The *physical\_io\_buffers* tunable has been obsoleted.

---

## Virtual Memory Kernel Tunables

Several virtual memory (VM) kernel tunables were changed to make system management easier.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following kernel tunables were removed:

- *eqmemsize*
- *pfdat\_hash\_locks*
- *region\_hash\_locks*
- *swapmem\_on*
- *unlockable\_mem*

---

**TIP** To find information about other obsoleted kernel tunables listed in this document, perform a search on the word “tunable”.

---

The following kernel tunable was added:

- *eqmem\_limit* (only on PA-RISC systems)

### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

System administrators upgrading to HP-UX 11i v3 may want to remove the use of obsoleted tunables. A warning message will occur when attempting to set an obsolete tunable. With no changes, the system will still work correctly. In general, the goal is to make tuning one’s kernel easier.

### **Compatibility**

The tunables *pfdat\_hash\_locks* and *region\_hash\_locks* have been obsoleted. The number of locks used will be automatically determined by the system.

The tunable *swapmem\_on* has been obsoleted. Pseudo-swap will always be enabled, as was the default for previous releases of HP-UX.

The tunable *eqmemsize* has been replaced with the new tunable *eqmem\_limit*. This is not a direct replacement. Most customers won’t want to set *eqmem\_limit*, whether or not they previously set *eqmemsize*.

### **Performance**

The tunable changes should not degrade performance.

In some configurations, setting *eqmem\_limit* to a non-default value may improve performance; see the *eqmem\_limit* manpage.

### **Documentation**

For further information, see the following manpages:

- *eqmemsize* (5)
- *eqmem\_limit* (5)
- *pfdat\_hash\_locks* (5)
- *region\_hash\_locks* (5)
- *swapmem\_on* (5)
- *unlockable\_mem* (5)

See also “Virtual Memory Kernel Tunable *physical\_io\_buffers* (Obsolete)” on page 195.

### **Obsolescence**

Not applicable.



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**What is in This Chapter?**

This chapter covers directory, file system, and disk management, including the following:

- HFS File System Type (Deprecated) (see page 200)
- HFS Filesystem and Backup Commands for Files >2TB (see page 200)
- HP CIFS Client (see page 201)
- HP CIFS Server (see page 204)
- HP-UX File Systems Architecture Enhancements (see page 206)
- Logical Volume Manager and MirrorDisk/UX (see page 212)
- Open Network Computing (ONC) (see page 217)
  - AutoFS (see page 217)
  - Cache File System (see page 219)
  - Library RPC (see page 220)
  - Network File System (NFS) Services (see page 223)
  - Network Information Service (NIS) (see page 227)
  - NIS+ (Obsoleted) (see page 229)
  - PCNFSD (see page 230)
- Unified File Cache (see page 231)
- VERITAS File System (see page 232)
- VERITAS Volume Manager (see page 234)

## HFS File System Type (Deprecated)

The HFS system type is also known as UFS.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP wants to give advanced warning to customers that the HFS (also known as UFS) file system type is now deprecated. It will still be installed and supported for several more releases, but it will be removed from the OS in a future release, to be determined. Customers are encouraged to start migrating their data from HFS to VxFS (VERITAS File System).

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There is no immediate impact in HP-UX 11i v3.

### Compatibility

There are no immediate compatibility issues in HP-UX 11i v3.

### Performance

Not applicable.

### Documentation

Not applicable.

### Obsolescence

Nothing is obsolete in HP-UX 11i v3. In a future HP-UX release, the HFS file system type will not be available with the base OS system and will be generally unsupported (for new releases). Support will continue for earlier releases which included HFS in the base product.

---

## HFS Filesystem and Backup Commands for Files >2TB

The following HP-UX commands are used for managing the HFS filesystem on HP-UX 11i v3:



convertfs, fsck, fsclean, fsdb, fstyp, mkfs, mount, newfs, tuneufs, umount

The following HP-UX commands are used for are used for backup related tasks on HP-UX 11i v3:

fbackup, frecover, labelit, volcopy, dcopy

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

We have enhanced the HFS file system and backup commands to work on file sizes larger than 2TB.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

We have enhanced the HFS file system and backup condos to work on file sizes larger than 2TB.

## Impact

Customer can run these commands on file sizes larger than 2TB.

## Compatibility

There are no known compatibility issues.

## Performance

There is no significant difference in performance.

## Documentation

See the manpage for the applicable commands.

## Obsolescence

Not applicable.

---

## HP CIFS Client

CIFS is the native networking protocol on Microsoft Windows operating systems. The HP CIFS products for HP-UX provide a wide range of integration strategies for HP-UX and Windows. The HP CIFS Client enables the HP-UX host to mount directories shared by remote CIFS servers (Windows, HP-UX, and other server platforms on which CIFS has been implemented). The HP CIFS Server enables the HP-UX host to provide access to its own shared directories by remote CIFS clients (Windows, HP-UX, and other CIFS clients); it emulates Windows file and print services.

The HP CIFS Client bundle also includes PAM-NTLM, a “pluggable authentication module” that allows HP-UX logins to be authenticated by a centralized service on a CIFS domain.

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

HP CIFS Client A.02.02.01 is available on the HP-UX 11i v3 release. This release of the HP CIFS Client contains several enhancements and defect fixes in addition to the new features provided in HP CIFS Client A.02.02.

- HP CIFS Client A.02.02 provides the following major new features:
  - MS Distributed File System (DFS) Support: DFS for the Microsoft Windows Server operating systems is a network server component that enables system administrators to build a single, hierarchical view of multiple file servers and file server shares on their network. DFS is a means for uniting files on different computers into a single name space.
  - Dynamically Loadable Kernel Module (DLKM) Support: The kernel component of the HP CIFS Client is implemented as a dynamically linked kernel module to support both static binding and dynamic loading. With DLKM support, installation, removal, and update of the HP CIFS Client do not require a system re-boot.
  - New Manual Pages Support: See the following “Documentation” section.
  - New Configuration Parameters

The following parameters are new in this release. Refer to Chapter 7, “Configuration File” in the *HP CIFS Client Administrators’ Guide* for details.

- *mnttabPrefix*
- *allowBackslashesInPaths*
- *fileCreateMask*
- *oldUdbEncrypt*
- *preventCreationEnable, preventCreationPattern*
- *unixExtensions*
- *smbOverTCP*

For detailed information about new features and defect fixes, refer to the *HP CIFS Client A.02.02 Administrator’s Guide and Release Notes*.

- HP CIFS Client A.02.02.01 contains the following enhancements and changes:
  - New `cifslogout -a (all)` option: This option allows users to log out from all current CIFS login sessions. This is particularly useful in environments which use the CIFS Client’s Distributed File System feature (DFS), wherein several CIFS logins can be created in the background as users traverse a DFS tree.
  - Make 32-bit errors default: The CIFS Client now uses 32-bit error codes with the CIFS servers by default, rather than the older DOS error class.
  - Improved logging: Several logging enhancements have been made in this release. These are mainly intended to help HP engineers diagnose potential problems customers encounter using this software.

- The `sockMode`, `sockOwner` and `sockGroup` parameters are no longer configurable. The values of these parameters are `sockMode = 0666`, `sockOwner = root`, `sockGroup = root`.
- Defect fixes

For detailed information about new enhancements, changes and defect fixes, refer to the *HP CIFS Client A.02.02.01 Release Notes*.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

HP CIFS Client A.02.02.01 supports several enhancements and defect fixes, as well as the new enhancements provided in HP CIFS Client A.02.02 previously described above.

### **Compatibility**

There is no known compatibility impact.

### **Performance**

There are no known performance issues.

### **Documentation**

For more information, refer to the following documentation, which can be found at <http://docs.hp.com/en/netcom.html> (navigate to CIFS):

- *HP CIFS Client A.02.02 Administrator's Guide*
- *HP CIFS Client A.02.02 Release Note*
- *HP CIFS Client A.02.02.01 Release Note*

Also see the following manpages:

- *cifsclient* (1M)
- *cifsdb* (1M)
- *cifslist*(1)
- *cifslogin* (1), *cifslogout*(1)
- *cifsmount* (1M), *cifsumount* (1M)
- *mount\_cifs* (1M), *umount\_cifs* (1M)

### **Obsolescence**

Not applicable.

## HP CIFS Server

HP CIFS Server is a SMB/CIFS-based product on HP-UX systems. It enables HP-UX systems to interoperate with PC clients running Microsoft Windows NT, XP, 2000/2003, and UNIX systems running the CIFS client and thus provides a fully integrated network of UNIX and Windows systems running as clients, servers, or both.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP CIFS Server 3.0f version A.02.03 is included on HP-UX 11i v3 release, it is based on Samba 3.0.22.

HP CIFS Server 3.0c version A.02.01.01 (based on samba 3.0.7) was delivered in the 0509 HP-UX 11i v1 release. HP CIFS Server 3.0f version A.02.03 is a feature release that delivers new enhancements as follows:

- Support for idmpa-rid: The idmap-rid facility with winbind support provides a unique mapping of windows SIDs to local UNIX UIDs and GIDs throughout a domain without requiring an LDAP directory.
- Support for Publishing printers in an MS Windows 2000/2003 ADS domain
- Winbind code has been re-designed to support the non-blocking, asynchronous request/reply behavior with the exception of user and group enumeration. With this new enhancement, winbind provides better scalability in large domain environments and on high latency networks.
- File Locking Interoperation Functionality:

HP CIFS Server A.02.03 for HP-UX 11i v3 includes new functionality to improve interoperability between CIFS clients and NFS clients. A new DLKM (dynamically loaded kernel module) known as CFSM (CIFS File System Module) can be used to enforce the file locks held by CIFS clients. This functionality is off by default and can be enabled on a per file system basis. Enabling this functionality prevents the possibility of file corruption due to concurrent file accesses from both CIFS and NFS, and allows for performance enhancing opportunistic locks to be safely used.

The kernel modules are part of an HP-UX 11i v3 only product, which is part of the CIFS Server bundle.

If CFSM is used, a new CFSM specific log file is created, and a new utility called `cfsutil` can be used to control the logging level, log file location and maximum log file size.

- Long user and group name support:  
HP CIFS Server supports HP-UX user and group name of up to 256 bytes.
- TDB Memory Map Support:

This release supports performance enhancements which include enabling the configuration parameter `use mmap` to take advantage of fixed size memory map access of CIFS's Trivial Database (TDB) files. The mechanism and number of TDB files using memory-mapped access has been tuned respective of the OS (HP-UX 11i v3 PA-RISC or 11i v3 Itanium®-based).

In case of memory-mapped failures such as low on memory resource or exceeding the fixed memory map size, HP CIFS Server for HP-UX 11i v3 supports Unified File Cache and allows memory-mapped TDB files to fall back to file I/O operations.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

HP CIFS Server 3.0f version A.02.03 is included on HP-UX 11i v3 release, it is based on Samba 3.0.22. HP CIFS Server 3.0f version A.02.03 is a feature release that delivers new enhancements as follows:

- Winbind code has been re-designed to support the non-blocking, asynchronous request/reply behavior with the exception of user and group enumeration. With this new enhancement, winbind provides better scalability in large domain environments and on high latency networks

- File Locking Interoperation Functionality:

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In case of memory-mapped failures such as low on memory resource or exceeding the fixed memory map size, HP CIFS Server for HP-UX 11i v3 supports Unified File Cache and allows memory-mapped TDB files to fall back to file I/O operations.

### **Impact**

To protect customers from data corruption, HP CIFS Server 3.0f version A.02.03 provides file locking interoperation enhancements that support the CIFS file locks to interoperate with accesses from NFS clients and other HP-UX processes. HP CIFS Server supports file locking interoperation for record locks, share mode locks and opportunistic locks.

## Compatibility

There are no known compatibility issues.

## Performance

Performance is comparable with the previous version.

## Documentation

For more information, refer to the following documentation:

- The following Samba books, provided with the HP CIFS Server product through the SWAT home page or accessible directly at `/opt/samba/docs/samba-HOWTO-Collection.pdf` and `/opt/samba/swat/help`:
  - *The Official Samba-3 HOWTO and Reference Guide*
  - *Samba-3 by Example*
- The following HP CIFS Server documents, which can be found at <http://docs.hp.com/en/netcom.html> (navigate to CIFS):
  - *HP CIFS Server 3.0f Administrator's Guide version A.02.03*
  - *HP CIFS Server 3.0f Release Note version A.02.03*

## Obsolescence

Not applicable.

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# HP-UX File Systems Architecture Enhancements

This entry includes general enhancements made in the HP-UX File Systems architecture, many in support of release-wide HP-UX 11i v3 objectives.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

File Systems architecture support for:

- Unix 2003 standard
- large PID/UNAME/hostname
- ONC+
- UFC
- CIFS integration
- *posix\_fadvise* (2)

- Tru64 application migration

File Systems architecture new features/enhancements:

- VFS stacking capabilities
- fsdaemon user level daemon
- large file systems and large files support
- improved file systems syncer
- performance improvement of *aio\_reap* (2)
- support of larger files and long link names in backup utility
- performance improvement in kernel long file name lookup searches
- new OL\*-aware automatic tunables
- synchronization delays fixed in kernel mount table
- HFS startup performance improvements
- improved HFS handling of errors

For further information, see the following “Impact” section.

### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

Benefits to Customers:

- Large file system and large file support
  - HP-UX 11i v2 provided support for large file systems (currently up to 16TB). However, mainly because specific file system types did not provide support for individual files larger than 2TB, this feature was not available to customers until HP-UX 11i v3.
  - In HP-UX 11i v3, customers using VxFS file systems will have support for larger file systems up to 40TB, and individual files up to 16TB.
- VFS Stacking
  - Enables a variety of new file system features, and multi-level stacking will allow those features to be combined by customers in arbitrary ways.
  - The architecture will also make it easy for third-parties (ISVs) to add new stacked modules and extend HP-UX FS functionality after releases.
- New fsdaemon user-level daemon to identify the file system on a device, and/or retrieve status information

- This allows a new subsystem to be installed on a running system and be immediately recognized without reboot. The daemon calls message-related routines for each subsystem in designated `/sbin` directories, until the device is claimed. The identity and status is then returned from the daemon to caller. The install program simply needs to (over)write the executable file in `/sbin`.
- This provides better time-to-market for new or upgraded file system types because the commands and libraries that used to contain dependent code (and all the code statically-linked to them) will no longer need to be patched.
- Third-party file systems can be supported for these functions.
- VXFS, HFS and CDFS port to use the Unified File Cache (migration from legacy buffer cache to UFC)
  - VXFS, HFS and CDFS file systems take advantage of the new file caching technology; in particular, issues existing in previous HP-UX releases with file data coherency in VXFS and HFS file systems are removed.
- New automatic file cache tunables in support of UFC and OL\*
  - In conjunction with the UFC and new Physical Memory Control, the use of the new file cache tunables provide improved file caching technology as well as improved physical memory management associated to the file I/O data cache.
  - File cache tunables are reduced in number from 5 to 2, and provide improved usability and default behavior.
  - File cache tunables will automatically adjust with OL\* (Online Addition or Deletion) of memory events.
- New *advise*(2) interface and support of the Posix.1 *posix\_advise*(2) system interface
  - Application-disclosed hints can dramatically reduce data access latency in I/O intensive applications as well as reduce overall system resource impact.
- FS system calls enhancements in support of Tru64 Application Migration
  - Ease migration of Tru64 applications to HP-UX 11i v3
- VFS expansion for Unix 2003 compliance
  - New interface for Unix 2003 compliance: *pselect*(2)
- Core FS enhancements in support of Interface Expansion
  - Expanded capacity PIDs, UNAME and hostname
- Core File Systems support of AutoFS, CacheFS, and NFS
  - Changes in the HP-UX VFS layer to support the porting of AutoFS, CacheFS, and NFS file systems to HP-UX 11i v3. Removal of incompatibilities between the HP-UX and Solaris VFS layers, without disturbing user space compatibility with previous HP-UX releases.
- VFS enhancements to support HP-UX CIFS integration
  - Enabling CIFS server integration to HP-UX 11i v3. The CIFS Server will have improved availability and manageability in heterogeneous HP-UX and NT environment.



- HP CIFS Server will avoid data corruption by providing Lock interoperability among CIFS Clients, NFS Clients and local HP-UX processes.
- The kernel mount table `/etc/mnttab` redesigned to become a pseudo device driver
  - Fixes synchronization delays that existed in previous releases between the `/etc/mnttab` user file and the in kernel mount table.
- New HFS handling of write errors
  - In previous releases the HFS file system did not handle write errors and could loop indefinitely retrying I/O's in the SCSI stack. With the new enhancements, HFS safely halts the affected file system. This change minimizes the possibility of file system corruption caused by I/O errors.
- New improved multi-thread file systems syncer
  - The multi-thread syncer is converted to a kernel daemon in HP-UX 11i v3. The new syncer solves previously existing synchronization and performance issues with CPU allocation and de-allocation, and provides general performance improvements for mount/umount and other commands and utilities using the `sync()` system call.
- Asynchronous I/O performance improvement
  - Significant improvement in performance of asynchronous I/O (AIO) for applications that use of `aio_reap(2)`
- command `pax` support of multi-terabyte files and long link file names
  - Customers will be able to archive, restore, copy and list files that are of multi-terabyte size using the `pax` backup utility.
  - Customers will be able to use `pax` on link files that have a filename length that is >200 characters (previously, a limit of 100 characters existed).
- Longer pathname components cached in file system's DNLC
  - The pre-HP-UX 11i v3 DNLC cached pathname components of length up to 39 characters. This has been extended to 256 characters, which provides (kernel) name look-up performance improvement when the pathname includes long component names. NFS file systems in particular use long pathname component names, and benefit from this performance improvement.
- HFS `fsck` command changes for start-up performance improvement.
  - The pre-HP-UX 11i v3 HFS `fsck` command would retry on non-responding devices for a long period of time. This caused a large delay on system start-up time while attempting to perform file consistency checks on HFS file systems resident on iSCSI devices that were not online. The `fsck` command was modified to eliminate the re-tries, resulting in performance improvements in the start-up circumstances described above. A backward compatibility option was added to the command to revert to old behavior.
- Open file table restructured (`nfile` tunable no longer needed)
  - The system open file table was restructured in HP-UX 11i v3 to remove previous architectural limitations, and, therefore, the need to tune the `nfile` tunable is removed.

- The *nfile* tunable is now private and deprecated. The recommended way to regulate the maximum number of open files on the system is to set the values of *maxfiles\_lim* and *nproc* appropriately; the theoretical system maximum can be assumed to be *maxfiles\_lim* \* *nproc*.

## Compatibility

- The *nfile* tunable
  - The *nfile* tunable is now private and deprecated. It should no longer be used, and may be removed in a future HP-UX release.
  - Please note that the default value returned by the tunable infrastructure for the private tunable *nfile* is 0 (zero). The value of zero means that the system limit usually enforced by *nfile* will be disabled (that is, the number of system-wide open files is limited only by available memory). So applications depending on a non-zero tunable value for *nfile* must be modified immediately to remove this dependency. Applications may want to use instead the `pstat` interface `pstat_getstatic()` which will return `MAX_INT` for *pst\_max\_nfile* if *nfile* is left to default.
- Obsolete buffer cache tunables: *bufcache\_max\_pct*, *bufpages*, *dbc\_min\_pct*, *dbc\_max\_pct*, or *nbuf*
  - These tunables are obsolete and removed. Attempting to tune any of the obsolete buffer cache tunables, *bufcache\_max\_pct*, *bufpages*, *dbc\_min\_pct*, *dbc\_max\_pct*, or *nbuf* results in an error.
  - If needed, customers should use the tunables *filecache\_max* (5) and *filecache\_min* (5) to set limits on the file cache. Note that, on any given system, the optimum values of these two new file cache tunables are not necessarily equivalent to the optimum values of the obsolete buffer cache tunable values in the older systems. Customers should first determine if the default/automatic values yield acceptable performance on their system, before attempting to change the values of the new file cache tunables.
- Obsolete *sendfile\_max* tunable
  - This tunable is obsolete and removed. Do not attempt to use this tunable, as it will result in an error. In previous releases this tunable was used to limit how the number of HP-UX buffer cache pages the `sendfile()` system call could use. The `sendfile()` operations no longer utilize the HP-UX traditional buffer cache and this tunable becomes obsolete. Please refer to *fcache\_seqlimit\_file* (5) and related file cache tunables to control the use of physical memory by `sendfile()` and other file system operations.
- See more on obsoleted interfaces in the following “Obsolescence” section.

## Performance

- New improved multi-thread file systems syncer

- The multi-thread syncer is converted to a kernel daemon in HP-UX 11i v3. The new syncer solves previously existing synchronization and performance issues with CPU allocation and de-allocation, and provides general performance improvements for mount/umount and other commands and utilities using the `sync()` system call.
- Asynchronous I/O performance improvement
  - Significant improvement in performance of asynchronous I/O (AIO) for applications that use of `aio_reap(2)`
- Longer pathname components cached in file system's DNLC
  - The pre-HP-UX 11i v3 DNLC cached pathname components of length up to 39 characters. This has been extended to 256 characters, which provides (kernel) name look-up performance improvement when the pathname includes long component names. NFS file systems in particular use long pathname component names, and benefit from this performance improvement.
- HFS `fsckclean` command changes for start-up performance improvement.
  - The pre-HP-UX 11i v3 HFS `fsckclean` command would retry on non-responding devices for a long period of time. This caused a large delay on system start-up time while attempting to perform file consistency checks on HFS file systems resident on iSCSI devices that were not online. The `fsckclean` command was modified to eliminate the re-tries, resulting in performance improvements in the start-up circumstances described above. A backward compatibility option was added to the command to revert to old behavior.

## Documentation

New or updated manpages:

- `filecache_min/filecache_max(5)`
- `chmod(2)`
- `pstat(2)`
- `open(2)`
- `fcntl(2)`
- `pathconf/fpathconf(2)`
- `select/pselect(2)`
- `truncate(2)`
- `fcntl(5)`
- `thread_safety(5)`
- `sendfile_max(5)`
- `getdtablesize(2)`
- `stat(2)`
- `mount/umount(2)`
- `mount/umount(1M)`
- `umount2(2)`
- `mnttab(4)`
- `statvfs(2)`
- `syncer(1M)`
- `pax(1)`
- `fadvise(2)`
- `fadvise(5)`
- `fcntl(5)`

- *fsclean* (1M)

Manpages updated for obsolescence notice:

- *dbc\_min\_pct* (5)
- *dbc\_max\_pct* (5)
- *nbuf* (5)
- *bufpages* (5)
- *sendfile\_max* (5)

Manpages updated for deprecation notice:

- *fbackup/frecover* (1M)

## Obsolescence

- The following interfaces are obsolete in HP-UX 11i v3:
  - *setmnt (/etc/mnttab converted to pseudo driver)*
  - *pstat\_getfile()* (interface expansion)
  - **tunables** *nbuf5, bufpages5, bufcache\_max\_pct5, dbc\_min\_pct5, dbc\_max\_pct5, bcvmap\_size\_factor5, sendfile\_max5, dskless\_node* (5)
- The following tunables are deprecated (private/internal tunables in HP-UX 11i v3) and customers should be encouraged to stop using them:
  - *nfile* (5), *file\_pad* (5), *o\_sync\_is\_o\_dsync* (5), *hpux\_aes\_override* (5)
- The following commands are deprecated in HP-UX 11i v3 and customers should be discouraged from using them:
 

*fbackup*, *frecover* and *ftio* are deprecated for creating new archives. In a future HP-UX release, creation of new archives with these commands will not be supported. Note that support will be continued for archive retrieval. The standard *pax* command (portable archive interchange) should be used as a favored replacement to create archives.

Also, see the preceding “Compatibility” section.

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## Logical Volume Manager and MirrorDisk/UX

Logical Volume Manager (LVM) is the HP-UX default Volume Manager. It provides the user with flexibility in configuring and managing mass storage resources. In HP-UX 11i v3, the LVM kernel and commands are bundled with the core HP-UX product. MirrorDisk/UX (B2491BA) is an optionally purchased HP-UX product to enable LVM mirroring functionality.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

See "What's New for Customers Migrating from HP-UX 11i v2 June 2006?"

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

In HP-UX 11i v3, LVM delivers significant performance, scalability and availability enhancements. It supports the next generation mass storage stack, described under Mass Storage Stack ("Mass Storage Stack" on page 85) and is integrated with the mass storage stack's load balancing and dynamic LUN expansion features. LVM also supports Error Management Technology (EMT).

In addition, LVM has been enhanced to support larger logical volumes, striping with mirroring of logical volumes, temporary quiescing of volume groups, and dynamic LUN expansion. LVM also provides a new `vgmodify` command, which enables modification of a volume group parameters.

- Increased logical volume size: LVM now supports logical volumes up to 16 terabytes (16TB) in size, an increase from 2TB in previous releases. Logical volumes larger than 2TB may not be usable on previous releases; see the compatibility note below.
- The tunable parameter `maxvgs` has been obsoleted; LVM can now create up to 256 volume groups dynamically.
- LVM Device Online Replacement (OLR): The `pvchange` command has a new option, `-a`, that can be used to temporarily stop LVM accessing a device or device special file, and to reenable access. A white paper (see "Documentation" below) explains how OLR simplifies the process of replacing or isolating disks. (This feature was introduced in HP-UX 11i Version 2 June 2006.)
- Volume Group Quiesce/Resume: Two new options, `-Q` and `-R`, have been added to the `vgchange` command. These options temporarily quiesce an activated volume group and resume it, respectively, and are discussed in detail on the `vgchange` (1M) manpage.

Using the `-Q` option, you can quiesce both read and write operations to the volume group, or just write operations. While the volume group is quiesced, the `vgdisplay` command will report the volume group's status as "quiesced." The indicated I/O operations will be queued until the volume group is resumed, and commands that would modify the volume group configuration will return an error. This keeps the volume group disk image in a stable state suitable for using disk management utilities to perform snapshots of all the disks in the volume group, without deactivating the volume group.

Note that the entire volume group is quiesced. Individual logical volumes or physical volumes cannot be quiesced using this feature. To disable or replace a physical volume or PVLink, use the `pvchange` command. To provide a stable image of a particular logical volume, in order to back up the data there, use the `lvsplit` command.

- Striping with Mirroring: In previous releases, LVM supported a limited extent-based striped mirror functionality, as described in the `lvcreate` (1M) manpage. This type of striped mirror required the stripe size to be a multiple of extent size. In HP-UX 11i v3, LVM supports mirroring of striped logical volumes with the entire range of stripe sizes. The `lvcreate` command options `-m` and `-i/-I` can be used together, and the `-m`

option of the `lvextend` and `lvreduce` commands can be applied to striped logical volumes. Note that logical volumes configured with such striped mirrors cannot be imported on releases before HP-UX 11i v3; see the compatibility note below.

To maximize data Integrity for striped mirrors, LVM enforces a strict allocation policy; that is, mirrored physical extents must be allocated on different physical volumes. This forces the physical extents used by all the replicas of a strip onto different physical volumes.

- **Mass Storage Stack:** LVM supports the next generation mass storage stack, as described in the Mass Storage Stack section of this document. In particular, LVM supports the use of both legacy and persistent device special files within the same volume group. New options to the `vgscan` and `vgimport` commands, described below, affect how LVM creates its configuration.

By default, `vgscan` recovers the LVM configuration information (the `/etc/lvmtab` file) using legacy device special files. If the new `-N` option is specified, then `vgscan` will use persistent device special files. If the new `-B` option is specified, then `vgscan` will populate the `/etc/lvmtab` file using both legacy and persistent device special files.

By default, when importing a volume group in shared mode, `vgimport` will populate the `/etc/lvmtab` file using legacy device special files. If the new `-N` option is specified, then `vgimport` will use persistent device special files.

- **Multi-pathing and Alternate Links (PVLINKs):** Management of multi-pathed devices is available outside of LVM using the next generation mass storage stack. By default, the mass storage stack balances the I/O load across all available paths to a disk. However, the new `scsimgr` command can be used to emulate LVM's PVLINK functionality, and offers additional options for handling LUN failure and load balancing.

HP recommends converting volume groups with multi-pathed disks to persistent device special files. This can be done by running the `/usr/contrib/bin/vgdsf`, `vgscan -N`, or `vgimport -s -N` commands.

- **SLVM Single Node Online Volume Reconfiguration (SNOR):** A new option, `-x`, has been added to the `vgchange` command. This option allows an administrator to make configuration changes to a shared volume group while keeping the volume group activated on one cluster node. A white paper, described below, explains the SNOR functionality.
- **Dynamic Volume Group Modification:** A new command, `vgmodify`, is available to dynamically modify a volume group's characteristics. In previous releases, the number of physical volumes, the number of logical volumes, and number of physical extents per disk were set when a volume group was created; the `vgmodify` command allows these parameters to be modified without recreating the volume group.
- **Dynamic LUN Expansion:** If the administrator increases the size of a LUN, the `vgmodify` command can be used to incorporate that additional space into the volume group without recreating the volume group.
- **Boot resiliency:** If during boot time the LVM subsystem detects an inconsistency between the firmware boot path and the LVM root volume group configuration, LVM will scan all the disk devices to find the physical volumes belonging to the root volume group and will continue the boot sequence. In previous releases, the administrator had to boot in LVM Maintenance Mode to resolve this inconsistency.

- **Display enhancements:** The `lvdisplay`, `pvdisplay`, `vgdisplay`, and `vgscan` commands all support the long hostnames described in Long hostname, `uname`, and `setuname` (see page 321). Those commands also support a new `-F` option to print in a format more easily parsed by user scripts. The `pvdisplay` command has a new `-l` option to display if a disk is under LVM control; the existing `-d` option displays if a physical volume is a bootable physical volume.
- **vgscan enhancements:** In addition to support of the mass storage stack, `vgscan` has new `-f` and `-k` options.

By default, the `vgscan` command does not modify or supplement the `/etc/lvmtab` file entries for volume groups that already have entries. The new `-f` option forces an update of the existing entries for the specified volume group.

By default, the `vgscan` command scans the I/O configuration searching for LVM physical volumes, which can be a time-consuming operation. The new `-k` option reads the LVM data structures in kernel memory and populates the `/etc/lvmtab` file based on that data.

## Impact

The new LVM features enable increased availability and adaptability of mass storage:

- LVM Device OLR functionality provides users with the flexibility to adjust their storage hardware without disabling LVM.
- Volume group quiescence allows users to snapshot a consistent LVM configuration without deactivating the volume group.
- Striping with mirroring adds flexibility in mass storage configuration.
- Integration with the next generation mass storage stack allows the use of its features, such as enhanced multi-pathing and load balancing.
- LVM SNOR functionality allows users to keep their applications running on a single node while modifying the underlying volume groups.
- Dynamic LUN expansion and Dynamic Volume Group Modification give users the ability to grow and modify their storage without recreating a volume group.

## Compatibility

Releases prior to HP-UX 11i v3 can only access data within the first 2TB of a logical volume. If a logical volume larger than 2TB is created on HP-UX 11i v3, its activation and use are not recommended on any previous HP-UX release. The logical volume can be activated and used, but the data beyond 2TB will be inaccessible.

Releases prior to HP-UX 11i v3 only support extent-based striping via the `-D` option to `lvcreate`. If a logical volume using simultaneous mirroring and non-extent-based striping is created on HP-UX 11i v3, attempts to import or activate its associated volume group will fail on a previous HP-UX release. To import the volume group, you must remove the incompatible logical volumes or reduce them to a single mirror.

There is no longer a requirement to use the `lvlnboot` command to configure swap and dump logical volumes. Instead, the `swapon` and `crashconf` commands should be used to configure those logical volumes; if these commands are used, the `lvlnboot` command will not display information about the swap and dump logical volumes. In addition, `lvlnboot` no longer displays hardware paths, but device special files.

After a volume group containing a logical volume using the Mirror Write Cache is activated on HP-UX 11i v3, its Mirror Write Cache format will be converted. Any subsequent activation on previous releases will not recognize the new MWC format and a full resync will happen. Note that this would happen during a Serviceguard rolling update configuration.

By default, the next generation mass storage stack distributes I/O requests across all available paths to a multi-pathed disk, even when using legacy device special files. Using LVM with persistent or legacy device special files may cause I/O requests to be sent across alternate links, even if the links are not configured as PVLinks. To force backward-compatible multi-pathing behavior on legacy device special files, use the `scsimgr` command to configure a global device tunable called `leg_mpath_enable`. However, HP recommends converting volume groups with multi-pathed disks to persistent device special files and native multi-pathing.

## Performance

The LVM performance has been improved compared to previous releases:

- The Mirror Write Cache is larger which improves mirrored logical volume performance by allowing more concurrent writes. See compatibility note above.
- LVM supports larger I/O sizes (up to the extent size).

## Documentation

- For more information about LVM, see *HP-UX System Administration: Logical Volume Management*, available at <http://docs.hp.com>.
- For information about migrating an LVM configuration from legacy device special files and pvlincs to persistent device special files and native multi-pathing, see the white paper entitled *LVM Migration from Legacy to Agile Naming Model*, available at <http://docs.hp.com>.
- The LVM Device Online Replacement feature is described in a white paper entitled *LVM Online Disk Replacement (LVM OLR)*, available at [http://docs.hp.com/en/7161/LVM\\_OLR\\_whitepaper.pdf](http://docs.hp.com/en/7161/LVM_OLR_whitepaper.pdf). It includes a description of the new functionality and procedures for isolating and replacing disk devices.
- The SLVM Single Node Online Volume Reconfiguration feature is described in a white paper entitled *SLVM Online Volume Reconfiguration*, available at [http://docs.hp.com/en/7389/LVM\\_SNOR\\_whitepaper.pdf](http://docs.hp.com/en/7389/LVM_SNOR_whitepaper.pdf). It includes a description of the new functionality and procedures for making changes to shared volume groups.
- In addition, there are over thirty existing manpages for LVM and its commands. The *lvm* (7) manpage provides an overview and list of commands.

## Obsolescence

- LVM no longer performs software bad block relocation, as modern disks and disk arrays handle such relocation in their own hardware. Existing software relocation information will be honored, unless the physical volume is larger than 256GB.



- The tunable parameter `maxvgs` is obsolete. Any attempts to modify `maxvgs` using the `ctune` command cause the following error message: `ERROR: There is no tunable named 'maxvgs'.`

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## Open Network Computing (ONC)

ONC (Open Network Computing) is a technology that consists of core services that help administrators implement distributed applications in a heterogeneous distributed computing environment. ONC also includes tools to administer clients and servers. ONC consists of technologies, services and tools. ONC consists of the following components: NFS, AutoFS, CacheFS, RPC, NIS, Network Lock Manager and Network Status Monitor. For more information on these components see the *ONC Product Release Notes*, available at <http://docs.hp.com>.

The following ONC components have changes in the initial release of HP-UX 11i v3:

- AutoFS (see page 217)
- Cache File System (see page 219)
- Library RPC (see page 220)
- Network File System (NFS) Services (see page 223)
- Network Information Service (NIS) (see page 227)
- NIS+ (Obsoleted) (see page 229)
- PCNFSD (see page 230)

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## AutoFS

AutoFS/Automounter mounts directories automatically when users or processes request access to them. AutoFS also unmounts the directories automatically if they remain idle for a specified period of time.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Note: The list provided here is a list of changes between the HP-UX 11i v1 September 2005 Update Release and HP-UX 11i v3 AutoFS. There is an Enhanced AutoFS product available at <http://software.hp.com> for HP-UX 11i v1 that provides many of the following features:

- Support for LDAP name service to store AutoFS maps.
- The ability to browse the list of potential mount points in an indirect AutoFS map without mounting the filesystems.

- The ability to configure AutoFS through the `/etc/default/autofs` file. See the *autofs* (4) manpage for details.
- A new option to disable LOFS mounts required for some of the MC ServiceGuard configuration.
- A new startup/shutdown script for AutoFs. AutoFS is no longer controlled by the NFS client startup/shutdown script.
- Support for managing CIFS file mounts.
- Support for NFSv4.
- Support for SecureNFS.
- Support for IPv6.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

- Provides the ability to configure AutoFS through the `/etc/default/autofs` file. See the *autofs* (4) manpage for details.
- Provides a new startup/shutdown script for AutoFs. AutoFS is no longer controlled by the NFS client startup/shutdown script.
- Provides support for NFSv4.
- Provides support for SecureNFS.
- Provides support for IPv6.

### **Impact**

The HP-UX 11i v3 version of AutoFS provides new and improved features.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

AutoFS provides improved performance through improved multi-threading in the AutoFS daemon that allows concurrent mounting and unmounting.

### **Documentation**

For further information, see the *autofs* (4), *automount* (1M), and *automountd* (1M) manpages, as well as Chapter 2 of *NFS Services Administrator's Guide: HP-UX 11i version 3* at <http://docs.hp.com/en/netcom.html#NFS%20Services>.

### **Obsolescence**

Not applicable.

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## Cache File System

The Cache File System (CacheFS) is a general purpose file system caching mechanism that improves server performance and scalability by reducing server and network load.

CacheFS performs local disk caching of remote Network File System (NFS)-served file systems. Clients, especially on slow links such as PPP, notice an increase in performance because local disk access is faster than remote file system access. Reduced access requests to the server increases the server's performance and allows more clients to access the server.

However, CacheFS performance improvements are dependent on the type of file system access. It suits file systems where data is read more than once. It has no impact on write performance or if data is read only once.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Introduces a new command, `cachefspack`, that packs files and file systems in the cache. It also sets up and maintains files in the cache.
- Introduces a new mount option, `weakconst`, that verifies the cache consistency with the NFS's client copy of file attributes and delays committing of changes to the server.
- Provides full implementation of the `demandconst` option.
- Provides support for changing mount options without deleting the cache.
- Provides support for error messages to be printed to standard error instead of standard output.
- Provides improved error messages that now contain the command name.
- Provides support for 64-byte long file names.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

A new command, `cachefspack`, packs files and file systems in the cache. The `cachefspack` command also sets up and maintains files in the cache. New features include long file name support. The new mount option `weakconst`, when used instead of the default option, results in improved response times of CacheFS.

Note that CacheFS does not support NFSv4.

### Compatibility

CacheFS on HP-UX 11i v3 is changed from the previous versions as follows:

- `cfsadmin -s directory` prints an error message and returns a non-zero value when run on an invalid directory, non-existing mount point, or a cachefs mountpoint not mounted with `demandconst` option. In earlier releases, it returned 0.
- To improve `mount` command performance, `fsck` is no longer executed automatically. This means that if a cache in the `cache` directory is deleted using `cfsadmin -d cache_ID cache_directory`, `fsck` must now be run explicitly on the cache directory before attempting to mount a cached file system using this `cache` directory. If `fsck` is not run, the `mount` fails with the following error message:

```
mount -F cachefs: mount failed No space left on device
```

## Performance

There is improvement in the time taken to mount a CacheFS file system using a cache directory with a lot of cached data.

## Documentation

- For further information, see the following manpages:
  - `mount_cachefs` (1M), `cfsadmin` (1M), `cachefsstat` (1M), `cachefspack` (1M), `umount_cachefs` (1M), `fsck_cachefs` (1M), `packingrules` (4M)
- Also see the following documents, available at <http://docs.hp.com/en/netcom.html#NFS%20Services>:
  - *ONC+ Release Notes*
  - *NFS Services Administrator's Guide*

## Obsolescence

Not applicable.

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## Library RPC

Library routines for Remote Procedure Calls (RPC) allow programs to make procedure calls on other machines across a network. All RPC routines require the header `rpc.h`. Routines that take the `netconfig` structure also require that be included. Applications using RPC and External Data Representation (XDR) routines must be linked with the `libnsl` library.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Library routines now support the following new datatypes:

- `rpcprog_t`: RPC program number

- `rpcvers_t`: RPC version number
- `rpcproc_t`: RPC procedure number
- `rpcport_t`: RPC port number
- `rpcprot_t`: RPC protocol number
- Support for IPv6
- New types of operations for `rpc_control`:
  - `RPC_SVC_THRMAX_SET`: specifies maximum number of threads
  - `RPC_SVC_THRMAX_GET`: retrieves maximum number of threads
  - `RPC_SVC_THRTOTAL_GET`: retrieves total number of currently active threads
  - `RPC_SVC_THRCREATES_GET`: retrieves total number of threads created by RPC library
  - `RPC_SVC_THRERRORS_GET`: retrieves number of errors at time of thread creation in the RPC library
  - `RPC_SVC_USE_POLLFD`: sets number of file descriptors to unlimited
  - `RPC_SVC_CONNMAXREC_SET`: Non-blocking I/O enhancement for TCP services to specify the maximum buffer size required to send and receive data.
  - `RPC_SVC_CONNMAXREC_GET`: Non-blocking I/O enhancement for TCP services to receive the maximum buffer size required to send and receive data.
- `SVCGET_XID`, a new operation for `svc_control()`, retrieves the transaction id of connection-oriented (vc) and connectionless (dg) transport service calls.
- A new function `svc_fd_negotiate_ucred()` to inform the underlying loopback transport that it wishes to receive user credentials (ucreds) for local calls, including those over IP transport.
- New library routines for timed client creation, which are similar to existing client creation routines, except they take the timeout parameter to specify the maximum amount of time allowed for each transport class:
  - `clnt_create_timed()`
  - `clnt_create_vers_timed()`
  - `clnt_tp_create_timed()`
- New types of operation for `clnt_control()`:
  - `CLSET_IO_MODE()` and `CLGET_IO_MODE()` to set and get I/O blocking modes for TCP clients. Use `RPC_CL_BLOCKING()` and `RPC_CL_NON-BLOCKING()` to set the I/O mode settings.
  - `CLSET_FLUSH_MODE()` and `CLGET_FLUSH_MODE()` to set and get the flush mode. `CLSET_FLUSH_MODE()` can only be used for non-blocking I/O mode and accepts the following arguments:
    - `RPC_CL_BESTEFFORT_FLUSH`
    - `RPC_CL_BLOCKING_FLUSH`.

- `CLFLUSH()` to flush pending requests. This operation can only be used for non-blocking I/O mode and accepts the following arguments:  
`RPC_CL_BESTEFFORT_FLUSH`  
`RPC_CL_BLOCKING_FLUSH`.
- `CLSET_CONNMAXREC_SIZE` to specify the maximum buffer size.
- `CLGET_CONNMAXREC_SIZE` to retrieve the maximum buffer size.
- `CLGET_CURRENTREC_SIZE` to return the size of pending requests stored in the buffer for non-blocking I/O mode.
- `CLGET_SERVER_ADDR` / `CLGET_SVC_ADDR` to retrieve the server's address.
- `CLSET_PROG` and `CLGET_PROG` to set and retrieve the program numbers.
- New header files:
  - `clnt_stat.h`
  - `rpc_com.h`.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?".

### Impact

HP recommends that you use the new datatypes introduced with this release. These new datatypes replace `u_long` and `long`. While `u_long` and `long` datatypes continue to be supported, you receive a compiler warning if you continue to use them.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Manpages:

*rpc* (3N) and those manpages mentioned in *rpc* (3N)

### Obsolescence

Not applicable.

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## Network File System (NFS) Services

Network File System (NFS) provides transparent access to files on the network. An NFS server makes a directory available to other hosts on the network by “sharing” the directory. An NFS client provides access to the NFS server’s directory by “mounting” the directory. To users on the NFS client, the directory appears as a part of the local file system.

### Summary of Change

#### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

- Features:
  - NFS Version 4 Protocol is supported on both the client and server. Note: NFSv4 server Delegation is disabled by default. If enabled, access is not provided to the shared file system.
  - The `nfsmapid` feature that maps NFS Version 4 owner and `owner_group` identification attributes to/from local UID and GID numbers is supported. Mapping domain is the DNS domain, but it can be set to a different domain by modifying the `/etc/default/nfs` file.
  - Additional security mechanisms, such as Secure RPC that supports Kerberos through GSSAPI, are now supported. GSSAPI supports Kerberos, Kerberos with Integrity, and Kerberos with Privacy. The `share` command can now export file systems with multiple security modes. The `mount` command now enables you to specify the security mode.
  - NFS Access using a Firewall is now supported.
  - The `share` command, used to share directories with NFS clients, replaces the `exportfs` command. The `exportfs` command is now a script that calls the `share` command for the NFS file type.
  - NFS mount supports client side failover on read-only mounted filesystems. NFS mount accepts an NFS URL defined by RFC 2224 or an IPv4 or an IPv6 address where square brackets enclose the IPv6 address.
  - The `nsquery` feature supports `ipnodes` lookup request and provides support to lookup IPv6 data in the backend libraries.
  - Manipulation and viewing of ACLs over an NFS mount point is supported and ACL manipulation does not fail (`ENOSUP`) over an NFS mount point.
  - The `adb` tool is replaced by the `kctune` tool for manipulating the NFS kernel variables.
- Commands:
  - The `spray` command provides the following new command options: `-d` and `-t`. The `-d` option specifies the time interval in microseconds before the next packet is sent. The `-t` option specifies the class of transports.

- The NFS environment configuration command (`setoncnv`) displays all NFS configuration variables, NFS public and private `key` variables, and subsystem specific variables. It can modify the contents of the following files:  
`/etc/default/nfs`, `/etc/default/autofs`, `/etc/default/keyserv`,  
`/etc/default/nfslogd`, `/etc/rc.config.d/nfsconf`, and  
`/etc/rc.config.d/namesvrs`.
- Daemons:
  - The `pcnfsd` daemon is multi-threaded and supports shadow password and Secure RPC.
  - The `pcnfsd` protocol limits username entries to 32 characters and client hostname entries to 64 characters in `wtmp` database, and printer names to 64 characters. All successful authentication requests are logged in the `wtmp` database.
  - A new user mode daemon, `gssd`, generates and validates API security tokens, and maps the GSSAPI principal names to the local user and group ids.
  - The `biold` daemon is removed from the system.
  - Asynchronous I/O is now handled through kernel threads per mount point instead of by the `biold` daemon.
  - A single `nfsd` process runs on the system where NFS is enabled. The `nfsd` daemon is now multi-threaded.
  - The `lockd` daemon is now a threaded kernel daemon and its port number is fixed at 4045.
  - The `mountd` and `statd` daemons are now threaded and can be configured to support a fixed port number for the RPC transport endpoint.
  - The NFS Authentication service is added to the `mountd` daemon, and the service sets the access rights of the client attempting to access the NFS server.
  - A new daemon, `nfslogd`, supports operational logging to the NFS server. It generates the activity log by analyzing RPC operations processed by the NFS server. This daemon is not enabled by default.
  - The `nfs4cbd` daemon provides support for the NFSv4 Delegation feature.
  - `keyserv` daemon enhancements:
    - The `keyserv` daemon is now multi-threaded.
    - When `keyserv` is started with the `-D` option to turn on the debugging mode, a default log file (`/var/nfs/keyserv.log`) is created.
    - Two new methods enable the use of default keys for nobody:  
They are: a new option, `-e` and the default parameter setting in the new `/etc/default/keyserv` file.
- Files:
  - A new default configuration file for NFS services (`/etc/default/nfs`) contains the parameter values to set the default behavior of various NFS commands and daemons in NFS Services.
  - A new NFS security file (`/etc/nfssec.conf`) provides a list of all valid and supported NFS security modes.



- A new default configuration file for `key serv` (`/etc/default/key serv`) contains the default parameter values to set the use of default keys for nobody.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

- With the obsolescence of NIS+ database, users must now configure an LDAP database to store and retrieve keys. To use LDAP you must set the `publickey` entry in `/etc/nsswitch.conf` to `ldap`.
- The `/etc/exports` file is replaced by `/etc/dfs/dfstab`. The format of `/etc/dfs/dfstab` is different from `/etc/exports`. If you have created a parser application for `/etc/exports`, use the `exp2dfs` tool to convert the `/etc/exportfs` file to `/etc/dfs/dfstab` file.
- To access NFS through a firewall, you must either:
  - Use the NFSv4 protocol and specify the opening port as 2049 and set the `rpcbind` port as 111, or
  - Configure a fixed port for `statd` and `mountd` and specify the opening port as 2049 and set the `rpcbind` port as 111, or
  - Use the configured fixed port for `mountd`, `statd` and specify 4045 as the port for `lockd` to support NFSv2 and NFSv3.
- On systems where NFS is enabled, customers will not see multiple `nfsd` processes running.
- The `-l` option used with the `lockd`, `mountd`, and `statd` daemons does not provide its original functionality of overriding the default log file and is not supported. If you specify the `-l` option with the `mountd` or `statd` daemon, the option is ignored. The logfile (`mountd.log` or `statd.log`) can now be found at the fixed location `/var/nfs/`. If you specify the `-l` option with the `lockd` daemon, the listen queue is set on the `lockd` transport endpoint.
- Mounts with invalid options are ignored with a warning message instead of an error.
- To use NFSv4, the `nfsmapid` daemon must be running on both the client and server.
- For the NFS client to support NFSv4 Delegations, the `nfs4cbd` daemon must be running.
- If the new default NFS Services configuration file is used instead of `/etc/rc.config.d/nfsconf`, the behavior of the NFS daemons remains the same regardless of the way the daemons are started (script or command line).
- To use Secure NFS with Kerberos, the `gssd` daemon must be running.
- The `ktune` tool helps you tune the NFS server and NFS client parameters. Changes made to the parameters are persistent across a reboot, patch installation, or kernel regeneration.
- If you have systems running different versions of HP-UX in your network, you must start `rpc.lockd` with the `-C` option on all pre-HP-UX 11i v3 systems to ensure that consistency is maintained on a client system when a file lock is cancelled.

## Compatibility

- In previous releases, while creating a key pair for the remote host using `newkey` command, you are prompted for the local root login password and hostname's root login password. With HP-UX 11i v3, you are prompted only for the hostname's root login password.
- In previous releases, while creating a key pair for the local host using `newkey` command, you are prompted for the local root login password and hostname's root login password. With HP-UX 11i v3, you are prompted only for the local root login password.
- If you have an existing parser application for the `/etc/exports` file, the application fails on HP-UX 11i v3 as the `/etc/exports` file is not supported. The application can also fail if the `/etc/exports` file is moved from a system running an older version of HP-UX to a system running HP-UX 11i v3. Use the `exp2dfs` tool to convert the `/etc/exports` file to the `/etc/dfs/dfstab` file.
- Sharing an NFS file system using the `-rw` option or the `-ro` option can take a hostname for a parameter. If the `-rw=hostname` syntax is used and the NFS server uses DNS, you must specify the fully qualified hostname or the clients fails to mount the NFS server.
- An attempt to unmount a shared local file system now returns an `EBUSY` error, and the local file system remains mounted until all shared directories within the local file system are unshared.
- During system startup and shutdown, the behavior of the `rpc.statd` and the `rpc.lockd` daemons is the same as in earlier HP-UX releases. However, if you use the startup scripts to start or stop the NFS client or NFS server, the `statd` or `lockd` daemons are not stopped. Use the `lockmgr` startup script to start or stop the `statd` or `lockd` daemons.

## Performance

- The multi-threaded `pcnfsd` daemon provides better performance. However, memory consumption is impacted by the number of threads created and the total number of threads and your system configuration.
- The multi-threaded `keyserv` provides better performance. However, memory consumption is impacted by the number of threads created and the total number of threads and your system configuration.

## Documentation

For further information, see the following manpages:

- `pcnfsd` (1M)
- `spray` (3N), `sprayd` (1M)
- `keyserv` (1M), `newkey` (1M), `chkey` (1) and `getpublickey` (3N)
- `share_nfs` (1M), `share` (1M), `exportfs` (1M)
- `biod` (1M), `mount_nfs` (1M)
- `nfsd` (1M)
- `rpc.lockd` (1M), `rpc.mountd` (1M), `rpc.statd` (1M)
- `setoncenv` (1M)
- `nfs`(4), `nfslogd` (1M), `nfssec.conf`(4), `nfsmapid` (1M), `nfs4cbd` (1M), `nfs` (7), `nfssec` (5)

- *gssd* (1M)
- *nsquery* (1M)

In addition, see the following documents, available at <http://docs.hp.com/en/netcom.html#NFS%20Services>:

- *NFS Services Administrator's Guide*
- *ONC+ Release Notes (HP-UX 11i v3)*

## Obsolescence

- Trusted mode support in *pcnfsd*, *newkey*, and *chkey* is discontinued.
- The *nisplus* database type as an option is discontinued in *newkey*, *chkey*, and *keylogin* commands, and *getpublickey()*/*getsecretkey()* function calls in *libnsl*.
- The *-l* option used with *lockd*, *mountd*, and *statd* daemons is deprecated in this release.
- The */etc/rc.config.d/nfsconf* is obsoleted and replaced by the default NFS Services Configuration (*/etc/default/nfs*) file.
- Use of *adb* tool to change values of kernel parameters is no longer supported.

---

## Network Information Service (NIS)

The Network Information Service (NIS) provides a simple network lookup service consisting of databases and processes.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Provides support for shadow mode if *SHADOW\_MODE*, a new variable in the *namesvrs* file, is enabled.
- Provides support for enabling DNS forwarding mode using an option to the NIS server daemon *ypserv*.
- Provides support for long uname, long hostname, and long username.
- Provides new options in the *ypserv*, *ypasswdd*, *makedbm*, and *ypmake* commands.
- Provides support for multihomed node.
- Provides IPv6 data support.
- Removal of NIS+ and DNS related variables and DNS entries from the *namesvrs* file. The *namesvrs* file now contains information related to NIS.
- Provides support for ipnodes through the */etc/nsswitch.conf* file.

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

This release of NIS provides new and improved features.

### Compatibility

- On previous versions the default host nickname used by the commands `ypcat` and `ypwhich` is `hosts.byaddr` while other commands use `hosts.byname`. In HP-UX 11i v3, the default map used by `ypcat` and `ypwhich` is now changed to `hosts.byname`, for consistency. This change in the default host nickname for `ypcat` and `ypwhich` results in a change in display. The usage message displayed is different when you use the `-x` option with the `ypcat` and `ypwhich` commands.
- With HP-UX 11i v3, if the `rpc.yppasswdd` daemon is started without the `-D` option, the following usage message is displayed:

```
rpc.yppasswdd -D directory | passwd_file
[-l log_file]
[-nopw] [-nogecos] [-nohome]
[-noshell] [-m arg1 arg2 ...] where
directory is the directory where the passwd, shadow
files are found (/etc by default)
It should match the setting of PWDIR in /var/yp/Makefile
```

`passwd_file` is the path to the `passwd` file

#### NOTES:

1. The `-D` option and the `passwd` arguments are mutually exclusive
2. A shadow file found in the same directory as the `passwd` will be assumed to contain the password information

arguments after `-m` are passed to `make(1)` after password changes  
`-nopw` passwords may not be changed remotely using `passwd`  
`-nogecos` full name may not be changed remotely using `passwd` or `chfn`  
`-nohome` home information may not be changed remotely using `passwd`  
`-noshell` shell may not be changed remotely using `passwd` or `chsh`

This usage message is not an error message. It introduces the `-D` option of `rpc.yppasswdd`. If the daemon is started with the `-D` option, the usage message is no longer displayed.

- If an unsupported option is used with `ypserv` or `rpc.yppasswdd`, the options are ignored and the daemon is started.

### Performance

There are no known performance issues.

### Documentation

For further information, see the following manpages:

- *domainname* (1)
- *ypcat* (1)
- *ypmatch* (1)
- *ypwhich* (1)
- *yppasswd* (1)
- *yppasswdd* (1M)
- *ypset* (1M)
- *makedbm* (1M)
- *ypinit* (1M)
- *ypmake* (1M)
- *yppoll* (1M)
- *yppush* (1M)
- *ypserv* (1M)
- *ypxfr* (1M)
- *rpc.nisd\_resolv* (1M)
- *ypclnt* (3C)
- *ypfiles* (4)

Information on NIS1.2 enhanced features can be found at <http://docs.hp.com/en/netcom.html#NFS%20Services>

Also, at this site can be found the *ONC+ Release Notes* and the *NFS Services Administrator's Guide*.

## Obsolescence

NIS protocol version 1 (NISv1) is deprecated in this release and will be obsoleted in a future HP-UX release. HP recommends that you move to the next protocol version of NIS.

---

## NIS+ (Obsoleted)

The Network Information Service Plus (NIS+) is an entirely different product than NIS, not an enhancement to NIS. It is a distributed database system that allows you to maintain commonly used configuration information on a master server and propagate the information to all the hosts in your network. NIS+ allows you to maintain configuration information for many hosts in a set of distributed databases. If you have the proper credentials and access permissions, you can read or modify these databases from any host in the network. Common configuration information, which would have to be maintained separately on each host in a network without NIS+, can be stored and maintained in a single location and propagated to all of the hosts in the network.

The disadvantage of NIS+ is that it is difficult to administer. It requires dedicated system administrators trained in NIS+ administration. NIS+ administration is very different from NIS administration. Also, the NIS+ databases are not automatically backed up to flat files. The system administrator must create and maintain a backup strategy for NIS+ databases, which includes dumping them to flat files and backing up the files.

Due to the declining demand for NIS+, HP is discontinuing NIS+. The last HP-UX release on which NIS+ was released is HP-UX 11i v2. Starting with HP-UX 11i v3, NIS+ is no longer supported. HP recommends customers migrate to LDAP.

For information on how to migrate to LDAP, see the *NIS+ to LDAP Migration Guide* located at

<http://docs.hp.com/en/J4269-90054/J4269-90054.pdf>

---

## PCNFSD

The `pcnfsd` daemon is an RPC server that provides authentication and printing services to PC clients.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The `pcnfsd` daemon is multi-threaded.
- Shadow password is supported.
- Secure RPC is supported.
- Successful authentication requests are logged in the `wtmps` database. A `wtmps` entry can hold usernames up to the PCNFSD protocol limitation of 32 characters and client hostnames up to the PCNFSD protocol limitation of 64.
- Printer names up to the PCNFSD protocol limitation of 64 characters is supported. Any printer configured using the `lpadmin` command with a name greater than 64 characters will be ignored.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- The `pcnfsd` daemon is multi-threaded.
- Shadow password is supported.
- Secure RPC is supported.
- Printer names up to the PCNFSD protocol limitation of 64 characters is supported. Any printer configured using the `lpadmin` command with a name greater than 64 characters will be ignored.

### Impact

The multi-threaded `pcnfsd` daemon can provide better performance but may consume more memory.

The `pcnfsd` daemon can provide better security with its support of shadow password and secure RPC.

## Compatibility

There are no known compatibility issues.

## Performance

The multi-threaded `pcnfsd` daemon will provide better performance.

## Documentation

For further information, see the `pcnfsd(1M)` manpage.

## Obsolescence

With the deprecation of trusted mode in HP-UX 11i Version 3, trusted mode support in `pcnfsd` will be discontinued.

---

## Unified File Cache

The Unified File Cache (UFC) integrates the page cache and buffer cache to provide coherency for file access. Currently, File Systems use the buffer cache to cache file data, and the `mmap()` interface uses the page cache to cache file data. If an application accesses the file using both `read(2)/write(2)` system calls and `mmap(2)` simultaneously, HP-UX does not guarantee coherency since data resides in two caches. With a Unified File Cache, coherency can be achieved. Unifying the architecture for accessing file data will enable the use of the same kernel interfaces by file systems for `read()` and `write()` system calls and for `mmap()`. These common interfaces will ease the port of third party file systems from Solaris

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Prior to HP-UX 11i v3, File Systems use the buffer cache to cache file data, and the `mmap()` interface uses the page cache to cache file data. If an application accesses the file using both `read()/write()` system calls and `mmap()` simultaneously, HP-UX does not guarantee coherency since data resides in two caches. With a Unified File Cache, coherency can be achieved. Unifying the architecture for accessing file data will enable the use of the same kernel interfaces by file systems for `read()` and `write()` system calls and for `mmap()`. These common interfaces will ease the port of third party file systems from Solaris.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The Unified File Cache on HP-UX 11i v3 offers customers the following benefits and added value:

- Serves as key enabler for VxFS 4.1 and ONC+2.3, which are base requirements for HP-UX 11i v3.
- Improves source compatibility with Solaris, Tru64, and Linux applications that depend on coherency of page and buffer cache.
- Potential performance improvement of applications that depend on coherency of page and buffer cache.

## Compatibility

There are no known compatibility issues.

## Performance

There are potential performance improvements of applications that depend on coherency of page and buffer cache. These improvements will vary depending on the application.

## Documentation

For further information, see the *mmap* (2) manpage.

## Obsolescence

Not applicable.

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## VERITAS File System

VERITAS File System (VxFS) is an extent based, intent logging file system. VxFS is designed for use in UNIX Environment, which require high performance and availability and deal with large volumes of data.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

VxFS version 4.1 includes the following:

- Support for 1024 ACLs
- Support for large filesystem (up to 40 TB) and large file size (up to 16 TB)
- VxFS Filesystem as a DLKM
- Multi-device filesystems



- Checkpoint enhancements
- Support for Disk Layouts 4, 5 and 6
- Support for greater than 67,000,000 UID and GID with edquota

Cluster File System (CFS) allows the VxFS file system to be mounted to support cluster functionality. This feature is not supported in the initial release of HP-UX 11i v3.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

VxFS version 4.1 includes the following:

- VxFS Filesystem as a DLKM
- Multi-device filesystems
- Checkpoint enhancements
- Support for greater than 67,000,000 UID and GID with edquota

Cluster File System (CFS) allows the VxFS file system to be mounted to support cluster functionality. This feature is not supported in the initial release of HP-UX 11i v3.

### **Impact**

There are no impacts other than those previously listed.

### **Compatibility**

Cluster File System (CFS) is not supported in the initial release of HP-UX 11i v3.

VxFS version 3.5 is not support in HP-UX 11i v3.

### **Performance**

There are no known performance issues.

### **Documentation**

For further information, see the following documents, available at <http://docs.hp.com/en/oshpux11iv2.html#VxFS>:

- *VERITAS File System 4.1 Release Notes*
- *VERITAS File System 4.1 Administrator's Guide*

### **Obsolescence**

Not applicable.

## VERITAS Volume Manager

The VERITAS Volume Manager (VxVM) 4.1 is a storage management subsystem that allows you to manage physical disks as logical devices called volumes.

Cluster Volume Manager (CVM) is part of VxVM and is enabled by a separate license, which is not being provided with the current 4.1 HP-UX 11i v3 release.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Supports Volume Sets (vssets) and VxFS MDS
- Device Discovery Layer (DDL) Phase 2
- Serial Split Brain (SSB)
- Dynamic LUN expansion
- Config back up and restore (CBR)
- Rootdg Elimination

Cluster Volume Manager (CVM), a part of VxVM that is enabled by a separate license, is not being provided with the current 4.1 HP-UX 11i v3 release.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

Coexistence of VxVM DMP with Native Multi-pathing on HP-UX 11i v3:

HP-UX 11i v3 provides native multi-pathing as part of its mass storage stack. In this scenario, two types of device special files are supported:

- Legacy device special files on the `/dev/dsk` and `/dev/rdisk` directories:  
These device files are only created for the first 32,768 paths on a system. Such device files can be discovered by VxVM DMP, and coexistence is supported. VxVM DMP works as a pass-through driver, and directs I/O and ioctl requests on one path without any load balancing. Native multi-pathing on HP-UX 11i v3 performs all multi-pathing and load balancing.
- Device special files on the `/dev/disk` and `/dev/rdisk` directories:  
One device file is created to represent each native multi-pathing metanode. These device files are created for all paths on a system, and more than 32,768 paths are supported. Such device files are not discovered by VxVM DMP and, coexistence is not supported. During device discovery, VxVM creates entries in the DMP database for the relationships between DMP nodes and the legacy device paths. Each DMP node represents a set of legacy paths. The legacy paths map internally to a native multi-pathing metanode that controls a set of physical paths. Native multi-pathing on HP-UX 11i v3 takes care of load balancing, failover and failback for the paths that it controls. The default I/O policy for VxVM DMP is set to single active for all types of

enclosure. When VxVM DMP receives or sends I/O on a legacy path, native multi-pathing chooses the appropriate physical path. Unless all the underlying physical paths of the native multi-pathing metanode fail, any I/O that VxVM DMP performs on a legacy path succeeds.

Note the following limitations of VxVM DMP coexistence with HP-UX native multi-pathing:

- VxVM DMP supports the A/P arrays that are supported by HP-UX native multi-pathing. No additional A/P arrays are supported. If an A/P array is used that is not supported by HP-UX native multi-pathing, any I/O or `ioctl` requests from VxVM DMP cause trespass.
- A path-specific attribute that is shown by the DMP `vxddmpadm getsubpaths` command may not match the actual array attribute. This is because VxVM DMP cannot perform path-specific I/O or `ioctl` requests unless legacy multi-pathing is disabled. Instead VxVM DMP shows the path attributes that are returned by HP-UX native multi-pathing. For example, on an A/P array, all paths may be shown as PRIMARY or SECONDARY.
- For A/A arrays, the `vxddmpadm getsubpaths` command shows all paths in the ENABLED (A) state until the last path is disabled. For arrays of type A/P, only one path is shown in the ENABLED (A) state.
- VxVM DMP does not perform failover when a path to a LUN fails. VxVM DMP still shows the state of the path as active until HP-UX native multi-pathing fails an I/O or `ioctl()` request on that path.
- The output from the `vxddmpadm iostat` command does not match the output from the native HP-UX `iostat` command.
- Using the `vxddmpadm disable` and `enable` commands on a path or controller causes DMP to use another path for I/O, but HP-UX native multi-pathing may still be sending I/O to the disabled path or controller.

## Compatibility

Cluster Volume Manager (CVM), a part of VxVM that is enabled by a separate license, is not being provided with the current 4.1 HP-UX 11i v3 release.

VxVM version 3.5 is not support in HP-UX 11i v3.

## Performance

There are no known performance issues.

## Documentation

For further information, see the following documents, available at <http://docs.hp.com/en/oshpux11iv2.html#VxVM>:

- *VERITAS Volume Manager 4.1 Release Notes*
- *VERITAS Volume Manager 4.1 Administrator's Guide*

## Obsolescence

Not applicable.



## What's in This Chapter?

This chapter describes new and changed Internet and networking functionality supported by the HP-UX 11i v3 release, including:

- ARPA Transport (see page 238)
- Browsers (see page 242)
- HP Data Link Provider Interface (DLPI) (see page 243)
- HP-UX PPPv6 (see page 244)
- HP-UX VLAN (see page 245)
- HP-UX Web Server Suite (see page 247)
  - HP-UX Apache-based Web Server (see page 248)
  - HP-UX Tomcat-based Servlet Engine (see page 249)
  - HP-UX Webmin-based Admin (see page 250)
- Internet Services (see page 251)
  - BIND (see page 252)
  - DHCPv4 (bootpd) (see page 254)
  - DHCPv6 (see page 255)
  - inetd (see page 256)
  - libc (see page 257)
  - Mailx, Elm and Talk (see page 260)
  - R-commands (Remote Commands) (see page 261)
  - Sendmail (see page 262)
  - TFTP (see page 264)
  - WU-FTPD (see page 264)
- LAN Administration Commands (see page 266)
- LDAP-UX Integration Product (see page 267)
- Mobile IPv6 (see page 269)
- Network Interface Management Command Line Interface (see page 270)
- Network Interfaces Configuration and Network Services Configuration (ncweb) (see page 271)
- Red Hat Directory Server for HP-UX (see page 273)
- STREAMS (see page 275)
- NetTL - Network Tracing and Logging (see page 277)

## ARPA Transport

### Summary of Change

This section describes features and enhancements added for HP-UX 11i v3.

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Security Containment - Some security containment components have migrated from the HP-UX 11i Security Containment subsystem to the Transport subsystem.
- Sendfile/UFC - *sendfile* (2) runs on Unified File Cache (UFC) instead of buffer cache.
- UNIX 2003 Conformance - Transport networking and system calls conform to UNIX03 standards.
- Large Hostname Support - Host names can be configured with up to 256 characters.
- Tru64 Application Migration - System call enhancements for greater compatibility with Tru64-UNIX. With Tru64 you can easily migrate to HP-UX/Itanium®-based.
- *ndd* tunable changes:
  - Tunable *tcp\_conn\_strategy* is deprecated.
  - Tunable *socket\_caching\_tcp* is the only tunable used to enable or disable the socket caching feature
  - Tunable *socket\_caching\_tcp* can enable the caching of TCP sockets for both *AF\_INET* and *AF\_INET6*.
  - Tunables *ip\_ipif\_status* and *ip6\_ipif\_status* will display an additional field *cid* for HP-UX 11i Security Containment. If HP-UX 11i Security Containment is not turned on, the *cid* is 0. If HP-UX 11i v2 Security Containment is turned on, it shows a decimal number.
  - Tunable *tcp\_frto\_enable* is added for F-RTO.
- Routing Socket Interface is a new feature for HP-UX 11i v3. It uses the new *PF\_ROUTE* domain to update the routing table in the kernel.
- The *read* (1) system call can return *ECONNREFUSED* or *ECONNRESET*, depending on when the *TCP\_RST* arrives. However, *recv* (2) returned only *ECONNRESET*. The inconsistency in *errno*s returned by *read* () and *recv* () after a nonblocking *connect* (2) are corrected to return the same *errno* for the same situation.
- The usage of the *PS\_SS\_BOUND* and *SS\_BOUND* flags are deprecated to retract exposure of implementation internals.
- The include file */usr/include/sys/unpcb.h* will no longer be used by the kernel.
- *SO\_SNDBUF* and *SO\_RCVBUF* - The socket layer allows users to send more than *SO\_SNDBUF* bytes and receive more than *SO\_RCVBUF* bytes for non-blocking *SOCK\_STREAM* sockets. This is the same as the behavior for blocking and other types of sockets such as *SOCK\_DGRAM*.
- NOSYNC IP Lower - The synchronization model of IP lower changes from module *sync* to *NOSYNC* to allow IP module to handle requests in parallel.

- Forward-Retransmission Timeout (F-RTO) - Enhancements to TCP retransmission algorithm more effectively deal with spurious timeouts.
- Congestion Window Validation - TCP Congestion Window Validation supported by RFC 2861 can be used to respond to spurious timeouts detected by F-RTO. Refer to the RFC at <http://www.ietf.org/rfc/rfc2861.txt?number=2861> for details.
- Enhanced `route` command - New `source` option provides users greater control by specifying the interface to associate with a route.
- 64-bit `libnm` support - Enhancement support 64-bit statistics when accessed through `libnm` user space library.
- Multiple TCP default queues - Allows multiple queues for packets processing so there are different queues running on different processors/cells.
- UDP multiple bind locks - This UDP internal change improves scalability when there are large numbers of UDP sockets.
- Dynamic Keying support for Mobile IPv6 and IPSec is added.
- All IPv4 and IPv6 `ioctl` requests can be sent to either IPv4 or IPv6 socket.
- An alternative compilation and linkage method for X/Open Sockets applications - This method slightly deviates from X/Open specification, however it allows an executable to include binary objects compiled to X/Open Sockets specification and binary objects compiled to BSD Sockets specification.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

- New functionalities users can use include:
  - routing socket
  - F-RTO
- The following interfaces and system calls are impacted by UNIX 2003 Conformance:
  - To conform to UNIX 2003, customers must define `_XOPEN_SOURCE` to 600. To conform to UNIX 95, customers must continue to define `_XOPEN_SOURCE` and `_XOPEN_SOURCE_EXTENDED`. Please note that applications using the X/Open Sockets must be linked with the Xnet library for UNIX 2003 and UNIX 95 conformance.
  - `recvmsg()` and `sendmsg()` return `EMSGSIZE` if the length of the `msghdr` structure is equal to 0, less than 0, or greater than `MAXIOVLEN`.
  - `setsockopt()` and `getsockopt()` return `ENOPROTOOPT` error number for `SO_RCVLOWAT`, `SO_SNDBLOWAT`, `SO_RCVTIMEO`, and `SO_SNDTIMEO` socket options.
  - `if_freenameindex()`, `if_indextoname()`, `if_nameindex(3)`, `if_nametoindex()`:  
The `if_*()` APIs now support both IPv4- and IPv6-configured network interfaces and are moved from the IPv6 library to the C library. To support the `if_*()` changes, the IPv4 and IPv6 loopback interfaces are now configured with the

same index number during system bootup. The *if\_nameindex* structure and *if\_\*()* function prototypes have also been moved from *net</if6.h>* to *<net/if.h>*.

- *socketmark()* is a new interface specified in the UNIX03 standards and is added to the C library.
- *ndd* tunable changes require that all references to *tcp\_conn\_strategy* in user scripts and programs be replaced with *socket\_caching\_tcp*.
- Applications that rely on the unintended behavior of expecting only *ECONNRESET* from *recv()* after a non-blocking *connect(2)* are affected.
- Applications that use the *PS\_SS\_BOUND* or *SS\_BOUND* flags should be modified to remove access to either of these flags. If an application needs to determine if a *SOCK\_DGRAM*-type socket is bound, it can check the following two fields in *struct pst\_socket*
  - determine if *pst\_type* field is set to *PS\_SOCK\_DGRAM*
  - determine if *pst\_boundaddr* field is non-NULL
- For applications that include the */usr/include/sys/unpcb.h* file but do not access any of the fields of *struct unpcb* there is no impact.
- There is also no impact for applications that include the */usr/include/sys/unpcb.h* file and access any of the fields of *struct union*. However, since the kernel is not using the *struct unpcb* but instead has its own private structure, *struct unpcb* is not updated to keep up with kernel's private data structure.
- In prior releases, if an executable includes binary objects compiled to X/Open Sockets and binary objects compiled to BSD specification, it may result in unexpected behavior, including abnormal termination and unexpected socket errors. This problem can now be avoided by:
  - Define *\_HPUX\_ALT\_XOPEN\_SOCKET\_API*, in addition to either defining *\_XOPEN\_SOURCE=600* in UNIX03, or *\_XOPEN\_SOURCE* and *\_XOPEN\_SOURCE\_EXTENDED* in UNIX95;
  - Link with C library instead of Xnet library. Xnet library should not be included in the link line.

## Compatibility

- UNIX 2003 Conformance
  - System calls *recvmsg()* and *sendmsg()* now return *EMSGSIZE* if the length of the *msg\_hdr* structure is less than or equal to 0 or greater than *MAXIOVLEN* for both UNIX95 and UNIX03 modes.
  - The moving of the *if\_\*()* APIs from the IPv6 library to the C library introduces an incompatibility if a program using the APIs was built using the IPv6 shared library and the C archived library on older releases. In order to continue building programs using the IPv6 shared library and the C archived library, users must specify the C archived library before the IPv6 library in the link order.



- If an application depends on the fields of *struct unpcb* or the size of the *struct unpcb* for certain functionality and expects it to be the same as the kernel's version, the application may not work properly because the application is referring to a data structure that the kernel no longer uses.
- The `pstat_getsocket()` system call does not return the `PS_SS_BOUND` flag in the `pst_state` field of *struct pst\_socket*.

## Performance

Major performance improvements in ARPA Transport include cache miss latency reduction, spinlock usage, prefetching, elimination of static false sharing, rearrangement of key data structures, path length reduction, and enhancements to improve scalability for high end systems.

The following are changes to improve performance:

- NOSYNC
- F-RTO
- Multiple TCP default queues
- UDP multiple bind lock
- Congestion Window Validation

## Documentation

Documents:

- The *Single UNIX Specification, Version 3 (UNIX03)* at <http://www.unix.org/version3/online.html>

Manpages:

- *connect* (2)
- *if\_freenameindex* (3N)
- *if\_indeXToname* (3N)
- *if\_nameindex* (3N)
- *if\_nametoindex* (3N)
- *ioctl* (2)
- *getsockopt* (2)
- *ndd* (1M)
- *pstat* (2)
- *recv* (2)
- *recvmsg* (2)
- *route* (7)
- *route* (1M)
- *routing* (7)
- *send* (2)
- *sendfile* (2)
- *sendmsg* (2)
- *setsockopt* (2)
- *socketmark* (3N)
- *tcp* (7)
- *xopen\_networking* (7)

Include files:

- /usr/include/sys/pstat/socket\_pstat\_body.h
- /usr/include/sys/socketvar.h
- /usr/include/sys/socket.h

### Obsolescence

The following are obsoleted or removed in HP-UX 11i v3 and future releases:

- *ndd tunable tcp\_conn\_strategy*
- *PS\_SS\_BOUND* flag in the *pst\_state* field of *struct pst\_socket*
- *SS\_BOUND* flag defined in /usr/include/sys/socketvar.h

The following is obsoleted or removed in HP-UX 11iv3 and future releases:

The file /usr/include/sys/unpcb.h is no longer used by the kernel.

---

## Browsers

Mozilla is an open source Web and e-mail applications suite. Since 2004 it has been the only supported browser on HP-UX. Products are:

- MOZILLA— Mozilla
- MOZILLAsrc — Mozilla Source
- ObsNetscBrws — Obsolescence for Netscape browsers

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Mozilla has been updated to incorporate defect fixes.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Mozilla version 1.7.12.01 for HP-UX provides online browsing, searching and e-mail tools for HP-UX 11i on HP Integrity Itanium®-based and HP 9000 PA-RISC systems. It also continues to include Navigator, Messenger, Composer, Mail and Newsgroup, Address book components, and IR Chat.

No changes are planned for B6848BA GTK+ runtime libs.

## Impact

This version includes improved Asian font support on HP-UX and the Japanese Language Pack. Also included are fixes for security vulnerabilities reported in Mozilla 1.7.11.00.

## Compatibility

This Mozilla release will install on top of previous releases. It will not interfere with Netscape installations. For information on interactions with browser plug-ins, please see <http://www.hp.com/go/mozilla>.

## Performance

Mozilla may be slow the first time it starts because it is creating a profile.

## Documentation

See [www.hp.com/go/mozilla](http://www.hp.com/go/mozilla) for more information about using Mozilla.

## Obsolescence

HP will release new versions of Mozilla for HP-UX periodically. The HP Mozilla Web site (<http://www.hp.com/go/mozilla>) will continue to distribute at least one previous version of the product. Source code for each release is available on the Mozilla Web site in compliance with the Mozilla licensing (MPL, GPL, LGPL). No patches are provided for this product. Any defects will be addressed in future versions.

---

## HP Data Link Provider Interface (DLPI)

Data Link Provider Interface (DLPI) is an industry standard definition for message communications to STREAMS-based network interface drivers. The HP implementation of the DLPI standard conforms to the DLPI Version 2.0 specification. HP DLPI provides the core link layer infrastructure for networking drivers and provides various extensions that enable feature rich and high performance networking stacks on HP-UX.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Enables Online Deletion (OLD) of I/O card instances claimed by LAN drivers.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Enables Online Deletion (OLD) of I/O card instances claimed by LAN drivers.

## Impact

The new HP DLPI offers the following benefits:

- NoSync feature: In early versions of HP DLPI, the *STREAMS* synchronization used by HP DLPI and other modules in the networking stack on HP-UX restricted the scalability of high bandwidth links such as HP APA aggregates and 10 Gigabit. HP

DLPI now uses the new *NOSYNC STREAMS* synchronization level to provide vastly improved performance and scalability for high speed links such as HP APA aggregates. For more details, see the *HP Auto Port Aggregation Performance and Scalability White Paper*, posted at <http://docs.hp.com/en/7662/new-apa-white-paper.pdf>

- OLD Capability: Enables the user to delete a LAN I/O card instance online without a system reboot.

## Compatibility

Beginning with this release:

- DLPI applications not running with effective uid=0, that use the HP DLPI RAW mode service, must now be granted `PRIV_NETRAWACCESS` privilege.
- DLPI applications not running with effective uid=0, that transmit or receive IPv4, IPv6 or ARP packets, must now be granted `PRIV_NETADMIN` privilege.
- DLPI applications running with effective uid=0, that perform administrative tasks such as resetting hardware statistics, must now be granted the `PRIV_NETADMIN` privilege.

If the fine-grained privileges are not granted, these applications fail with the EPERM error. For information on how these privileges may be granted to the affected applications, see *HP-UX 11i Security Containment Administrator's Guide*.

## Performance

The NoSync feature improves performance and scalability.

## Documents

The *HP-UX 11i v3 HP DLPI Programmer's Guide* is posted at <http://docs.hp.com/en/netcom.html#Internet%20Transport>

## Obsolescence

Not applicable.

---

## HP-UX PPPv6

PPPoE allows you to connect multiple hosts at a remote location through the same customer access device, reducing the cost of providing dial-up services using Point-to-Point Protocol (PPP). The key function of the HP-UX PPPv6 software is to handle IPv6 datagrams in addition to IPv4 datagrams and to provide all the required connectivity to end-users from a remote network.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Defect fixes to be added.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Defect fixes to be added.

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The following are available at

[http://docs.hp.com/en/netcom.html#InternetTransport:](http://docs.hp.com/en/netcom.html#InternetTransport)

- *Installing and Administering PPP*
- *PPPoE/v6 Administrator's Guide*
- *HP-UX PPP Enhancements - PPPoE and PPPv6 for TOUR 2.0*
- *HP-UX PPP Enhancements - PPPoE and PPPv6 for TOUR 1.0*

## Obsolescence

Not applicable.

---

## HP-UX VLAN

DLPI is a de-facto STREAMS-based networking standard providing APIs for user space and kernel space applications to access the data-link layer (layer 2 in the OSI model). The HP implementation of the DLPI standard also provides various extensions that enable feature rich and high performance networking stacks on HP-UX. HP's DLPI implementation delivers the Virtual LAN (VLAN) features based on IEEE 802.1p/Q standards.)

A Virtual LAN (VLAN) is a logical or virtual network segment that can span multiple physical network segments.

The main benefit of a host-based VLAN product like HP-UX VLAN is the ability to extend the network VLAN implementation into the host in the form of VLAN interfaces. VLAN interfaces let you configure applications to utilize the traffic isolation features of VLANs.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Support for enabling HP-UX VLAN over Auto-Port Aggregation (APA) aggregates or LAN-Monitor failover groups.
- Support for HP-UX VLAN configuration in the SMH-Network Interfaces Configuration tool.
- Support for HP-UX VLAN operations in `nwmgr` - a new command for managing all LAN-based and IB-based Network interfaces

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The new HP-UX VLAN features for this release offer the following customer benefits:

- VLAN over APA: Pre-HP-UX 11i v3 HP-UX VLANs are supported only over physical interfaces. At HP-UX 11i v3, support for HP-UX VLANs over APA aggregates and LAN-monitor failover groups combines the traffic isolation benefits of VLAN technology with the high availability and high bandwidth capabilities of APA/LM technology on HP-UX servers.
- SMH-Network Interfaces Configuration support for HP-UX VLAN: Being part of the SMH-Network Interfaces Configuration tool, offers a better, web-based GUI experience for performing administrative tasks.
- `nwmgr` support for HP-UX VLAN: Being part of the new `nwmgr` CLI will result over time in increased satisfaction with HP-UX I/O tools having a common look and feel.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Manpages:

- `vlan` (7)
- `nwmgr_vlan` (1M)
- `nwmgr` (1M)

White Papers:

- *Planning and Implementing VLANs with HP-UX*, available at <http://docs.hp.com/en/netcom.html#Virtual%20LAN>

Product Documentation:

- *HP-UX VLAN Administrator's Guide* (replaces *Using HP-UX VLANs*) at <http://docs.hp.com/en/netcom.html#Virtual%20LAN>

## Obsolescence

Not applicable.

---

## HP-UX Web Server Suite

### Web Server Suite Overview

The HP-UX Web Server Suite, version 2.16, is a free product available for the HP-UX platform. It contains key software products necessary to deploy, manage, and implement a mission critical web server. The following components can be separately installed:

- HP-UX Apache-based Web Server (see page 248)
- HP-UX Tomcat-based Servlet Engine (see page 249)
- HP-UX Webmin-based Admin (see page 250)
- HP-UX XML Web Server Tools (unchanged in the initial release of HP-UX 11i v3)

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11iv1?

HP-UX Web Server Suite, version 2.16, includes the following changes:

- Apache upgraded to 2.0.58.00
- Tomcat upgraded to 5.5.9.04
- Webmin upgraded to 1.070.08
- HP-UX XML Web Server Tools is unchanged for the initial release of HP-UX 11i v3

Please see the HP-UX Web Server Suite release notes for details.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11iv1?"

### Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Bundled documentation (Release Notes, Admin Guides, User Guides, Migration Guides and FAQs) install into `/opt/hpws/hp_docs`. You can access these documents through the HP-UX Apache-based Web Server, HP-UX Tomcat-based Servlet Engine, or HP-UX Webmin-based Admin by browsing to `http://yourserver.com/hp_docs` on the appropriate port.

For example, for Webmin on port 10000 the URL should be

`http://yourserver.com:10000/hp_docs`

---

### NOTE

Shared documentation, such as Migration Guides and FAQs, are located at `/opt/hpws/hp_docs` and are included in the HP-UX Webmin-based Admin product. The latest information can also be found on the product Web site:

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

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## Obsolescence

Not applicable.

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## HP-UX Apache-based Web Server

HP-UX Apache-based Web Server combines Apache with numerous popular modules from other Open Source projects and provides HP value-added features for the HP-UX platform:

- Scripting capabilities: PHP, `mod_perl`, CGI
- Content management: WebDAV, FrontPage Server Extensions 2002
- Security: authentication through an LDAP server, webproxy, chroot-ed environment, SSL and TLS support

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Version 2.0.58.00 of HP-UX Apache-based Web Server is primarily a bug fix release:

- Apache upgraded to 2.0.58



Please see HP-UX Web Server Suite release notes for details.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

This release is binary-compatible with HP-UX Apache-based Web Server v2.0.50 and greater. All modules compiled with HP-UX Apache-based Web Server v2.0.50 or greater will continue to work with this version since the Apache API has not changed.

### **Performance**

Performance is similar to previous HP-UX Apache-based Web Server releases.

### **Documentation**

See "Documentation" on page 248.

### **Obsolescence**

Not applicable.

---

## **HP-UX Tomcat-based Servlet Engine**

HP-UX Tomcat-based Servlet Engine provides Java-based extensions for dynamic content generation via Servlets and JavaServer Pages (JSPs).

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

Tomcat version is upgraded to 5.5.9.04. Tomcat version 5 implements the Servlet 2.4 and JavaServer Pages 2.0 specifications. Tomcat 5.5.x is designed to run on JDK 1.5 and later versions.

For more details refer to the HP-UX Web Server Release Notes (see "Documentation" on page 248).

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

There are no changes from the June 2006 release of HP-UX 11i v2.

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

See “Documentation” on page 248.

### **Obsolescence**

Not applicable.

---

## **HP-UX Webmin-based Admin**

HP-UX Webmin-based Admin is a configuration and administration GUI with extensive enhancements for the HP-UX Apache-based Web Server.

### **Summary of Change**

#### **What’s New for Customers Migrating from HP-UX 11i v1 September 2005?**

Version 1.070.08 of HP-UX Webmin-based Admin is primarily a bug fix release:

- Webmin upgraded to 1.070.08

Please see *HP-UX Web Server Suite Release Notes* for details.

#### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What’s New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

See “Documentation” on page 248.

## Obsolescence

Not applicable.

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# Internet Services

## Overview

Internet Services delivers and supports the networking services considered essential to HP-UX system administrators interoperating in a network based on the TCP/IP framework. These networking services include:

- FTP
- r-commands (such as rcp, rlogin, remsh)
- mailers (such as mailx, elm, sendmail)
- DNS/BIND
- routing services (gated, mouted and ramD)

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The InternetSrvcs product is split into multiple products based on product functionality. All of these products are part of the HP-UX base operating system in HP-UX 11iv3.

According to the new architecture of the Internet Services suite of products, the InternetSrvcs product is split into 12 small products as follows:

- DHCPv6
- DHCPv4
- Sendmail
- NameService
- Gated-Mouted
- RAMD
- FTP
- NTP
- TCPWrappers
- SLP

- MSP
- InternetSrvcs

These products can be deselected during installation or can be removed individually.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

You can now deselect the individual InternetSrvcs products during installation and to remove individual filesets.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

*HP-UX Internet Services Administrator's Guide*, available at  
<http://docs.hp.com/en/netcom.html#Internet%20Services>

*HP-UX 11i v3 Installation and Update Guide*, available at  
<http://docs.hp.com/en/hpux11iv3.html>

### **Obsolescence**

Not applicable.

---

## **BIND**

The Berkeley Internet Name Domain (BIND) is a Berkeley implementation of the Domain Name System (DNS). It is a distributed network information lookup service that maps host names to Internet addresses and maps Internet addresses to host names. It also facilitates Internet mail routing by supplying a list of hosts that accept mail for other hosts. The `named.conf` file is the BIND configuration file that allows you to specify a number of features using statement and comments.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

BIND 9.3 is the new version of BIND available in the HP-UX 11i v3 operating system. Following are the BIND 9.3 features:

- DNSSEC standard implementation as per RFC 4033, 4034, 4035
- Run-time option to enable and disable DNSSEC
- Option for RR Ordering
- Option to set a maximum size for the journal file
- Option to define a named set of master servers
- Support for IXFR deltas
- Improved logging mechanism
- Option to set the advertised EDNS UDP size
- Option for dual stack servers
- Transition support for IPv4 and IPv6
- Starting with HP-UX 11i v3, the `NAMED` and `NAMED_ARGS` variables (which are used to configure the name server) are moved from the `/etc/rc.config.d/namesvrs` file to a new configuration file called the `/etc/rc.config.d/namesvrs_dns` file. The configuration variables for NIS will continue to be in the `/etc/rc.config.d/namesvrs` file.
- Compartmentalization available in BIND for improved security

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

If your product or application accesses the `/etc/rc.config.d/namesvrs` file to read, modify, or remove the name server variables `NAMED` and `NAMED_ARGS`, you must modify your application to access the new `/etc/rc.config.d/namesvrs_dns` file instead of the `/etc/rc.config.d/namesvrs` file.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- *BIND 9.3 Release Notes*
- *HP-UX IP Address and Client Management Administrator's Guide*

## Obsolescence

Not applicable.

---

## DHCPv4 (bootpd)

DHCPv4 (Dynamic Host Configuration Protocol) is an extension of BOOTP that defines a protocol for passing configuration information to network hosts. The `bootpd` daemon implements the BOOTP and DHCP protocols, used for assigning a network IP address.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- A new configuration option called the `sa` tag is added to configure the `tftp` server and control the `siaddr` field of a DHCP packet.
- A new configuration option for the `subnet selection` option is added to the `/etc/dhcptab` file. Configuring this option in the `/etc/dhcptab` file enables `bootpd` to recognize the `subnet selection` option in client requests. If this option is enabled, `bootpd` can assign a network address even if `bootpd` is not part of that network.
- Support for PXE clients has been added. PXE (Preboot Execution Environment) is a uniform and consistent set of pre-boot protocol services.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There are no impacts other than those listed previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Manpage:

*bootpd* (1M)

## Obsolescence

Not applicable.

---

## DHCPv6

Dynamic Host Configuration Protocol (DHCP) is an extension of BOOTP that defines a protocol for passing configuration information to hosts on a network. DHCPv6 2.001 supports IPv6, the next-generation Internet protocol. DHCPv6 2.001 enables DHCP servers to transmit configuration parameters using extensions to IPv6 nodes. It automatically allocates reusable network addresses and reduces the cost of managing IPv6 nodes in environments where administrators require more control over the allocation of IP addresses.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Starting with the HP-UX 11i v3 operating system, DHCPv6 2.001 is available in the core operating system.

Following are the DHCPv6 2.001 features:

- IPv6 address allocation
- Stateful auto-configuration protocol for IPv6
- Better performance due to multi-threaded DHCPv6 2.001 server
- Renumbering using a server initiated message exchange
- Multiple prefixes for a link
- Globally unique IDs for the client and server
- DNS, SIP, NIS, and NIS+ configuration using DHCPv6 2.001
- Authentication for RECONFIGURE messages
- Stateless dynamic host configuration protocol service for IPv6
- Relay agent functionality
- Request for configuration parameters from different servers within the same domain
- Configuration parameters for an individual client
- Vendor-specific options based on user class or vendor class
- Mechanism to update the appropriate system configuration parameters in the client

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Documents:

- *Installing and Configuring DHCPv6 2.001* at <http://docs.hp.com/en/netcom.html#Internet%20Services>

Manpages:

- *dhcpcv6d* (1M)
- *dhcpcv6db2conf* (1M)
- *dhcpcv6client\_ui* (1)
- *dhcpcv6clientd* (1M)

## Obsolescence

Not applicable.

---

## inetd

*inetd* (1M) is used to invoke certain services, such as “Remote Logging” or “File Transfer,” that clients request from remote machines.

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

- A new feature: limit number of processes invoked by *inetd*, is included in *inetd* as a new command-line option to *inetd*: `-p number`.
- A new feature: enable user level auditing of processes invoked by *inetd*, is included in *inetd*, as a new command-line option (`-a`) to *inetd*.
- Large hostname support is added to *inetd*.
- Large PID support is added to *inetd*.



## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There are no impacts other than those listed previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Manpages:

- *inetd* (1M)
- *inetd.conf* (4)
- *inetd.sec* (4)

### Obsolescence

Not applicable.

---

## libc

*libc* is the C library that provides the interface between the user program and the kernel.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The *rexec* and the *rexec\_af* APIs support usernames of up to 255 characters.
- As NIS+ is obsoleted, the following APIs can no longer obtain their protocol, service, or network information from the NIS+ database:
  - *gethostent*( )
  - *getnetbyname*( )
  - *getnetbyaddr*( )
  - *getprotobyname*( )

- *getprotobyname()*
- *getservbyname()*
- The libc APIs *getnameinfo()* and *getaddrinfo()* look into the repositories specified in the *ipnodes* directive to resolve addresses. If this resolution fails, and if an IPv4 address is requested using a *flag* parameter, *getnameinfo()/getaddrinfo()* additionally looks into the repositories specified with the *hosts* directive of the */etc/nsswitch.conf* file to resolve an IPv4 address. This additional lookup involves *getaddrinfo()* calling the *gethostbyname()* function, and *getnameinfo()* calling the *gethostbyaddr()* function to resolve IPv4 addresses.
- A call to *getaddrinfo()* or *getnameinfo()* may overwrite the storage used by the *gethostbyname()* or *gethostbyaddr()* functions to return the result. Therefore, the data returned by *gethostbyname()* or *gethostbyaddr()* must be copied to a different location before a subsequent call to *getaddrinfo()* or *getnameinfo()* (or the libc APIs *getipnodebyname()* or *getipnodebyaddr()*) is made.
- The return value of the *gai\_strerror()* API has changed from *char \** to *const char \**.
- A new non-zero error code, *EAI\_OVERFLOW*, is introduced in the *getnameinfo()* API. *getnameinfo()* returns an *EAI\_OVERFLOW* error if an argument buffer overflow occurs.
- The type of the *hostlen* and *servlen* variables in *getnameinfo()* is changed from *size\_t* to *socklen\_t*.
- *getnameinfo()* does not perform a lookup of an IPv6 address of the form *::*, and returns an *EAI\_NONAME* error.
- *getnetbyaddr()* accepts the network number as an unsigned integer instead of integer.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- The *rexec* and the *rexec\_af* APIs support usernames of up to 255 characters.
- As NIS+ is obsoleted, the following APIs can no longer obtain their protocol, service, or network information from the NIS+ database:
  - *gethostent* (3N)
  - *getnetbyname* (3N)
  - *getnetbyaddr* (3N)
  - *getprotobyname* (3N)
  - *getprotobynumber* (3N)
  - *getservbyname* (3N)
- The return value of the *gai\_strerror()* API has changed from *char \** to *const char \**.
- A new non-zero error code, *EAI\_OVERFLOW*, is introduced in the *getnameinfo()* API. *getnameinfo()* returns an *EAI\_OVERFLOW* error if an argument buffer overflow occurs.

- The type of the *hostlen* and *servlen* variables in `getnameinfo()` is changed from *size\_t* to *socklen\_t*.
- `getnameinfo()` does not perform a lookup of an IPv6 address of the form `::`, and returns an *EAI\_NONAME* error.
- `getnetbyaddr()` accepts the network number as an unsigned integer instead of integer.
- HP-UX 11i v2 is the last operating system supporting the `libc` APIs `getipnodebyname()` and `getipnodebyaddr()` and they may be removed in future releases.

## Impact

- Usernames longer than 16 characters and up to 255 are not truncated when used with the *rexec* or *rexec\_af* APIs.
- If the *rexec* or *rexec\_af* APIs are used by applications to obtain service, network, or protocol information, the `/etc/nsswitch.conf` file must not contain an entry for *nisplus*.
- Applications that invoked the *getnameinfo* API with *addrinfo* structure set to 0 (all zeros IPv6 address) will now get the *EAI\_NONAME* error value instead of the earlier value of 0. Additionally, the host name cannot be set to `::`.
- If the buffers in *getnameinfo* that are used to store the host or service names are of insufficient length, *getnameinfo* now returns an error value of *EAI\_OVERFLOW* instead of the earlier value of 0. Also, *getnameinfo* truncates the host or service names in the buffer.
- Networking applications that call the *getnameinfo* or *getaddrinfo* APIs may notice a change in the value of the parameter *addrinfo* returned by these functions while resolving IPv4 addresses.
- Customers are discouraged from using the `libc` APIs *getipnodebyaddr* and *getipnodebyname* in their applications. They can use the `libc` APIs *getaddrinfo* and *getnameinfo* which support the same functionality.
- When *getnameinfo* receives an insufficient buffer, *getnameinfo* returns an *EAI\_OVERFLOW* error instead of *success*.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Manpages:

- *getaddrinfo* (3N)
- *getnameinfo* (3N)
- *gethostent* (3N)

- *getnetbyaddr* (3N)
- *gai\_strerror* (3N)

## Obsolescence

Not applicable.

---

## Mailx, Elm and Talk

The programs `mailx`, `elm`, and `talk` are the mailing utilities. The `mailx` program provides a comfortable, flexible environment for sending and receiving messages electronically. The `elm` program is a screen-oriented electronic mail processing system. The `talk` utility is a two-way, screen-oriented communication program.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following changes are made for HP-UX 11i v3:

- While using the `-f` option in `mailx`, do not specify a system mailbox (for example, `/var/mail/user`) as an argument to the `-f` option. According to the `mailx` standards, the `-f` option cannot be used to read the system mailbox messages. The behavior of `mailx` in such a circumstance is undefined.
- `elm` and `mailx` are long-user-name compliant.
- `talk` is not long-user-name compliant because of a compatibility issue with previous releases of `talk`.
- Though `elm` and `mailx` are long user name compliant, the maximum supported length of a user name is 250 characters.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- While using the `-f` option in `mailx`, do not specify a system mailbox (for example, `/var/mail/user`) as an argument to the `-f` option. According to the `mailx` standards, the `-f` option cannot be used to read the system mailbox messages. The behavior of `mailx` in such a circumstance is undefined.
- `elm` and `mailx` are long-user-name compliant.
- `talk` is not long-user-name compliant because of a compatibility issue with previous releases of `talk`.

## Impact

There are no impacts other than those listed previously.

## **Compatibility**

There are no known compatibility issues.

## **Performance**

There are no known performance issues.

## **Documentation**

Manpages:

- *mailx* (1)
- *elm* (1)
- *talk* (1)

## **Obsolescence**

Not applicable.

---

## **R-commands (Remote Commands)**

R-commands is used to provide remote system services, like remote login, remote copy and remote shell command execution.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

Beginning with HP-UX 11i v3 (11.31), long username is supported in r-commands.

#### **What's New for Customers of HP-UX 11i v2 June 2006?**

Beginning with HP-UX 11i v3 (11.31), long username is supported in r-commands.

### **Impact**

There are no impacts other than those listed previously.

## **Compatibility**

There are no known compatibility issues.

## **Performance**

There are no known performance issues.

## Documentation

*rlogin* (1), *rlogind* (1M), *remsh* (1), *remshd* (1M), *rexec* (1), *rexecd* (1M), *rcp* (1), *rdist* (1), *rwho* (1), *rwhod* (1M), *ruptime* (1), *rcmd* (3N), and *hosts.equiv* (4)

## Obsolescence

Not applicable.

---

## Sendmail

Sendmail is an electronic mail transport agent that sends messages to one or more recipients, routing the message over whatever networks are necessary.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Sendmail 8.13.3 is the new version of Sendmail available with this operating system release. Sendmail 8.13.3 features are:
  - It is a non-setuid program. Any attempt from a non-root user to obtain root user privileges is avoided.
  - It supports secured mail transactions using the Transport Layer Security (TLS) protocol.
  - It supports *libmilter.a*, the mail filtering APIs.
  - It contains LDAP enhancements to support recursion and LDAP URL support.
  - The daemon PID files are locked so that daemons do not attempt to overwrite each other's PID files.
  - It includes the *authinfo* feature to allow a separate database for SMTP AUTH information.
  - When Sendmail 8.13.3 receives a temporary error on a *RCPT TO:* command, it attempts to contact other available MX hosts.
  - The recipient list used for delivery is internally ordered by *hostsignature*, the character string version of MX records. This sorts recipients for the same MX records together so that only small portions of the list need to be scanned, instead of the whole list. The sorting is done for each *delivery()* pass, to determine piggybacking. The significance of the change is better when the recipient list is large. *hostsignature* is now created during recipient list creation rather than during delivery.
  - The previous piggybacking called *coincidental* is extended to a more opportunistic piggybacking called *coattail*. Rather than complete MX record matching (*coincidental*), piggybacking is done if just the lowest value preference matches *coattail*.

- New queueing features are implemented.
  - It supports `DeliverBy` SMTP extension (RFC 2852).
  - A new option `DelayLA` to delay connections if the load average exceeds the specified value, is added.
  - New LDAP map options are added.
  - The new option `MailboxDatabase` specifies the type of mailbox database used to look up local mail recipients.
  - If the new option `FastSplit` has a value greater than zero, it suppresses the MX lookups on addresses when they are initially sorted. This may result in faster envelope splitting.
- The source route addressing feature and `DontPruneRoutes` option are deprecated in Sendmail 8.13.3.
  - NIS+ and ndbm are deprecated in Sendmail 8.13.3.
  - Sendmail 8.13.3 is compliant with the long user name changes.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

*HP-UX Mailing Services Administrator's Guide*, available at  
<http://docs.hp.com/en/5991-6611/index.html>

### **Obsolescence**

Not applicable.

## TFTP

The `tftpd` daemon implements the TFTP (Trivial File Transfer Protocol) protocol. TFTP is used for file transfers.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- `tftpd` (server) and `tftp` (client) are enhanced to support IPv6 addresses.
- New command-line options specify the upper and lower limits of the port range for data transfer; `-L` corresponds to the lower limit and `-U` corresponds to the upper limit.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

There are no impacts other than those listed previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Manpages:

- `tftpd` (1M)

### Obsolescence

Not applicable.

---

## WU-FTPD

The `ftpd` program implements the Standard FTP protocol. It is basically used to transfer files from the local machine to a remote machine.



## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

This version of FTPD is WU-FTPD 2.6.1. It contains the following features:

- Virtual hosts support
- The `privatepw` utility
- New clauses in the `/etc/ftpd/ftpaccess` file
- RFC 1413 enablement
- New features related to data transfer
- Field added to `xferlog`
- IPv6 support

WU-FTPD 2.6.1 is backward compatible with WU-FTPD 2.4, which was shipped with the base HP-UX 11i v1 operating system. It supports the long username feature.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

A new feature, `ascii_count`, is introduced in the `ftpaccess` file. By this feature, `ftpd` can be made to reset the timeout alarm of the data connection.

WU-FTPD 2.6.1 supports the long username feature.

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no performance issues.

## Documentation

Manpages:

- `ftp` (1)
- `ftpcount` (1)
- `ftprestart` (1)
- `ftpshut` (1)
- `ftpwho` (1)
- `ftpd` (1M)
- `ftpaccess` (4)
- `ftpconversions` (4)
- `ftpgroups` (4)
- `ftphosts` (4)
- `ftpservers` (4)
- `ftpusers` (4)

## Obsolescence

Not applicable.

---

## LAN Administration Commands

The following commands allow you to monitor, test, and configure LAN interfaces:

- lanadmin
- lanscan
- linkloop
- landiag

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following changes were applied for this release.

The `lanadmin` command is enhanced to support:

- IPoIB interface
- 64-bit MIB
- Native & Non-Native DLPI drivers developed by IHVs (Independent Hardware Vendors)

The `lanscan` command is enhanced to support:

- IPoIB interfaces

The `linkloop` is enhanced to support:

- IPoIB interfaces

The LAN administration and display commands, namely, `lanadmin`, `lanscan`, and `linkloop`, are deprecated and will be removed in a future release. HP recommends the use of the replacement command, `nwmgr`, for performing these LAN functions. For more information about the `nwmgr` command, see *nwmgr* (1M).

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

LAN commands support IPoIB and VLAN interfaces along with 64 bit MIB statistics. Customers can clear interface statistics and also reset LAN interface card using command-line options.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Manpages:

- *landadmin* (1M)
- *lanscan* (1M)
- *landiag* (1M)

## Obsolescence

The `landiag` command, which is a copy of the `lanadmin` command, will be obsoleted after HP-UX 11i v3. The transition link for `landiag`, maintained as `usr/bin/landiag` will be obsoleted after HP-UX 11i v3. The `landiag` manpage, which is currently a copy of the `lanadmin` manpage, will also be obsoleted after HP-UX 11i v3.

The LAN administration and display commands, namely, `lanadmin`, `lanscan`, and `linkloop`, are deprecated and will be removed in a future release. HP recommends the use of the replacement command, `nwmgr`, for performing these LAN functions. For more information about the `nwmgr` command, see *nwmgr* (1M).

---

## LDAP-UX Integration Product

LDAP-UX Integration uses the Lightweight Directory Access Protocol (LDAP) to centralize user, group and network information management in an LDAP directory.

LDAP-UX Integration includes the following subcomponents:

- LDAP-UX Client Services
- LDAP-UX Client Administration Tools and Migration Scripts
- Mozilla LDAP C Software Development Kit (SDK)

LDAP-UX Client Services simplifies HP-UX system administration by consolidating account, group and other configuration information into a central LDAP directory server. LDAP-UX Client Services software works with a variety of LDAP v3 capable directory servers and is fully tested with Red Hat Directory Server and the Microsoft Windows 2000/2003 Active Directory Server.

LDAP-UX Client administration tools can help you to manage data in an LDAP directory server.

The Mozilla LDAP C SDK contains a set of LDAP Application Programming Interfaces (APIs) to allow you to build LDAP-enabled clients. Using the functionality provided with the SDK, you can enable your clients to connect to LDAP v3-compliant servers and perform the LDAP functions.

The LDAP-UX Integration product B.04.00.10 is included on HP-UX 11i v3 release.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The LDAP-UX Integration product B.04.00.02 is included on the 0509 HP-UX 11i v1 release.

The LDAP-UX Integration product B.04.00.10 is delivered in this release. The product version B.04.00.10 provides defect fixes in addition to the new features provided in version B.04.00.02.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

LDAP-UX Integration product B.04.00.10 provides defect fixes to the customer.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Refer to the following documentation available at <http://docs.hp.com/en/internet.html>:

- *LDAP-UX Client Services B.04.00 Administrator's Guide, edition 3 (part number J4269-90051)*
- *LDAP-UX Client Services B.04.00 with Microsoft Windows 2000/2003 Active Directory Server Administrator's Guide (part number J4269-90049)*
- *LDAP-UX Client Services B.04.00 Release notes (part number J4269-90045)*
- *LDAP-UX Client Services B.04.00.02 Release Notes (part number J4269-90052)*
- *NIS+ to LDAP Migration Guide*

## Obsolescence

Not applicable.

---

## Mobile IPv6

HP-UX Mobile IPv6 allows mobile nodes to change network attachment points while remaining reachable and with no disruption in network connectivity, using a single, fixed IP address for extended periods of time. By handling mobility at the IP layer, the only common layer for applications in IP networks, HP-UX Mobile IPv6 makes mobility transparent to layers above the IP layer. The HP-UX Mobile IPv6 product delivers mobility support for IPv6 addresses by providing Home Agent and Correspondent Node functionality for HP-UX servers.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Mobile IP v6 was not released on HP-UX 11i v1 (B.11.11). It was delivered to HP-UX 11i v1 customers via Transport Optional Upgrade Release (TOUR) 2.0 (a Web release for new ARPA Transport features and functionality).

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Apart from version strings, there is no change in functionality.

### Impact

There are no impacts other than those listed previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Product Documentation:

- *HP-UX Mobile IPv6 A.01.00 Administrator's Guide*, available at <http://docs.hp.com/en/netcom.html#Mobile%20IP>

Manpages:

- *mip6mod* - the Mobile IPv6 Kernel STREAMS module
- *mip6admin* - the Mobile IPv6 administration tool
- *mip6.conf* - the Mobile IPv6 configuration file
- *mip6config* - the Mobile IPv6 configuration file tool

Router Advertisement Daemon:

- *tradvd* - the IPv6 Router Advertisement Daemon
- *rtradvd.conf* - the IPv6 Router Advertisement Daemon configuration file

IETF Documentation:

- HP-UX Mobile IPv6 is based on the following IETF standards:
  - RFC 3775 (Mobility Support in IPv6)
  - RFC 3776 (Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home).

The documentation on the standards can be found at <http://www.ietf.org>.

## Obsolescence

Not applicable.

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## Network Interface Management Command Line Interface

The network interface management command referred to as `nwmgr` (version 1.00.00), is a single tool for performing all network interface-related tasks. The command is used to manage LAN-based and IB-based network interfaces. The LAN-based interfaces include LAN Internet and Networking physical interfaces and logical interfaces (APA, VLAN). The IB interfaces include all RDMA-based interfaces.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `nwmgr` command includes the following features:

- Support for unified management of LAN (Ethernet NICs, APA, VLANs), RDMA (IB, RNICs)
- Support the functionalities of the following commands:
  - `lanadmin`
  - `lanscan`
  - `linkloop`
  - `lan*conf`
  - `itutil`
- Support for updating saved values in the configuration files
- Support for modifying the current attribute values
- Support for creation and deletion of logical interfaces
- Support for displaying information about the interface
- Operation preview

- Scriptable and readable output formats
- Support for specifying multiple attributes in a single command
- Statistics monitor

The LAN administration and display commands, namely, `lanadmin`, `lanscan`, and `linkloop`, are deprecated and will be removed in a future release. HP recommends the use of the replacement command, `nwmgr`, for performing these LAN functions. For more information about the `nwmgr` command, see *nwmgr* (1M).

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

Customers can use a single tool, `nwmgr`, to perform all tasks related to network interfaces.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Manpages:

- *nwmgr* (1M)

### **Obsolescence**

Not applicable.

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## **Network Interfaces Configuration and Network Services Configuration (ncweb)**

This product (bundle name, `NetworkConf`) is used to configure network interfaces and network services on a HP-UX system. It has a web-based graphical user interface and a terminal user interface. The two HP System Management Homepage (SMH) plug-ins that are available after installing this product are:

- Network Interfaces Configuration tool for configuring APA, NIC, RDMA, VLAN, and X.25 interfaces

- Network Services Configuration tool for configuring various network services

This product is an enhanced version of the Networking and Communications functional area of System Administration Manager (SAM).

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The changes are described below:

- You can launch this product from HP SMH.
- This product is a new web-based network interfaces configuration tool to configure various network interfaces:
  - Auto Port Aggregation (APA)
  - Network Interface Cards (NIC)
  - Virtual LANs (VLAN)
  - Remote Direct Memory Access (RDMA)
- You can launch X Window-based tools (Network Services Configuration) to configure various network services like bootable devices, DHCPv6, DNS, Hosts, Network News, Networked File Systems, X.25, SNA, System Access and Time.
- This product has a new web-based tool to share and unshare local file systems from a Network Services Configuration HP SMH plug-in.
- This product presents a new look and feel for the Network Interfaces Configuration terminal user interface and Share/Unshare File Systems terminal user interface.
- The NFS client mounts all the configured file systems and at boot time enables mounting of all the configured systems.
- The product supports the following:
  - IPv6 configuration
  - Configuring IPv6 address over VLAN and APA's
  - Creating Fail over Groups in APA subsection
  - Configuring Default, Host and Net Routes
- This product provides web-based tool to share and unshare local file systems (earlier called Export Local File systems)
- This product provides a Preview button to view the command line equivalent for a task.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?".



## Impact

- System Administration Manager (SAM) is not available on HP-UX 11i v3 and onwards. The Networking and Communications functional area of SAM is now available as the Network Interfaces Configuration tool and the Network Services Configuration tool in the System Management Homepage (SMH).

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

GUI and TUI Online Help is integrated with the tool.

## Obsolescence

Not applicable.

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## Red Hat Directory Server for HP-UX

HP provides an industry-standard centralized directory service to build your intranet or extranet on. Your Red Hat servers and other directory-enabled applications use the directory service as a common, network-accessible location for storing shared data, such as user and group identification, server identification, and access control information. In addition, the Red Hat Directory Server can be extended to support your entire enterprise with a global directory service that provides centralized management of your enterprise's resource information.

Red Hat Directory Server for HP-UX (NSDirSvr7) B.07.10.20 is included in the HP-UX 11i v3 release. Netscape Directory Server 6.21 (J4258CA) is included in the 11i v1 0509 release. Netscape Directory Server (NDS) and Red Hat Directory Server (RHDS) are two separate products. RHDS 7.10 provides more functionality than NDS 6.21 does.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Netscape Directory Server 6.21 (J4258CA) is included in the HP-UX 11i v1 0509 release. Red Hat Directory Server B.07.10.20 (NSDirSvr7) is included in the HP-UX 11i v3 release. When you upgrade the OS from HP-UX 11i v1 to 11i v3, you can continue to use the Directory Server you are using on release 11i v1. To get newer functionality support

from RHDS 7.10, you need to migrate to RHDS 7.10 (which is optional software in HP-UX 11i v3), you will get a product which is newer version of NDS 6.21 in the 0509 HP-UX 11i v1 release.

Red Hat Directory Server B.07.10.20 contains defect fixes in addition to new features provided in Red Hat Directory Server B.07.10.00 for HP-UX. These new features for security, memory and performance are as follows:

- **Windows User Synchronization:** Directory Server 7.10 introduces Windows User Sync, which synchronizes changes in groups, user entries, attributes, and passwords between Red Hat Directory Server and Microsoft Active Directory and Windows NT4 Server in a process similar to replication.
- **Get Effective Right Control:** Directory Server 7.10 allows an LDAP client to request the access control permissions set on each attribute within an entry, allowing administrators to find and control the access rights set on an individual entry.
- **Wide-Area Network Replication:** Directory Server 7.10 achieves much higher performance over high-delay network paths by not waiting for acknowledgements before sending updates, allowing more changes to be relayed more quickly.
- **Fractional Replication:** Directory Server 7.10 introduces fractional replication, a way of replicating a database without replicating all information in it. This feature allows an administrator to select a set of attributes that will not be replicated.
- **Password Change Extended Operation:** Directory Server 7.10 supports the password change extended operation as defined in RFC 3062. This allows users to change their passwords using a suitable client, according to industry standards.
- **Filesystem Replica Initialization:** Directory Server 7.10 adds the capability to initialize a replica using the database files from the supplier server, avoiding the need to rebuild the consumer server database, and can be done at essentially the speed of the raw network between the two servers by transferring the files. Where the servers contain gigabytes of data, the improvement in performance is significant.
- **Bug fixes**

For detailed information about new features and defect fixes, refer to *Red Hat Directory Server B.07.10.20 for HP-UX Release Notes* and Red Hat Directory Server 7.10 documentation available at <http://www.docs.hp.com/en/internet.html>.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

Red Hat Directory Serer (RHDS) B.07.10.10 is available in the 0606 HP-UX 11i v2 release. The RHDS.07.10.20 for HP-UX is included in release HP-UX 11i v3. It contains defect fixes. For detailed information about new changes and defect fixes, refer to *Red Hat Directory Server B.07.10.20 for HP-UX Release Notes* available at <http://www.docs.hp.com/en/internet.html>

### **Impact**

Red Hat Directory Server (RHDS) B.07.10.20 delivers defect fixes in addition to new features for security, memory and performance provided in RHDS B.07.10.10.

### **Compatibility**

There are no known compatibility issues.

## Performance

This release of RHDS provides new features for performance improvements such as wide-area network replication and filesystem replica initialization enhancements.

## Documentation

For more information, refer to the following documents available at <http://www.docs.hp.com/en/internet.html>

- *Red Hat Directory B.07.10.20 for HP-UX Release Notes*
- *Red Hat Directory Server 7.10 Installation Guide*
- *Red Hat Directory Server 7.10 Configuration, Command, and File Reference*
- *Red Hat Directory Server 7.10 Deployment Guide*
- *Red Hat Directory Server 7.10 Administrator's Guide*
- *Red Hat Directory Server 7.10 Schema Reference*
- *Red Hat Directory Server 7.10 Plug-In Programmer's Guide*
- *Red Hat Directory Server 7.10 Gateway Customization Guide*
- *Red Hat Directory Server 7.10 DSML Gateway*

## Obsolescence

Not applicable.

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## STREAMS

STREAMS is an industry standard programming environment. It provides a uniform way for developing and implementing networking services and other character-based I/O. STREAMS/UX is Hewlett Packard's implementation of the standard for communications protocols. STREAMS/UX consists of the STREAMS environment, Transport Layer Interface (TLI), and XTI. HP also provides a Data Link Provider Interface (DLPI) adapter with the core operating system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Previous STREAMS releases supported only one execution of the `put` procedure at a time for a given queue. For multiple requests to the same queue, STREAMS synchronized the requests depending on the synchronization level of a module. Synchronization ensured that only one request could be executed at a time. With high speed I/O, the synchronization limits imposed by STREAMS led to a performance bottleneck.

NOSYNC allows multiple instances of a `put` procedure (for a given queue), as well as the service routine for that queue, to run concurrently. Modules and drivers are responsible for synchronizing access to their own private data structures accordingly.

Uniprocessor (UP) Emulation Removal:

The Uniprocessor Emulation (UP) functionality has not been supported on HP-UX starting with release HP-UX 11i v1. However, no changes were made to warn users when they specify their modules or drivers as UP.

For the HP-UX 11i v3 release, all references to the global variable `uniprocessor` have been removed from STREAMS. This global variable was used by STREAMS to make UP emulation checks.

Autopush Enhancement:

The `autopush` command has been enhanced to support `-f -` option. `-` is the standard input.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?".

## **Impact**

STREAMS now provides a better high performing network infrastructure to improve:

- APA performance
- High-speed links performance

## **Compatibility**

There are no known compatibility issues.

## **Performance**

There are no known performance issues.

## **Documentation**

Manpages:

- *streams* (2)

Documents:

- *STREAMS/UX Programmer's Guide*, available at <http://docs.hp.com/en/netcom.html#STREAMS/UX>

## **Obsolescence**

Not applicable.

---

## NetTL - Network Tracing and Logging

The `nettl` command is used to capture network events or data packets. Logging captures network activities such as state changes, errors, and connection establishment. Tracing captures or takes a snapshot of inbound and outbound packets going through the network, including packet loopback or header information.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following new features are supported on the HP-UX 11i v3 release:

- formatting support for IPoIB header
- command-line option to configure trace buffer timer value
- pre-capture trace filters functionality for the following subsystems: GELAN, IGELAN, BTLAN, INTL100, IETHER, IXGBE, NS\_LS\_IP, NS\_LS\_TCP, NS\_LS\_UDP, NS\_LS\_ICMP

The following new options are included in the `nettl` command-line interface to manage trace filters:

- `setfilter` - to set filter expressions for subsystems
- `removefilter` - to remove filter expressions that have been set for the subsystems
- `displayfilter` - to display the filters and its current state
- `filteron` - to turn on a filter that has been set with the `setfilter` option for the subsystem. This command activates the filter.
- `filteroff` - to turn off a filter that has been previously turned on with the `filteron` option for the subsystem. This command de-activates the filter.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Pre-capture trace filters functionality for the following subsystems: GELAN, IGELAN, BTLAN, INTL100, IETHER, IXGBE, NS\_LS\_IP, NS\_LS\_TCP, NS\_LS\_UDP, NS\_LS\_ICMP

The following new options are included in the `nettl` command-line interface to manage trace filters:

- `setfilter` - to set filter expressions for subsystems
- `removefilter` - to remove filter expressions that have been set for the subsystems
- `displayfilter` - to display the filters and its current state
- `filteron` - to turn on a filter that has been set with the `setfilter` option for the subsystem. This command activates the filter.
- `filteroff` - to turn off a filter that has been previously turned on with the `filteron` option for the subsystem. This command de-activates the filter.

## **Impact**

There are no impacts other than those listed previously.

## **Compatibility**

There are no known compatibility issues.

## **Performance**

The CPU performance will be improved when the trace filter feature is enabled.

## **Documentation**

Manpages:

- *nettl* (1M)
- *netfnt* (1M)
- *nettlconf* (1M)
- *nettlgen.conf* (4)

## **Obsolescence**

Not applicable.

---

**What is in This Chapter?**

This chapter covers changes and enhancements to security services, including the following:

- HP-UX 11i Security Containment (see page 280)
- HP-UX Auditing System (see page 281)
- HP-UX Bastille (see page 284)
- HP-UX Host Intrusion Detection System (see page 286)
- HP-UX IPFilter (see page 288)
- HP-UX IPsec (see page 290)
- HP-UX Secure Shell A.04.40.005 (see page 292)
- HP-UX Security Attributes Configuration (secweb) (see page 295)
- HP-UX Standard Mode Security Extensions (see page 296)
- Install-Time Security (see page 298)
- Kerberos Client (see page 299)
- OpenSSL (see page 301)
- PAM Kerberos (see page 302)
- Security Patch Check (see page 304)

## HP-UX 11i Security Containment

HP-UX 11i Security Containment provides two core technologies, compartments and fine-grained privileges. Together, these components provide a highly secure operating environment without requiring applications to be modified.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- **Compartments**

Compartments isolate unrelated resources on a system to prevent catastrophic system damage if one compartment is penetrated. When configured in a compartment, an application (processes, binaries, data files and communication channels used) has restricted access to resources outside its compartment. This restriction is enforced by the HP-UX kernel and cannot be overridden unless specifically configured to do so. If the application is compromised, it will not be able to damage other parts of the system because it is isolated by the compartment configuration.
- **Fine-Grained Privileges**

Traditional UNIX operating systems grant “all or nothing” administrative privileges based on the effective UID of the process that is running. If the process is running with the effective uid=0, it is granted all privileges. With fine-grained privileges, processes are granted only the privileges needed for the task and, optionally, only for the time needed to complete the task. Applications that are privilege-aware can elevate their privilege to the required level for the operation, and lower it after the operation completes.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Fine-grained privileges and compartments are now part of core.

### Impact

Applications developed to fine-grained feature are more secure than those developed to a simpler administrative model of monolithic privilege model (“effective uid of 0”). Customers can compartmentalize applications so that they use only pre-defined files, IPCs, and network interfaces. Using SRP (Secure Resource Partitions), a compartment can also be restricted from using too much resources (CPU, disk bandwidth etc).

### Compatibility

The features are compatible: e.g., the fine-grained privilege is implemented such that applications developed to monolithic privilege model do not see any behavioral difference.



## Performance

Compartment feature is optional. Turning it on may result in a performance loss depending on how the compartment rules are configured. A typical loss is around 10% for non-trivial rule setup. Fine-grained privilege is part of the kernel. It cannot be turned off. There is no performance loss.

## Documentation

For further information see the *privileges* (3), *compartments* (4), *compartments* (5), and *cmpt\_tune* (1M) manpages.

## Obsolescence

Not applicable.

---

# HP-UX Auditing System

The purpose of the auditing system is to record instances of access by subjects to objects and to allow detection of any (repeated) attempts to bypass the protection mechanism and any misuses of privileges, thus acting as a deterrent against system abuses and exposing potential security weaknesses in the system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The auditing system has been enhanced in a number of ways:
- Auditing subsystem is now working without converting the system to trusted mode.
- Standard mode audit user selection information is stored in a per-user configuration user database, which is similar to */tcb* in Trusted Mode. Refer to the *userdb* (4) manpage.
- The *userdbset* command specifies which users are to be audited in standard mode. This functionality is equivalent to the *audusr* command in trusted mode. Refer to the *userdbset* (1M) manpage.
- A more flexible form of audit identity called audit tags is introduced, uniquely identifies each login session and responsible user.
- Two new libsec routines, *getauduser()* and *setauduser()*, are similar to the *getaudid()* and *setaudid()* system calls. The new libsec routines manage the audit tags. Refer to the *getauduser* (3), *setauduser* (3), and *audit* (5) manpages.
- For applications that use PAM for authentication and session management, the *pam\_hpsec* PAM module transparently handles the setting of the audit tag information. Refer to the *pam\_hpsec* (5) manpage.

- A multi-threaded kernel audit daemon is now dedicated in logging the data into configurable number of files for better performance. See `-N` option in *audsys* (1M) manpage.
- Collected audit data are more comprehensive.
- Data source for both C2 level auditing and HIDS/9000 product is now unified, but are being configured differently.
- `Audisp` output is modified to be more self-descriptive and more friendly to text process tool.
- Audit overflow monitor daemon is now capable of auto-switching audit trails and run an external command to run at each auto-switch point. See *audomon* (1M) manpage.
- Audit events or profiles can be customized. See *audit.conf* (4) manpage.
- Audit system now tries to track the current working and root directory for each process, and report the full path name of a given file. See *audit\_track\_paths* (5) manpage.
- Memory consumption for audit data is now configurable. See *audit\_memory\_usage* (5) and *diskaudit\_flush\_interval* (5) manpage.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The auditing system has been enhanced in a number of ways:

- Standard Mode Auditing is now part of core products.
- A multi-threaded kernel audit daemon is now dedicated in logging the data into configurable number of files for better performance. See `-N` option in *audsys* (1M) manpage.
- Collected audit data are more comprehensive.
- `Audisp` output is modified to be more self-descriptive and more friendly to text process tools.
- Audit overflow monitor daemon is now capable of auto-switching audit trails and taking an external command to run at each auto-switch point. See *audomon* (1M) manpage.
- Audit events or profiles can be customized. See *audit.conf* (4) manpage.
- Audit system now tries to track the current working and root directory for each process, and report the full path name of a given file. See *audit\_track\_paths* (5) manpage.
- Memory consumption for audit data is now configurable. See *audit\_memory\_usage* (5) and *diskaudit\_flush\_interval* (5) manpage.

### Impact

- You may run auditing without converting system to trusted mode.
- You will see the difference in `audisp` output. The displayed data is made more comprehensive and self-descriptive, and more friendly to test processing tool. You need to modify your applications or scripts that process `audisp` output data.

- Each audit trail is now identified as a directory instead of a file (if running in regular mode, see `-N` option in *audsys* (1M) manpage). You need to modify your applications or scripts that handle audit trails as files, or force audit system to use compatibility mode using `-N` option.
- Audit overflow management now requires less manual interference. See `-x` option in *audomon* (1M) manpage. You may write up script to run at each auto-switch point to archive/backup audit trails.
- You will experience less performance impact when turning on auditing.

## Compatibility

- The audit commands *audsys*, *audisp*, *audevent* and *audomon* still work the same way with a few new options added.
- The *userdbset* (1M) command is used to configure audit user in standard mode, instead of *audusr* (1M) which still works in trusted mode.
- Applications or scripts that handle each audit trail as a single file need to change to handle it as a directory. If this is not desired, turn on *audit* with `-N 0` (see *audsys* (1M) manpage), known as compatibility mode. However, compatibility mode will be obsoleted in any future releases after HP-UX 11i v3.
- Applications or scripts that process *audisp* output data need to change to handle the new format.

## Performance

- A multi-threaded kernel audit daemon is now dedicated in logging the data into configurable number of files. See `-N` option in *audsys* (1M) manpage. This results in better performance.
- Audit system now tracks the current working and root directory for each process. This results in a little degrade in performance. See *audit\_track\_paths* (5) manpage.
- Performance is also impacted by the maximum specified memory consumption for storing audit data and how often kernel audit daemon flushes audit data onto disk. See *audit\_memory\_usage* (5) and *diskaudit\_flush\_interval* (5) manpage.

## Documentation

For further information, refer to the following manpages: *audit* (5), *audsys* (1M), *audevent* (1M), *audisp* (1M), *audomon* (1M), *audusr* (1M), *audit.conf* (4), *getauduser* (3), *setauduser* (3), *pam\_hpsec* (5).

## Obsolescence

HP-UX 11i v3 will be the last release to support trusted systems functionality including those for auditing (e.g., *audusr* command).

Compatibility mode (i.e., `-N 0`) and `-x` option for *audsys* are solely supported for backward compatibility and will be obsoleted in any future releases after HP-UX 11i v3.

The following auditable system call names are being deprecated in HP-UX 11i v3: `putpmsg()`, `setcontext()`, `nsp_init()`, `exportfs()`, `t64migration()`, `privgrp()`. In HP-UX 11i v3, `audevent` and `audisp` still take them as valid arguments but perform no action on these names. After HP-UX 11i v3, `audevent` and `audisp` will reject these names with errors.

The following auditable system calls were not being documented, and they are being renamed in HP-UX 11i v3: `utssys()`, `_set_mem_window()`, `toolbox()`, `modadm()`, `spuctl()`, `__cnx_p2p_ctl()`, `__cnx_gsched_ctl()`, `mem_res_grp()`, `lchmod()`, `socket2()`, `socketpair2()`, `ptrace64()`, `ksem_open()`, `ksem_close()`, `ksem_unlink()`. In HP-UX 11i v3, `audevent` and `audisp` still take them as valid arguments and map them to their new names. After HP-UX 11i v3, `audevent` and `audisp` will reject these names with errors.

`[gs]etaudid()` is provided purely for backward compatibility. HP recommends that new applications use `[gs]etauduser()` instead. See *setauduser* (3) manpage.

`[gs]etevent` is provided purely for backward compatibility. HP recommends that new applications use `audevent` command to get events and system calls that are currently being audited. See *audevent* (1M) manpage.

`audctl()` is provided purely for backward compatibility. HP recommends that new applications use `audsys` command to configure the auditing system. See *audsys* (1M) manpage.

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## HP-UX Bastille

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

Bastille was originally developed by the open source community for use on Linux systems. HP is contributing by providing Bastille on HP-UX.

This tool, along with Install-Time Security (ITS) and Security Patch Check (SPC), introduces new, out-of-the-box security functionality.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Although HP-UX Bastille has been available on the Web for some time, it was not previously delivered on the HP-UX 11i v1 Operating Environments (OEs). For customers migrating from HP-UX 11i v1, this is the first time the product is delivered on the HP-UX OEs.

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

HP-UX Bastille has been available on the HP-UX 11i v2 OEs since September 2004. With the HP-UX 11i v3 release, HP-UX Bastille, version 3.0.x, includes the following enhancements:

- New enhancements:
  - A new feature called `bastille_drift` analysis (Bastille 3.0) is able to report when system's hardening/lockdown configuration no longer matches policy (Bastille config applied). New enhancements also include Bastille questions (hardening features).
- New capabilities:
  - Easily tell whether any system's hardening configuration remains consistent with what was applied without risking system changes. Previously, would have to re-run Bastille config and risk breaking system if change had been intentional (impractical on production systems).
  - Detect if unintentional side effect of system config activities (e.g. installing new software or patches) loosened hardening configuration.
- New Features and Benefits:
  - Drift report: Visibility into undone hardening, to allow planned response without risking unexpected system breakage. Assist with regulatory/SOX compliance.
  - Tested System Insight Manager CMS Policy: Pre-built HP Systems Insight Management (SIM) server Central Management Server (CMS)-hardened configuration.
  - Acceptance of ICMP echo (ping) requests in `Sec20MngDMZ` level, which allows for greater compatibility with management frameworks discovery / monitoring.

## Impact

These represent additional items that Bastille will be able to lock down, additional usability improvements, and a new ability for Bastille to ensure that each cluster node has a consistent set of security settings.

## Compatibility

There are no differences between the Itanium®-based and PA-RISC implementation (they are the same). Some products depend on services, system settings, or network ports that Bastille secures. In those cases, products that depend on out-of-box settings that Bastille may change, document their dependency. Where practical, Bastille also documents these dependencies.

## Performance

Though Bastille does not directly affect performance, its configuration of IPFilter settings (host-based firewall), will cause a slight network performance decrease.

## Documentation

Information can be found in the following documents:

- *HP-UX System Administrator's Guide: Security Management*, available online at <http://docs.hp.com/en/oshpux11iv3.html> (specifically, Chapter 10)
- *bastille* (1M) manpage (add `/opt/sec_mgmt/share/man/` to `MANPATH`)
- *Bastille User's Guide*, delivered in `/opt/sec_mgmt/bastille/docs/user_guide.txt`
- HP-UX Bastille Web site at <http://www.software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=B6849AA>
- *HP-UX 11i v2 Installation and Update Guide*, available online at <http://docs.hp.com/en/oshpux11iv3.html>
- "Install-Time Security" on page 298

Support is also offered through HP's IT Resource Center's HP-UX Security Forum at <http://forums1.itrc.hp.com/service/forums/parseCurl.do?CURL=%2Fcm%2FcategoryHome%2F1%2C%2C155%2C00.html&admit=-682735245+1157685896487+28353475>

## Obsolescence

Not applicable.

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## HP-UX Host Intrusion Detection System

HP-UX Host Intrusion Detection System (HIDS) Release 4.0 is a host-based HP-UX security product for HP computers running HP-UX 11i (HP-UX 11i v1, 11i v2, and 11i v3). HP-UX HIDS Release 4.0 enables security administrators to proactively monitor, detect, and respond to attacks targeted at specific hosts. Since there are many types of attacks that can bypass network-based detection systems, HP-UX HIDS Release 4.0 complements existing network-based security mechanisms, bolstering enterprise security.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Following are the features new from HIDS version 3.1 on HP-UX 11i v1:

- Reducing alert volume by aggregation - HIDS supports a new feature called alert aggregation that can significantly reduce the alert volume for a monitored system. When enabled, alerts that are generated by a process or a group of related processes are aggregated until the processes terminate, or a certain amount of time elapses.
- Reducing alert volume by monitoring only critical files - The template property values of the file related preconfigured groups and templates have been modified to monitor only the core critical files to reduce the alert volume. For example, only certain files in the `/etc` directory (for example `/etc/passwd`, `/etc/shadow`) are monitored instead of monitoring the entire directory.

- Configuring critical users - In earlier releases, the system templates (login/logout and su) hard coded root and ids as being critical for determining alerts with high severity. Since applications like HP-UX 11i Security Containment support the assignment of root privileges to several users, HIDS must support configuration of critical users. The system templates support new template properties to specify the critical user names.
- Supporting specification of usernames and user IDs - The template properties that specify user IDs (for example, `priv_uid_list`) in prior releases, now support the specification of both user IDs and user names.
- Measuring the event rate - A new `idscor` option (`-t`) is supported to measure the rate of events generated by a system and monitored by HIDS. Knowing the event rate, one can refer to the HIDS Tuning and Sizing primer (available on <http://docs.hp.com>) to determine the impact of HIDS on memory and CPU consumption.

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**NOTE** The `idssysdsp` program has been made a non-setuid bit program from HP-UX 11i v3 onwards.

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### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

There are no changes from HIDS version 4.0 on HP-UX 11i v2.

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**NOTE** The `idssysdsp` program has been made a non-setuid bit program from HP-UX 11i v3 onwards.

---

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

HP-UX HIDS 4.0 is compatible (can be used with) Release 3.1 and Release 3.0 running on HP-UX 11i v1 and HP-UX 11i v2 operating systems. It is not compatible with Release 2.0, Release 2.1, Release 2.2, and Release 1.0.

### **Performance**

There are no known performance issues.

### **Documentation**

Following manpages are available at `/opt/ids/share/man/man1m` on installing HP-UX HIDS 4.0:

- *IDS\_checkAdminCert* (1M)
- *IDS\_checkAgentCert* (1M)
- *IDS\_checkInstall* (1M)

- *IDS\_genAdminKeys* (1M)
- *IDS\_genAgentCerts* (1M)
- *IDS\_importAgentKeys* (1M)
- *idsadmin* (1M)
- *idsagent* (1M)
- *idsgui* (1M)
- *ids.cf* (5)

Following documents are available on <http://docs.hp.com> in the Internet and Security Solutions section:

- *HP-UX Host Intrusion Detection System Release 4.0 Release Notes*
- *HP-UX Host Intrusion Detection System Administrator's Guide, Software Release 4.0.*

Information about the HP OpenView Operations SMART Plug-in for HP-UX HIDS is available at [http://openview.hp.com/products/spi/spi\\_ids/index.html](http://openview.hp.com/products/spi/spi_ids/index.html)

## Obsolescence

Not applicable.

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## HP-UX IPFilter

The security product, HP-UX IPFilter version A.03.05.13, provides system firewall capabilities by filtering IP packets to control traffic in and out of a system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX IPFilter version A.03.05.13 is functionally equivalent to HP-UX IPFilter version A.03.05.12 for HP-UX 11i v1 and HP-UX 11i v2, except for the changes mentioned in the following sections.

HP-UX IPFilter version A.03.05.13 contains defect fixes and minor enhancements. It also includes the following new features and major enhancements:

- Filtering on X.25 interfaces
- Filtering on 10GigE interfaces
- IPFilter is not plumbed into the networking stack by default
- No reboot required to enable IPFilter

For more information on defect fixes, see the *HP-UX IPFilter A.03.05.13 Release Notes*, available at <http://docs.hp.com/en/internet.html#HP-UX%20IPFilter>.

- HP-UX IPFilter is not Plumbed into the Networking Stack by Default



By default HP-UX IPFilter is installed but not configured, as it is not plumbed into the networking stack. The user needs to enable HP-UX IPFilter, after which the relevant module will be plumbed into the networking stack. For more details, see the *HP-UX IPFilter A.03.05.13 Administrator's Guide*, available at <http://docs.hp.com/en/internet.html#HP-UX%20IPFilter>.

- No Reboot Required to Enable HP-UX IPFilter

Once installed, the default state of HP-UX IPFilter is disabled. No reboot is required to enable HP-UX IPFilter. However, enabling IPFilter will involve a short network outage. For more information, see the *HP-UX IPFilter A.03.05.13 Administrator's Guide*.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

HP-UX IPFilter version A.03.05.13 is functionally equivalent to HP-UX IPFilter version A.03.05.12 for HP-UX 11i v1 and HP-UX 11i v2, except for the changes mentioned previously. See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

HP-UX IPFilter is not enabled by default and, therefore, is not providing filtering security. However, if Bastille/ITS is used, with the `Sec20MngDMZ` or `Sec30DMZ` install time security levels, then HP-UX IPFilter will be automatically enabled.

Enabling HP-UX IPFilter does not require a reboot but does involve a brief network outage. HP Serviceguard customers or anyone running timing sensitive applications should schedule an appropriate time to enable HP-UX IPFilter.

For more information on enabling HP-UX IPFilter, see the *HP-UX IPFilter version A.03.05.13 Administrator's Guide*, available at <http://docs.hp.com/en/internet.html#HP-UX%20IPFilter>.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For further information, see the following manpages:

<i>ipf</i> (4)	packet filtering kernel interface
<i>ipf</i> (5)	IP packet filter rule syntax
<i>ipf</i> (8)	alters packet filtering kernel's internal lists
<i>ipl</i> (4)	data structure for IP packet log device
<i>ipmon</i> (8)	monitors <code>/dev/ipl</code> for logged packets
<i>ipstat</i> (8)	reports on packet filter statistics and filter list

*iptest* (1) test packet rules with arbitrary input

In addition, see the following documents, available at <http://docs.hp.com/en/internet.html#HP-UX%20IPFilter>:

- *HP-UX IPFilter version A.03.05.13 Administrator's Guide*
- *HP-UX IPFilter A.03.05.13 Release Notes*

## Obsolescence

Tunable parameters *ipl\_buffer\_sz*, *ipl\_suppress*, and *ipl\_logall* are now tuned using the *kctune* command and not *ndd*. The *ndd* variable, *cur\_iplbuf\_sz*, was used to check the size of the log buffer and buffer space currently used. This variable is no longer available. These values can now be obtained using *ipfstat -B*. See the *IPFilter Administrator's Guide* for more details.

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## HP-UX IPsec

HP-UX IPsec A.02.01.01 provides an infrastructure to allow secure communications (authentication, integrity, confidentiality) over IP networks between systems and devices that implement the IPsec protocol suite.

Some of the benefits of HP-UX IPsec are as follows:

- Adheres to all relevant IPsec standards, including IKE (Internet Key Exchange) for automated key generation.
- Data privacy and data integrity and authentication.
- Application-transparent security.
- High-speed encryption, with throughput for encrypted data transmission as high as 91.95 Mb/s in a 100 Mb/s topology.
- Dynamic data encryption key management using IKE.
- Demonstrated multi-vendor interoperability. HP-UX IPsec interoperates with over 25 other vendor implementations, including Cisco, Microsoft, and Linux.
- Host-based authentication using preshared keys and digital certificates.
- Support for IPv4 and IPv6.
- Support for HP-UX Mobile IPv6.
- Support for HP Serviceguard.
- Powerful and flexible management utilities:
  - Easy-to-use Command-Line Interface (CLI) configuration that supports batch-mode configuration.
  - Flexible, packet-based configuration.
  - Configuration test utility.

- Diagnostic and monitoring tools; logging and audit trail for accountability and intrusion alerts.
- Host-based IPsec topologies.

HP-UX IPsec is supported on host systems in host-to-host and in host-to-gateway topologies. You can use HP-UX IPsec to provide security in internal networks and to provide Virtual Public Network (VPN) solutions across public Internet communication.

You can also use HP-UX IPsec to secure packets between gateway or proxy application servers that are publicly accessible and backend application servers.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX IPsec was not delivered on previous OE releases, but HP-UX IPsec A.02.01.01 was delivered on AR media for HP-UX 11i.

There is no difference in functionality between HP-UX IPsec A.02.01 and HP-UX IPsec A.02.01.01. However, the A.02.01.01 version for HP-UX 11i v3 differs from the A.02.01 and A.02.01.01 versions for 11i as follows:

- The software bundle name is now `IPsec` instead of `J4256AA`.
- There are no dependencies on TOUR or HP-UX Transport patches.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

HP-UX IPsec was not delivered on previous OE releases, but HP-UX IPsec A.02.01.01 was delivered on AR media for HP-UX 11i.

There is no difference in functionality between HP-UX IPsec A.02.01 and HP-UX IPsec A.02.01.01. However, the A.02.01.01 version for HP-UX 11i v3 differs from the A.02.01 and A.02.01.01 versions for 11i as follows:

- The software bundle name is now `IPsec` instead of `J4256AA`.
- There are no dependencies on TOUR or HP-UX Transport patches.

## Impact

Customers using versions of HP-UX IPsec prior to A.02.01 must use the `ipsec_migrate` utility to migrate configuration data.

## Compatibility

Customers using versions of HP-UX IPsec prior to A.02.01 must use the `ipsec_migrate` utility to migrate configuration data. Customers using security certificates with HP-UX IPsec may need to perform additional migration tasks.

## Performance

The *HP-UX Performance White Paper* (available at <http://docs.hp.com>) contains performance statistics and information for HP-UX IPsec on HP-UX 11i v2. Customers will experience similar performance on HP-UX 11i v3 systems.

## Documentation

For further information, see the following manpages:

- *ipsec\_admin* (1M)
- *ipsec\_config* (1M)
- *ipsec\_config\_add* (1M)
- *ipsec\_config\_batch* (1M)
- *ipsec\_config\_delete* (1M)
- *ipsec\_config\_export* (1M)
- *ipsec\_migrate* (1M)
- *ipsec\_policy* (1M)
- *ipsec\_report* (1M)

In addition, see the following documents, available at

<http://docs.hp.com/en/internet.html#IPSec>:

- *HP-UX IPsec version A.02.01 Administrator's Guide (J4256-90015)*
- *HP-UX IPsec version A.02.01.01 Release Notes (J4256-90022)*
- *HP-UX IPsec Performance and Sizing White Paper*
- *Using OpenSSL Certificates with HP-UX IPsec A.02.01*
- *HP-UX IPsec version A.02.01 Manpages*

## Obsolescence

Not applicable.

---

## HP-UX Secure Shell A.04.40.005

HP-UX Secure Shell A.04.40.005 (A.04.40) is based on the public domain OpenSSH 4.4p1. The client/server architecture supports the SSH-1 and SSH-2 protocols and provides secured remote login, file transfer, and remote command execution.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following features are new in HP-UX Secure Shell A.04.40.005 as compared to A.04.00.002 on HP-UX 11i v1:

- Introduced in version A.04.10:
  - Audit logging of login and logout events, and system calls for HP-UX 11.0 and 11i v1
  - Enforcement of the max-bad-login-attempt limit for key-based authentication methods
  - Modified utmp(s) log record with a telnet-compatible ut\_id format
  - New zlib version 1.2.3

- Introduced in version A.04.20:
  - High Performance Enabled SSH/SCP patch
  - New configuration directives in the server:
    - The CountKeyAuthBadLogins directive
    - The EnforceSecureTTY directive
  - Inclusion of the Auth Selection patch
  - Increase in the default size of RSA and DSA keys
  - Delayed compression
  - Support for improved Arcfour cipher modes
  - Modified ControlPath client configuration directive
  - Support for X11 and agent forwarding over multiplexed connections
- Introduced in version A.04.30:
  - Provides an sftponly solution in a chroot environment
  - HP-UX Secure Shell's usage of TCP Wrappers support IPv6
- Introduced in version A.04.40:
  - Implemented conditional configuration in the `sshd_config` file using the 'Match' directive. This allows you to selectively override some configuration options if specific criteria (based on user, group, hostname or address) are met.
  - Added a ForceCommand configuration directive to `sshd_config` (5). Similar to the `command='...'` option accepted in `~/.ssh/authorized_keys`, this forces the execution of the specified command regardless of what the user requested. This is very useful in conjunction with the new “Match” directive.
  - Added a “PermitOpen” directive to `sshd_config` (5). This mirrors the `permitopen='...'` `authorized_keys` option, allowing fine-grained control over the port-forwardings that a user is allowed to establish.
  - Enabled optional logging of transactions to sftp-server.
  - Added an `ExitOnForwardFailure` option to cause `ssh` (1) to exit (with a non-zero exit code) when requested port forwardings are not established.
  - Extended `sshd_config` “SubSystem” declarations to allow the specification of command-line arguments.
  - Replaced all integer overflow susceptible invocations of `malloc` (3) and `realloc` (3) with overflow-checking equivalents.
  - Modified `ssh` behavior so that `ssh` (1) now records port numbers for hosts stored in `~/.ssh/known_hosts` when a non-standard port has been requested.
- HP-UX Secure Shell A.04.40.005 also contains some defect fixes. For more information on these new features and defect fixes, see the *HP-UX Secure Shell Release Notes* at <http://docs.hp.com>.

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The following features are new in HP-UX Secure Shell A.04.40.005 as compared to A.04.20.009 on HP-UX 11i v2:

- Introduced in version A.04.30:
  - Provides an sftp-only solution in a chroot environment
  - HP-UX Secure Shell's usage of TCP Wrappers support IPv6
- Introduced in version A.04.40:
  - Implemented conditional configuration in the `sshd_config` file using the "Match" directive. This allows you to selectively override some configuration options if specific criteria (based on user, group, hostname or address) are met.
  - Added a ForceCommand configuration directive to `sshd_config` (5). Similar to the `command='...'` option accepted in `~/.ssh/authorized_keys`, this forces the execution of the specified command regardless of what the user requested. This is very useful in conjunction with the new "Match" directive.
  - Added a "PermitOpen" directive to `sshd_config` (5). This mirrors the `permitopen='...'` `authorized_keys` option, allowing fine-grained control over the port-forwardings that a user is allowed to establish.
  - Enabled optional logging of transactions to sftp-server.
  - Added an `ExitOnForwardFailure` option to cause `ssh` (1) to exit (with a non-zero exit code) when requested port forwardings are not established.
  - Extended `sshd_config` "SubSystem" declarations to allow the specification of command-line arguments.
  - Replaced all integer overflow susceptible invocations of `malloc` (3) and `realloc` (3) with overflow-checking equivalents.
  - Modified `ssh` behavior so that `ssh` (1) now records port numbers for hosts stored in `~/.ssh/known_hosts` when a non-standard port has been requested.
- HP-UX Secure Shell A.04.40.005 also contains some defect fixes. For more information on these new features and defect fixes, see the *HP-UX Secure Shell Release Notes* at <http://docs.hp.com>.

## Impact

There is no impact other than that previously listed.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Following documents are available on <http://docs.hp.com> in the “Internet and Security Solutions” section:

- *HP-UX Secure Shell Getting Started Guide*
- *HP-UX Secure Shell A.04.40.005 Release Notes*

Manpages:

- *sshd\_config* (5)
- *ssh\_config* (5)
- *ssh* (1)

## Obsolescence

Not applicable.

---

## HP-UX Security Attributes Configuration (secweb)

The HP-UX Security Attributes Configuration tool (*secweb*) is an easy-to-use tool for configuring system-wide and per-user values of security attributes of local and Network Information Service (NIS) users. The tool provides both web-based Graphical User Interface (GUI) and Text User Interface (TUI). You can launch the tool from HP System Management Homepage (SMH) or HP Systems Insight Manager (SIM), or by using the *secweb* command.

The main features of the HP-UX Security Attributes Configuration tool are as follows:

- Configure system-wide values of security attributes from the System Defaults tab.
- Configure per-user values of security attributes of local users from the Local Users tab.
- Configure per-user values of security attributes of NIS users from the NIS Users tab.
- Preview commands that support the GUI actions, prior to execution.
- View lock information of security attributes of local and NIS users.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The HP-UX Security Attributes Configuration tool now supports the following:

- Web-based interface (GUI)
- New Text User Interface (TUI)
- Long user name

**What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

The HP-UX Security Attributes Configuration tool now supports the following:

- Improved look and feel in Text User Interface (TUI)
- Long user name

**Impact**

There is no impact other than that previously listed.

**Compatibility**

There are no known compatibility issues.

**Performance**

There are no known performance issues.

**Documentation**

For more information, refer to the following:

- Security Attributes Configuration Online Help
- *secweb* (1M) manpage
- *sam* (1M) and *smh* (1M) manpages

**Obsolescence**

Not applicable.

---

**HP-UX Standard Mode Security Extensions**

The HP-UX Standard Mode Security Extensions product enhances the security of systems running in standard mode, by providing security features that were previously available only on systems that had been converted to trusted mode.

**Summary of Change****What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The HP-UX Standard Mode Security Extensions product was previously unavailable on HP-UX 11i v1 as of the September 2005 release.

Several security features that were previously available only in trusted mode can now be used in standard mode, without converting to trusted mode. In addition, several security attributes can now be configured with a system-wide default or with a per-user value.



The following security features are now available in standard mode:

- Auditing user and system activities.
- Account locking after too many authentication failures.
- Displaying the last successful and last unsuccessful login.
- Preventing the re-use of passwords in the password history.
- Preventing logins with a null password.
- Restricting logins to specific time periods.
- Expiring inactive accounts.
- Reporting accounts that are locked.
- Shadow passwords are now also supported with NIS.

These features are implemented by the following HP-UX changes:

- The auditing system (commands and libraries).
- The `/etc/default/security` file, described in *security* (4).
- The `/etc/shadow` file, described in *shadow* (4).
- The `/etc/pam.conf` configuration file, described in *pam.conf* (4).
- The `libsec` and PAM libraries.
- A new user database, described in *userdb* (4).
- New commands: `userdbget`, `userdbset`, `userdbck`, `userstat`.
- New user configuration tool, described in *secweb* (1M).

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

The HP-UX Standard Mode Security Extensions product is now part of the core OS.

New command: `userstat`.

New library functions: `userdb_read()`, `userdb_write()`, and `userdb_delete()`, described in *userdb\_read* (3), *userdb\_write* (3), and *userdb\_delete* (3).

Shadow passwords are now also supported with NIS.

### **Impact**

The HP-UX Standard Mode Security Extensions product provides new features that enhance system security. Each of the new security features is optionally configured. None of the new security features applies to systems running in trusted mode.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

## Documentation

For further information, refer to the following manpages: *secweb* (1M), *useradd* (1M), *userdel* (1M), *usermod* (1M), *userstat* (1M), *userdbck* (1M), *userdbget* (1M), *userdbset* (1M), *pam\_acct\_mgmt*(3), *userdb\_read*(3), *pam.conf*(4), *security*(4), *shadow*(4), *userdb*(4), *audit*(5), *pam\_hpsec*(5).

## Obsolescence

As of HP-UX 11i v3, NIS+ is no longer supported. HP-UX 11i v3 will be the last release to support trusted systems functionality.

---

## Install-Time Security

Install-Time Security (ITS) version 1.0.4 adds a security step to the install/update process that allows you to run the Bastille security lockdown engine during system Installation with one of four configurations ranging from default security to DMZ.

ITS includes the following bundles:

- *Sec00Tools* (recommended software bundle)
- *Sec10Host* (optional software bundle)
- *Sec20MngDMZ* (optional software bundle)
- *Sec30DMZ* (optional software bundle)

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Install-Time Security is new with the HP-UX 11i v3 release for customers migrating from HP-UX 11i v1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

ITS 1.0.4 includes the following new functionality.

- New questions/configuration
- Diagnostic daemon configure to local-only use (not network)
- Syslog local-only

## Impact

You will benefit from new functionality:

- New lockdown configuration items
- New Ignite Integration (on security tab)

## Compatibility

There are no differences between the Itanium®-based and PA-RISC implementation (they are the same). Some products depend on services, system settings, or network ports that Bastille secures. In those cases, products that depend on out-of-box settings that Bastille may change, document their dependency. Where practical, Bastille also documents these dependencies. *HP-UX 11i v3 Installation and Update Guide*, available at <http://docs.hp.com/en/oshpux11iv3.html>, discusses which particular Bastille settings are applied at each level.

## Performance

ITS does not impact performance, but if the DMZ or MngDMZ levels are used, there may be a very small network performance slowdown due to the IPFilter packet filtering.

## Documentation

Information can be found in the following documents:

- *HP-UX System Administrator's Guide: Security Management*, available online at <http://docs.hp.com/en/oshpux11iv3.html>
- *bastille* (1M) manpage (add `/opt/sec_mgmt/share/man/` to *MANPATH*)
- *Bastille User's Guide*, delivered in `/opt/sec_mgmt/bastille/docs/user_guide.txt`
- HP-UX Bastille Web site at <http://www.software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=B6849AA>
- *HP-UX 11i v2 Installation and Update Guide*, available online at <http://docs.hp.com/en/oshpux11iv3.html>
- “HP-UX Bastille” on page 284

## Obsolescence

Not applicable.

---

## Kerberos Client

Kerberos Client version 1.3.5.03 helps to provide Kerberos authentication and strong cryptography for secure communication over the network.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Kerberos Client version 1.3.5.03 includes the following features new from Kerberos Client version 1.0:

- Administrators can now control the behavior of Kerberized login applications that call the `krb5_kuserok()` API provided by the `libkrb5.sl` library. In earlier versions of Kerberos Client, `krb5_kuserok()` checked the `.k5login` file in the user's home directory for access permissions. This enabled users to modify the `.k5login` file and allow access to others.
- Administrators can now create files with the name `.k5login.username` in the `/etc/krb5` directory. Administrators can also create symbolic links pointing to the `.k5login` file in the user's home directory. If the `/etc/krb5` directory does not exist, `krb5_kuserok()` continues to check the `.k5login` file in the user's home directory. If the `/etc/krb5` directory exists, the `krb5_kuserok()` API ignores any corresponding `.k5login` files in the user's home directory while making authorization decisions. The format of the entries in the new files in `/etc/krb5` continues to be the same as that of the `.k5login` file in the user's home directory.
- SASL/GSS-API bind to Netscape Directory Server used to fail when SSL was enabled. This problem has been fixed in this release.
- Support for powerful cryptographic algorithms like 3DES, RC4, and AES
- Support for IPv6
- Support for TCP. Kerberos Client libraries can now use TCP to connect to KDC. Libraries can use TCP to communicate with Microsoft KDCs (domain controllers) if they issue tickets with excessive PAC data.
- All relevant security fixes up to version 1.5.1 made by MIT in the open source version of Kerberos Client

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

What's New for Customers Migrating from HP-UX 11i v1 September 2005? (see page 300)

#### Impact

There is no impact other than that previously listed.

#### Compatibility

There are no known compatibility issues.

#### Performance

There are no known performance issues.

## Documentation

Following Kerberos Client 1.3.5.03 documents are available on <http://docs.hp.com> in the Internet and Security Solutions section:

- *Release Notes*
- *Configuration Guide for Kerberos Client Products*

The following manpages are also available with Kerberos Client 1.3.5.03:

- *kerberos* (9)
- *libkrb5* (3)
- *krb5.conf* (4)
- *kdestroy* (1)
- *kinit* (1)
- *klist* (1)
- *kpasswd* (1)

## Obsolescence

Not applicable

---

## OpenSSL

OpenSSL A.00.09.09d is based on the open source OpenSSL 0.9.7l and 0.9.8d products. This bundle contains the following:

- OpenSSL A.00.09.08d in the `/opt/openssl/0.9.8` directory
- OpenSSL A.00.09.07l in the `/opt/openssl/0.9.7` directory

The default version of OpenSSL enabled in HP-UX 11i v3 is OpenSSL A.00.09.08d. A toggle script `switchversion.sh` is available in `/opt/openssl`. Use this script to change the default version of OpenSSL between OpenSSL A.00.09.08d and OpenSSL A.00.09.07l.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

OpenSSL A.00.09.08d (default version of OpenSSL on HP-UX 11i v3) supports the following hardware ENGINES: 4758cca, aep, atalla, chil, cswift, gmp, nuron, sureware, and ubsec.

This version of OpenSSL also supports elliptic curve cryptography. Following are the public key elliptic curve cryptography protocols supported by OpenSSL A.00.09.08d:

- Elliptic Curve Crypto (ECC)
- Elliptic Curve Diffie-Hellman (ECDH) protocol
- Elliptic Curve Digital Signature Algorithm (ECDSA)

NOTE: Only OpenSSL A.00.09.08d (the default version of OpenSSL on HP-UX 11i v3) has hardware ENGINE support libraries and elliptic curve cryptography. If you change the default version of OpenSSL, the openssl A.00.09.08d command line features will not be available. However, there is support for OpenSSL A.00.09.08d libraries.

OpenSSL A.00.09.071 and OpenSSL A .00.09.08d support X.509 and X.509v3 certificates.

OpenSSL A.00.09.071 and OpenSSL A.00.09.08d also contain a few defect fixes. For more information on these defect fixes, see the *Release Notes* at <http://docs.hp.com> and the OpenSSL Changelog at <http://www.openssl.org/news/changelog.html>

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See What's New for Customers Migrating from HP-UX 11i v1 September 2005? (see page 301).

### **Impact**

There is no impact other than that previously listed.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For more information, refer to the *OpenSSL A.00.09.071/A.00.09.08d Release Notes* at <http://docs.hp.com> under the section "Internet and Security Solutions".

### **Obsolescence**

Not applicable.

---

## **PAM Kerberos**

Pluggable Authentication Module (PAM) is an easily configurable framework that provides support for multiple authentication technologies on HP-UX. PAM Kerberos v1.24 (bundle name PAM-Kerberos) is the PAM module that provides support for Kerberos authentication protocol as specified in Open Group RFC 86.0. PAM allows multiple authentication technologies to co-exist.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Enhancements new in this release:

- The `pamkrbval` tool checks the ownership of the `rc_host_0` file when a user tries to `rlogin` into a system. If `rc_host_0` is owned by anyone other than `root`, a warning is issued.
- The `pamkrbval` tool now issues a warning message if the keytable entry is not found for the host service principal on the client but present at the KDC. Earlier, the `pamkrbval` tool did not check for the keytab entry at KDC if it is not found at client, and executed successfully without giving any warning.

This release also includes defect fixes. For details, see the *PAM-Kerberos 1.24 Release Notes*, available at <http://docs.hp.com> (navigate to **Internet and Security Solutions**).

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For further information, see the manpages for `pamkrbval` and `pam_krb5`, as well as the following documents, available at <http://docs.hp.com> (navigate to **Internet and Security Solutions**):

- *Configuration Guide for Kerberos Client Products*
- *PAM-Kerberos 1.24 Release Notes*

## Obsolescence

Not applicable.

## Security Patch Check

Security Patch Check (SPC) (bundle SecPatchCk, formerly B6834AA) is a tool that analyzes the currency of a system with respect to security bulletins. It recommends actions for security vulnerabilities that have not been fixed by patches, updates, or logged manual actions currently applied to the system.

Use of the Security Patch Check software tool can help efficiently improve system security, but does not guarantee system security. SPC can be set up as part of the Bastille interactive configuration or manually.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

SPC was not previously delivered on the HP-UX 11i v1 Operating Environments (OEs). For customers migrating from HP-UX 11i v1, this is the first time the product is delivered on the HP-UX OEs.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

SPC has been updated to incorporate defect fixes. Otherwise, there are no changes since the September 2004 release of HP-UX 11i v2.

### Impact

SPC provides update and manual action analysis, whereas prior releases only analyzed patches. It also downloads the catalog via HTTPs.

---

**NOTE**

For HTTPs catalog download, Perl 5.8.0.C and OpenSSL must be installed. They are both included in the Operating Environments, but must be downloaded separately if SPC is downloaded from the Web.

---

### Compatibility

At HP-UX 11i v2 September 2004, the output format changed to incorporate the additional information.

### Performance

There are no known performance issues.

### Documentation

For further information, see the following:

- Manpage:  
*security\_patch\_check* (1M)



- Product page:

<http://software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=B6834AA>

Also see “HP-UX Bastille” on page 284.

## **Obsolescence**

Not applicable.



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## What is in This Chapter?

This chapter includes information about new and changed commands and system calls, including the following:

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**NOTE**

Changes to other commands may be documented in relation to changed products or features elsewhere in this document.

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- `/etc/skel/.profile` shell script (see page 309)
- 32-bit `pstat` System Call (Deprecated) (see page 309)
- `at`, `cron`, and `batch` Commands (see page 310)
- `core` Format Implementation Change (see page 312)
- `cs` Command Language Interpreter (see page 313)
- File Systems Backup and Recovery Commands `fbackup`, `frecover`, and `ftio` (Deprecated) (see page 314)
- `gcore` Command (see page 315)
- `getgroups`, `setgroups` System Calls (see page 316)
- `getty` Command (see page 318)
- HP-UX Kernel Configuration Commands (see page 319)
- `iostat` Command (see page 320)
- `Long hostname`, `uname`, and `setuname` (see page 321)
- Long Username Support by HFS `ff`, VxFS 4.1 `ff`, `repquota`, `quotacheck` (see page 323)
- `lp`, `lpadm`, `lpfence`, `lpmove`, and `lpsched` Commands (see page 324)
- `mmap()` System Call (see page 325)
- `pax` Command (see page 326)
- PFS (Portable File System) Commands (Obsolete) (see page 328)
- `pipcs` Command (see page 328)
- `ps` Command (see page 329)
- `pselect()` System Call (see page 330)
- `psrset` Command (see page 331)
- `pstat_getstatic()` System Call (see page 332)
- Ptools Process Management Tools Command (see page 333)
- `ptrace()` System Call (Obsolete) (see page 335)
- `rc` Shell Script (see page 335)

**What is in This Chapter?**

- sar Command (see page 337)
- setboot Command (see page 338)
- sigblock(2), sigsetmask(2), sigstack(2), sigvector(2), bsd\_signal(3C) Manpages (Obsolescence) (see page 340)
- spray Command (see page 341)
- swapctl() and swapon() System Calls (see page 342)
- swapon and swapinfo Commands (see page 343)
- sysdef Command (Deprecated) (see page 344)
- syslogd Command (see page 345)
- usermod Command (see page 346)
- UNIX 2003 Standards Compliance Commands (see page 347)

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## **/etc/skel/.profile shell script**

`/etc/skel/.profile` is the default user `.profile` script that is copied to the new login's home directory on creation.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

This is a deprecation notice for the presence of `.` (current path) in the definition of `$PATH` in `/etc/skel/.profile` file for future HP-UX releases.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

This is a deprecation notice for the presence of `.` (current path) in the definition of `$PATH` in `/etc/skel/.profile` file for future HP-UX releases.

### **Impact**

No immediate impact in HP-UX 11i v3. This is a deprecation notice for the presence of `.` (current path) in the definition of `$PATH` in `/etc/skel/.profile` file for future HP-UX releases.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There is no known impact on performance.

### **Documentation**

A suitable note has been added as a comment in the `/etc/skel/.profile` file. It is recommended to look in the file for details.

### **Obsolescence**

The usage of `.` (current path) in the definition of `$PATH` in `/etc/skel/.profile` is deprecated and it will be removed from the definition of `$PATH` in `/etc/skel/.profile` in a future HP-UX release.

---

## **32-bit pstat System Call (Deprecated)**

The `pstat()` functions return information about various system contexts.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

When compiling a 32-bit application that uses the `pstat()` system call, the compiler option `_D_PSTAT64` must now be specified. This causes `pstat()` to use 64-bit fields rather than 32-bit fields. The application still remains a 32-bit application.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

Programs calling `pstat()` will be less vulnerable to data truncation from overflows. Some minor program modifications may be needed to accommodate large fields. In addition, it will no longer be possible to use strict ANSI compilation; extended ANSI must be used instead.

## Compatibility

A compiler switch will be provided to allow 32-bit applications to be compiled in 32-bit mode as before. This will preserve source compatibility. Support for the compatibility switch will be removed in some future release.

## Performance

There are no known performance issues.

## Documentation

For further information, see the *pstat(2)* manpage.

## Obsolescence

The *pstat(2)* manpage describing this change was submitted on November 23, 2004: "The use of the `pstat` functional interfaces for application using the ILP32 programming model without defining the `-D_PSTAT64` compiler flag is deprecated." This functionality will be obsoleted after 2 years from that date, by changing the behavior of the compiler switches associated with `pstat()`.

---

## at, cron, and batch Commands

The `at` and `batch` commands schedule jobs for execution by the cron daemon.

The `at` command schedules a job for execution at a specified time. `at` can also list (`-l`) or remove (`-r`) existing scheduled `at` and batch jobs.

The `batch` command schedules a job for execution immediately, or as soon as system load levels permit.

The `cron` daemon executes commands at specified dates and times.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The `cron` daemon now supports compartmentalization feature. If compartmentalization is enabled, `cron` 1M executes the job in the compartment it was created from, using `at`, `batch`, `crontab`.  
For more information, please see “HP-UX 11i Security Containment” on page 280.
- The `at` command queues multiple jobs at the same time if the `MULTI_JOB_SUPPORT` variable in `/etc/default/cron` is set to 1.
- The `batch` command supports queueing of more than 100 jobs. The limit of retries for getting job-id is now configurable through the variable `BATCH_MAXTRYS` in `/etc/default/cron`.
- The `cron` command is able to schedule jobs up to the `njob` limit specified for every queue in `queuedefs` if the `DISABLE_MAXJOB_LIMIT` variable in `/etc/default/cron` is set to 1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- The `at` command queues multiple jobs at the same time if the `MULTI_JOB_SUPPORT` variable in `/etc/default/cron` is set to 1.
- The `batch` command supports queueing of more than 100 jobs. The limit of retries for getting job-id is now configurable through the variable `BATCH_MAXTRYS` in `/etc/default/cron`.
- The `cron` command is able to schedule jobs up to the `njob` limit specified for every queue in `queuedefs` if the `DISABLE_MAXJOB_LIMIT` variable in `/etc/default/cron` is set to 1.

## Impact

You will see new features on the above-mentioned HP-UX commands.

## Compatibility

The changes are compatible with previous versions of HP-UX.

## Performance

There is no impact on performance.

## Documentation

For further information, see the following manpages:

- `at(1)`

- *cron* (1M)
- *batch* (1)

## Obsolescence

Not applicable.

---

## core Format Implementation Change

The HP-UX system writes out a file containing a core image of a terminated process when certain signals are received (see *signal* (5) for the list of reasons). The most common causes are memory violations, illegal instructions, floating point exceptions, bus errors, and user-generated quit signals. The core image file is called `core` and is written in the process's working directory (provided it is allowed by normal access controls). A process with an effective user ID different from its real user ID does not produce a core image.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The *core* (4) manpage requires the `CORE_KERNEL` segment of the application core file contain a null-terminated kernel version string. This was incorrectly implemented in HP-UX 11i v2 and earlier releases by placing the `utsname struct` in that segment. `Utsname struct` does contain the OS version string but not as its first element. Applications accessing the first (and what should be the only) string in the segment instead get the name of the OS, "HP-UX." HP has fixed that by putting the true version string, and only that, in the `CORE_KERNEL` segment. As a work-around for applications which reversed engineered the core file format and depend on `utsname` being in it, HP has added a new segment, `CORE_UTSNAME`, containing the expanded `utsname struct`.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The *core* (4) manpage requires the `CORE_KERNEL` segment of the application core file contain a null-terminated kernel version string. This was incorrectly implemented in HP-UX 11i v2 and earlier releases by placing the `utsname struct` in that segment. `Utsname struct` does contain the OS version string but not as its first element. Applications accessing the first (and what should be the only) string in the segment instead get the name of the OS, "HP-UX." HP has fixed that by putting the true version string, and only that, in the `CORE_KERNEL` segment. As a work-around for applications which reversed engineered the core file format and depend on `utsname` being in it, HP has added a new segment, `CORE_UTSNAME`, containing the expanded `utsname struct`.

In the HP-UX September 2004 release, the above change was introduced but governed by the private kernel tunable `core_large_utsname_on`. The default for this tunable was `OFF` which meant the old core file format was generated. Only if a customer explicitly



turned this tunable ON did they get the new format as described above. This private tunable was publicized to customers as part of the then optional Interface Expansion functionality.

What has changed between HP-UX September 2004 (or HP-UX June 2006) and HP-UX 11i v3 is that the tunable has been removed and the new core file format is now the default (and only) format.

## Impact

Applications which read the core file, generally debuggers, and which are ill-behaved are potentially impacted in two ways. The first is that applications which expected and used a `utsname` struct in the `CORE_KERNEL` segment will no longer find it there. The impact on the application could range from inability to display some system related data in its output to an abort of the application. The second is that applications might be (poorly) coded to abort if they encounter a core file with a segment type they were not expecting.

Ill-behaved applications with one or both of these issues will have to modify their implementation to function correctly with this change.

End-user customers using such applications will need to get a corrected application from their supplier or switch to a different application.

## Compatibility

There are no incompatibilities but there is the possibility that a very restricted set of ill-behaved applications might be impacted as described in the “Impact” section.

## Performance

There is no known impact on performance.

## Documentation

For further information, see the `core (4)` manpage (note, however, that there is no change to this manpage).

## Obsolescence

Not applicable.

---

## csh Command Language Interpreter

`csh` is a command language interpreter that incorporates a command history buffer, C-like syntax, and job control facilities.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The non-interactive invocation of `csch` will not source the `~/.history` file by default. Thus, the non-interactive invocation of `csch` will not update the history file on exit.

### What's New for Customers of HP-UX 11i v2 June 2006?

The non-interactive invocation of `csch` will not source the `~/.history` file by default. Thus, the non-interactive invocation of `csch` will not update the history file on exit.

## Impact

Customers who need history functionality in the non-interactive invocation of `csch` can source the `~/.history` file explicitly, using the command below in the first line of their non-interactive scripts:

```
source -h ~/.history
```

## Compatibility

The non-interactive invocation of `csch` will not source the `~/.history` file and hence the history file will not be updated.

## Performance

There are no known performance issues.

## Documentation

`csch` (1) manpage

## Obsolescence

Not applicable.

---

## File Systems Backup and Recovery Commands `fbackup`, `frecover`, and `ftio` (Deprecated)

The `fbackup` command combines features of `dump` and `ftio` to provide a flexible, high-speed file system backup mechanism.

The `frecover` command reads media written by the `fbackup` command.

The `ftio` command is a tool designed specifically for copying files to tape drives.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The commands `fbackup`, `frecover`, and `ftio` are deprecated for creating new archives.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There is no immediate impact in HP-UX 11i v3. This is a deprecation notice for future HP-UX releases. You can prepare by migrating to the favorable replacement `pax`.

## Compatibility

There is no immediate compatibility issue in HP-UX 11i v3. This is a deprecation notice for future HP-UX releases.

## Performance

There are no known performance issues.

## Documentation

Information about the commands can be found in their respective manpages:

*fbackup* (1M) , *frecover* (1M) , and *ftio* (1)

## Obsolescence

The commands `fbackup`, `frecover`, and `ftio` are deprecated. In a future HP-UX release, the ability to create new archives using the `fbackup` or `ftio` commands will be discontinued. Support will be continued for archive retrieval. You should stop using `fbackup` and `ftio` for creating archives, and the standard `pax` command (portable archive interchange) should be used as a favored replacement to create archives.

---

## gcore Command

The `gcore` command is defined as "Get core images of running processes".

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following new command is provided in HP-UX 11i v3: `gcore`

The `gcore` command creates a core image of each specified process.

By default, the name of the core image file for `process-id` will be `core.process-id`. The process information in the core file can be obtained by using debuggers.

When the `gcore` command creates a core image of each specified process, the process is temporarily stopped. Further, when the creation of core image is complete, the process continues to execute.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

You will see the new features on the above-mentioned HP-UX command.

### **Compatibility**

The changes are compatible with previous versions of HP-UX.

### **Performance**

There is no impact on performance.

### **Documentation**

For further information, see the following manpage:

- `gcore` (1)

### **Obsolescence**

Not applicable.

---

## **getgroups, setgroups System Calls**

The `getgroups()` system call returns a list of supplementary group IDs associated with the calling process. The `setgroups()` system call associates a set of supplementary group IDs with the calling process.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The number of groups that may be returned by the `getgroups()` system call or passed to the `setgroups()` system call is no longer limited by the `NGROUPS_MAX` compile time constant. Programs should use `sysconf(_SC_NGROUPS_MAX)` to determine the maximum

number of groups that may be returned. (This can also be used on prior versions of HP-UX.) The actual limit will be returned by `sysconf (_SC_NGROUPS_MAX)`. This value will never be smaller than the current value of `NGROUPS_MAX` (20). This change is recommended to prepare applications for future versions of HP-UX which may be optionally configured to support more groups.

### **What's New for Customers of HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## **Impact**

Applications calling `getgroups()` may no longer rely on the `NGROUPS_MAX` compile time constant to size an array big enough to hold all the groups a process may belong to. They must first call `sysconf (_SC_NGROUPS_MAX)` to determine the maximum number of groups supported by the system they're running on and dynamically allocate a suitable sized array of `gid_t`. Applications must be prepared for `getgroups()` to return a list of arbitrary length. Applications calling `setgroups()` with an `ngroups` value greater than `NGROUPS_MAX` may succeed. Applications which depend on such a call to fail should be changed. The `sysconf (_SC_NGROUPS_MAX)` call will return the maximum number of groups supported on the current system. This value will never be smaller than the current value of `NGROUPS_MAX` (20) and may be arbitrarily larger on a future release of HP-UX.

## **Compatibility**

A future release of HP-UX may permit system administrators to raise the maximum number of groups above the current value of `NGROUPS_MAX` (20). In such a system: Applications passing `NGROUPS_MAX` to `getgroups()` will get a return value of -1 with `errno` set to `EINVAL` when called from a process that belongs to more than 20 groups. Applications passing more than `NGROUPS_MAX` (but no more than `sysconf (_SC_NGROUPS_MAX)` groups) to `setgroups()` will succeed where they previously would have failed with -1 and `errno` set to `EINVAL`.

## **Performance**

There is no impact on performance.

## **Documentation**

Man pages: *getgroups(2)*, *setgroups(2)*

## **Obsolescence**

The limitation on the maximum number of groups returned by `getgroups()` being determined by `NGROUPS_MAX` at compile time is deprecated. The limitation on the maximum number of groups which may be passed to `setgroups()` being determined by `NGROUPS_MAX` at compile time is deprecated.

## getty Command

`getty` is a program that is invoked by `init`. It is the second process in the series, (`init-getty-login-shell`) that ultimately connects a user with the HP-UX system. Initially, if `/etc/issue` exists, `getty` prints its contents to the user's terminal, followed by the login message field for the entry it is using from `/etc/gettydefs`. `getty` reads the user's login name and invokes the `login` command with the user's name as argument. While reading the name, `getty` attempts to adapt the system to the speed and type of terminal being used.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

`getty` is enhanced to configure the default setting for special control characters (erase, kill, etc.) by the user. This flexibility could be achieved by invoking `getty` with a new option `-f` and modifying the `/dev/ttyconf` file.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

You will see the new features on the above-mentioned HP-UX command.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.

### Documentation

For further information, see the following manpage:

- `getty(1M)`

### Obsolescence

Not applicable.

---

## HP-UX Kernel Configuration Commands

HP-UX provides a set of commands for configuring the HP-UX kernel. There are three primary commands: `kconfig`, which manages whole kernel configurations; `kcmodule`, which manages kernel modules; and `kctune`, which manages tunable parameters. Also supported are the `mk_kernel` script (a wrapper around `kconfig`); `kclog`, which displays the log file of configuration changes; and `kcpath`, a helper command for scripts that need to know where configuration files are located.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The HP-UX 11i v1 kernel configuration commands (`config`, `kmadmin`, `kminstall`, `kmmodreg`, `kmpath`, `kmsystem`, `kmtune`, and `kmupdate`) have been removed, in favor of the commands listed above.
- In addition to these command changes, there are changes to the location of kernels and related files on disk; to the manner in which a kernel configuration is chosen at boot time; and to the manner in which the system automatically maintains a backup kernel configuration. For more information, see the documentation listed below.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- The error, warning, and note messages from all kernel configuration commands have been revised for clarity. Message numbers have been assigned to all messages.
- `kconfig`, `kcmodule`, and `kctune` have new options for control of automatic configuration backups. See the discussion of the “Backup Configuration” in `kconfig(5)` for more details.
- The `kctune` command has two new options. The `-F` option allows the user to specify the format used for reporting tunable values. The `-m` option allows the user to restrict the output of `kctune` to those tunables defined by a specific module. See `kctune (1M)` for more details.
- `kctune` now allows some tunable values to be specified in terms of the percentage of some system resource. These tunables will adjust automatically when the underlying system resource changes. For example, the tunable `filecache_max` can be set to “20%”, which means that the file cache cannot exceed 20% of the physical memory on the system. If the amount of system memory increases, the size of the file cache is automatically allowed to increase as well. For more details, see `kctune (1M)` and the manpages for individual tunables in section 5.
- `kctune` now allows the use of “K”, “KB”, “M”, “MB”, and “GB” suffixes on tunable values. It automatically scales the values appropriately. See `kctune (1M)` for more details.
- A variety of internal changes have been made to the kernel configuration commands to improve resiliency and performance.
- Tunable parameter values may now be overridden on the boot loader command line. For more details, see `hpux (1M)` for PA-RISC systems and `hpux.efi (1M)` for Itanium® systems.

- The `create_sysfile` command is now obsolete. It will be removed in a future release of HP-UX.
- The `swap`, `dump`, and `driver` directives in the `system (4)` file are now obsolete. Support for these directives will be removed in a future release of HP-UX. Swap devices, dump devices, and driver bindings should be configured using the `swapon`, `crashconf`, and `iobind` commands, respectively.
- The format of the kernel configuration log file, `/var/adm/kc.log`, has changed. It now contains a complete copy of the output of each command invocation that made configuration changes, as well as the error messages from failed attempts at configuration changes.
- Tunable parameter changes made through the `settune()` or `settune_txn()` system calls may no longer remain effective across reboots. If persistence across reboots is desired, tunable parameter changes must be made using `kctune`.

### **Impact**

There are no impacts other than those listed previously.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

In addition to the manpages referenced above, documentation on the kernel configuration tools can be found in the white paper *Managing Kernel Configurations in HP-UX 11i*, available at <http://docs.hp.com>.

### **Obsolescence**

See “What’s New for Customers Migrating from HP-UX 11i v2 June 2006?”

---

## **iostat Command**

`iostat` iteratively reports I/O statistics for each active disk on the system.



## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

`iostat` has been enhanced to report activity for each active lunpath to the LUNs. For multiple lunpaths, data is presented on successive lines for each active lunpath. If no lunpath is active, a blank line is printed.

The following new option has been added:

`-L` list active lunpath statistics.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those listed previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The following manpage documents the changes: `iostat` (1M).

## Obsolescence

Not applicable.

---

## Long hostname, uname, and setuname

The `hostname`, `uname` and `setuname` commands are part of the core OS.

- The `hostname` command is used to set or display name of current host system.
- The `uname` command is used to display information about computer system and set node name.
- The `setuname` command is used to change machine information.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

In HP-UX 11i v3:

- The `hostname` command sets and displays the name of the current host system to more than the previously allowed 64 bytes.
- The `uname` command sets and displays the current node name to more than the previously allowed 8 bytes.
- The `setuname` command modifies the value for system name and/or the node name by using the appropriate option(s), to more than the previously allowed 8 bytes.

The system administrator may configure the system to allow these limits to be expanded to 255 bytes.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The long `hostname`, `uname` and `setuname` feature is available on HP-UX 11i v2 as well. On HP-UX 11i v2, the `NodeHostNameXpnd` product bundle must be installed and the appropriate configuration options enabled to allow up to 255 bytes.

However, on HP-UX 11i v3 this is available by default.

## Impact

The `hostname` command may set or display the host name up to 255 bytes. The `uname` command may set or display the node name up to 255 bytes. The `setuname` command may set system name up to 255 bytes.

## Compatibility

The default configuration options, allowing host names up to 64 bytes and node names up to 8 bytes, ensures compatibility with all HP-UX versions.

## Performance

There is no change in performance.

## Documentation

The following manpages document the changes:

- *hostname* (1).
- *uname* (1).
- *uname* (2).
- *gethostname* (2).
- *sethostname* (2).
- *nodehostnamesize* (5).
- *setuname* (1M).
- *setuname* (2).

The white paper *Node and Host Name Sizes on HP-UX* is installed at `/usr/share/doc/NodeHostNameSize.pdf`.

## Obsolescence

Not applicable.

---

## Long Username Support by HFS ff, VxFS 4.1 ff, repquota, quotacheck

The `ff` command reads the `i`-list and directories of each special file, assuming it to be a file system, saving `i`-node data for files that match the selection criteria. Output consists of the path name for each saved `i`-node, plus any other file information requested with the `-o` option. Output fields are positional. The output is produced in `i`-node order; fields are separated by tabs. The default line produced by `ff` includes the path name and `i`-number fields.

The `repquota` command prints a summary of disk usage and quotas for each specified filesystem.

The `quotacheck` command examines each file system, builds a table of current disk usage, and compares this table against that stored in the disk quota file for the file system. If any inconsistencies are detected, both the quota file and the current system copy of the incorrect quotas are updated.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The HFS `ff`, VxFS `ff`, `repquota`, `quotacheck` commands have been enhanced to support the username up to 255 bytes.

This feature is new for customers migrating from HP-UX 11i v1.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The HFS `ff`, VxFS `ff`, `repquota`, `quotacheck` commands have been enhanced to support the username up to 255 bytes.

On HP-UX 11i v2, the maximum username length is 32 bytes. Hence, the above commands can support usernames up to 32 bytes on HP-UX 11i v2.

On HP-UX 11i v3, the maximum username length is 256 bytes. Hence, the above commands can support usernames up to 256 bytes on HP-UX 11i v3.

## Impact

On a system where long username is not enabled, you will see the old behavior of the above commands. All the above commands (HFS `ff`, VxFS `ff`, `repquota`, `quotacheck`) will support the username up to 32 bytes only. Once the system is long-username-enabled (by invoking the command `lugadmin -e`), all the above commands will support the username up to 256 bytes.

## Compatibility

The behavior on both PA-RISC and Itanium®-based systems are the same. There are no regressions from the previous release of these commands on PA-RISC and Itanium®-based systems.

## Performance

There are no known performance issues.

## Documentation

For further information, see the *lugadmin* (1M) manpage, which will give information about how to enable the system for long username support, as well as the display guideline of the long username by the commands.

## Obsolescence

Not applicable.

---

## lp, lpadmin, lpfence, lpmove, and lpsched Commands

The `lp` command queues files for printing. The `lpadmin` command configures LP spooling systems to describe printers, classes and devices. The `lpsched`, `lpshut`, `lpmove`, `lpfence` commands start the LP request scheduler, stop the LP request scheduler, move requests between LP destinations, and define the minimum priority for printing

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Printers can be added/removed/modified without bringing down the `lp` scheduler. It moves requests that were queued by `lp` between LP destinations.  
`lpadmin`, `lpfence`, `lpmove`, `lpsched` are enhanced to support this enhancement.  
Now `lpadmin`, `lpfence` and `lpmove` can be used without stopping `lp` scheduler.
- Line printer spooler is enhanced to support printer/class names up to 250 characters from the previous limit of 14 characters.
- Support is also extended to remote destination names.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

You will see new features on the above-mentioned HP-UX command.

## Compatibility

The changes are compatible with previous versions of HP-UX.

## Performance

There is no impact on performance.

## Documentation

For further information, see the following manpages:

- *lp* (1)
- *lpadmin* (1M)
- *lpfence* (1M)
- *lpmove* (1M)

## Obsolescence

Not applicable.

---

# mmap() System Call

`mmap()` function to establish mapping between a process' address space and a file

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

**PROT\_EXEC:** The HP-UX `mmap()` system call requires execute permission to map a file with `MAP_SHARED` and `PROT_EXEC`. According to the Single UNIX Specification, Version 3 (a.k.a. UNIX 2003), to map a file with `MAP_SHARED` and `PROT_EXEC`, `mmap()` needs to have only read permission for the file being mapped. In HP-UX 11i v3 (11.31) we have made changes in `mmap()` implementation to address this issue. In HP-UX 11i v3 (11.31) the `mmap()` function requires only read permission to map a file with `MAP_SHARED` and `PROT_EXEC`.

**MAP\_FIXED:** The `mmap()` function can be called with the flag `MAP_FIXED` to establish a mapping at an address range specified by the arguments *pa* and *len*. According to the Single UNIX Specification, Version 2 (a.k.a. UNIX 98) the mapping established by `mmap()` with `MAP_FIXED` replaces any previous mappings for those whole pages containing any part of the address space of the process starting at *pa* and continuing for *len* bytes. In HP-UX 11i v1 (11.11) `mmap()` previously failed where there is already a mapping in the specified address range. In HP-UX 11i v3 (11.31) HP has made changes

in `mmap()` implementation to replace any previous mappings for those whole pages containing any part of the address space of the process starting at `pa` and continuing for `len` bytes and establish the new mapping.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

Applications which call `mmap()` and succeed in mapping will not see any difference. However, any application where `mmap()` previously failed for not having execute permission for the underlying file will now succeed.

Applications that follow the `mmap()` behavior according to the standards and/or HP-UX *mmap(2)* manpage will not be impacted by this change. Ill-behaved applications which presumes that `mmap()` with `MAP_FIXED` will fail if there is any mapping in the specified address range will be impacted.

### **Compatibility**

`PROT_EXEC`: There are no known compatibility issues. However, there is the possibility that applications which call `mmap()` without execute permission for the file being mapped will succeed.

`MAP_FIXED`: There are no known compatibility issues.

### **Performance**

There is no impact on performance.

### **Documentation**

See the *mmap(2)* manpage.

### **Obsolescence**

Not applicable.

---

## **pax Command**

The `pax` command extracts, writes, and lists archive files; copies files and directory hierarchies.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `pax` command, version 11i v3 (11.31), has now been made to conform to the Unix 2003 Standard. This includes the following:

- Two new options `-H` and `-L` have been introduced. These options allow the user to control whether and to what extent `pax` follows symbolic links.
- A new archive format “pax interchange format” IEEE Std 1003.1, 2003 Edition has been introduced. This format supports large files (greater than or equal to 8GB), long user and group names, long pathnames and large uids and gids.
- A new option `-o` has been introduced. This options provides information to the implementation to modify the algorithm in the various modes of operation of `pax`.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

You will now be able to use `pax` to archive files having the following:

- size greater than or equal to 8GB
- a long user name/group name
- a large UID/GID greater than 2097151
- a long pathname or link name

## Compatibility

There are no known compatibility issues. A new option (`-x pax`) has been provided to support the new format. The default behavior of `pax` will be as before.

## Performance

There is no significant difference in performance.

## Documentation

For further information, see the `pax(1)` manpage.

## Obsolescence

Not applicable.

## PFS (Portable File System) Commands (Obsolete)

PFS (Portable File System) was intended to allow access to a variety of CD-ROM file system formats. PFS was originally adopted by HP to provide accessibility to RockRidge Interchange file system format on CD-ROM file systems.

PFS is obsolete and not delivered on HP-UX 11i v3. The equivalent functionality (CD-ROM file system access including Rock Ridge extensions support) is now provided by HP via the HP-UX CDFS file system type and HP-UX's standard file systems commands. With the HP-UX support of Rock Ridge extensions in CDFS, there is no longer the need to execute the special PFS daemons or commands.

See the *mount* (1M) and *mount\_cdfs* (1M) man pages for the replacement functionality.

---

## pipcs Command

The `pipcs` command displays certain information on active POSIX interprocess communication facilities. When no options are specified, `pipcs` displays information in short format for the POSIX message queues and POSIX named semaphores that are currently active in the system.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `pipcs` command has been enhanced to provide details regarding the following:

- Processes using the various POSIX Message Queues.
- Creation time and Last Modification time of the POSIX Message Queues.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

You will see the new features on the above-mentioned HP-UX command.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.



## Documentation

For further information, see the following manpage:

- *pipcs* (1)

## Obsolescence

Not applicable.

---

## ps Command

`ps` prints information about selected processes.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

`ps` has been enhanced to display a maximum of 1020 characters in the `COMMAND` field.

The default width of the `COMMAND` field when `ps` is invoked:

- with `-f` or `-x` options is 128
- without these options is 14

Under the standards environment (UNIX95 or UNIX 2003), the default width is 128 in both the cases.

The width can be configured by setting `DEFAULT_CMD_LINE_WIDTH=value` in the `/etc/default/ps` file. The value of `DEFAULT_CMD_LINE_WIDTH` should be between 64 and 1020. If the value set is:

- less than 64, `ps` uses 128 as the width
- greater than 1020, `ps` uses 1020 as the width.

By default, the above configuration comes into effect, only when `ps` is invoked with `-f` or `-x` options. If the environment variable `PS_CMD_BASENAME` is set, the width is picked from the configuration file for all other invocations of `ps` also.

Under the standards environment (UNIX95 or UNIX 2003), the width is read from the configuration file `/etc/default/ps` file for all invocations of `ps`.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

By default, the width configured by setting `DEFAULT_CMD_LINE_WIDTH=value` in the `/etc/default/ps` file comes in to effect only when `ps` is invoked with `-f` or `-x` options. If the environment variable `PS_CMD_BASENAME` is set, the width is picked from the configuration file for all other invocations of `ps` also.

## Impact

Customers can configure the width of the `COMMAND` field using the `DEFAULT_CMD_LINE_WIDTH` variable in `/etc/default/ps`. The maximum allowable width is 1020.

Also, under the standards environment (UNIX95 or UNIX 2003), the default length of command field is increased to 128.

Under default HP-UX environment, the default width of `COMMAND` field when `ps` is invoked:

- with `-f` or `-x` options is 128.
- without these options is 14.

Customers can set `PS_CMD_BASENAME` to pick the width from `/etc/default/ps` file.

## Compatibility

The changes are compatible with previous versions of HP-UX and there are no regressions from the previous releases.

## Performance

There is no known impact on performance.

## Documentation

The manpage of `ps(1)` documents the changes.

## Obsolescence

Not applicable.

---

## pselect() System Call

The `pselect()` system call provides additional parameter options to users of the `select()` system call. The timeout granularity may be specified in seconds and nanoseconds. In addition, a new signal mask parameter is available to be used for the duration of the system call.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `pselect()` system call interface has been added to meet the UNIX 2003 standard.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

The system call will be available. No action is required by customers to take advantage of it. Code using `select()` will not need to be modified unless desired by the customer.

### Compatibility

There are no known compatibility issues. The functionality of `select()` has not been changed.

### Performance

There is no change in performance.

### Documentation

For further information, see the *pselect(2)* manpage.

### Obsolescence

Not applicable.

---

## psrset Command

The `psrset` utility controls the management of processor sets.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The kernel now supports Real Time Extension (RTE) to processor sets, and `psrset` has been enhanced to manage the RTE processor set.

The following new options have been added for RTE processor set:

<code>-l</code>	Lists all the processor sets that are configured as RTE processor set.
<code>-m pset_id</code>	Marks a processor set with the identification number, <code>pset_id</code> , as an RTE processor set.
<code>-s pset_id</code>	Un-marks the processor set with the identification number, <code>pset_id</code> , as an RTE processor set.

`-R [processor_list]`

Creates a new RTE processor set and displays the processor set identification number (`pset_id`) for the new processor set.

- The Dual-Core Intel® Itanium® 2 platform is being introduced with HP-UX 11i v3 and as part of this `psrset` has been enhanced to support one more PSET attribute type called LCPU.

The attribute values for this attribute are ON or OFF. The `psrset` command displays the LCPU attribute type and its value (ON or OFF) along with other PSET attributes and their values and any Processor Set (PSET) in the system.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

- The Dual-Core Intel® Itanium® 2 platform is being introduced with HP-UX 11i v3 and as part of this `psrset` has been enhanced to support one more PSET attribute type called LCPU.

The attribute values for this attribute are ON or OFF. The `psrset` command displays the LCPU attribute type and its value (ON or OFF) along with other PSET attributes and their values and any Processor Set (PSET) in the system.

#### **Impact**

You will see new features on the above-mentioned HP-UX command.

#### **Compatibility**

The changes are compatible with previous versions of HP-UX.

#### **Performance**

There is no impact on performance.

#### **Documentation**

For further information, see the following manpage:

- `psrset (1M)`

#### **Obsolescence**

Not applicable.

---

## **pstat\_getstatic() System Call**

The `pstat_getstatic()` system call returns information about the system.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The information returned by `pstat_getstatic()` may now change between reboots, although the likelihood of it changing is infrequent.

Although this system data usually does not change frequently, it may change while the system is running due to manually or automatically generated administrative changes in the associated kernel tunables, online addition/deletion of resources, or other events.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

You may no longer assume that information returned by `pstat_getstatic()` will remain constant between reboots, although the likelihood of it changing is infrequent.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

For further information, see the `pstat(2)` manpage.

## Obsolescence

Not applicable.

---

## Ptools Process Management Tools Command

Ptools is a new set of process management tools that support easy process tracking and debugging. This set consists of the following commands:

- `pmap`
- `pfiles`
- `pgrep`
- `pkill`
- `ptree`

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

On HP-UX 11i v3 (11.31), HP provides Ptools, a new set of process management tools that support easy process tracking and debugging. As of this release, this set consists of the following commands:

- `pmap`  
`pmap` prints the address space information of a process.
- `pfiles`  
`pfiles` prints information about all open file descriptors of a process.  
If file descriptor corresponds to a file, then `pfiles` prints the `fstat()` and `fcntl()` information.  
If the file descriptor corresponds to a socket, then `pfiles` prints socket related info, such as the socket type, socket family, and protocol family.  
In the case of `AF_INET` and `AF_INET6` family of sockets, information about the peer host is also printed.
- `pgrep`  
`pgrep` searches for processes having attributes matching the selection criteria specified by its arguments.  
The process ID numbers of the matched processes are printed, separated by a delimiter, the default being the newline.  
Each attribute option can take multiple values separated by a comma. `pgrep` will select those processes that match all the attribute options specified. If an attribute option has multiple values, then the process needs to match one of the values.
- `pkill`  
`pkill` selects processes similar to `pgrep`, but instead of printing the process ID numbers, it signals the matched processes.  
The user can specify the signal to be sent to the matched process as the first argument to `pkill`. By default `SIGTERM` is assumed.
- `ptree`  
`ptree` prints the process tree of all processes that match the specified arguments. While printing the tree, the child processes are indented to the right from their respective parent processes.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

You will see the new features on the above-mentioned HP-UX command.

## Compatibility

The changes are compatible with previous versions of HP-UX.

## Performance

There is no impact on performance.

## Documentation

For further information, see the following manpage:

- *pmap* (1)
- *pfiles* (1)
- *pgrep* (1)
- *pkill* (1)
- *ptree* (1)

## Obsolescence

Not applicable.

---

## ptrace() System Call (Obsolete)

The `ptrace()` interface is now obsolete. This interface was used in HP-UX 11i v1 to trace processes. HP-UX 11i v1 also supported `ttrace()` interface, which provides the same functionality. Hence, `ptrace()` will no longer be supported in HP-UX 11i v3.

The `ptrace()` system call was planned for obsolescence since HP-UX 11i v1. This interface is not supported on Itanium®-based platforms. User applications that continue to reference `ptrace` will get `ENOSYS` error.

This change does not improve or degrade the performance of an application.

The *ptrace* (2) manpage has been removed from the HP-UX 11i v3 release.

---

## rc Shell Script

The `rc` shell script is a general purpose sequencer invoked upon entering new run level.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Whenever a startup script returns the value 3 to `/sbin/rc`, it is understood that the system needs to reboot for some reason. The actual cause is made available in `/etc/rc.log` to enable the user to view the message once the system reboots.

Now, a message in the same context can be displayed on the console, with the help of new file called `/etc/rc.bootmsg`. This is achieved by creating a text file named `/etc/rc.bootmsg` containing the text to be displayed on the console.

The messages which need to be displayed are written by the startup scripts. Note that `/sbin/rc` deletes this file after displaying the message, so the startup scripts need to write the messages to this file each time a specific message is required to be displayed on the console prior to reboot.

This is done for both line-mode and screen-mode terminals.

New features for `rc` in this release are as follows:

- A new file, `/etc/rc.bootmsg`, will be created.
- Startup scripts will write the messages in the file `/etc/rc.bootmsg`, and `/sbin/rc` will display the message before rebooting the system.
- Once the messages are displayed on the console, the file `/etc/rc.bootmsg` is deleted.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

These changes were made previously in the September 2004 release of HP-UX 11i v2.

## Impact

When a system needs reboot for some reason, messages in the file `/etc/rc.bootmsg` will be displayed before the system is rebooted.

## Compatibility

These changes are compatible with all the releases. There are no regressions from the previous releases.

## Performance

There is no change in performance.

## Documentation

For further information, see the `rc` (1M) manpage.

## Obsolescence

Not applicable.



---

## sar Command

When a sampling interval  $n$  is specified in the `sar` command, `sar` samples cumulative activity counters in the operating system at  $n$  intervals of  $t$  seconds. If the `-o` option is specified, it saves the samples in file in binary format. The default value of  $n$  is 1. If no sampling interval is specified, `sar` extracts data from a previously recorded file, either the one specified by `-f` option or, by default, the standard system activity daily data file `/var/adm/sa/sadd` for the current day  $dd$ .

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

`sar` has been enhanced to report activity for each active HBA, tape device, and lunpath. One line is printed for each device that had the activity in the last interval. If no devices were active, a blank line is printed.

As a corollary, `sadc` has been enhanced to collect activity data for HBA, Tape devices, and lunpaths. The following new options have been added to report HBA, Tape, and lunpath statistics.

- H Report activity for each active HBA device.
- t Report activity for each active Tape device.
- L Report activity for each active lunpath.

`sar` has been enhanced to report reads and writes per second to the device. The following new option has been added:

- R Report the number of reads and writes per second to the device. This option is used with the `-d` option.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

You will see new features on the above-mentioned HP-UX command.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.

### Documentation

For further information, see the following manpage:

- `sar (1M)`

## Obsolescence

Not applicable.

---

## setboot Command

The `setboot` command displays and sets boot variables in stable storage (also known as nonvolatile memory).

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- `setboot` has been enhanced to provide support for setting the High Availability (HA) Alternate boot path using a new option `-h`.
- The SpeedyBoot firmware and software extensions allow a superuser to control which firmware tests are executed by the system during the boot process. Formerly, the `setboot` command could only be used to set these firmware tests on a PA-RISC platform. Now, however, `setboot` has been enhanced to support the setting of a firmware test for the next boot on the Itanium®-based platform.
- `setboot` has been enhanced to enable or disable hyperthreading environment for the next boot on a Dual-Core Intel® Itanium® 2 platform. The following new option has been added to enable/disable hyperthreading environment:  

```
-m [ on | off ] enable or disable hyperthreading for next boot
```
- `setboot` has been modified to accept a persistent device special file (`dsf`) as input. `setboot` selects then any lunpath hardware path currently available to the corresponding LUN and writes it to stable storage for use as the bootpath at next boot. `setboot` also accepts a lunpath hardware path as input, in which case it writes that lunpath hardware path to stable storage.

To maintain backwards compatibility, `setboot` continues to accept a legacy hardware path as input. However, the path stored in stable storage is no longer the legacy hardware path itself but is the corresponding lunpath hardware path. If the path stored in stable storage happens to fail later, `setboot` will be notified via an EVM event and will automatically select an alternate available path to the LUN and reconfigure it to stable storage, regardless if it was setup via a persistent `dsf`, or via a lunpath or legacy hardware path.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- `setboot` has been enhanced to enable or disable hyperthreading environment for the next boot on a Dual-Core Intel® Itanium® 2 platform. The following new option has been added to enable/disable hyperthreading environment:

-m [ on | off ] enable or disable hyperthreading for next boot

- `setboot` has been modified to accept a persistent device special file (dsf) as input. `setboot` selects any lunpath hardware path currently available to the corresponding LUN and writes it to stable storage for use as the bootpath at next boot. `setboot` also accepts a lunpath hardware path as input, in which case it writes that lunpath hardware path to stable storage.

To maintain backwards compatibility, `setboot` continues to accept a legacy hardware path as input. However, the path stored in stable storage is no longer the legacy hardware path itself but is the corresponding lunpath hardware path. If the path stored in stable storage happens to fail later, `setboot` will be notified via an EVM event and will automatically select an alternate available path to the LUN and reconfigure it to stable storage, regardless if it was setup via a persistent dsf, or via a lunpath or legacy hardware path.

## Impact

If a legacy hardware path is provided as input to `setboot`, it is the corresponding lunpath hardware path that `setboot` will store in stable storage. So `setboot` will now display the lunpath hardware path instead of the legacy hardware path. The lunpath hardware path stored in stable storage and displayed by `setboot` may change automatically upon failure of this path due to `setboot` automatic path failover.

## Compatibility

Although the `setboot` command continues to accept a legacy hardware path as input like in releases prior to 11i v3, the path it stores and displays is the corresponding lunpath hardware path. Therefore, the `setboot` output has been changed from prior releases.

## Performance

There is no impact on performance.

## Documentation

For further information, see the following manpage:

- `setboot` (1M)

and the `setboot` whitepaper at <http://docs.hp.com>:

- `setboot(1M) in HP-UX 11i v3`

## Obsolescence

Not applicable.

---

## **sigblock(2), sigsetmask(2), sigstack(2), sigvector(2), bsd\_signal(3C) Manpages (Obsolescence)**

*sigblock* (2), *sigsetmask* (2), *sigstack* (2), *sigvector* (2), and *bsd\_signal* (3C) are obsoleted signal manpages.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The above listed manpages were declared to be obsoleted in HP-UX 11i v1 and will not be available in HP-UX 11i v3.

#### **What's New for Customers of HP-UX 11i v2 June 2006?**

The above listed manpages were declared to be obsoleted in HP-UX 11i v2 and will not be available in HP-UX 11i v3.

### **Impact**

*sigblock* (2), *sigsetmask* (2), *sigstack* (2), *sigvector* (2), and *bsd\_signal* (3C) are obsoleted. HP-UX 11.31 will not have these obsoleted manpages. Any reference to these manpages will no longer work. The above interfaces remain functioning without compatibility impact; this is for the obsolescence of only the manpages. However, the corresponding functions will be removed in a future release. Alternative: *sigset* (3C), *sigpause* (3C)

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Not applicable.

### **Obsolescence**

**Manpages:** /usr/man/man2.Z/sigblock.2, /usr/man/man2.Z/sigsetmask.2,  
/usr/man/man2.Z/sigstack.2, /usr/man/man2.Z/sigvector.2,  
/usr/man/man3.Z/bsd\_signal.3c

Alternative: *sigset* (3C), *sigpause* (3C)

---

## spray Command

The `spray` command sends a one-way stream of packets to host using RPC, and reports how many were received by host and what the transfer rate was.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

On HP-UX 11i v3, the `spray` command will provide two new `spray` command options from the previous version. They are `-d` and `-t`.

```
spray [-c count] [-l length] [-d delay] [-t nettype] host
```

- `host`  
Specifies the hostname.
- `-c`  
Specifies how many packets to send.
- `-l`  
The length parameter is the numbers of bytes in the Ethernet packet that holds the RPC call message.
- `-d`  
Specify how many microseconds to pause between sending each packet. The default is 0.
- `-t`  
Specify class of transports. Defaults to `netpath`. Current ONC+1.2 `spray` does not provide this option and supports UDP only.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There are no impacts other than those previously listed.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For further information, see the `spray` (3N) and `sprayd` (1M) manpages.

## Obsolescence

Not applicable.

---

## swapctl() and swapon() System Calls

The new system call `swapctl()` is being provided to manage and configure swap space. `swapctl()` replaces `swapon()`. The `swapon()` system call is deprecated and will be obsolete in a future release.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `swapctl()` system call is entirely new with the HP-UX 11i v3 release.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The `swapctl()` system call allows you to configure primary swap to take effect on the next boot. Previously this could only be done via the commands `lvlnboot` and `vxvmbboot`.

## Compatibility

There is no impact. All old methods of swap configuration will continue to be supported in HP-UX 11i v3.

## Performance

There are no known performance issues.

## Documentation

For further information, see the `swapctl(2)` manpage.

## Obsolescence

The `swapon()` system call is deprecated and will be obsolete in a future release. Note that this is the `swapon()` system call and not the `swapon(1M)` command.

## swapon and swapinfo Commands

The `swapon` command enables devices or file systems on which paging is to take place. The `swapinfo` command prints information about device and file system paging space.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `swapon` command has been enhanced to support setting/unsetting of primary swap device for next boot.

The `swapinfo` command supports a new `-s` option to display settings of the primary swap for next boot.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

You will see the new features on the above-mentioned HP-UX command.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.

### Documentation

For further information, see the following manpage:

- `swapon` (1M)
- `swapinfo` (1M)

### Obsolescence

Not applicable.

## **sysdef Command (Deprecated)**

The `sysdef` command analyzes the currently running system and reports on its tunable configuration parameters.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The `sysdef` command has been deprecated in HP-UX 11i v2 and is planned for future obsolescence. Customers are advised to use the alternative `kctune`.

The `sysdef` command reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See previous “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### **Impact**

If you use the `sysdef` command, you could get incorrect values for some kernel tunable parameters.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues, beyond what was described previously.

### **Documentation**

The `sysdef(1M)` manpage has been updated to indicate that the output from `sysdef` reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`.

### **Obsolescence**

See previous “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”



---

## syslogd Command

The `syslogd` command reads and logs messages into a set of files described by the configuration file `/etc/syslog.conf`.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The `syslogd` command can continue logging to log files even after the size of the log file grows beyond 2GB.

The size that a `syslogd` log file can grow to is a configurable variable: `LOG_SIZE` in `/etc/default/syslogd`.

`LOG_SIZE` (interpreted in GB) can be any value greater than 2 or `NOLIMIT` (filesystem imposed limit)

- The `syslogd` command has been enhanced to log multibyte message strings correctly.

When logging messages, `syslogd` will replace each newline character in the message, except for the last one, with a blank space.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- The `syslogd` command has been enhanced to log multibyte message strings correctly.

When logging messages, `syslogd` will replace each newline character in the message, except for the last one, with a blank space.

### Impact

You will see new features on the above-mentioned HP-UX command.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.

### Documentation

For further information, see the following manpage:

- `syslogd` (1M)

### Obsolescence

Not applicable.

---

## usermod Command

The `usermod` command modifies the user login on the system by changing the login related information.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

`usermod` with `-m` option moves the user's home directory mentioned in the command line. In 11.31, `usermod` has been modified to selectively prevent the movement of home directories with `-m` option. By default, the movement of the files is prevented from `/.` System admin(s) can prevent the movement of any other home directories by adding those directories into the configuration file `/etc/default/usermod`.

#### What's New for Customers of HP-UX 11i v2 June 2006?

`usermod` with `-m` option moves the user's home directory mentioned in the command line. In 11.31, `usermod` has been modified to selectively prevent the movement of home directories with `-m` option. By default, the movement of the files is prevented from `/.` System admin(s) can prevent the movement of any other home directories by adding those directories into the configuration file `/etc/default/usermod`.

### Impact

You can configure `/etc/default/usermod` to restrict the movement of home directories with `-m` option. The movement of `/.` is restricted by default.

### Compatibility

The movement of `/.` is restricted by default.

### Performance

There is no impact on performance.

### Documentation

For further information, see the *usermod* (1M) and *usermod* (4) manpages.

### Obsolescence

Not applicable.

---

## UNIX 2003 Standards Compliance Commands

The UNIX 03 Product Standard is the mark for systems conforming to Version 3 of the Single UNIX Specification. It is a significantly enhanced version of the UNIX 95 Product Standard. The mandatory enhancements include alignment with ISO/IEC 9989:1999 C Programming Language, IEEE Std1003.1-2001, and ISO/IEC 9945:2002.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

All commands are modified/enhanced to conform to UNIX 2003 Standards.

The UNIX 2003 changes which do not affect HP-UX compatibility are available by default. Otherwise, in order to get Unix 2003 behavior, the variable `UNIX_STD` has to be defined in the environment.

Under the Korn, Bourne, and POSIX shells, this is accomplished with the following:

```
export UNIX_STD=2003
```

Under the C shell this is accomplished using:

```
setenv UNIX_STD 2003
```

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

HP-UX commands conform to UNIX 2003 Standards. The variable `UNIX_STD` in the environment, when set to 2003, gives the complete UNIX 2003 behavior.

### Compatibility

The changes are compatible with previous versions of HP-UX.

### Performance

There is no impact on performance.

### Documentation

For further information, visit the Open Group's The Single UNIX Specification, Version 3 Web site at <http://www.unix.org/version3/>.

Also see the *standards* (5) manpage.

### Obsolescence

Not applicable.



## What is in This Chapter?

This chapter covers a variety of changes of particular interest to programmers, such as changes to compilers, editors, and libraries, including the following:

- Bundled C Compiler (see page 350)
- aC++ Run Time Library (see page 351)
- Dynamic Loader (dld.so) (see page 353)
- FirstBoot (see page 353)
- HP MLIB (see page 354)
- HP MPI (see page 355)
- HP-UX Color-Curses: libcur\_colr Library and Commands (Obsolete) (see page 357)
- HP-UX C Library (libc) (see page 359)
  - HP-UX C library (libc) - UNIX 2003 Standard Compliance (see page 359)
  - HP-UX C library (libc) - Other Changes (see page 360)
  - libc.1 Library (Deprecated) (see page 366)
  - Networking libc APIs (see page 367)
- Java 2 Platform (see page 369)
  - Java JDK/JRE for HP-UX (see page 369)
  - Java OOB (see page 370)
- libIO Library (see page 371)
- libpthread Library (see page 372)
- Link Editor (ld) (see page 373)
- Mercury Library (libhg) (see page 375)
- Perl (see page 376)
- Threads Renice facility (see page 378)
- UNIX 2003 Standard Profile Conformance (see page 379)
- Unwind Library (libunwind) (see page 380)

## Bundled C Compiler

The bundled C Compiler in HP-UX 11i v3 is version A.06.12 on Itanium®-based servers and B.11.11.16 on PA-RISC. In previous releases, it was supplied for kernel installation and tuning only; it is no longer needed for that, and may be obsoleted in the future.

HP recommends that customers doing development in C obtain the separately available HP C/aC++ Developer's Bundle instead of using the bundled C compiler. The bundled C compiler does not support any optimization or other advanced features found in the Developer's Bundle compiler.

For more information on the HP C/aC++ Developer's Bundle, go to <http://www.hp.com/go/cpp/>.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The bundled compiler that ships as part of HP-UX 11i v3 on Itanium®-based servers is different from the bundled compiler which shipped as part of the HP-UX 11i v2. However, the compilers are highly compatible. Diagnostic message format and identifying numbers have changed. More erroneous and suspicious source constructs are diagnosed. Because the numbers have changed, customers who manipulate the severity of diagnostics on the command line with `+Ww###` or `+We###`, or suppress them entirely with `+W###`, need to modify those command lines.

On PA-RISC, the bundled C compiler is unchanged except for routine maintenance.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

Diagnostic numeric identifiers and diagnostic wording have changed.

## Compatibility

- Itanium®-based Servers:
  - Command lines may need to be changed to specify different numbers for `+W###`, `+We###` and `+Ww###` options.
  - Filter scripts which search for specific diagnostic patterns will need to be changed.
- PA-RISC Servers:
  - There are no known compatibility issues.

## Performance

This compiler does not support optimization. For compiling performance sensitive applications, obtain the HP C/aC++ Developer's Bundle.

## Documentation

The only documentation specifically relating to the bundled C compiler is its manpage: *cc\_bundled* (1).

The separately available HP C/aC++ Developer's Bundle compiler is documented at <http://www.hp.com/go/cpp/>.

## Obsolescence

Not applicable.

---

## aC++ Run Time Library

The aC++ Run Time Library provides the necessary language support for C++ applications. It is provided in two variants:

- A full Standard C++ Library with a templated iostream library, and
- A partial Standard C++ Library with a classic iostream library.

Additionally supplied are two variants of the RogueWave tools.h++ library, *librwtools*, corresponding to the two variants of the standard libraries listed above.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- The `-AA -D_HP_NONSTD_FAST_Iostream` Performance Improvement Macro  
HP aC++ A.06.10 has a new performance improvement preprocessor macro, `_HP_NONSTD_FAST_Iostream`, which improves the `-AA` iostream performance.

This macro enables the following non-standard features:

- Sets `std::ios_base::sync_with_stdio(false)`, which disables the default synchronization with `stdio`.
- Sets `std::cin.tie(0)`, which unties the `cin` from other streams.
- Replaces all occurrences of `std::endl` with `\n`.

Enabling this macro might result in noticeable performance improvement, if the application uses iostreams often.

---

### NOTE

Note: Do not enable the `_HP_NONSTD_FAST_Iostream` macro in any of the following cases:

- If the application assumes a C++ stream to be in sync with a C stream
- If the application depends on stream flushing behavior with `endl`

- If the user uses `std::cout.unsetf( ios::unitbuf )` to unit buffer the output stream.
- 

- **C++ Standard Library TC1 Compliance Change**

The ISO C++ Standard Technical Corrigenda 1 (TC1) has changed the STL function `make_pair` to take their arguments by value instead of `const` reference.

This change brings the HP library into compliance if the enabling macro `-D__HP_TC1_MAKE_PAIR` is specified at compile time. For binary compatibility reasons, the default behavior is unchanged.

- **USA 2007 Daylight Savings Time Legislation Support**

This version of the `librwtool` libraries supports the new 2007 USA Daylight Savings Time rules.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

There is no impact unless you set the newly-defined macros described above during compilation.

### **Compatibility**

There is no known compatibility impact; these changes are binary and source compatible.

### **Performance**

An application's use of `_HP_NONSTD_FAST_Iostream` may significantly increase its performance, if the application meets the requirements to be able to safely use the optimization enabled by this macro.

### **Documentation**

The libraries are a bundled part of the HP-UX system to support distributing C++ applications. However, the documentation for the libraries is provided only as part of the HP C/aC++ Developer's Bundle, since the library documentation is only useful when developing C++ programs. On systems with the HP C/aC++ Developer's Bundle installed, the library is documented in manpages installed in `/opt/aCC/share/man`.

### **Obsolescence**

Not applicable.



---

## Dynamic Loader (dld.so)

Dynamic Loader (`dld.so`) is used to dynamically load shared libraries during executable startup.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

There are no changes since the `PHSS_32864` patch in September 2005.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

There are no changes since the `PHSS_34440` patch in June 2006.

### Impact

There are no impacts other than those described previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For further information about the dynamic loader, see the `dld(5)` manpage.

### Obsolescence

Not applicable.

---

## FirstBoot

FirstBoot provides a set of commands to configure system network.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

As part of Transition links (a.k.a. Upgrade), HP used to create a symbolic link `/etc/set_parms -> /sbin/set_parms`.

Transition links are obsoleted in HP-UX 11i v3 and `set_parms` is available to the user as `/sbin/set_parms`. So HP-UX 11i v3 will not support the symbolic link `/etc/set_parms`.

This change is consistent with the HP-UX program's direction for the handling of Transition links.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

If the user's script invokes `/etc/set_parms` rather than `/sbin/set_parms`, the script will not find the command. The degree of failure will depend on how the script is written. To correct the problem, the user needs to change the path to `/sbin/set_parms`. As a workaround, customers can choose to create the symbolic link themselves until they are able to update their scripts.

### **Compatibility**

There is no known compatibility issue.

### **Performance**

There is no performance impact.

### **Documentation**

For further information, refer to the `set_parms` (1M) manpage.

### **Obsolescence**

`/etc/set_parms` will not be supported from HP-UX 11i v3 onwards.

---

## **HP MLIB**

HP MLIB V9.5 contains mathematical software and computational kernels for engineering and scientific applications involving linear equations, least squares, eigenvalue problems, singular value decomposition, vector and matrix computations, convolutions, and Fourier Transforms. MLIB has six components: VECLIB, LAPACK, ScaLAPACK, SuperLU\_DIST, SOLVERS, and VMATH.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Two new libraries have been added, VECLIBSC8 and LAPACKSC8. These are 64-bit address libraries with 64-bit integer values that use calling conventions similar to those found in Cray's SCILIB math library.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

There are no impacts other than those described previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- See the *mlib* (3M) manpage installed at `/opt/mlib/share/man`.
- Visit the following Web sites:
  - <http://www.hp.com/go/mlib>
  - <http://docs.hp.com/hpux/dev/index.html#Performance%20Tools%20and%20Libraries>.

## Obsolescence

Not applicable.

---

## HP MPI

HP MPI V2.2 is a high-performance implementation of the Message Passing Interface standard. HP-MPI provides an application programming interface and software libraries to support parallel, message-passing applications that are efficient, portable, and flexible.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

New features for version 2.2:

- C++ bindings
- New `mpirun` command line launch options:
  - `hostlist`
  - `hostfile`
  - `lsb_hosts`
  - `lsb_mcpu_host`
- MPI-2 supported ROMIO
- CPU bind support
- Signal Propagation
- New RDMA environment variables

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

There are no changes for this product from the June 2006 release.

## Impact

There are no impacts other than those described previously.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

- See the *mpi* (3M) manpage installed at `/opt/mpi/man`.
- Visit the following Web sites:
  - <http://www.hp.com/go/mpi>
  - Consult the product User's Guide and Release Notes at <http://docs.hp.com/hpux/dev/index.html#Performance%20Tools%20and%20Libraries>.

## Obsolescence

Not applicable.

---

## HP-UX Color-Curses: libcur\_colr Library and Commands (Obsolete)

Libraries `libcur_colr.a` and `libcur_colr.sl`, and commands `captainfo_colr`, `infocmp_colr`, `tput_colr`, and `tic_colr` are part of HP-UX Color-Curses package used for color-management.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX Color-Curses libraries and commands were declared deprecated in HP-UX 10.30 and are not available in HP-UX 11i v3 PA-RISC.

Following are the libraries, commands and header files obsoleted in HP-UX 11i v3 PA-RISC version:

- `/usr/lib/libcur_colr.a`
- `/usr/lib/libcur_colr.sl`
- `/usr/bin/captainfo_colr`
- `/usr/bin/infocmp_colr`
- `/usr/bin/tput_colr`
- `/usr/bin/tic_colr`
- `/usr/include/curses_colr/curses.h`
- `/usr/include/curses_colr/term.h`

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

HP-UX Color-Curses libraries and commands were declared deprecated in HP-UX 10.30 and are not available in HP-UX 11i v3 PA-RISC.

Following are the libraries, commands and header files obsoleted in HP-UX 11i v3 PA-RISC version:

- `/usr/lib/libcur_colr.a`
- `/usr/lib/libcur_colr.sl`
- `/usr/bin/captainfo_colr`
- `/usr/bin/infocmp_colr`
- `/usr/bin/tput_colr`
- `/usr/bin/tic_colr`
- `/usr/include/curses_colr/curses.h`
- `/usr/include/curses_colr/term.h`

The above files are available in HP-UX 11i v2 PA-RISC version but not in HP-UX 11i v2 Itanium®-based version.

## Impact

As HP-UX 11i v3 does not have these libraries and commands. Any makefiles or executables referring to these libraries or scripts making use of these commands may not work.

Alternative: X/Open libcurses. For more information about libcurses and X/Open libcurses, see the white paper “Migrating HP Curses Applications to Xcurses” at <http://devresource.hp.com/drc/STK/docs/refs/xcurses.jsp>. Also see the following “Documentation” section.

## Compatibility

On HP-UX 11i v3 PA-RISC machine makefiles or scripts referring to the obsoleted commands will fail. Applications linking to the obsoleted libraries may not work. Similar APIs are available in the X/Open libcurses library.

On HP-UX 11i v3 Itanium®-based machines there is no change as these deliverables are already obsoleted in HP-UX 11i v2 release.

## Performance

There are no known performance issues.

## Documentation

For further information, refer to the following Web sites:

- <http://docs.hp.com/en/B3782-90716/ch08s11.html> (under the heading “Interface: Curses Libcur\_colr.a, libcur\_colr.sl”)
- <http://docs.hp.com/en/B9106-90003/ch07s12.html> (under the heading “libHcurses and Related APIs”)
- <http://devresource.hp.com/drc/STK/docs/refs/xcurses.jsp> (under the sub-heading “Compiling with cur\_colr”)
- <http://www.opengroup.org/onlinepubs/007908799/cursesix.html> (X/Open Curses, Issue 4 Version 2)

## Obsolescence

Interface:

- /usr/lib/libcur\_colr.a
- /usr/lib/libcur\_colr.sl
- /usr/bin/captainfo\_colr
- /usr/bin/infocmp\_colr
- /usr/bin/tput\_colr
- /usr/bin/tic\_colr
- /usr/include/curses\_colr/curses.h
- /usr/include/curses\_colr/term.h

were declared for obsolescence as follows:

Deprecated:	HP-UX 10.30
Discontinued:	HP-UX 11i v1.5 (11.20) (For Itanium®-based) HP-UX 11i v3 (For PA-RISC)
Obsoleted:	HP-UX 11i v1.5 (11.20) (For Itanium®-based) HP-UX 11i v3 (For PA-RISC)
Alternative:	X/Open libcurses

---

## HP-UX C Library (libc)

The C library, `libc`, implements a set of commonly used functions. It also provides the interface between the user program and the kernel.

Changes to `libc` are documented in the following sections:

- HP-UX C library (libc) - UNIX 2003 Standard Compliance (see page 359)
- HP-UX C library (libc) - Other Changes (see page 360)
- Networking libc APIs (see page 367)

See also “libc” on page 257 in Chapter 7.

---

## HP-UX C library (libc) - UNIX 2003 Standard Compliance

The C library, `libc`, implements a set of commonly used functions. It also provides the interface between the user program and the kernel.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `libc` library has been enhanced to comply with UNIX 2003 standards. As a result a number of APIs have been added, while some APIs have been modified. The new APIs are *imaxabs* (3), *isblank* (3), *iswblank* (3), *llabs* (3), *atoll* (3), *unsetenv* (3), *setenv* (3), *imaxdiv* (3), *lldiv* (3), *\_Exit* (2), *setegid* (3), *seteuid* (3), *strtof* (3), *posix\_openpt* (3), *vfwscanf* (3), *vswscanf* (3), *vscanf* (3), *wcstof* (3) (only for Itanium®-based systems) and *wcstold* (3).

None of the modifications to existing APIs or structures will break compatibility except for the `lconv` structure.

## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There are no impacts other than those previously listed.

### Compatibility

The `lconv` structure defined in `/usr/include/locale.h` has been extended to conform to Unix 2003 standards. This change may have a compatibility impact on applications linked with archive libraries, dependent upon the locale version used. The `localeconv` (3C) manpage lists the new fields in the `lconv` structure.

### Performance

There is no known impact on performance.

### Documentation

For further information, see the following documentation:

- Manpages:  
*standards* (5), *localeconv* (3C), *imaxabs* (3), *isblank* (3), *iswblank* (3), *labs* (3), *atoll* (3), *unsetenv* (3), *setenv* (3), *imaxdiv* (3), *lldiv* (3), *\_Exit* (2), *setegid* (3), *seteuid* (3), *strtof* (3), *posix\_openpt* (3), *vfwscanf* (3), *vswscanf* (3), *vscanf* (3), *wcstof* (3), and *wcstold* (3).
- Web pages:  
<http://www.opengroup.org/onlinepubs/009695399/basedefs/locale.h.html>

### Obsolescence

Not applicable.

---

## HP-UX C library (libc) - Other Changes

The C library, `libc`, implements a set of commonly used functions. It also provides the interface between the user program and the kernel.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- Large PID:



libc APIs `mktemp` and `mkstemp` have been enhanced to generate unique filenames when large PID is enabled. These APIs replace the *X*'s in the template string passed as a parameter and use the current process ID to form a unique filename.

Since the maximum value of PID supported prior to HP-UX 11i v3 is 30000, it was possible to accommodate the PID in the five *X*'s specified in the template string. When large PID support is enabled in HP-UX 11i v3 (as specified in Unix 2003 standard specifications when the PID is less than 1 billion), the number of digits in the PID will be more than 5. So, new implementations of these APIs have been provided which can support large PID values while generating unique filenames.

- Large UNAME and HOSTNAME:

This solution supports `uname` and related libc interfaces to support hostnames in excess of eight bytes. Also, this supports the expansion of `MAXHOSTNAMELEN` constant from 64 bytes to 256 bytes.

The following libc APIs are modified to support large UNAME and HOSTNAME:

- `uname()`: Applications which want to take advantage of large `uname` have to recompile with `-D_HPUX_API_LEVEL=20040821`. They also have to provide for increase in buffer sizes from 9 to 256 in order to take advantage of large `uname`.
- `gethostname()`: Applications which need to take advantage of a larger hostname should make calls with a larger buffer and a bigger “size” parameter (limit increased from 9 to 256) to `gethostname()`.
- `sethostname()`: Applications which need to take advantage of a larger hostname should make calls with a larger buffer and a bigger “size” parameter (limit has increased from 9 to 256) to `sethostname()`.
- `setuname()`: All applications which uses `setuname()` should provide for a larger buffer (`const char* name`) and a bigger `nameLen` parameter (limit increased from 9 to 256)

Please look at the respective manpages for more details.

- Tru64 API Migration - APIs to support migration from Tru64 to HP-UX 11i v3

This feature provides two new APIs in the C library:

- `mvalid()` - checks a given memory region for validity
- `setlinebuf()` - sets the buffering attributes of a stream

Some other Tru64 APIs will be made available in HP-UX 11i v3 as part of Unix2003 standardization. These APIs are `flock`, `setenv`, `unsetenv`, `seteuid`, `setguid`.

Please look at the respective manpages for more details .

- `malloc` - thread local cache enhancements

New options allow blocks in the per thread cache to be exchanged among threads. The exchange is facilitated by a global pool of blocks. `max_cache_misses` and `num_global_slots` are new options that can be set through the environment variable `_M_CACHE_OPTS`.

- Long username and groupname support in libc

libc APIs have been enhanced to work with long (255 bytes) user and group name. libc also supports new APIs that enable the application programmer to get the current username attributes of the system.

The system administrator may use the newly provided `lugadmin` command to enable long user name. The `lugadmin` command will update a place holder file with the newly set maximum username length. Once long username is set it cannot be disabled.

In order to make application logic transparent to any future expansion of username length, application programmers are encouraged to use the `sysconf` API with the `_SC_LOGIN_NAME_MAX` parameter to dynamically determine the currently set username length. The `sysconf` API will return the currently set username/groupname length for the system.

Following `libc` APIs are long username and groupname enabled

- `getpwent` family
- `getgrent` family
- `getuts` family
- `initgroups`
- `sysconf`

A new API is provided in HP-UX 11i v3, `ug_display_width`, providing a mechanism for applications to check the number of bytes of the username/groupname that is apt for displaying. This display length can be set system wide using the `lugadmin` command or for a process or set of processes using the environment variable `UG_DISPLAY_WIDTH`.

More information on enabling applications for long username can be found in the white paper, "Username and groupname sizes on HP-UX," available at <http://docs.hp.com> and the manpage `lugadmin`.

Please refer to the respective manpages for more details.

- Change in `localtime_r()` and `tzset()`:

The API `localtime_r()` returns pointer to the time structure `tm` and `tzset()` sets the external variables `timezone`, `daylight` and `tzname`.

If the value of the `timezone` cannot be determined from the environment variable `TZ` or from the file `/etc/default/tz`, it is set to a default value of `EST5EDT`. If the `timezone` is set to the default value of `EST5EDT` and the `timezone` adjustment file (`/usr/lib/tztab`) is not available, then `localtime_r()` and `tzset()` return values are as follows:

`localtime_r()` returns Coordinated Universal Time (UTC) in the time structure `tm` and `tzset()` sets `tzname`, `timezone` and `daylight` according to Coordinated Universal Time (UTC) `timezone`.

Please refer the manual page of `localtime_r(3C)` and `tzset(3C)` for more details.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- Tru64 API Migration - Two new APIs to support migration from Tru64 onto HP-UX HP-UX 11i v3. Compared to HP-UX 11i v2, this feature provides the following two new APIs in C library to make use by other applications:
  - `mvalid()` - check memory region for validity
  - `setlinebuf()` - assign buffering to a stream.

- Some other Tru64 APIs will be made available in HP-UX 11i v3 as part of Unix2003 standardization. These APIs are `flock`, `setenv`, `unsetenv`, `seteuid` and `setgid`. Please refer to the respective manpages for more details.

- `malloc` - thread local cache enhancements

New options allow blocks in the per thread cache to be exchanged among threads. The exchange is facilitated by a global pool of blocks. `max_cache_misses` and `num_global_slots` are new options that can be set through the environment variable `_M_CACHE_OPTS`.

- Long username and groupname support in `libc`

`libc` APIs have been enhanced to work with long (255 bytes) user and group name. `libc` also supports new APIs that enable the application programmer to get the current username attributes of the system.

The system administrator may use the newly provided `lugadmin` command to enable long user name. The `lugadmin` command will update a place holder file with the newly set maximum username length. Once long username is set it cannot be disabled.

In order to make application logic transparent to any future expansion of username length, application programmers are encouraged to use the `sysconf` API with the `_SC_LOGIN_NAME_MAX` parameter to dynamically determine the currently set username length. The `sysconf` API will return the currently set username/groupname length for the system.

Following `libc` APIs are long username and groupname enabled

- `getpwent` family
- `getgrent` family
- `getuts` family
- `initgroups`
- `sysconf`

A new API is provided in HP-UX 11i v3, `ug_display_width`, providing a mechanism for applications to check the number of bytes of the username/groupname that is apt for displaying. This display length can be set system wide using the `lugadmin` command or for a process or set of processes using the environment variable `UG_DISPLAY_WIDTH`.

Please refer to the respective manpages for more details.

More information on enabling applications for long username can be found in the white paper, "Username and groupname sizes on HP-UX," available at <http://docs.hp.com> and the manpage `lugadmin` (1M).

- Change in `localtime_r()` and `tzset()`:

The API `localtime_r()` returns pointer to the time structure `tm` and `tzset()` sets the external variables `timezone`, `daylight` and `tzname`.

If the value of the `timezone` cannot be determined from the environment variable `TZ` or from the file `/etc/default/tz`, it is set to a default value of `EST5EDT`. If the `timezone` is set to the default value of `EST5EDT` and the `timezone` adjustment file (`/usr/lib/tztab`) is not available, then `localtime_r()` and `tzset()` return values are as follows:

`localtime_r()` returns Coordinated Universal Time (UTC) in the time structure `tm` and `tzset()` sets `tzname`, `timezone` and `daylight` according to Coordinated Universal Time (UTC) timezone.

Please refer the manual page of `localtime_r(3C)` and `tzset(3C)` for more details.

## Impact

The following APIs are impacted by the above change in `localtime_r()` and `tzset()`:

- `localtime(3C)`, `ctime(3C)`, `asctime(3C)`, `mkttime(3C)`, `getdate(3C)`, `strftime(3C)` and `strptime(3C)`.

Applications using `localtime_r()` or `tzset()` or any of the above mentioned APIs will be impacted, if the default timezone value of `EST5EDT` could not be read from the timezone adjustment file (`/usr/lib/tztab`).

## Compatibility

- Large PID:

When Large PID is enabled, these APIs will always guarantee to return a unique filename. However, if the application expects the PID value in the unique filename returned by these APIs, it is not guaranteed. (Example: Applications which parse the PID from the filename.)

- Large UNAME and HOSTNAME:

This feature enables the customer requirement of establishing host naming conventions using more characters. Applications which have not been upgraded to use the expanded `uname` and/or `hostname` will continue to run without any problems as long as the system administrator does not assign a `uname/nodename` in excess of 8 bytes or a `hostname` in excess of 64 bytes.

- Change in `localtime_r()` and `tzset()`:

If the value of the timezone cannot not be determined from the environment variable `TZ` or from the file `/etc/default/tz`, the default timezone is set to `EST5EDT`. In `11iv1` and `11iv2`, if this default timezone value could not be read from the timezone adjustment file (`/usr/lib/tztab`), `localtime_r()` returns `EST5EDT` in time structure `tm` and `tzset()` sets `tzname`, `timezone` and `daylight` according to `EST5EDT` timezone.

In `11i v3` if default timezone value of `EST5EDT` could not be read from the timezone adjustment file (`/usr/lib/tztab`), `localtime_r()` will return Coordinated Universal Time (UTC) in the time structure `tm` and `tzset()` will set `tzname`, `timezone` and `daylight` according to the Coordinated Universal Time (UTC) timezone.

Some of the scenarios wherein `libc` cannot read timezone adjustment file (`/usr/lib/tztab`) are listed below:-

1. In a HP-UX `11i` Security Containment-enabled environment, a process can be blocked access to the timezone adjustment file (`/usr/lib/tztab`).
2. When `/usr` is not mounted. (Ex.: In single user mode)
3. When the timezone adjustment file (`/usr/lib/tztab`) is missing or corrupt.

4. In “Change Root Directory” environment *chroot* (1m), if the new root does not have the timezone adjustment file (*/usr/lib/tztab*).

In earlier releases in the above mentioned scenarios, if a user had set the timezone to a value having Day Light Saving (DST) Component and if *libc* could not read that timezone from the timezone adjustment file (*/usr/lib/tztab*), then the user would not be served in the requested timezone. It would be served based on the timezone *EST5EDT*.

In the same scenario, now a user will get time served in Cordinated Universal time (UTC) if *libc* cannot read timezone *EST5EDT* from the timezone adjustment file (*/usr/lib/tztab*).

## Performance

The new options *max\_cache\_misses* and *num\_global\_slots* can be used to tune the *malloc* thread local cache to improve the performance of certain multi-threaded applications. By allowing exchange of cached blocks among threads, these options allow *malloc* and *free* to be handled in a more efficient way.

There is no direct impact on performance from the other changes in *libc*.

## Documentation

Manpages:

- *mktemp* (3C)
- *mkstemp* (3C)
- *uname* (2)
- *gethostname* (2)
- *sethostname* (2)
- *mvalid* (2)
- *setbuf* (3S)
- *flock* (2)
- *setenv* (3C)
- *seteuid* (2)
- *malloc* (3C)
- *localtime\_r* (3C)
- *tzset* (3C)

White Paper:

- *Username and Groupname Sizes on HP-UX* available at <http://docs.hp.com>

## Obsolescence

Not applicable.

## **libc.1 Library (Deprecated)**

`libc.1` is a HP-UX 10.20 compatibility “C” library available in HP-UX 11i. It is a C library normally used by all “C” programs.

### **Summary of Change**

#### **What’s New for Customers Migrating from HP-UX 11i v1 September 2005?**

The library `libc.1` is deprecated.

There is no change compared to HP-UX 11i v1 release, but it will be obsoleted from the OS in a future release.

#### **What’s New for Customers Migrating from HP-UX 11i v2 June 2006?**

The library `libc.1` is deprecated.

There is no change compared to HP-UX 11i v2 release, but it will be obsoleted from the OS in a future release.

### **Impact**

There is no immediate impact in HP-UX 11i v3. When the `libc.1` library is obsoleted, all programs linking to this library will not work. Hence customers are encouraged to start migrating their programs from `libc.1` to `libc.2` library.

### **Compatibility**

There is no immediate compatibility issue in HP-UX 11i v3. As library `libc.1` is deprecated, customers are encouraged to start migrating their programs from `libc.1` to `libc.2` library.

### **Performance**

There are no known performance issues.

### **Documentation**

None.

### **Obsolescence**

Library `libc.1` is deprecated from HP-UX 11i v3. In future HP-UX releases, the `libc.1` library will be obsoleted. `libc.2` is the alternate library.

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## Networking libc APIs

The C library, `libc`, provides the interface between the user program and the kernel.

- The `getnameinfo()` networking `libc` function is used to look up a host name and service name, given the binary address and port.
- The `getaddrinfo()` networking `libc` function is used to translate the hostname-to-address in a protocol-independent fashion.
- `getipnodebyname()` and `getipnodeaddr()` are the two networking `libc` APIs which provide the same functionality as `getnameinfo()` and `getaddrinfo()`, respectively.
- The `getipnodebyname()` `libc` function performs the translation from nodename to IP address using the policy specified in the `/etc/nsswitch.conf` file.
- The `getipnodebyaddr()` `libc` function performs the translation from IP address to nodename using the policy specified in the `/etc/nsswitch.conf` file.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following changes are applicable to the networking APIs:

- The `libc` APIs `getnameinfo()` and `getaddrinfo()` look into the repositories specified in the `ipnodes` directive to resolve addresses. If this resolution fails, and if an IPv4 address is requested using a flag parameter, `getnameinfo()` and `getaddrinfo()` additionally look into the repositories specified with the `hosts` directive of the `/etc/nsswitch.conf` file to resolve an IPv4 address. This additional lookup involves `getaddrinfo()` calling the `gethostbyname()` function and `getnameinfo()` calling the `gethostbyaddr()` function to resolve IPv4 addresses.
- A call to `getaddrinfo()/getnameinfo()` may overwrite the storage which is used by the `gethostbyname()/gethostbyaddr()` functions to return the result. Therefore, the data returned by `gethostbyname()/gethostbyaddr()` should be copied to a different location before a subsequent call to `getaddrinfo()/getnameinfo()` (or the `libc` APIs `getipnodebyname()/getipnodebyaddr()`) is made.
- HP-UX 11i v2 is the last operating system supporting the `libc` APIs `getipnodebyname()` and `getipnodebyaddr()` and may be removed in future releases.
- The return value of the `gai_strerror` API has changed from `char *` to `const char *`.
- A new non-zero error code, `EAI_OVERFLOW`, is introduced in the `getnameinfo` API. `getnameinfo` returns an `EAI_OVERFLOW` error if an argument buffer overflow occurs.
- The type of the `hostlen` and `servlen` variables in `getnameinfo` is changed from `size_t` to `socklen_t`.
- `getnameinfo` does not perform a lookup of an IPv6 address of the form `::` and returns an `EAI_NONAME` error.

- `getnetbyaddr` accepts the network number as an unsigned integer instead of integer.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

The following changes are applicable to the networking APIs:

- The return value of the `gai_strerror` API has changed from `char *` to `const char *`.
- A new non-zero error code, `EAI_OVERFLOW`, is introduced in the `getnameinfo` API. `getnameinfo` returns an `EAI_OVERFLOW` error if an argument buffer overflow occurs.
- The type of the `hostlen` and `servlen` variables in `getnameinfo` is changed from `size_t` to `socklen_t`.
- `getnameinfo` does not perform a lookup of an IPv6 address of the form `::` and returns an `EAI_NONAME` error.
- `getnetbyaddr` accepts the network number as an unsigned integer instead of integer.

### Impact

- Networking applications that call the `getnameinfo()/getaddrinfo()` functions may notice a change in the value of the parameter `addrinfo` returned by these functions while resolving IPv4 addresses.
- Customers are discouraged from using the libc APIs `getipnodebyaddr()` and `getipnodebyname()` in their applications. Instead, they can use the libc APIs `getaddrinfo()` and `getnameinfo()` which support the same functionality.
- When `getnameinfo` receives an insufficient buffer, `getnameinfo` returns an `EAI_OVERFLOW` error instead of success.

### Compatibility

There are no known compatibility issues.

### Performance

A timeout delay can be noticed due to the additional lookup by the `getaddrinfo()` and `getnameinfo()` functions.

### Documentation

The following manpages are modified:

- `getaddrinfo` (3N)
- `getnameinfo` (3N)
- `gethostent` (3N)
- `getnetbyaddr` (3N)
- `gai_strerror` (3N)



## Obsolescence

Not applicable.

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## Java 2 Platform

The Java 2 platform includes:

- “Java JDK/JRE for HP-UX” on page 369
- “Java OOB” on page 370

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## Java JDK/JRE for HP-UX

HP-UX Software Development Kit and Runtime Environment for the Java 2 Standard Edition Platform (SDK/RTE) provides the Java 2 programming tools and runtime environment that allow you to deploy Java technology with the best performance on systems running HP-UX 11i.

Products are:

- Java15JDK - Java 1.5.JDK
- Java15JDKadd - Java 1.5.JDK Addon
- Java15JRE - Java 1.5 JRE
- Java15JREadd - Java 1.5 JRE Addon
- T1456AA - Java 1.4 SDK
- T1456AAaddon - Java 1.4 SDK Addon
- T1457AA - Java 1.4 RTE
- T1457AAaddon - Java 1.4 RTE Addon
- T1458AA - Java 1.4 Plugin
- ObsJava12 - Obsolescence for Java 1.2
- ObsJava13 - Obsolescence for Java 1.3

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

HP-UX 11i v3 does not include Java 1.3 and Java 3D (J3D 1.4).

SDK/RTE version 5.0 has been updated to incorporate defect fixes.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

HP-UX 11i v3 does not include Java 1.3 and Java 3D (J3D 1.4).

SDK/RTE version 5.0 has been updated to incorporate defect fixes.

### **Impact**

With this release you have the most current Java technology.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For the latest documentation, refer to the *Java Technology for HP-UX 11i* Web site at <http://hp.com/go/java> and select "Information library" in the left navigation bar.

### **Obsolescence**

SDK/RTE 1.2 and SDK/RTE 1.3 have reached end-of-life and are not included in this release.

ObsJava12 Obsolescence for Java 1.2

ObsJava13 Obsolescence for Java 1.3

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## **Java OOB**

Java Out-of-Box is a stand-alone bundle that upon installation installs startup (RC) scripts, modifies kernel parameters, rebuilds the kernel, and reboots the system. During startup the startup scripts modify system tunables, providing better "Out of The Box" behavior for Java.

The product is:

JAVAOOB, Java Out-of-Box

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

JAVAOOB has been updated to incorporate defect fixes.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

JAVAOOB has been updated to incorporate defect fixes.

#### **Impact**

There are no impacts other than those described previously.

#### **Compatibility**

There are no known compatibility issues.

#### **Performance**

There are no known performance issues.

#### **Documentation**

For the latest documentation, go to the *Java Technology for HP-UX 11i* Web site at <http://hp.com/go/java> and select "Information library" in the left navigation bar.

#### **Obsolescence**

Not applicable.

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## **libIO Library**

`libIO.so` (for Itanium®-based systems) or `libIO.sl` (for PA-RISC systems) is a shared library, which provides APIs for accessing the HP-UX I/O subsystem information. The *libIO* (3X) manpage documents the APIs. The header file `/usr/include/sys/libIO.h` has the data structures needed for compiling the programs using libIO.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

This library (`libIO`) is being introduced into HP-UX for the first time.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

This library (`libIO`) is being introduced into HP-UX for the first time.

#### **Impact**

The library will enable you to use the APIs to get HP-UX I/O subsystem information. The library will reduce the dependency on other HP-UX commands for I/O information.

## Compatibility

Many APIs in `libIO` are release-specific. These APIs may be removed or have their meanings changed in future releases of HP-UX. Currently, the `libIO` APIs are not thread-safe. For more information, see the *libIO (3X)* manpage.

## Performance

There are no known performance issues.

## Documentation

The *libIO (3X)* manpage documents the library. See also the white paper “Using the HP-UX `libIO` library,” available at <http://docs.hp.com>.

## Obsolescence

Not applicable.

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## libpthread Library

The `libpthread` library is delivered as a core part of base HP-UX. It enables multithreading support in user level applications.

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

A new API, `pthread_setschedprio()`, is added. It allows you to set scheduling priority of the target thread.

### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

A new API, `pthread_setschedprio()`, is added. It allows you to set scheduling priority of the target thread.

## Impact

There are no impacts other than those described previously.

## Compatibility

Not applicable.

## Performance

There are no known performance issues.

## Documentation

Manpage:

`pthread_setschedprio()`

## Obsolescence

Not applicable.

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## Link Editor (ld)

Link Editor (ld) takes one or more object files or libraries as input and combines them to produce a single (usually executable) file.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Changes since the PHSS\_32864 patch in September 2005:

- Introduce new linker option `+nosymb` to exclude symbol from `-Bsymbolic` processing.
- Introduce new program header `PT_HP_LINKER_FOOTPRINT`, which points to the linker footprint in the output file. Linker adds this program header for all Itanium®-based loadable modules.
- Introduce new program header flag `PF_HP_ENABLE_RECOVER`. The flag is added to the text segment's flag to indicate `enable recovery` mode. Linker adds this program flag for all Itanium®-based loadable modules.
- For `ld` option `+FP mode`, extend the allowable values for `mode` to include ones that specify the rounding mode in the environment for floating-point operations to be initialized at program start-up:
  - RN to nearest (the default)
  - RU upward (toward +infinity)
  - RZ toward zero (truncate)
  - RD downward (toward -infinity)
- Introduced new linker flag `+nobss`, which pads the data segment with zeros so bss data is included with file-mapped data. Data segments with one or more pages of bss are normally loaded into memory with two `mmap` calls. Building with `+nobss` allows them to be loaded with a single `mmap` call.
- Reduced link time for large programs built with profile based optimization.
- Improved global variable layout for programs built with profile based optimization.
- Turn on `+noinputmmap` behavior when `mmap` fails

- Introduce new linker option `+alloc_hidden_commons` to allocate storage for hidden commons in relocatable link
- Introduce new linker option `+noprocelim_sym` to exclude specific symbols from procedure elimination
- Introduce new linker option `-w` to suppress warnings.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

Changes since the PHSS\_34440 patch in June 2006:

- Introduce new linker option `+alloc_hidden_commons` to allocate storage for hidden commons in relocatable link
- Introduce new linker option `+noprocelim_sym` to exclude specific symbols from procedure elimination
- Introduce new linker option `-w` to suppress warnings
- Added implicit linking of CIN runtime libraries when the linker recognizes CIN instrumented input objects and shared libraries. Issue a warning if CIN options and libraries were missing from the link line.

### **Impact**

There may be a link time improvement for large application.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There may be a link time improvement for large application.

### **Documentation**

Manpages:

`/usr/man/man1.Z/ld.1`

`/usr/man/man1.Z/ld_ia.1`

`/usr/man/man1.Z/ld_pa.1`

Documents:

*Linker and Libraries User Guide* (`ld +help`)

### **Obsolescence**

Not applicable.

---

## Mercury Library (libhg)

The Mercury library (libhg) provides high performance interfaces between the user programs and the kernel making it possible to transfer key pieces of information back and forth at high speeds.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Mercury library (libhg) is newly introduced in HP-UX 11i v3. It is not available on HP-UX 11i v1 release.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

Mercury library (libhg) is newly introduced in HP-UX 11i v3. It is not available on HP-UX 11i v2 release.

### Impact

Mercury library (libhg) is a new library on HP-UX 11i v3. This does not have any impact on you unless your application is explicitly linked to libhg and the interfaces provided therein are used.

### Compatibility

Mercury library (libhg) is a new library on HP-UX 11i v3. There are no compatibility issues for source files, scripts, makefiles, executables, data, and so on.

### Performance

The Mercury library (libhg) provides high performance interfaces between the user programs and the kernel, making it possible to transfer key pieces of information back and forth at high speeds. A participating thread registers itself with the kernel, and then its run state is made available in a shared memory area to all threads running in the system. The system call `hg()` is not meant for direct use in the application. The application can link the Mercury Library `libhg`, which provides functions for the user. However, you should note that the information received may become stale at the very next moment. The application design must take this fact into account.

### Documentation

For further information see the *hg* (3T) and *mercury* (3T) manpages.

### Obsolescence

Not applicable.

## Perl

Perl is a high-level programming language created and enhanced by the Open Source community. Perl takes the best features from other languages: C, awk, sed, sh, and BASIC, among others, and at least a dozen other tools and languages.

The version for HP-UX 11i v3 is 5.8.8 build 817.1.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- `chdir`, `chmod` and `chown` can now work on filehandles as well as filenames, if the system supports respectively `fchdir`, `fchmod` and `fchown`.
- `h2xs` implements new option `--use-xsloader` to force use of `XSLoader` even in backwards compatible modules. Any `enums` with negative values are now skipped.\
- `Perlivp` implements new option `-a` and will not check for `*.ph` files by default any more. Use the `-a` option to run all tests.
- Some of the modules are upgraded to latest revisions.
- Some of the bug fixes done in this release are:
  - no warnings category works correctly with `-w`
  - Remove over-optimization
  - `sprintf()` fixes
  - Debugger and Unicode slowdown
- Provides large hostname/uname support.
- The Perl interpreter is built to allow the use of a site customization script.
- `Config.pm` is now about 3K rather than 32K, with the infrequently used code and `%Config` values loaded on demand.
- There has been a fair amount of refactoring of the C source code, partly to make it tidier and more maintainable.
- `${^UTF8LOCALE}` has been added to give Perl space access to `PL_utf8` locale.
- The size of the arenas used to allocate SV heads and most SV bodies can now be changed at compile time.
- From HP-UX 11i v3 on all applications embedding Perl will behave as if Perl were compiled with `-DPERL_USE_SAFE_PUTENV`.
- Most C source files now have comments at the top explaining their purpose, which should help anyone wishing to get an overview of the implementation.
- The debugger can now emulate stepping backwards, by restarting and rerunning all but the last command from a saved command history. It (`lib/perl5db.pl`) can now save all debugger commands for sourcing later, and can display the parent inheritance tree of a given class.



## What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

There are no impacts other than those described previously.

### Compatibility

Perl 5.8 is not binary compatible with earlier releases of Perl for XS modules. These modules have to be recompiled. (Pure Perl modules should continue to work.)

The major reason for the discontinuity is the new IO architecture called PerlIO. PerlIO is the default configuration because without it many new features of Perl 5.8 cannot be used. In other words, you just have to recompile your modules containing XS code.

The new safe signals implementation postpones handling of signals until it's safe (in between the execution of low level opcodes). This change may have surprising side effects because signals no longer interrupt Perl instantly.

### Performance

- Weak reference creation is now  $O(1)$  rather than  $O(n)$ . Weak reference deletion remains  $O(n)$ , but if deletion only happens at program exit, it may be skipped completely.
- There are improvements to reduce the memory usage of *sort* and to speed up some cases.
- As much data as possible in the C source files is marked as *static*, to increase the proportion of the executable file that the operating system can share between process and thus reduce real memory usage on multi-user systems.
- The internal pointer mapping hash used during ithreads cloning now uses an arena for memory allocation. In tests this reduced ithreads cloning time by about 10%.
- *reverse sort ...* is now optimized to sort in reverse, avoiding the generation of a temporary intermediate list.
- *for (reverse @foo)* now iterates in reverse, avoiding the generation of a temporary reversed list.

### Documentation

Web sites:

<http://www.perl.org>

<http://www.activestate.com>

<http://learn.perl.org>

### Obsolescence

Not applicable.

---

## Threads Renice facility

The threads renice feature provides an ability to change the nice value of a thread within a multi-threaded process. The *nice* value of a thread is similar to the process *nice* and controls the effective priority of a running thread. On prior releases of HP-UX, only the *nice* value of a process could be controlled. This feature provides a finer grain of control to user-applications over scheduling of *SCHED\_HPUX* policy threads in a multi-threaded process. To use this feature, the application would need to use the new interfaces provided.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Two new pthread APIs have been provided as a part of this functionality:

- `pthread_get_nice_np` retrieves the current nice value of a given thread.
- `pthread_set_nice_np` sets the nice value on a given thread.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?".

### Impact

There are no impacts other than those described previously.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Manpages:

- `nice` (2)
- `pthread_get_nice_np` (3T)
- `pthread_set_nice_np` (3T)

### Obsolescence

Not applicable.

---

## UNIX 2003 Standard Profile Conformance

Conformance to the UNIX 2003 Standard Profile with formal branding on the Itanium®-based hardware.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

New functions and compiler conformance as defined in the Single UNIX Specification version 3.

The Precision Architecture (PA) systems will have most of the UNIX 2003 features available for applications. Since the C99 compiler will not be available on PA, full UNIX 2003 branding is not supported.

Itanium®-based systems will fully conform and will be branded to UNIX 2003.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

No negative impact. Customers have the option to enable a “strictly conforming” UNIX 2003 environment.

### Compatibility

Compatible with previous versions of HP-UX. Customer can enable UNIX 2003 conformance, as well as continuing to enable the UNIX 95 conformance if it is so desired.

### Performance

There are no known performance issues.

### Documentation

<http://www.opengroup.org/certification/unix-home.html>

### Obsolescence

Not applicable.

## Unwind Library (`libunwind`)

The Unwind Library, `libunwind`, provides basic stack unwind functionality for HP-UX applications on Itanium®-based servers, including APIs for printing a stack trace, APIs for unwinding the stack programmatically, and APIs to support the C++ exception handling mechanism.

There are two sets of APIs for unwinding the stack programmatically:

- the original “classic” APIs `_UNW_createContext` (3X), `_UNW_step` (3X), et al.,
- and the new “unwind express” APIs `uwX_init` (3X), `uwX_step` (3X), et al.

### Summary of Change

#### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

The Unwind Library, `libunwind`, is for Itanium®-based systems only.

#### What’s New for Customers Migrating from HP-UX 11i v2 June 2006?

The current version of `libunwind` is 1.49.

The performance of the unwind express APIs has been improved substantially, as much as 40% compared to version 1.42, which shipped with HP-UX 11i v2. The C++ exception handling mechanism uses these APIs, so there will also be a performance improvement in the processing of thrown exceptions. The actual performance benefit observed in a real application will depend on the relative amount of time spent in exception handling.

The `U_STACK_TRACE` (3X) and `_UNW_STACK_TRACE` (3X) APIs have been enhanced to include source file and line number information, when symbolic debug information is available, in the generated stack traces. When symbolic debug information is available, the generated stack traces will also show inlined calls.

The following new APIs have been added to the unwind express portion of the library:

- `uwX_step_inline` (3X), for stepping over inlined calls
- `uwX_get_source_info` (3X) and `uwX_find_source_info` (3X), for looking up source file and line number information

### Impact

You will not be affected unless you wish to take advantage of the new APIs for accessing source file and line number information.

### Compatibility

The format of the output from `U_STACK_TRACE` (3X) and `_UNW_STACK_TRACE` (3X) has changed. The information written for each stack frame will include an extra insertion of the form “at file\_name:line” (preceding the module name) if symbolic debug information is available for that function. If symbolic debug information is available to identify inlined calls, an extra line will be written for each inlined call; these extra lines do not have a frame index or module name, and show “(inlined)” in place of an IP value.

The output from these APIs is intended for humans, and the exact format is subject to change in future releases. Any scripts that depend on this output format are likely to be affected.

There are no source or makefile compatibility issues for the programmatic interfaces.

## **Performance**

Raw unwind performance using the unwind express APIs has improved by 40%.

## **Documentation**

Manpages:

- see *uwx* (3X) and *unwind* (5), which point to the other manpages in their SEE ALSO sections
- also see *U\_STACK\_TRACE* (3X)

## **Obsolescence**

Not applicable.



## What is in This Chapter?

This chapter describes changes in internationalization functionality in HP-UX 11i v3, including the following topics:

- Unicode 5.0 Support (see page 384)
- JIS X 0213 Standard Support (see page 385)
- KS X 1001 Standard Support (see page 386)
- Big5-2003 and CNS11643-2004 Standard Support (see page 387)
- HKSCS-2004 Support (see page 388)
- New Locales - Baltic/Russia/Ukraine/Latin America (see page 389)
- New Locale Versioning: localedef/libc UNIX 2003-related I18N changes (see page 391)
- UNIX 2003 Support in localedef, locale, and iconv (see page 393)
- Alternate Width Properties for Unicode Codesets (see page 394)
- New Messaging Commands: mkcatdefs, dspmsg, and dspcat (see page 395)
- Iconv Codeset Converter Config File Changes: system.config.iconv (see page 396)
- Japanese Mainframe Character Set Converter (see page 398)
- Internationalized PostScript Printing Support: psfontpf (see page 398)
- Asian Printing (see page 399)
- TrueType Fonts for European Codesets (see page 401)
- Asian TrueType Fonts (see page 402)
- Asian Bitmap Fonts (see page 403)
- Fallback Font Support (see page 405)
- Asian Obsolete and Deprecated Functionality (see page 406)

## Unicode 5.0 Support

HP-UX 11i v3 includes Unicode 5.0 support, which is an extension to the previously supported Unicode 3.0 character set standard. Unicode 5.0 is aligned with the revised ISO 10646-2:2003 standard including Amendments 1 and 2, defining 99,089 total characters. It includes an additional 48,830 new characters from the Unicode 3.0 version. Most notable of these additions are new CJK ideographic characters that align with the most recent versions of GB-18030, JIS X 0213 and HKSCS-2004, new Latin and Cyrillic characters and a number of historic script characters.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

All 52 previously supported system supplied utf8 locales have been updated to support the character repertoire specified by the Unicode 5.0 standard. In addition, all new 11i v3 utf8 locales (refer to “New locales - Baltic/Russia/Ukraine/Latin America” section) align with the Unicode 5.0 standard.

Note that as of 11i v3, the locale binaries provided are version 3. Refer to the “New Locale Versioning” section for further details regarding levels of support for PA-RISC-based archived applications.

Changes have been made in the Streams ldterm modules, libc and associated libc utf8 method libraries, the `localedef` and the `eucset` commands, `iconv` converters, Xlib, fonts, CDE, and Asian print drivers to support Unicode 5.0.

Users will also notice specific changes in display/printing aspects between Asian utf8 and non-Asian utf8 locales. Support has been added within HP-UX to properly support the Unicode Consortium's specified “Alternate Width Properties” for Asian locales.

(Refer to “Alternative Width Properties for Unicode Character Sets” for more details.)

To effect this change within the `tty/ldterm` settings, the `eucset` command has been extended to include a new `-c codeset` option “ASIAN\_UTF8”. Refer to the `eucset(1)` manpage for more details. In addition to `eucset` command, the CDE components have been enhanced to handle ‘ASIAN\_UTF8’ option for Asian locales.

Significant additions have been made to `iconv` converters to support new Unicode 5.0 characters, surrogate characters, byte-order marks and all forms of Unicode-specified transformations, including UTF-8, UTF-16, UTF-32, big and little-endian forms. Refer to the `system.config.iconv` file under `/usr/lib/nls/iconv` for the complete listing of all `iconv` converters supported as part of the base operating system.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

No additional memory requirements are needed when running in any of these locales.



## Compatibility

Support for Unicode 5.0 is only provided for applications running on Itanium®-based 32/64-bit platforms or those compiled in shared mode on PA-RISC 32/64-bit platforms. Unicode 5.0 support is not provided for those applications that were compiled in archived mode on previous HP-UX releases. Those archived applications will continue to use the Unicode 3.0 repertoire as supported in previous HP-UX releases.

## Performance

For specific operations, involving collation and/or string handling, some performance improvements from past releases will be observed within the system.

## Documentation

See the manpages for *localedef*(1) and *eucset*(1).

## Obsolescence

Not applicable.

---

## JIS X 0213 Standard Support

Support for JIS X 0213, an extended Japanese character set standard.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

JIS X 0213, established in 2000 and revised in 2004 (JIS2004), was designed to provide sufficient code points to encode all the contemporary Japanese characters. JIS X 0213 was defined as a JIS X 0208 extension with 11,233 Kanji and non-Kanji characters in total. All the legal Kanji characters for personal names added in 2004 by the Japanese government are included in JIS X 0213.

HP-UX11i v3 supports JIS X 0213 in the *ja\_JP.utf8* locale. Bitmap fonts, TrueType fonts and printing functionality have been enhanced to display and print JIS X 0213 characters. *iconv* supports code conversion of JIS X 0213 between SJIS/EUC and Unicode encodings. A codemap table, phonetic and radical dictionaries are available to refer to the JIS X 0213 character set.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

This new feature enables customers to display, print, and process JIS X 0213 characters on HP-UX.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Refer to the *HP-UX Japanese System Environment User's Guide* for details. This is located in the HP-UX 11i v3 section at <http://docs.hp.com>.

## Obsolescence

Not applicable.

---

## KS X 1001 Standard Support

HP-UX 11i v3 supports the latest Korean national character set: KS X 1001:2002.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

In 1998, the Euro and registered signs were added to KS X 1001. In 2002, the postal code mark was added to it. HP-UX 11i v3 supports the additional three characters to comply with KS X 1001:2002.

Both `ko_KR.eucKR` and `ko_KR.utf8` locales support the new standard. Bitmap fonts, TrueType fonts and `iconv` have been enhanced to support it.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

This enhancement allows customers to display, print, and process all KS X 1001:2002 characters on HP-UX. Glyph design for some characters has been corrected for batang bitmap fonts with size 16.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Refer to the *HP-UX Korean System Environment User's Guide* for details. This is located in the HP-UX 11i v3 section at <http://docs.hp.com>.

## Obsolescence

Not applicable.

---

## Big5-2003 and CNS11643-2004 Standard Support

Support for Big5-2003 and CNS11643-2004, two Traditional Chinese character sets.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The Big5 standard, established in 1984 and revised in 2003 (Big5-2003), was designed to provide a small basic character set to encode the contemporary Traditional Chinese characters. Big5-2003 was defined as a Big5 extension and it has only 2 planes with 13,051 T-Chinese characters and 778 symbols, totaling 13,829 characters.

CNS11643, established in 1992 and revised in 2004, (known as CNS11643-2004 or CNS11643 version 3) was designed to provide sufficient character codes to encode all the contemporary Traditional Chinese characters. CNS11643-2004 was defined as a CNS11643 extension and it can have 80 code planes. It can support:  $8836 \times 80 = 706,880$  code points. The original CNS11643 standard has only 16 code planes. All the legal Traditional Chinese characters of people's names allowed by the Taiwan government are included in plane 4, and planes 12 through 15.

HP-UX11i v3 supports Big5-2003 in the `zh_TW.big5` locale. Bitmap fonts, TrueType fonts and printing functionality have been enhanced to display and print these Big5-2003 characters. The `iconv` command supports code conversion of Big5-2003 to and from CNS/EUC and Unicode encodings. A codemap table, phonetic and Tsang-Chieh dictionaries are available to input the Big5-2003 character set.

HP-UX11i v3 supports CNS11643-2004 for plane 1 through 7 and 15 in the `zh_TW.eucTW` and `zh_TW.utf8` locales. Bitmap fonts, TrueType fonts and printing functionality have been enhanced to display and print these CNS11643-2004 characters. For the `zh_TW.eucTW` locale, display support is limited to plane 1-4 characters only. The `iconv` command supports code conversion of CNS11643-2004 to and from `big5` and Unicode

encodings. A codemap table and internal code input methods are available for the CNS11643-2004 character set. Phonetic and Tsang-Chieh dictionaries are available for the base (Planes 1-4) CNS11643 character set.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

This new feature enables customers to display, input, print, and process Big5-2003 and CNS11643-2004 characters on HP-UX 11i v3.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Refer to the *HP-UX Traditional Chinese System Environment User's Guide* for details. This is located in the HP-UX 11i v3 section at <http://docs.hp.com>.

### **Obsolescence**

Not applicable.

---

## **HKSCS-2004 Support**

Support for the HKSCS-2004 Traditional Chinese character set standard.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

The HKSCS (Hong Kong Supplementary Character Set) standard, established in 1999 and revised in 2004 (HKSCS-2004), was designed to provide sufficient characters to encode all the contemporary Traditional Chinese characters used in the Hong Kong SAR (Special Administrative Region). HKSCS-2004 was defined as a Big5 standard extension with 13,051 original Big5 T-Chinese characters and 4,941 more characters defined in the UDC (User-Defined Characters) area, totaling 17,992 characters.

HP-UX11i v3 supports HKSCS-2004 in the `zh_HK.hkbig5` and `zh_HK.utf8` locales. Bitmap fonts, TrueType fonts and printing functionality have been enhanced to display and print these HKSCS-2004 characters. The `iconv` command supports code conversion of HKSCS-2004 to and from various Unicode encodings. A codemap table and Tsang-Chieh dictionaries are available to input the HKSCS-2004 character set.

The `xtim` input method has been enhanced to allow customers to input HKSCS-2004 Traditional Chinese characters when using either `zh_HK.hkbig5` or `zh_HK.utf8` locales. Both Tsang-Chieh and Rapid Tsang-Chieh input methods are available.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

This new feature enables customers to display, print, input and process HKSCS-2004 characters on HP-UX.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Refer to the *HP-UX Traditional Chinese System Environment User's Guide* for details. This is located in the HP-UX 11i v3 section at <http://docs.hp.com>.

### **Obsolescence**

Not applicable.

---

## **New Locales - Baltic/Russia/Ukraine/Latin America**

New system level support is provided for a number of countries/regions in HP-UX 11i v3, including Estonia, Latvia, Lithuania, Russia, Ukraine, Dominican Republic, Honduras and US (Spanish). A total of 22 new locales are provided in HP-UX 11i v3 to enable system support in these regions.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following 22 sets of new locale binaries and source files are delivered for both 32- and 64-bit PA-RISC and Itanium®-based versions:

**Table 11-1 Dominican Republic, Honduras, and US (Spanish)**

Country	ISO 8859-1 Based	ISO 8859-15 Based	UTF-8 Based
Dominican Republic	es_DO.iso88591	es_DO.iso885915	es_DO.utf8
Honduras	es_HN.iso88591	es_HN.iso885915	es_HN.utf8
United States (Spanish)	es_US.iso88591	es_US.iso885915	es_US.utf8

**Table 11-2 Estonia**

Country	ISO 8859-4 Based	ISO 8859-15 Based	UTF-8 Based
Estonia	et_EE.iso88594	et_EE.iso885915	et_EE.utf8

**Table 11-3 Latvia and Lithuania**

Country	ISO 8859-4 Based	ISO 8859-13 Based	UTF-8 Based
Latvia	lv_LV.iso88594	lv_LV.iso885913	lv_LV.utf8
Lithuania	lt_LT.iso88594	lt_LT.iso885913	lt_LT.utf8

**Table 11-4 Russia and Ukraine**

Country	MS CP1251 Based	Koi8-R Based	UTF-8 Based
Russia	ru_RU.cp1251	ru_RU.koi8r	
Ukraine	uk_UA.cp1251		uk_UA.utf8

Note that for the PA-RISC versions, the locale binaries provided are version 3. Refer to the “New Locale Versioning” section for further details regarding levels of support.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## Impact

No additional memory requirements are needed when running in any of these locales.

## Compatibility

This set of new locales is not provided for applications compiled in archived mode on PA-RISC platforms. Only applications running on Itanium®-based or running in shared mode on PA-RISC are supported.

## Performance

There are no known performance issues.

## Documentation

Not applicable.

## Obsolescence

Not applicable.

---

## New Locale Versioning: localedef/libc UNIX 2003-related I18N changes

With the 11i v3 release, a new locale version “locales.3” has been generated for all system supported locale binaries. This has been provided to protect older PA-RISC-based archived applications from unexpected systems behavior necessitated in order to fully support the UNIX 2003 standard. In addition, `localedef` and `libc` have been extended to support up to 255 ctype character classes defined within a locale and several new UNIX 2003 defined `LC_MONETARY` international currency locale keyword elements.

## Summary of Change

### What’s New for Customers Migrating from HP-UX 11i v1 September 2005?

Several changes have been made within the standard header file `/usr/include/locale.h` to conform to the UNIX 2003 standard. These changes impact the locale’s internal data structure generated by the `localedef` command and associated `libc` routines that access those locales.

Users will find a new locale version “locales.3” under:

- `/usr/lib/nls/loc/locales.3` (for 32-bit PA-RISC)
- `/usr/lib/nls/loc/pa20_64/locales.3` (for 64-bit PA-RISC)
- `/usr/lib/nls/loc/hpux32/locales.3` (for 32-bit Itanium®-based)
- `/usr/lib/nls/loc/hpux64/locales.3` (for 64-bit Itanium®-based)

As part of the new `locales.3` version, several other changes have been made to the locale internals resulting in a smaller, more optimized locales, requiring less disk space while also offering better runtime performance (especially when processing larger character sets, such as Unicode) than in previous locale versions.

The `localedef` utility now allows the definition of up to 255 character type classes within a locale. Previous releases allowed a maximum of 32 ctype classes.

Locales now support new UNIX 2003 `LC_MONETARY` keywords that are used by `strfmon()` and `localeconv()`. Refer to the manpages for `localeconv` and `strfmon` for more information.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

## **Impact**

No additional memory requirements are needed when using these new locale binary versions.

## **Compatibility**

Older PA-RISC archived applications will not be able to use these new `locales.3` locales unless they are statically re-linked on an 11i v3 system. To maintain compatibility, older locale binaries (`locales.1` and `locales.2`) continue to be provided for use by archived applications. Customers who provide their own set of customized locale binaries will need to rebuild them on 11i v3 systems using the `localedef` command to generate correct v3 “`locales.3`” binaries. Locale binaries built on previous releases such as those installed in “`locales.1`” or “`locales.2`” subdirectories may not be installed into the `locales.3` area. This has been documented as not being permitted in the “Note” section of the `localedef(1M)` manpage for the past several releases.

## **Performance**

With the new locale binary restructuring, some collation/sorting and string handling intensive applications may observe performance improvements when compared to past releases.

## **Documentation**

Not applicable.

## **Obsolescence**

10.20-based `locales.1` binaries are considered to be deprecated and will no longer be provided in a future release. 11i-based `locales.2` binaries will be moved from being part of the Base-OS file set to an optional file set that may be only installed if requested by users.



---

## UNIX 2003 Support in `localedef`, `locale`, and `iconv`

The `localedef`, `locale` and `iconv` commands and the associated C library APIs, `locale` databases and `iconv` converters, which provide the core internationalization support in HP-UX, have been updated to align with the UNIX 2003 standard.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `localedef`, `locale` and `iconv` now support all the new options and features defined in the UNIX 2003 standard.

The `localedef` command now supports the following new features and options:

- New `-u` option for specifying the name of a codeset used as the target mapping of character symbols and collating element symbols whose encoding values are defined in terms of the Unicode scalar values.
- New `LC_MONETARY` keywords related to the formatting of monetary quantities with international currency symbol.
- Optional use of width specification in the `charmap` files for specifying multibyte character width instead of using a `wcwidth` method.

The `locale` command is enhanced to display new `LC_MONETARY` keywords defined in the UNIX 2003 standard.

The `iconv` command is enhanced to support the following new features and options:

- New `-l` option which lists all the supported fromcode and tocode pairs.
- Support the use of `charmap` files in the command line in place of the “from” and “to” codeset names.
- New command line options `-c` and `-s` which deal with invalid character processing have been supported and command line semantics have been changed.

The semantics of the various `LC_MONETARY` keywords in a locale file are now interpreted according to the UNIX 2003 standard. As a result, the behavior of the `strfmon()` function has been changed slightly. The keyword values in the system locales are adjusted slightly to compensate for this behavior change with the end result that the `strfmon()` function will behave the same as before for applications that use the system locales. However, any user-generated locale may need some tuning to provide the same `strfmon()` behavior as before.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

The change should be transparent to the users unless they use their own customized locales instead of system provided locales. In that case, the behavior of the `strfmon()` function may be changed depending on how the `LC_MONETARY` sections of the customized locales are defined. Applications that use the `localeconv()` function to retrieve

`LC_MONETARY` parameters may have to be updated to handle the new members returned in the `lconv` structure. Few applications use customized locales or the `localeconv()` function for direct monetary values formatting. So the impact should be minimal. The command line semantics change of the `iconv` command may also affect applications that have dependence on the old command line semantics.

## Compatibility

The behavior of the `strfmon()` function has been changed slightly to align with the UNIX 2003 standard. The system locales are changed accordingly to make the behavior of the `strfmon()` function the same as before unless applications use non-system locales. In which case, the `LC_MONETARY` sections of the user-customized locales may have to be updated so as to provide the old `strfmon()` behavior. The `localeconv()` function has been changed to return a `lconv` structure with new members for formatting monetary quantity with international currency symbol. The values of some of the existing members may be changed to reflect new semantics in the UNIX 2003 standard. Applications that use those values directly for formatting may have to be updated to handle new semantics defined in the UNIX 2003 standard. Applications that linked with the archived `libc` library will not be impacted unless they are recompiled for the current release. The command line semantics of the `iconv` command has also been changed.

## Performance

There are no known performance issues.

## Documentation

The manual pages for the following commands have been updated to reflect the new and updated functionalities:

*iconv* (1), *localedef* (1M), *localeconv* (3C), *strfmon* (3C), *localedef* (4), *charmap* (4)

## Obsolescence

Not applicable.

---

## Alternate Width Properties for Unicode Codesets

Support for alternate width properties for Asian Unicode locales.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Unicode/ISO-10646 is an industry standard character set. As part of the Unicode Standard, width properties have been defined for all Unicode code points. These widths are classified as half-width, full-width, narrow, neutral, and ambiguous. The ambiguous

characters are either half-width or full-width depending on the fonts used to display those characters. In HP-UX, Asian codesets use full-width fonts for all characters except ASCII, and half-width Katakana, Hangul and Symbol variants. The use of full-width fonts in Asian Unicode codesets necessitates the support for alternate width properties for these locales.

HP-UX11i v3 supports an alternate width properties for Asian locales. The `pty` driver, `dtterm`, `eucset`, `Xlib`, `libc` methods, and `XLocale` databases have been enhanced to support this new feature. This enhancement provides the same look and feel of characters displayed in Asian Unicode and corresponding National Standards Codesets.

### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

HP-UX11i v2 and earlier versions display half-width characters using Latin based fonts. HP-UX11i v3 displays full-width characters using Asian based fonts. The displayed characters in Asian Unicode locales will have the same look and feel as compared to Asian national codesets.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

For details refer to *HP-UX 11i v3 Internationalization Features* located at <http://docs.hp.com>.

### **Obsolescence**

Not applicable.

---

## **New Messaging Commands: `mkcatdefs`, `dspmsg`, and `dspcat`**

New messaging commands `mkcatdefs`, `dspmsg`, and `dspcat` are added to HP-UX for compatibility with Tru64 UNIX.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The `mkcatdefs` command is a preprocessor for the `gencat` command. It enables the use of symbolic set and message identifiers in the message catalog files instead of numeric set and message numbers.

The `dspmsg` command enables shell scripts to use the system message catalog facility for displaying user visible messages.

The `dspcat` command displays part of all the messages in a message catalog.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

These new messaging commands ease the migration of Tru64 UNIX applications that make use of those messaging commands to HP-UX.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The manual pages for the following commands have been added to describe the new messaging commands:

*mkcatdefs* (1), *dspmsg* (1), *dspcat* (1)

## Obsolescence

Not applicable.

---

## Iconv Codeset Converter Config File Changes: `system.config.iconv`

A new `system.config.iconv` file has been provided to separate HP-UX core OS provided `iconv` mapping table information from layered third-party and user-specific `iconv` mapping table information.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Code set converters can be easily added by both third-party and user applications as needed within HP-UX. In previous releases, any changes made to the `config.iconv` file to add new converter mapping information was negatively impacted when OS updates and/or new patches are installed on the system.

`iconv` converter logic within `libc` has been modified to recognize the existence of two `iconv` config mapping files - `system.config.iconv`, which is new for 11i v3 and the pre-existing `config.iconv` file. This change has been provided in 11i v3 to maintain third-party and user-specific `iconv` mapping information within `config.iconv` from being overwritten when OS updates and `iconv` patches are provided by HP.

In 11i v3, the `iconv` function will first search for converter mappings within the `system.config.iconv` file and if not found, then in the `config.iconv` file. Users should only modify `config.iconv` file to change or add user specific `iconv` conversions.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

Customized `iconv` mapping additions to `config.iconv` will now be preserved when HP-UX OS updates and `iconv` patches are applied to a given system. No changes are required by the user.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

Refer to the manual pages for `iconv` (1) and `iconv` (3C).

## Obsolescence

Not applicable.

## Japanese Mainframe Character Set Converter

`iconv` now supports an extended area of Japanese mainframe character sets, including conversions from/to several Unicode variants including UTF-8 and UCS-4.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

Mainframe (NEC JIPS, Fujitsu JEF and Hitachi KEIS) character set converters, provided by `iconv`, have been enhanced to convert vendor defined characters, located in an extended character set, from/to SJIS, eucJP and Unicode.

Conversions have been made available from/to several Unicode variants including UTF-8, UCS-2BE, UCS-2LE, UCS-4, UCS-4BE and UCS-4LE in addition to UCS-2.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

This enhancement enables customers to transfer and process many mainframe vendor defined characters on HP-UX.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

Refer to the *HP-UX Japanese System Environment User's Guide* for details. This is located in the HP-UX 11i v3 section at <http://docs.hp.com>.

### Obsolescence

Not applicable.

---

## Internationalized PostScript Printing Support: `psfontpf`

A new PostScript printer filter that supports the printing of international characters in text files and web pages displayed by Mozilla/Firefox.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The new `psfontpf` printer filter enables the printing of non-English international characters in text files and web pages (displayed by Mozilla/Firefox) in printers that support the PostScript level 2 or 3 printing language. The printers do not need to have local language fonts pre-installed as the font files in the HP-UX system will be used, if necessary. The `psmsgen` command is a configuration tool for managing printer model scripts that use the `psfontpf` printer filter.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

The new PostScript printing capability enables customers to print what they see in Web pages without missing characters.

## Compatibility

There are no known compatibility issues.

## Performance

There are no known performance issues.

## Documentation

The following new manual pages have been added to describe the new PostScript printing capability:

*psfontpf* (1M), *psmsgen* (1M)

Refer to the document *HP-UX 11i v3 International Printing Features* for more details on how to use the PostScript printer filter. It is located in the HP-UX 11i v3 section at <http://docs.hp.com>

## Obsolescence

Not applicable.

---

## Asian Printing

Asian `lp` model files and filters have been enhanced to support important Asian national standards and ISO 10646.

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The Asian `lp` model files, `PCL5.asian` for HP LasetJet printers and `ESCP` for ESC/P dot impact printers, now can print the characters defined in the latest national standards including JIS X 0213:2004, KS X 1001:2002, GB18030-2000, Big5-2003, CNS11643-2004 and HKSCS-2004 as well as ISO10646 by using Asian TrueType and bitmap fonts on HP-UX. The LIPS4 Japanese `lp` model file can now print the characters defined in JIS X 0213:2004 and ISO10646.

The `PCL5.asian` model supports OfficeJet 7210 printer with `pcl3` option.

`ESCP` allows use of 94 user defined characters per line, instead of per one job.

`PCL5.asian`, `ESCP` and `LIPS4` models allow use of TrueType fonts for user defined characters with `umap` option.

Network printer setup tool `setnetlp` has been enhanced.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

## Impact

This enhancement enables customers to print the characters defined in the latest Asian national standards and ISO10646.

## Compatibility

There are no known compatibility issues. Customers who require complete compatibility with previous releases can find the previous version of the `lp` model files in `/usr/old/usr/lib/lp/model`.

## Performance

Printing performance of `PCL5.asian` has been improved even if the printer does not have Asian fonts.

## Documentation

Refer to the appropriate Asian System Environment User Guide for details. These are:

- *HP-UX Japanese System Environment User's Guide*
- *HP-UX Korean System Environment User's Guide*
- *HP-UX Traditional Chinese System Environment User's Guide*
- *HP-UX Simplified Chinese System Environment User's Guide*

These are located in the HP-UX 11i v3 section at <http://docs.hp.com>.

Refer to the document *HP-UX 11i v3 International Printing Features* for more details on how to use the enhanced `PCL5.asian` model file and `setnetlp` command. It is located in the HP-UX 11i v3 section at <http://docs.hp.com>.



## Obsolescence

User defined characters developed by Traditional Chinese UDC tools are not supported. LIPS4 lp model file does not support LIPS2 printers.

---

## TrueType Fonts for European Codesets

Additional TrueType Fonts for European Codesets in HP-UX 11i v3.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

TrueType fonts are used by layered technologies, such as Java, X-windows, and printer modules. These fonts are required by these technologies to meet European market requirements. The glyph patterns are designed based on Unicode standards, and are indexed as Unicode code points.

HP-UX11i v3 provides additional TrueType fonts support to cover the glyph patterns for ASCII, Latin-1 Supplement, Latin Extended-A, Latin-Extended-B, Greek, Cyrillic, and currency symbols.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### Impact

This new feature enables customers to display and print characters listed in the summary section.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For details refer to *HP-UX 11i v3 Internationalization Features* located at <http://docs.hp.com>.

### Obsolescence

Not applicable.

---

## Asian TrueType Fonts

Asian TrueType fonts have been enhanced to support the latest national standards and ISO10646. New typefaces are provided for Japanese, Simplified Chinese, and Traditional Chinese fonts.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

##### Japanese

- HG-GothicB and HG-MinchoL have been enhanced to include JIS X 0213:2004 characters.
- New typefaces, Heisei-KakuGothicW5 and Heisei-MinchoW3, are available.
- New encodings, JIS X 0213 plane1/plane2 and ISO10646 BMP/plane2, are available.

##### Korean

- HYBatang, HYDotum, HYGulim and HYGungsoh have been enhanced to include the latest KS X 1001:2002 and ISO10646 characters.
- New encodings, KS X 1001:2002, KS X 1003:1993 and ISO10646 BMP/plane2, are available.

##### Simplified Chinese

- ZYCJKHei and ZYCJKSun have been enhanced to include latest GB18030 and ISO10646 characters.
- New typefaces, FZFangSong and FZKai, are available.
- New encodings, ISO10646 BMP/plane2, are available.

##### Traditional Chinese

- ARMINGTil has been enhanced to include latest Big5-2003, CNS11643-2004 and ISO10646 characters.
- ARMINGTilHK have been enhanced to include latest HKSCS-2004 and ISO10646 characters.
- New typefaces, ARPSTDKaim and ARPSTDKaimHk, are available.
- New encodings, CNS11643-2004-plane5/6/7/15 and ISO10646 BMP/plane2, are available.

## **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

### **Impact**

This enhancement enables customers to display and print the characters defined in the latest Asian national standards and ISO10646.

### **Compatibility**

There are no known compatibility issues.

### **Performance**

There are no known performance issues.

### **Documentation**

Refer to the appropriate Asian System Environment User Guide for details. These are:

- *HP-UX Japanese System Environment User's Guide*
- *HP-UX Korean System Environment User's Guide*
- *HP-UX Traditional Chinese System Environment User's Guide*
- *HP-UX Simplified Chinese System Environment User's Guide*

These are located in the HP-UX 11i v3 section at <http://docs.hp.com>.

### **Obsolescence**

Not applicable.

---

## **Asian Bitmap Fonts**

Asian bitmap fonts have been enhanced to support the latest national standards and ISO 10646.

### **Summary of Change**

#### **What's New for Customers Migrating from HP-UX 11i v1 September 2005?**

Japanese

- New bitmap fonts are available to support JIS X 0213:2004 plane1/2 and ISO10646 BMP/plane2.

Korean

- New bitmap fonts are available to support ISO10646 plane2.
- Existing fonts have been enhanced to include latest KS X 1001:2002 and ISO10646 characters with more readable glyphs.

#### Simplified Chinese

- New bitmap fonts are available to support ISO10646 plane2.
- Existing fonts have been enhanced to include latest GB18030 and ISO10646 characters.

#### Traditional Chinese

- New bitmap fonts are available to support ISO10646 BMP/plane2.
- Existing fonts have been enhanced to include the latest Big5-2003, CNS11643-2004, and HKSCS-2004 characters with more readable glyphs.

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

See "What's New for Customers Migrating from HP-UX 11i v1 September 2005?"

#### **Impact**

This enhancement enables customers to display the characters defined in the latest national standards and ISO10646. Glyph design has been changed and improved in existing Korean and Traditional Chinese fonts.

#### **Compatibility**

There are no known compatibility issues.

#### **Performance**

There are no known performance issues.

#### **Documentation**

Refer to the appropriate Asian System Environment User Guide for details. These are:

- *HP-UX Japanese System Environment User's Guide*
- *HP-UX Korean System Environment User's Guide*
- *HP-UX Traditional Chinese System Environment User's Guide*
- *HP-UX Simplified Chinese System Environment User's Guide*

These are located in the HP-UX 11i v3 section at <http://docs.hp.com>.

#### **Obsolescence**

Not applicable.

---

## Fallback Font Support

Provide fallback font support for Asian Unicode locales

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The Unicode/ISO-10646 standards have added several thousands of new characters. HP-UX locales support all code points defined in the Unicode 5.0 standard. HP-UX does not provide glyphs/fonts to cover all the characters defined in the standards. Any attempt by a GUI application to display a text that has characters for which there are no glyphs will have an unpredictable behavior. This is a common problem in any operating system.

HP-UX11i v3 provides fallback fonts support that helps to mitigate this unpredictable behavior of text-based GUI applications. In the event there are no glyphs, the application will display “?” or “: :” characters. Xlib and XLocale database modules have been enhanced so that “?” or “: :” glyphs are displayed.

#### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

See “What's New for Customers Migrating from HP-UX 11i v1 September 2005?”

### Impact

“?” or “: :” glyphs are displayed for characters for which there are no glyphs/fonts available.

### Compatibility

There are no known compatibility issues.

### Performance

There are no known performance issues.

### Documentation

For details refer to *HP-UX 11i v3 Internationalization Features* located at <http://docs.hp.com>.

### Obsolescence

Not applicable.

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## Asian Obsolete and Deprecated Functionality

Several legacy functions relating to Asian language support are obsolete and have been removed from HP-UX 11i v3.

### Obsolescence

The following functions are no longer supplied in HP-UX 11i v3:

- Asian printer `lp` models: `hpc1208a`, `PCL4.nl00` and `PS.nlio`. These are replaced by the `PCL5.asian` and `PS2.nlio` models.
- ATOK8 Japanese input method. ATOK X is the recommended replacement input method.
- Asian terminal tools: `bserver`, `nlio`, `nlioinit` and `nliostart`.
- Simplified Chinese Toolkit: `sconv` and `sptr`.
- Traditional Chinese UDC tools: `big5-et`, `et-big5`, `big5-cwin`, `cwin-big5`, `big5udfgen`, `big5udfdwn`, `ccdcudfgen` and `ccdcudfdwn`.
- Terminal transparent print tool: `ptr`.
- CNS-EUC code lookup tool: `coder`.

### Deprecated

The following functionality is considered to be deprecated and will be removed in the next major release of HP-UX.

- Asian printer `lp` models: `LIPS3`, `LPS`, `hpc1200aj`, `hpc1200ak`, `hpc1200ac`, `hpc1200at` and `hpc1205at`.
- Japanese specific utility/library routines described in `/usr/share/doc/JpnCmdLib.txt`.
- Korean 32/40/48/64 dot bitmap fonts
- Traditional Chinese 34/42/50 dot bitmap fonts

### Documentation

Refer to the appropriate Asian System Environment User Guide for details. These are:

- *HP-UX Japanese System Environment User's Guide*
- *HP-UX Korean System Environment User's Guide*
- *HP-UX Traditional Chinese System Environment User's Guide*
- *HP-UX Simplified Chinese System Environment User's Guide*

These are located in the HP-UX 11i v3 section at <http://docs.hp.com>.

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**What is in This Chapter?**

This chapter describes other new and changed operating-system software functionality, including:

- Common Desktop Environment (see page 408)
- Distributed Computing Environment (DCE) Client and Integrated Login (see page 414)

## Common Desktop Environment

Common Desktop Environment 2.1 (CDE) is an environment for interacting with your system. When CDE is running on your system, it is said to be your system's desktop.

### Summary of Change

#### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

- HP-UX now includes native Itanium®-based
  - 32-bit and 64-bit X/Motif libraries delivered at the following locations respectively
    - /usr/lib/hpux32/X11R6/
    - /usr/lib/hpux32/Motif2.1/
    - /usr/contrib/X11R6/lib/hpux32/
  - And
    - /usr/lib/hpux64/X11R6/
    - /usr/lib/hpux64/Motif2.1/
    - /usr/contrib/X11R6/lib/hpux64/
  - Corresponding symbolic links are available at /usr/lib/hpux32/ and /usr/lib/hpux64/ directories respectively.
  - 32-bit and 64-bit user interface language compiler (uil/uil64) and 32-bit imake
  - 32-bit CDE binaries delivered in /usr/dt/bin/ directory.
  - 32-bit Xclients delivered in /usr/bin/X11/ directory.
  - 32-bit libraries delivered in /usr/dt/lib/hpux32/ directory.
  - 32-bit PA-RISC libraries are retained and are available in /usr/dt/lib/ directory
  - HP-UX Developer's Toolkit is available as HPDesktopDev product which is freely downloadable. It now consists of Itanium®-based CDE and X/Motif environment for developing user interface
- CDE delivers 64-bit PA-RISC and Itanium®-based libraries for the first time in HP-UX 11i v3 at /usr/dt/lib/pa20\_64/ and /usr/dt/lib/hpux64/ directories respectively.
- CDE supports Node and Host Name Expansion feature. The user interfaces within CDE will display a truncated uname/hostname if the message string exceeds the screen width.
- CDE supports expanded username feature. The user interfaces of CDE displays a truncated username if the message string exceeds the screen width.
- UCS-4 support is provided in font library, ufst rasterizer, xfs and mkfontdir. This feature is available in both the Itanium®-based and PA-RISC versions of these components.



- `dtlogin` will not attempt to start Xserver continuously if it is not getting started. Instead `dtlogin` attempts to start X only for the number of times provided in `startAttempts`. The default value for `startAttempts` is 4 and is configurable by user. Please refer to the manpage of `dtlogin` (1) for more information.
- `dtterm` is enhanced such a way that it uses the current Width Properties for all European/Latin Unicode/UTF8 locales, and the Alternate Width Properties to Asian Unicode/UTF8 locales.
- CDE components are partially HP-UX 11i Security Containment enabled/enhanced. `dtsession`, `dtterm`, `xterm`, `dtprintinfo` and `dtaction` are made privilege aware and SUID bits are removed for them. `dtprintinfo`, `dtaction` and `dthelpgen` require `hpux.cde.dtprintinfo`, `hpux.cde.dtaction` and `hpux.cde.dthelpgen` authorizations respectively to perform superuser operations. By default root user has all `hpux.cde.*` authorizations. The manpages of `dtprintinfo`, `dtaction` and `dthelpgen` are modified to include this information.
- Currently HP-UX 11i Security Containment is not enabled on CDE for:
  - daemons started by `inetd` like `dtlogin`, `rpc.ttdbserver`, `dtspcd` and `rpc.cmsd`
  - scripts run by root like `dtappintegrate` and `dtconfig`
  - `dtfile`
- CDE now uses `lp` by default for printing. An option is available by which the user can disable `lp` and print using TPS and viceversa. The CDE components that are affected by this change are `dtcm`, `dtmail` and `dtpad`. Printing with `dtcm`, `dtmail` and `dtpad` can occur with either `lp` or TPS.
- All cFront CDE components and libraries have been migrated to aC++, including CDE libraries, `libtt` (3) and `libDtSvc` (3). The cfront applications may not work with aC++ built libraries. In order to provide backward compatibility, both aC++ and cfront built libraries are delivered.

The existing cFront built libraries continue to be available as

- `/usr/dt/lib/libtt.3` (The tooltalk messaging library)
- `/usr/dt/lib/libDtSvc.3` (The Desktop service library)

The above sets of libraries (tooltalk messaging and Desktop service) are also delivered as aC++ built libraries.

- `/usr/dt/lib/libtt.4` (The tooltalk messaging library)
- `/usr/dt/lib/libDtSvc.4` (The Desktop service library)

All CDE applications make use of aC++ built CDE libraries.

- CDE 2.1 on HP-UX 11.00 and HP-UX 11i v1.0 contains VUEtoCDE transition tool that migrates HP VUE customizations to CDE during upgrade from HP-UX 10.x. This tool is not available on and above HP-UX 11i v1.5 since there is no upgrade path from HP-UX 10.10/10.20 to these versions.
- CDE supports IPv6 on and above HP-UX 11i v2. This is in addition to the Ipv4 support that CDE already provides.
- The `dtspcd` (CDE subprocess control service) and `rpc.ttdbserver` (RPC-based ToolTalk database server) services should be configured to run in Ipv6 mode. Please refer the corresponding manpages listed below for further details.

- The CDE Applications will support the Ipv6 addresses for the DISPLAY environment variable.
- CDE has been enhanced to use the scalable utmps/wtmps/btmps services. (For more information on these services, see Ipv6 Support by HP-UX libc and HP-UX Commands.)
- CDE now has features to provide more accessibility to the desktop for physically challenged users. These additional features are as follows:
  - A single-point of GUI control through dtstyle for enabling or disabling accessibility features.
  - AccessX, a client for changing keyboard and mouse settings that allows a user to navigate easily. AccessX can be invoked from the Desktop Style Manager. Alternately, it can be invoked from the command line as  
`/usr/bin/X11/AccessX/accessx.`
  - A new screen magnifier utility called xzoom that is available unsupported under  
`/usr/contrib/bin/X11.`
- The accessibility features are not localized, but they are available in all locales that CDE supports.
- Some of the Xclient components are delivered as unsupported under  
`/usr/contrib/bin, /usr/contrib/bin/X11, /usr/contrib/bin/X11R5` as PA-RISC on Itanium®-based platform. They run through Aries (PA-RISC compatibility). (For more information about Aries, see Aries Binary Translator.)
- Xfree86 xterm is now delivered under `/usr/bin/X11` and the old X11R5-based xterm is moved to `/usr/contrib/bin/X11R5`. Xfree86-based xterm has support for terminal types VTUTF8 and VT100+ and enables remote access for EFI shell users. This is based on X11R6 and is linked to libc.2. This removes LDAP limitations. It supports IPv6 addressing.

### What's New for Customers Migrating from HP-UX 11i v2 June 2006?

- HP-UX now includes native Itanium®-based
  - 32-bit CDE binaries delivered in `/usr/dt/bin/` directory.
  - 32-bit Xclients delivered in `/usr/bin/X11/` directory.
  - 32-bit libraries delivered in `/usr/dt/lib/hpux32/` directory.
  - 32-bit PA-RISC libraries are retained and are available in `/usr/dt/lib/` directory
  - HP-UX developer's Toolkit is available as HPDesktopDev product which is freely downloadable. It now consists of Itanium®-based CDE and X/Motif environment for developing user interface,
- CDE delivers 64-bit PA-RISC and Itanium®-based libraries for the first time in HP-UX 11i v3 at `/usr/dt/lib/pa20_64/` and `/usr/dt/lib/hpux64/` directories respectively.
- CDE supports Node and Host Name Expansion feature. The user interfaces within CDE will display a truncated `uname/hostname` if the message string exceeds the screen width.

- CDE supports expanded username feature. The user interfaces of CDE displays a truncated username if the message string exceeds the screen width.
- UCS-4 support is provided in font library, ufst rasterizer, xfs and mkfontdir. This feature is available in both the Itanium®-based and PA-RISC versions of these components.
- `dtlogin` will not attempt to start Xserver continuously if it is not getting started. Instead `dtlogin` attempts to start X only for the number of times provided in `startAttempts`. The default value for `startAttempts` is 4 and is configurable by user. Please refer to the manpage of `dtlogin` (1) for more information.
- `dtterm` is enhanced such a way that it uses the current Width Properties for all European/Latin Unicode/UTF8 locales, and the Alternate Width Properties to Asian Unicode/UTF8 locales.
- CDE components are partially HP-UX 11i Security Containment enabled/enhanced. `dtsession`, `dtterm`, `xterm`, `dtprintinfo` and `dtaction` are made privilege aware and SUID bits are removed for them. `dtprintinfo`, `dtaction` and `dthelpgen` require `hpux.cde.dtprintinfo`, `hpux.cde.dtaction` and `hpux.cde.dthelpgen` authorizations respectively to perform superuser operations. By default root user has all `hpux.cde.*` authorizations. The manpages of `dtprintinfo`, `dtaction` and `dthelpgen` are modified to include this information.
- Currently HP-UX 11i Security Containment is not enabled on CDE for:
  - daemons started by `inetd` like `dtlogin`, `rpc.ttdbserver`, `dtspcd` and `rpc.cmsd`
  - scripts run by root like `dtappintegrate` and `dtconfig`
  - `dtfile`

## Impact

### Impacts for Customers Migrating from HP-UX 11i v1

- CDE is made optional on HP-UX 11i V3 to give a complete look-and-feel package for those users requiring GUI-based access to the system. All the HP-UX customers need not install GUI-related filesets as part of the default/base HP-UX 11i V3 system installation. The following are the known problems in case customers install HP-UX 11i V3 without any CDE-language bundle.
  - `/usr/bin/X11/dtterm` which is installed with `HPUXMinRuntime` is a symbolic link pointing to `/usr/dt/bin/dtterm` which is part of CDE-language bundle. If user wants to use `dtterm` functionality, CDE language bundle should be installed on the system.
  - `/usr/dt/bin/dtksh` is required for some third-party product installation scripts to launch license-acceptance dialogs for applications like Mozilla. Either CDE should be installed to enable the script to run as expected, or Mozilla should be run manually on command line (`/opt/mozilla/mozilla`) to accept the Mozilla license.
  - Internationalization impacts without CDE: Cannot display and/or input internationalized characters.
- Improved accessibility features on the desktop will benefit physically challenged users.

- CDE will not come up when the mouse is not connected to the system.
- On configuring a user machine with Bastille's maximum security options, the following impact can be seen in the CDE Desktop environment:
  - Remote hosts will not be able to execute any CDE actions on the Bastille configured machine.
  - `cmsd` service will not be available.
  - Exchange of messages between CDE applications will be forbidden.

For detailed information on these impacts, as well as directions for re-enabling the services, see Chapter 12 of the *HP-UX 11i Version 2 September 2004 Release Notes*, available on the Web at

<http://www.docs.hp.com/en/oshpux11iv2.html#Release%20Notes>

- The `/usr/share/lib/terminfo/x/xterm` terminfo database file has been changed so that the terminfo key mappings for `xterm` matches the sequences generated by `xterm` for the keys F1 to F12 and Page up/down.
- The VUEtoCDE transition tool is not available from HP-UX 11i v1.5 onwards.
- The Digital Video libraries (`libyuv2.*` and `libv1Video.*`) and Digital Video server (`v1Server`) are not available from HP-UX 11i v2 onwards.
- The Terminal `hpterm` (`/usr/bin/X11/hpterm`) is not available (see also the following “Obsolescence” section) from HP-UX 11i v3 onwards.

### Impacts for Customers Migrating from HP-UX 11i v2

- CDE is made optional on HP-UX 11i V3 to give a complete look-and-feel package for those users requiring GUI-based access to the system. All the HP-UX customers need not install GUI-related filesets as part of the default/base HP-UX 11i V3 system installation. The following are the known problems in case customers install HP-UX 11i V3 without any CDE-language bundle.
  - `/usr/bin/X11/dtterm` which is installed with `HPUXMinRuntime` is a symbolic link pointing to `/usr/dt/bin/dtterm` which is part of CDE-language bundle. If user wants to use `dtterm` functionality, CDE language bundle should be installed on the system.
  - `/usr/dt/bin/dtksh` is required for some third-party product installation scripts to launch license-acceptance dialogs for applications like Mozilla. Either CDE should be installed to enable the script to run as expected, or Mozilla should be run manually on command line (`/opt/mozilla/mozilla`) to accept the Mozilla license.
  - Internationalization impacts without CDE: Cannot display and/or input internationalized characters.
- The Terminal `hpterm` (`/usr/bin/X11/hpterm`) is not available (see also the following “Obsolescence” section) from HP-UX 11i v3 onwards.

### Compatibility

The functionality of Itanium®-based CDE will remain the same as PA-RISC CDE and therefore is compatible with lower releases.

See also the preceding “Impact” section.

## Performance

There are no known performance issues.

## Documentation

For more information about Node and Host Name Expansion feature support in CDE, see the following manpages:

- *dtterm* (1)
- *dthelpprint* (1)
- *dtwm* (1)
- *mwm* (1)
- *dtsession* (1)
- *dtappgather* (1)
- *Get\_Sysinfo* (4)
- *XGetDefault* (3X)
- *XtAppInitialize* (3X)
- *XtDisplayInitialize* (3X)

For more information about the Expanded username support in CDE, see the following manpages:

- *dtappgather* (1)
- *dthelpgen* (1)
- *dthelpview* (1)
- *dtdcm* (1)
- *dtmail* (1)

For more information on the HP-UX 11i Security Containment support in CDE, see the following manpages:

- *dthelpgen* (1)
- *dtprintinfo* (1)
- *dtaction* (1)

## Obsolescence

The terminal emulator `hpterm` is obsolete and no longer available from `/usr/bin/X11/hpterm`. It is made unsupported and has been moved to `/usr/contrib/bin/X11/hpterm`. It is recommended that `dtterm` be used instead of `hpterm`. For more information on `hpterm` or `dtterm`, please see the respective manpages.

IMAKE utilities are part of X/Motif developer’s toolkit and are delivered under `/opt/imake/` directory. Starting from HP-UX 11i v3, these utilities are delivered as unsupported and are moved into `/usr/contrib/imake/`. Symbolic links are available from `/opt/imake/` to `/usr/contrib/imake/` to provide compatibility.

The following AudioSubsystem and ImagingSubsystem components will be delivered unsupported on HP-UX 11i v3 and will be obsolete in future releases:

- AudioSubsystem:
  - `/opt/audio/bin/Aserver`

- /opt/audio/bin/asecure
  - /opt/audio/bin/attributes
  - /opt/audio/bin/convert
  - /opt/audio/bin/sendsound
  - /opt/audio/lib/libAt.1
  - /opt/audio/lib/libAt.2
  - /opt/audio/lib/libAt.3
  - /opt/audio/lib/pa20\_64/libAt.3
  - /opt/audio/lib/libAlib.1
  - /opt/audio/lib/libAlib.2
  - /opt/audio/lib/libAlibkt.1
  - /opt/audio/lib/pa20\_64/libAlibkt.1
  - /opt/audio/lib/hpux32/libAt.so.1
  - /opt/audio/lib/hpux64/libAlibkt.so.1
  - /opt/audio/lib/hpux32/libAt.so.1
  - /opt/audio/lib/hpux64/libAlibkt.so.1
- **ImagingSubsystem:**
    - /opt/image/lib/libil.1
    - /opt/image/lib/libil.2
    - /opt/image/lib/libilefs.1
    - /opt/image/lib/libilefs.2
    - /opt/image/lib/hpux32/libil.so.1
    - /opt/image/lib/hpux32/libilefs.so.1

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## Distributed Computing Environment (DCE) Client and Integrated Login

Distributed Computing Environment (DCE) products provide a high-quality, comprehensive, standards-based framework to develop, administer, and use distributed applications.

Integrated Login provides a single-step login, and provides means to incorporate DCE security technology in the HP-UX environment.

The HP DCE/9000 version 2.0 on HP-UX 11i v3 that is shipped as part of the core OS consists of the following:

- Remote Procedure Call daemon (PA-RISC/Itanium®-based versions)
- CDS client (PA-RISC/Itanium®-based versions)
- Security client (PA-RISC/Itanium®-based versions)
- DTS client (PA-RISC/Itanium®-based versions)
- CMA Threads: POSIX 1003.1c, a user-space implementation (PA-RISC) only (available only for application support, not build support)
- DCE runtime library, CMA version, 32- and 64-bit version of Kernel Threaded version, 32- and 64-bit version of KT runtime library are available in native Itanium®-based
- DCE-CoreTools as in HP-UX 11i v2 September 2004 version onwards

## Summary of Change

### What's New for Customers Migrating from HP-UX 11i v1 September 2005?

The following features have been added for DCE Client 2.0 for HP-UX 11i v3:

- The default permissions of the following files have changed from 0666 to 0644:

- /var/opt/dce/svc/error.log
- /var/opt/dce/svc/warning.log
- /var/opt/dce/svc/fatal.log

In previous versions of DCE Client, these files had the 0666 permissions by default. In DCE Client 2.0, the default permission of these files is 0644, so that DCE processes running under any privileges cannot log messages to these files. To log messages with any privileges, use the following `dced` command with the `-j` option:

```
/opt/dce/sbin/dced -j
```

If DCE is not configured, you must run `/opt/dce/sbin/rpcd -j` instead of `/opt/dce/sbin/dced -j`

- The following new filesets are available on systems running on PA-RISC:

- DCE-Core Tools:
- DCE-CoreTools.DCE-TLS-NOTES
- DCE-CoreTools.DCE-BPRG
- DCE-CoreTools.DCEP-ENG-A-MAN

The THD-ENG-A-MAN fileset has been removed in this version of DCE.

- The following new filesets are available on systems running on Itanium®-based:

- DCE-Core:
- DCE-Core.DCE-IA64-SHLIB
- DCE-Core Tools:
- DCE-CoreTools.DCE-TLS-NOTES
- DCE-CoreTools.DCE-BPRG

- DCE-CoreTools.DCEP-ENG-A-MAN  
THD-ENG-A-MAN fileset has been removed in this version of DCE.
- The following products are not available with DCE Client on HP-UX 11i v3:
  - CDS Services: DCE-CDS Server
  - Security Server: DCE-SEC-Server
  - DCE Administration Tools: DCE-CoreAdmin
  - DCE-C-ToolsKRB-Support is discontinued in this release.
- Changes in Integrated Login:  
Two new filesets have been introduced in this version:
  - ILOGIN-IA-DCE (on an Itanium®-based machine)
  - ILOGIN-PA-DCE (on a PA-RISC machine)

#### **What's New for Customers Migrating from HP-UX 11i v2 June 2006?**

- The following filesets have been removed from DCE Client (on PA-RISC and Itanium®-based systems):  
DCE-Core:
  - DCE-COR-PA-DTS and DCE-COR-PA-RUN (from PA-RISC machines)
  - DCE-COR-IA-DTS and DCE-COR-IA-RUN (from Itanium®-based machines)
- The following products are not available with DCE Client on HP-UX 11i v3:
  - CDS Services: DCE-CDS Server
  - Security Server: DCE-SEC-Server
  - DCE Administration Tools: DCE-CoreAdmin
  - DCE-C-Tools
- Changes in Integrated Login:
  - Introduced the `/usr/lib/security/pa20_64/libpam_dce.so.1` library

#### **Impact**

There are no impacts other than those listed previously.

#### **Compatibility**

There are no known compatibility issues.

#### **Performance**

There are no known performance issues.



## Documentation

For further information, see the following documents, available at <http://docs.hp.com>:

- *HP-UX DCE Version 2.0 Release Notes*
- *Planning and Configuring HP-UX DCE 2.0*

## Obsolescence

Not applicable.