

HP-UX 11i Version 2 September 2004 Release Notes

HP 9000 Servers, HP Integrity Servers, and HP Workstations



Manufacturing Part Number: 5992-2852

September 2004, Edition 2

© Copyright 2004 Hewlett-Packard Development Company, L.P.

Legal Notices

© Copyright 2004 Hewlett-Packard Development Company, L.P.

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel® Itanium® Logo, Intel, Intel Inside and Itanium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Java™ is a US trademark of Sun Microsystems, Inc.

Linux is a US registered trademark of Linus Torvalds.

Microsoft®, Windows®, Windows NT®, and Windows® XP are U.S. registered trademarks of Microsoft Corporation.

Oracle® is a registered US trademark of Oracle Corporation, Redwood City, California.

UNIX® is a registered trademark of The Open Group.

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).

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>).

Publication History

The manual's publication date and part number indicate its current edition. The publication date changes when a new edition is released. The manual part number changes when extensive changes are made.

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

- *HP-UX 11i Version 2 September 2004 Release Notes*
September 2004, Edition 2, 5992-2852
Instant Information DVD and Web at <http://www.docs.hp.com>
- *HP-UX 11i Version 2 September 2004 Release Notes*
September 2004, Edition 1, 5990-8153 (retired)
Instant Information DVD and Web at <http://www.docs.hp.com>

New editions of this manual incorporate all material updated since the previous edition. For the latest version, see the HP-UX 11i Version 2 documentation on the Web at:

<http://www.docs.hp.com/hpux/os/11iV2>

HP Encourages Your Comments

Please direct comments regarding this guide to:

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

Or, use this Web form to send us feedback:

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

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 CD, 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 CD, it may be a hot link to the book itself.
<i>Emphasis</i>	Text that is emphasized.
Emphasis	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.
UserInput	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.

1. Overview of the Release Notes

What's in This Chapter?	11
What's the Purpose of the HP-UX 11i Version 2 September 2004 Release Notes?	12
Where Should I Begin?	13
Locating Release Notes for Previous Versions of HP-UX	14
Other Sources of Information about This Release	15
What's in the Remaining Chapters?	17

2. Introduction to HP-UX 11i Version 2

What's in This Chapter?	19
Welcome to HP-UX 11i v2 September 2004	20
HP-UX 11i Release Names and Release Identifiers.	21
HP-UX 11i v2 Software and Driver Bundle Types.	22
HP-UX 11i v2 Operating Environments.	23
For Customers Migrating from HP-UX 11i v1: What's Not Included in This Release of HP-UX 11i v2	29
HP-UX 11i v2 Compatibility	33

3. What's New at a Glance

What's in This Chapter?	37
What's New in the September 2004 Release?	38
What's New in the March 2004 Release?	57
What's New in the Initial (October 2003) HP-UX 11i v2 Release?	60

4. Workstation- and Server-Specific Information

What's in This Chapter?	71
HP Instant Support Enterprise Edition	73
HP StorageWorks Command View SDM	74
HP StorageWorks Secure Path for HP-UX.	75
HP-UX 11i v2 Driver Development Kit	77
HP-UX 3D Graphics Run Time Environment and Developer's Kit	78
Networking and Mass Storage Drivers.	79
Always-Installed Networking Drivers	79
Gigabit Ethernet and Fast Ethernet.	80
PCI FDDI	83
Selectable Networking Drivers	84
HyperFabric	84
PCI ATM.	85
PCI Token Ring	86
Always-Installed Mass Storage Drivers	87
disc3 Driver	88
Fibre Channel Tachlite Driver (FibrChanl-00).	89
FibrChanl-01	91
HP-UX HSC Fibre Channel Mass Storage (FCMS) driver	92
HP-UX Ultra320 SCSI Driver.	92
RAID-01	93
SCSI Drivers.	94

Contents

Selectable Mass Storage Drivers	96
HP-UX iSCSI Software Initiator	96
Online Addition and Replacement (OL* or OLAR)	97
On Demand Solutions	98
Instant Capacity on Demand (iCOD)	99
Pay Per Use	100
Supported Servers and Workstations	101
Unsupported Storage Devices	103
Unsupported I/O Cards	104
Technical System Configuration	105

5. General System Administration

What's in This Chapter?	109
Compressed Dump	111
Enterprise Cluster Master Toolkit	112
Event Monitoring Service	113
GlancePlus Pak	114
High Availability Monitors	116
HP Partitioning	117
HP Process Resource Manager	117
HP-UX nPartition Configuration Commands	118
HP-UX Processor Sets	121
HP-UX Virtual Partitions	123
HP-UX Workload Manager	124
HP-UX Workload Manager Toolkits	125
nPartition Provider	127
Partition Manager (parmgr)	128
HP Serviceguard	129
HP Serviceguard Manager	131
HP Serviceguard Quorum Server	132
HP-UX 11i v2 Required Patch Bundle (BUNDLE11i)	133
HP-UX Kernel Configuration	134
HP-UX Peripheral Device Tool	138
Ignite-UX	139
Improved Database Startup and Shutdown Times	143
Interrupt Migration	144
MySQL	145
Obsolescence Bundle	146
OnlineDiag	147
Quality Pack Patch Bundle	148
SAM - Nodal Network Configuration (NNC)	150
Servicecontrol Manager	151
Software Distributor (SD)	152
Software Package Builder	153
System Administration Manager (SAM)	154
System V Shared Memory	156

Tape Boot	157
Update-UX	157

6. Disk and File Management

What's in This Chapter?	159
16 Terabyte File System Support	160
AutoFS/Automounter	160
DeviceIDS	162
File Systems Backup and Recovery Commands (Deprecated)	163
Hierarchical File System (HFS) (Deprecated)	164
HP CIFS Client	165
HP CIFS Server	166
Logical Volume Manager (LVM) and MirrorDisk/UX	168
Network File System (NFS)	169
Network Information Service Plus (NIS+) (Deprecated)	171
Portable File System (PFS) (Obsolete)	173
VERITAS File System 3.5 (HP Online JFS/JFS 3.5)	175
VERITAS Volume Manager 3.5 for HP-UX (Base)	177

7. Internet and Networking

What's in This Chapter?	179
HP Data Link Provider Interface (DLPI)	181
HP Openview Emanate Agent	183
HP WBEM Services for HP-UX	184
HP-UX LAN Provider	185
HP-UX Mobile IPv6	186
HP-UX Web Server Suite	188
HP-UX Apache-based Web Server	190
HP-UX Tomcat-based Servlet Engine	192
HP-UX Webmin-based Admin	193
HP-UX XML Web Server	194
Internet Services	195
BIND	195
BOOTP and DHCP	197
Dynamic Host Configuration Protocol (DHCP) v6	198
inetd	200
IPv4 Address Display	201
IPv6 Support for All Internet Services Products	202
Logging User Accounting Information	203
Multimedia Streaming Protocols (MSP)	204
rbootd	206
remsh/rexec	206
rexecd	208
Route Administration Manager for IPv6 Routing Protocols (RAMIPv6)	209
rwhod	210
Secure Internet Services	211

Contents

Sendmail.....	212
Service Location Protocol (SLP)	214
TCP Wrappers	216
telnetd.....	217
WU-FTPD.....	218
LAN Administration Commands	220
Mozilla Application Suite	221
Netscape Directory Server.....	223
NetTL Network Tracing and Logging	224
Network Transport (ARPA).....	226
Point-to-Point Protocol.....	231
STREAMS/UX	232

8. Security

What's in This Chapter?	235
Boot Authentication.....	236
Generic Security Service Application Programming Interface (GSS-API).....	237
HP-UX Bastille.....	238
HP-UX Host Intrusion Detection System	239
HP-UX IPFilter	241
HP-UX Secure Shell.....	242
HP-UX Strong Random Number Generator.....	244
Install-Time Security.....	245
Kerberos Client (KRB5-Client)	247
OpenSSL.....	249
Pluggable Authentication Modules (PAM)	250
PAM Kerberos	251
Security Patch Check.....	252
Shadow Passwords.....	254
Trusted Mode	255

9. Commands and System Calls

What's in This Chapter?	257
The <code>execve()</code> System Calls.....	258
The <code>fuser</code> Command.....	260
The <code>insf</code> , <code>lssf</code> , and <code>mksf</code> Commands	261
The <code>mmap()</code> Function	262
The <code>olrad</code> Command.....	263
Post/Wait.....	264
The <code>ps</code> command	265
The <code>rc</code> Shell Script	266
The <code>scsimgr</code> and <code>scsiscan</code> Commands (Deprecated).....	267
The <code>settune</code> and <code>settune_txn</code> System Calls	268
The <code>sfd</code> Daemon (Deprecated).....	269
The <code>sysdef</code> Command (Deprecated).....	270

10. Libraries and Programming

What's in This Chapter?	273
Absolute Debugger (adb)	274
HP aC++/HP ANSI C Compiler for Itanium-based Systems	275
HP aC++ Compiler for PA-RISC Systems	276
HP C Compiler for PA-RISC Systems	281
HP Fortran for HP-UX	285
HP MLIB	287
HP Message Passing Interface (MPI)	288
HP-UX Buffer Cache Tunable Parameters (Deprecated)	289
Java 2 Standard Edition Platform	290
HP 3D Technology for the Java 2 Standard Edition Platform	290
HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition 291	
Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE	292
Java Out-of-Box	293
Math Library (libm), C Headers, and C++ Headers	294
POSIX Threads	303
Software Transition Kit	305
Transition Links (Deprecated)	305

11. Internationalization

What's in This Chapter?	309
Internationalization Features	310
Deprecated Functionality	315

12. Other Functionality

What's in This Chapter?	317
ccNUMA	318
Common Desktop Environment (CDE)	322
Distributed Computing Environment (DCE) Client and Integrated Login	328

What's in This Chapter?

The purpose of this chapter is to help you use these release notes along with related HP-UX documentation effectively. The following topics are covered in this overview:

- What's the Purpose of the HP-UX 11i Version 2 September 2004 Release Notes? (see page 12)
- Where Should I Begin? (see page 13)
- Locating Release Notes for Previous Versions of HP-UX (see page 14)
- Other Sources of Information about This Release (see page 15)
- What's in the Remaining Chapters? (see page 17)

What's the Purpose of the HP-UX 11i Version 2 September 2004 Release Notes?

The *HP-UX 11i Version 2 September 2004 Release Notes* describes what is new, has changed, or has been deprecated or obsoleted in the current release, as compared to the following updates:

- HP-UX 11i v1 June 2004
- HP-UX 11i v2 March 2004

Normally, this document would only describe the differences between the current release and the one previous. But, since this is the first time HP-UX 11i v2 has supported two platforms (PA-RISC and Itanium-based), this document describes the differences from the previous release of HP-UX 11i v1, which supports PA-RISC systems, *and* the previous release of HP-UX 11i v2, which, until now, supported only Itanium-based systems.

As with other HP-UX release notes, the *HP-UX 11i Version 2 September 2004 Release Notes* does not completely document all the features of this release. Instead, it contains high-level information and pointers to more detailed operating system and product-specific documentation. Where appropriate, it also notes changes in the support of products. These release notes generally apply only to features that are part of the HP-UX 11i v2 Operating Environments.

For pointers to product-specific release notes, see the individual products documented elsewhere in this document. Additional product-specific release notes files are often located in the `/opt` directory, in sub-directories named `[name]/newconfig/RelNotes` (where *name* represents the name of the product). For example, Distributed Computing Environment (DCE) release notes are located in the `/opt/dce/newconfig/RelNotes` directory.

NOTE

The name of the initial HP-UX 11i v2 release was "HP-UX 11i Version 2." Unlike its subsequent updates, it does not have a date in its name, although we may sometimes note parenthetically that it was released in October 2003.

Where Should I Begin?

This book is organized in such a way that you need only read Chapter 3, “What’s 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 current and previous releases of HP-UX 11i v2.

The section “What’s New in the September 2004 Release?”, in particular, will give you a general picture of how this release differs from the June 2004 release of HP-UX 11i v1 (B.11.11), as well as the March 2004 release of HP-UX 11i v2 (B.11.23).

For further information about a particular item, you can go to the appropriate section in the remainder of the book or, if the item pertains to a previous release, to an earlier version of this document.

HP-UX system release notes can be found in the following locations:

- The HP-UX Instant Information media. See “HP-UX 11i v2 Instant Information Media” on page 16 for more information.
- At the Web site <http://www.docs.hp.com/hpux/os/11iv2/>.

Be sure to consult the version most appropriate to your release. If you are concerned with just the initial (October 2003) release of HP-UX 11i v2, consult the *HP-UX 11i Version 2 Release Notes*. If, on the other hand, you are concerned about an update of the initial release, then you should begin with the *Release Notes* version appropriate to that release. For instance, the *HP-UX 11i Version 2 March 2004 Release Notes* would be most appropriate to the March 2004 update release.

For details on performing an installation, be sure to review the appropriate *HP-UX 11i Version 2 Installation and Update Guide* at the above Web site.

For critical, late-breaking cold-install and update issues not in the *HP-UX 11i Version 2 Installation and Update Guide*, you should also review the media booklet, *Read Before Installing or Updating to HP-UX 11i Version 2*, which is also available at the above Web site.

NOTE

The most current version of these documents, as well as most HP documentation, can always be found at <http://www.docs.hp.com/>.

Information about the HP-UX 11i v1.6 release is available on the Web at

<http://www.docs.hp.com/hpux/os/11iv1.6/>

Additionally, you may want to familiarize yourself with the HP-UX 11i v1 release. This information is available on the Web at

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

Locating Release Notes for Previous Versions of HP-UX

Release notes are found in the following locations:

- HP-UX Instant Information DVD. See “HP-UX 11i v2 Instant Information Media” on page 16 for more information.
- The `/usr/share/doc/` directory of your HP-UX 11i v2 system. Please note, however, that the latest editions may not be contained in this directory and are instead located at <http://www.docs.hp.com/>.
- The HP Documentation Site at <http://www.docs.hp.com/>. Here you will find the release notes pertinent to all previous releases of HP-UX, as well as release notes for various individual products.

See “The HP Documentation Web Site” on page 16 for more information.

Other Sources of Information about This Release

In addition to these release notes, you have many other sources of information related to the HP-UX 11i v2 release available to you on the Web at

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

The following documents, which are found at this Web site, may be of particular interest:

Read Before Installing or Updating to HP-UX 11i Version 2, MPN **5990-6741**

HP-UX 11i Version 2 Installation and Update Guide, MPN **5990-6728**

HP-UX 11i Version 2 Reference, MPN **B2355-60103**

Ignite-UX Administrator's Guide, Edition 11 MPN **B2355-90788**

Patch Management User Guide for HP-UX 11.x Systems, MPN **5990-6753**

Software Distributor Administrator's Guide, MPN **B2355-90789**

Software Package Builder 2.0 Users Guide for HP-UX 11i v1 and 11i v2, MPN **5990-6771**

HP-UX System Partitions Guide, MPN **5971-4742**

Managing Systems and Workgroups, MPN **5990-8172**: This document provides simple, reliable guidelines and recipes for managing and administrating multi-system workgroups, as well as covering the basics of single-system administration.

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

Of additional interest is the following document, which can be found in the "Networking and Communications" section of <http://docs.hp.com>:

HP-UX Networking Ports Reference Guide, MPN **5187-4242**

Additionally, the following Web sites may be of interest in obtaining a variety of information regarding the HP-UX 11i v2 release:

Enterprise servers, Workstations, and Systems Hardware:

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

HP Integrity Servers: <http://www.hp.com/go/integrity>

Intel® Itanium®-based Workstations:

<http://www.hp.com/workstations/itanium/index.html>

Product Manuals:

http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp?locale=en_US&contentType=SupportManual&docIndexId=179166

HP Software Depot: <http://software.hp.com>

HP Software Releases and Media:

<http://www.software.hp.com/RELEASES-MEDIA/>

Software Availability Matrix: <http://software.hp.com/MATRIX/>

Software Transition Kit and Software Solutions:

<http://devresource.hp.com/drc/STK>

IT Resource Center (ITRC): <http://itrc.hp.com>

Developer & Solution Partner Program (DSPP): <http://www.hp.com/dspp>

Development Resource Central: <http://devresource.hp.com>

The HP Documentation Web Site

HP provides a Web site where the latest HP-UX documentation and updates are available. This Web site is found at

<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, documentation supporting the release can be accessed before the software is installed. The Instant Information DVD provides improved online presentation, print quality and search capabilities.

HP-UX Welcome Page

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

Manual Pages

For the HP-UX 11i v2 release, the manual pages (manpages) are available on the HP-UX Welcome Page of your system, on the Instant Information DVD under the title *HP-UX Reference*, through the use of the `man` command, and on the Web at

http://docs.hp.com/hpux/os/man_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 2 Installation and Configuration Guide*. Any product contained in the release may have a README document, so several README documents may be included. The README document specific for HP-UX 11i v2 is included with your media kit.

White Papers on HP-UX

White papers associated with the HP-UX 11i v2 release are available at

<http://www.docs.hp.com/hpux/os/11iV2>

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

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

What's in the Remaining Chapters?

The remaining chapters of these release notes are as follows:

- Chapter 2, “Introduction to HP-UX 11i Version 2,” on page 19, provides an overview of the five Operating Environments, along with information about unsupported products and compatibility issues.
- Chapter 3, “What's 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 and previous releases of HP-UX 11i v2.
- Chapter 4, “Workstation- and Server-Specific Information,” on page 71, presents information regarding supported systems, networking and mass storage cards and drivers, and information that is server or workstation specific.
- Chapter 5, “General System Administration,” on page 109, includes information of particular interest to system administrators.
- Chapter 6, “Disk and File Management,” on page 159, presents information regarding directory, file system, and disk management.
- Chapter 7, “Internet and Networking,” on page 179, covers changes to networking functionality and internet services.
- Chapter 8, “Security,” on page 235, covers changes and enhancements to security services.
- Chapter 9, “Commands and System Calls,” on page 257, includes information about new and changed commands and system calls.
- Chapter 10, “Libraries and Programming,” on page 273, covers a wide variety of changes of particular interest to programmers, including changes to compilers, editors, and libraries.
- Chapter 11, “Internationalization,” on page 309, presents information about text fonts and converters relating to various international languages.
- Chapter 12, “Other Functionality,” on page 317, includes additional applications or functionality in the Operating Environments.

What's in This Chapter?

This chapter provides an introduction to HP-UX 11i v2, along with an overview of the five Operating Environments. Also included is a list of unsupported products and compatibility issues.

- Welcome to HP-UX 11i v2 September 2004 (see page 20)
- HP-UX 11i Release Names and Release Identifiers (see page 21)
- HP-UX 11i v2 Software and Driver Bundle Types (see page 22)
- HP-UX 11i v2 Operating Environments (see page 23)
 - Overview (see page 23)
 - HP-UX 11i v2 Foundation Operating Environment (see page 24)
 - HP-UX 11i v2 Enterprise Operating Environment (see page 26)
 - HP-UX 11i v2 Mission Critical Operating Environment (see page 26)
 - HP-UX 11i v2 Minimal Technical Operating Environment (see page 27)
 - HP-UX 11i v2 Technical Computing Operating Environment (see page 28)
- For Customers Migrating from HP-UX 11i v1: What's Not Included in This Release of HP-UX 11i v2 (see page 29)
- HP-UX 11i v2 Compatibility (see page 33)

Welcome to HP-UX 11i v2 September 2004

The September 2004 release of HP-UX 11i v2 is a joint release of HP-UX 11i for both the HP 9000 and Integrity server families. This enterprise release offers a full range of HP-UX Operating Environments and capabilities including 128-way scaling, systems management, security, and high-availability software products. This release of HP-UX 11i v2 is delivered on a common DVD media which means that the same media can be used for installation on either HP 9000 or Integrity servers.

Itanium®-based systems offer significantly better price/performance and performance scalability than systems based on current architectures, and HP-UX 11i v2 provides the best way to preserve your investment through the transition from Precision Architecture Reduced Instruction Set Computing (PA-RISC) HP 9000 servers to Itanium-based Integrity servers.

Hewlett-Packard's enterprise computing business has carefully planned the transition to Itanium-based systems, placing a premium on customer and partner investment protection. HP-UX 11i v2 maintains compatibility between HP 9000 and Integrity servers through:¹

- Common “look and feel”
- Application Build Environment compatibility (source code compatibility)
- Data compatibility
- Binary compatibility²

With this release of HP-UX 11i v2 for both the HP 9000 and Integrity server families, HP has successfully introduced a transition bridge between the PA-RISC architecture and the Itanium architecture and provided a smooth transition path for its customers and partners onto the Itanium next-generation architecture.

-
1. For further information about HP-UX 11i v2 compatibility, including a list of products with documented compatibility exceptions, see “HP-UX 11i v2 Compatibility” on page 33.
 2. Through the Aries emulator, PA-RISC applications can run on Itanium-based systems. However, the reverse is not true: Itanium-based applications cannot run on PA-RISC systems.

HP-UX 11i Release Names and Release Identifiers

Each HP-UX 11i release has an associated release name and 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 ^a

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

The *uname* (1) command with the *-r* option returns the release identifier.

You can also determine the update release date and the Operating Environment by entering the following:

```
# swlist | grep HPUX11i
```

The resulting output will list the current release identifier, update release date, and Operating Environment. For example:

```
HPUX11i-TCOE                    B.11.23.0409 HP-UX Technical Computing Operating  
Environment Component
```

The above revision string represents the following:

B.11.23 = HP-UX 11i v2

0409 = September 2004 Update Release

HP-UX 11i v2 Software and Driver Bundle Types

The HP-UX 11i v2 media contains all of the software and network driver bundles for your system to run the latest version of HP-UX 11i v2. Additional software and network driver bundles are included, which you may choose to either select or de-select prior to install or update. HP-UX 11i v2 contains three types of bundles:

- **Always-Installed:** Software and network driver bundles required by HP-UX 11i v2. Other always-installed bundles are also included as part of your operating environment. Examples include the core OS bundles, some software bundles, and some network and mass-storage drivers.
- **Default-Installed:** Software bundles that are installed by default. You can manually de-select the bundles before you install or update system. Examples include Mozilla Application Suite and the HP-UX Web Server Suite bundles.
- **Selectable:** Software bundles that are *not* installed or updated by default. You must manually select these bundles before you install or update your system. Examples include Ignite-UX and security.

For a detailed list of the always-installed, default-installed, and selectable bundles, see Appendix D of the *HP-UX 11i Version 2 Installation and Update Guide*, available at <http://www.docs.hp.com>.

In the following section, “HP-UX 11i v2 Operating Environments” on page 23, products are listed according to their bundle type.

HP-UX 11i v2 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 v2 OEs:

- **HP-UX 11i v2 Foundation OE (FOE)** — Designed for the demands of Web servers, content servers and front-end servers, this OE includes applications such as HP-UX Web Server Suite, Java, and Mozilla Application Suite. This OE is bundled as HPUX11i-OE. For more details, see “HP-UX 11i v2 Foundation Operating Environment” on page 24.
- **HP-UX 11i v2 Enterprise OE (EOE)** — Designed for database application servers and logic servers, this OE contains the HP-UX 11i v2 Foundation OE bundles and additional applications such as GlancePlus Pak to enable an enterprise-level server. This OE is bundled as HPUX11i-OE-ENT. For more details, see “HP-UX 11i v2 Enterprise Operating Environment” on page 26.
- **HP-UX 11i v2 Mission Critical OE (MCOE)** — Designed for the large, powerful back-end application servers and database servers that access customer files and handle transaction processing, this OE contains the Enterprise OE bundles, plus applications such as HP Serviceguard and Workload Manager to enable a mission-critical server. This OE is bundled as HPUX11i-OE-MC. For more details, see “HP-UX 11i v2 Mission Critical Operating Environment” on page 26.
- **HP-UX 11i v2 Minimal Technical OE (MTOE)** — Designed for workstations running HP-UX 11i v2, this OE includes the Mozilla Application Suite, Perl, Technical System Configuration (TechSysConf), and VERITAS Volume Manager (VxVM). This OE is bundled as HPUX11i-MTOE. For more details, see “HP-UX 11i v2 Minimal Technical Operating Environment” on page 27.
- **HP-UX 11i v2 Technical Computing OE (TCOE)** — Designed for both compute-intensive workstation and server applications, this OE contains the MTOE bundles plus extensive graphics applications and Math Libraries. This OE is bundled as HPUX11i-TCOE. For more details, see “HP-UX 11i v2 Technical Computing Operating Environment” on page 28.

The following table details the supported OEs for HP Servers and Workstations:

Table 2-2 Supported Operating Environments for Servers and Workstations

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

a. Can be purposed as either a workstation or compute-intensive technical server.

HP-UX 11i v2 Foundation Operating Environment

The HP-UX 11i v2 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 v2 Foundation OE includes the base 64-bit HP-UX operating system, plus the following features. (For an overview of the features that are new or have changed in this release, see Chapter 3, “What’s New at a Glance,” on page 37.)

Always-Installed Features¹

- Event Monitoring Service
- FDDI (PCI)
- FibreChannel (PCI)
- Gigabit Ethernet (PCI)
- Gigabit Ethernet Next Generation (PCI)
- HP CIFS Client
- HP CIFS Server
- HP WBEM Services for HP-UX
- HP-UX Kernel Configuration
- iEther (PCI)
- instant Capacity on Demand (iCOD)
- Logical Volume Manager (LVM)
- nPartition Provider
- Obsolescence Bundle
- ONC+
- OnlineDiag
- OpenSSL
- PAM Kerberos
- Peripheral Device Tool
- PRM Libraries
- RAID-01
- Runtime Plug-in (JPI) for Netscape/Mozilla for the Java™ 2 Platform v1.3 and v1.4
- SAM-NNC
- scsiU320-00
- Software Distributor (SD)
- SWGETTOOLS
- System Administration Manager (SAM)
- System Management Base
- Update-UX
- USB-00
- VERITAS File System (base VxFS/JFS)
- VERITAS Volume Manager (base VxVM)
- WBEM-LAN-00

Default-Installed Features

- Event Monitoring Services
- GTK+ Libraries
- HP-UX Bastille

1. For definitions of *always-installed*, *default-installed*, and *selectable*, see “HP-UX 11i v2 Software and Driver Bundle Types” on page 22.

- HP-UX IPFilter
- HP-UX Secure Shell
- HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition
- 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)
- Instant Support Enterprise Edition (ISEE) (Servers only)
- Java for HP-UX Add-On C++ Libraries for SDK and RTE (PA-RISC only)
- Judy Libraries
- Mozilla Application Suite
- Mozilla Source
- MySQL
- Partition Manager
- Perl
- Runtime Environment (RTE) for the Java™ 2 Platform v1.3 and v1.4
- Sec00Tools
- Security Patch Check
- Servicecontrol Manager

Selectable Features

- ATM-00
- HP-UX Host Intrusion Detection System (HIDS) (servers only; not included in the MTOE or TCOE)
- HP-UX Install Utilities
- HP-UX iSCSI Software Initiator
- HyperFabric
- Ignite-UX
- Java (Out of Box) Tunable
- Mobile IPv6
- Netscape Directory Server
- Pay Per Use
- PCI MUX
- RAID Utilities (ACUGUIUtils)
- Security Level 10
- Security Level 20
- Security Level 30
- Software Package Builder
- Token Ring

HP-UX 11i v2 Enterprise Operating Environment

The HP-UX 11i v2 Enterprise Operating Environment is targeted especially for database application servers and logic servers. In addition to the features found in the HP-UX 11i v2 Foundation OE (described on page 24), the Enterprise OE includes the following additional features. (For an overview of the features that are new or have changed in this release, see Chapter 3, “What’s New at a Glance,” on page 37.)

Always-Installed Features¹

- High Availability Monitors
- MirrorDisk/UX
- VERITAS File System (full VxFS/OnlineJFS v3.5)
- GlancePlus Pak
- HP Process Resource Manager

Default-Installed Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

Selectable Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

HP-UX 11i v2 Mission Critical Operating Environment

The HP-UX 11i v2 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 Chapter 3, “What’s New at a Glance,” on page 37.)

Always-Installed Features¹

- Enterprise Cluster Master Toolkit
- HP Serviceguard
- MC/ServiceGuard NFS Toolkit
- Cluster Object Manager
- Workload Manager
- Workload Manager Toolkits

Default-Installed Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

Selectable Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

1. For definitions of *always-installed*, *default-installed*, and *selectable*, see “HP-UX 11i v2 Software and Driver Bundle Types” on page 22.

HP-UX 11i v2 Minimal Technical Operating Environment

The Minimal Technical Operating Environment is the smallest and most fundamental OE that is defined specifically for HP workstations. It exists to offer an HP-UX 11i v2 solution to the customer who is interested in a low-cost HP Workstation and a correspondingly basic Operating Environment. The Minimal Technical OE is directed to the Workstation OEM market and to those customers for whom the Technical Computing OE is not a suitable solution.

The Minimal Technical OE contains all the base functionality that is common to the other four OEs, including the base 64-bit HP-UX operating system, network drivers, and some of the other always-installed features. However, compared to the Technical Computing OE, the set of additional features is greatly reduced.

The HP-UX 11i v2 Minimal Technical OE includes the following features. (For an overview of the features that are new or have changed in this release, see Chapter 3, “What’s New at a Glance,” on page 37.)

Always-Installed Features¹

- Event Monitoring Service
- FDDI (PCI)
- FibreChannel (PCI)
- Gigabit Ethernet (PCI)
- Gigabit Ethernet Next Generation (PCI)
- HP WBEM Services for HP-UX
- HP-UX 3D Graphics Run Time Environment and Developer's Kit (PA-RISC Workstations not supported. See “HP-UX 3D Graphics Run Time Environment and Developer's Kit” on page 78.)
- HP-UX Kernel Configuration
- iEther (PCI)
- instant Capacity on Demand (iCOD)
- Logical Volume Manager (LVM)
- nPartition Provider
- Obsolescence Bundle
- ONC+
- Online Diagnostics
- OpenSSL
- Peripheral Device Tool
- RAID-01
- scsiU320-00
- Technical System Configuration (TechSysConf)
- SAM-NNC
- Software Distributor (SD)
- SWGETTOOLS
- System Administration Manager (SAM)
- System Management Base
- Update-UX
- USB
- VERITAS File System (base VxVS/JFS)
- VERITAS Volume Manager (base)

1. For definitions of *always-installed*, *default-installed*, and *selectable*, see “HP-UX 11i v2 Software and Driver Bundle Types” on page 22.

- WBEM-LAN-00

Default-Installed Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

Selectable Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

HP-UX 11i v2 Technical Computing Operating Environment

Like the Minimal Technical Operating Environment, the Technical Computing Operating Environment contains all the base functionality that is common to the other four OEs, including the base 64-bit HP-UX operating system, network drivers, and other always-installed functionality. While it is *not* a superset of the Foundation OE, it *is* a superset of the Minimal Technical OE. Unlike the Minimal Technical OE, however, the Technical Computing OE is available on both technical servers and workstations.

In addition to the features found in the Minimal Technical OE, the HP-UX 11i v2 Technical Computing OE includes the following features. (For an overview of the features that are new or have changed in this release, see Chapter 3, “What’s New at a Glance,” on page 37.)

Always-Installed Features¹

- HP CIFS Client
- HP CIFS Server
- PAM Kerberos
- Runtime Plug-in (JPI) for Netscape/Mozilla for the Java™ 2 Platform v1.3 and v1.4
- HP 3D Technology for the Java 2 Standard Edition Platform (Itanium only. See “HP 3D Technology for the Java 2 Standard Edition Platform” on page 290.)
- HP MLIB
- HP Message Passing Interface (MPI)

Default-Installed Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

Selectable Features

- See “HP-UX 11i v2 Foundation Operating Environment” on page 24

1. For definitions of *always-installed*, *default-installed*, and *selectable*, see “HP-UX 11i v2 Software and Driver Bundle Types” on page 22.

For Customers Migrating from HP-UX 11i v1: What's Not Included in This Release of HP-UX 11i v2

All of the new core functionality on HP-UX 11i v1, except Virtual Partitions¹, is available on HP-UX 11i v2 September 2004. The vast majority are incorporated into the release.

Some networking and mass storage cards (such as EISA, HP-PB, and HSC) are not supported by this release. For a list of unsupported I/O cards, see “Unsupported I/O Cards” on page 104. See also “Gigabit Ethernet and Fast Ethernet” on page 80 and “HP-UX HSC Fibre Channel Mass Storage (FCMS) driver” on page 92.²

Some storage devices are no longer supported with this release. See “Unsupported Storage Devices” on page 103.

This release of HP-UX 11i v2 is not supported on PA-RISC Workstations. HP recommends that PA-RISC Workstation customers use HP-UX 11i v1. In addition, some HP 9000 servers are not supported by this release. See “Supported Servers and Workstations” on page 101.

NOTE

For a general guide to what *is* included in this release of HP-UX 11i v2, see the “HP-UX 11i v2 Operating Environments” on page 23.

For descriptions of what is new, has changed, or has been deprecated or obsoleted, see the summaries in Chapter 3, “What's New at a Glance,” on page 37. The summaries are cross-referenced to other sections, which provide more detail.

HP-UX 11i v1 Products or Features Not Supported by This Release

The following products or features are not supported by HP-UX 11i v2 September 2004. Some of these products or features were delivered on the OE, SPK, or AR media; others were released as Web upgrades. Some of the products listed will be removed upon updating to this release. See “Obsolescence Bundle” on page 146.

NOTE

This is not an exhaustive list. For information about the support of a particular product, see the product-specific documentation.

- Automounter (replaced by AutoFS. See “AutoFS/Automounter” on page 160.)
- Advanced Svr/9000 Workstation
- Advanced Svr/9000 Server

1. Virtual Partitions (vPars) will be available on HP-UX 11i v2 in the coming months. See “HP-UX Virtual Partitions” on page 123.

2. For a list of drivers delivered on the OE media and the cards they support, see the tables in “Networking and Mass Storage Drivers” on page 79.

- ALLBASE/SQL Runtime (s700, s800)
- ALLBASE/SQL Development (s700, s800)
- Cobol (obsoleted in HP-UX 11i v1)
- CXperf App Performance Analyzer LTU
- DCE Client CMA threads library in Itanium-based mode (obsolete) (DCE Client CMA threads library in PA-RISC mode is currently being shipped.)
- Digital Video Product
- DTC16 RX Manager
- DTC Manager/UX
- Event Monitoring Service (EMS) Kernel Resource Monitor
- The Fibre Channel Mass Storage Driver (driver name `fcms`) is not supported in HP-UX 11i v2. This driver was available in HP-UX 11i v1 for support of cards HSC A3404A and A3636A, which are also not supported. For a list of other unsupported cards, see “Unsupported I/O Cards” on page 104.
- FirstSpace v1 (obsolete)
- FTAM Bundle
- HP 3D Technology for the Java Platform: Included in HP-UX 11i v2 only for Itanium-based systems. PA-RISC-based systems are not supported. (See “HP 3D Technology for the Java 2 Standard Edition Platform” on page 290.)
- HP Distributed Print Service (HPDPS)
- HP EISA 100BaseT Driver
- HP EISA FDDI Driver
- HP EISA TokenRing Driver
- HP Frame Relay
- HP HPPB 100BaseT Driver
- HP HPPB FDDI Driver
- HP HPPB TokenRing Driver
- HP HSC ATM Driver
- HP HSC FDDI Driver
- HP I20 RAID Product
- HP MPower Web s/700 (obsolete)
- HP-PB ATM Driver
- HP Praesidium CDSA (obsolete)
- HP WebQoS Peak UX LTU (obsolete)
- HP-RT Developer's Kit
- HP-RT VME BackPlane Networking
- HP-RT Streams
- HP-RT X11 Server

- HP-RT Simple Network Management
- HP-UX 3D Graphics Run Time Environment and Developer's Kit: All modules for hardware-accelerated OpenGL rendering have been removed because PA-RISC Workstations are not supported by this release. (See “HP-UX 3D Graphics Run Time Environment and Developer's Kit” on page 78.)
- HP-UX Base 32-bit OS
- HP-UX Developer's Toolkit license s700 (obsolete)
- HP-UX Installation Utilities for 10.20
- HP-UX Runtime Environment for the Java 2 (RTE) Platform v1.2 (HP-UX SDK and RTE v1.3 and v1.4 are delivered. See “HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition” on page 291.)
- HP-UX Visualize Conference Run Time Environment
- The Netscape Browser (all versions): No longer supported on HP-UX. Mozilla has replaced Netscape as the supported browser. (See “Mozilla Application Suite” on page 221.)
- NIO Commkit 4.0
- NS Enterprise Server 4.0 International and US/Canada (obsolete)
- Object Action Manager (ObAM) UI Framework (v5.0)
- Pascal Developer's Kit
- PCI Info Tool
- Praesidium Speedcard K, D/R (HSC, PCI)
- Runtime Plug-in (JPI) for the Java 2 platform v1.2
- SCR (obsolete)
- ShmemExtensions (The functionality of the ShmemExtensions product has been integrated into the System V shared memory component of the HP-UX kernel. See “System V Shared Memory” on page 156).
- VUEtoCDE Transition Tool
- Virtual Partition Manager
- Virtual Terminals to HP 3000
- VJE-gamma and EGBridge Japanese Input Methods
- VP Performance Manager
- WebQoS Peak Pkg Ed LTU

HP-UX 11i v1 Products or Features to be Supported Later

The following products or features are not supported at the initial offering of HP-UX 11i v2 September 2004. They will be supported at a later date. Some of these products or features were delivered on the OE, SPK, or AR media; others were released as Web upgrades.

- The A5158A PCI Tachlite Fibre Channel adapter is not supported on the HP-UX 11i v2 September 2004 release on PA-RISC platforms at this time, but may be later. This card is supported on HP-UX 11i v2 on Itanium-based platforms. Please check the IT Resource Center at <http://itrc.hp.com> for updates. Search the technical knowledge base using the keyword JAGaf38985.
- Enterprise Cluster Master Toolkit (ECMT): PA-RISC customers who migrate from ECMT B.02.10 on HP-UX 11i v1 to B.02.11 on HP-UX 11i v2 will lose support for Sybase, Informix, and DB2. This release of HP-UX 11i v2 will not be supported by these database applications until a later date. (See “Enterprise Cluster Master Toolkit” on page 112.)
- HP OpenView products, other than GlancePlus and OVPA (which currently support this release), will support this release in the near future.
- HP-UX AAA Server (RADIUS): Does not currently support HP-UX 11i v2 on PA-RISC, but will be available in the future at <http://software.hp.com>.
- HP-UX Mobile AAA Server (Diameter): Not yet available on HP-UX 11i v2, will be available in the future at <http://software.hp.com>.
- HP-UX Virtual Partitions (vPars) A.04.01: Targeted to release mid-2005.
- Secure Path for HP-UX V3.0E, which provides EVA Boot and Dump support, will be available at a later date. (See “HP StorageWorks Secure Path for HP-UX” on page 75.)
- Tape Boot is currently only supported on PA-RISC systems. (See “Tape Boot” on page 157.)
- Upon updating to HP-UX 11i v2 September 2004, the following products will be removed. Supported versions of these products will be available later for download from the Software Depot at <http://software.hp.com>.
 - DMI
 - Mobile IPv4
 - Multimedia Streaming Protocols (MSP) (See page 204.)
 - Network Server Accelerator HTTP
 - Route Administration Manager for IPv6 Routing Protocols (RAMIPv6) (See page 209.)

HP-UX 11i v2 Compatibility

HP has a long record of providing HP-UX compatibility. Because it protects your investment and allows you to upgrade easily, compatibility is an important feature that HP has always recognized and that HP customers have come to expect.

HP-UX provides source compatibility for applications moving from HP-UX 11.00 or later to HP-UX 11i v2, provided the applications conform to the definition of “well-behaved” at http://devrsrc1.external.hp.com/STK/compab_11.html. Applications moving from PA-RISC to Integrity platforms, or from Integrity platforms to PA-RISC, must also be free from explicit dependencies on the architecture. APIs and language features are supported on both PA-RISC and Itanium-based platforms unless explicitly documented otherwise.

HP-UX 11i v2 provides application binary compatibility between HP-UX 11i v1 and the September 2004 release of HP-UX 11i v2 on PA-RISC. Similarly, you need not take any action on applications developed for the initial release (September 2003) of HP-UX 11i v2 for Itanium-based systems, as this is an update to that release. HP-UX 11.00 applications that have been certified or proven to run well on HP-UX 11i v1 can also be considered to be compatible with HP-UX 11i v2.

NOTE

This binary compatibility does not apply to kernel-intrusive applications or applications that rely on proprietary data structures inside HP-UX.

Additionally, there is complete data compatibility between the HP-UX 11i releases for PA-RISC and Itanium-based systems. No data conversion is required when transferring data between releases of HP-UX 11i on PA-RISC and Itanium.

If your HP-UX 11i v1 application meets the criteria for binary compatibility (it is not kernel intrusive and does not rely on proprietary data structures) and fails to function on HP-UX 11i v2 as it functions on HP-UX 11i v1, you can contact HP through a special support line (for North America) at 1-800-249-3294. Use option 2, and then option 1.

Help is also available by sending an e-mail to spp@cup.hp.com. When you call this number or send an e-mail, identify your problem as a “compatibility failure” and the support staff will help you with the situation.

Compatibility Exceptions

The following products or features have noted compatibility issues or exceptions. For details, see the indicated section.¹

Chapter 4: Workstation- and Server-Specific Information

- “HP StorageWorks Secure Path for HP-UX” on page 75
- “Gigabit Ethernet and Fast Ethernet” on page 80

1. For HP-UX 11i v1 products or features not delivered in this release, see “For Customers Migrating from HP-UX 11i v1: What’s Not Included in This Release of HP-UX 11i v2” on page 29.

- “SCSI Drivers” on page 94

Chapter 5: General System Administration

- “Compressed Dump” on page 111
- “Enterprise Cluster Master Toolkit” on page 112
- “HP-UX Workload Manager” on page 124
- “HP Serviceguard” on page 129
- “HP-UX Kernel Configuration” on page 134
- “Ignite-UX” on page 139
- “OnlineDiag” on page 147
- “Software Distributor (SD)” on page 152
- “Tape Boot” on page 157

Chapter 6: Disk and File Management

- “Logical Volume Manager (LVM) and MirrorDisk/UX” on page 168
- “Network File System (NFS)” on page 169
- “Network Information Service Plus (NIS+) (Deprecated)” on page 171
- “Portable File System (PFS) (Obsolete)” on page 173

Chapter 7: Internet and Networking

- “HP Data Link Provider Interface (DLPI)” on page 181
- “HP-UX Apache-based Web Server” on page 190
- “HP-UX Tomcat-based Servlet Engine” on page 192
- “IPv4 Address Display” on page 201
- “Multimedia Streaming Protocols (MSP)” on page 204
- “remsh/rexec” on page 206
- “Sendmail” on page 212
- “Network Transport (ARPA)” on page 226

Chapter 8: Security

- “HP-UX Bastille” on page 238
- “Security Patch Check” on page 252
- “Shadow Passwords” on page 254

Chapter 9: Commands and System Calls

- “The `execve()` System Calls” on page 258

Chapter 10: Libraries and Programming

- “HP aC++/HP ANSI C Compiler for Itanium-based Systems” on page 275

- “HP aC++ Compiler for PA-RISC Systems” on page 276
- “HP C Compiler for PA-RISC Systems” on page 281
- “Math Library (libm), C Headers, and C++ Headers” on page 294
- “POSIX Threads” on page 303

Chapter 11: Internationalization

- “Internationalization Features” on page 310

Chapter 12: Other Functionality

- “Distributed Computing Environment (DCE) Client and Integrated Login” on page 328

What's in This Chapter?

This chapter provides a quick overview of what is new, has changed, and has been deprecated or obsoleted in each HP-UX 11i v2 release. For further details, see the cross-referenced pages in the remainder of this book or, as noted, in previous editions.

- What's New in the September 2004 Release? (see page 38)
- What's New in the March 2004 Release? (see page 57)
- What's New in the Initial (October 2003) HP-UX 11i v2 Release? (see page 60)

What's New in the September 2004 Release?

The following summaries pertain to the September 2004 HP-UX 11i v2 release. The summaries are divided into two lists:

1. What's New for Customers Migrating from HP-UX 11i v1? (see page 38)
2. What's New for Customers of HP-UX 11i v2? (see page 48)

For further information, see the indicated chapters in the remainder of this document.

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

In the following summaries, you can obtain a general picture of how the current release of HP-UX 11i v2 differs from the June 2004 release of HP-UX 11i v1. For further details, see the indicated sections in the remainder of this document.

In addition, you should review the list "What's New for Customers of HP-UX 11i v2?" on page 48 for items that are new to the current release of HP-UX 11i v2.

What's New for Customers Migrating from HP-UX 11i v1

Chapter 4: "Workstation- and Server-Specific Information" (see page 71)

- HP Instant Support Enterprise Edition: Formerly delivered on the HP-UX 11i v1 Support Plus media; now available with this release on HP-UX 11i v2. (See "HP Instant Support Enterprise Edition" on page 73.)
- HP StorageWorks Command View SDM v1.08.00: Supports HP-UX 11i v2 on Itanium-based platforms only. Near the release of HP-UX 11i v2 September 2004, a version of CVSDM to support HP-UX 11i v2 on PA-RISC platforms will be available on the Web. (See "HP StorageWorks Command View SDM" on page 74.)
- HP StorageWorks Secure Path V3.0E for HP-UX: Provides EVA Boot and Dump support on HP-UX 11i v2 September 2004 and later releases. (See "HP StorageWorks Secure Path for HP-UX" on page 75.)
- HP-UX 11i v2 Driver Development Kit: Enhanced to support the current release of HP-UX 11i v2. Includes sample drivers and makefiles, as well as driver development tools for both PA-RISC and Itanium®-based systems, and other enhancements. (See "HP-UX 11i v2 Driver Development Kit" on page 77.)
- HP-UX 3D Graphics Run Time Environment and Developer's Kit: Modules for hardware-accelerated OpenGL rendering removed because PA-RISC Workstations are not supported by this release. OpenGL rendering to remote displays supported via GLX protocol and HP Virtual Memory Driver. (See "HP-UX 3D Graphics Run Time Environment and Developer's Kit" on page 78.)
- Networking and Mass Storage Drivers
 - Always-Installed Networking Drivers:
 - Gigabit Ethernet and Fast Ethernet: Includes TCP Segmentation Offload (TSO) support for `iether` and `igelan` drivers; 64-bit MIB statistics support; HP-UX LAN provider support. (See "Gigabit Ethernet and Fast Ethernet" on page 80.)

- PCI FDDI: Enhanced to provide the FDDI network connectivity from Itanium-based platforms, in addition to existing PA-RISC platforms. Deprecated and planned for future obsolescence. (See “PCI FDDI” on page 83.)
- Selectable Networking Drivers:
 - HyperFabric: Now supports a transparent local failover feature. (See “HyperFabric” on page 84.)
 - PCI ATM: Support for A5513A (155 Mbps ATM adapter over MMF) available on IO expander slots of rp8400 platform. (See “PCI ATM” on page 85.)
 - PCI Token Ring: Now available on Itanium-based 64-bit platforms, in addition to existing PA-RISC platforms. Deprecated and planned for future obsolescence. (See “PCI Token Ring” on page 86.)
- Always-Installed Mass Storage Drivers:
 - `disc3` Driver: Obsolete. (See “`disc3` Driver” on page 88.)
 - Fibre Channel Tachlite Driver: Supports A6795A, A5158A. Boot support provided. Online diagnostic tool changed to support A6826A. Supports Interrupt Migration and OLAR. (See “Fibre Channel Tachlite Driver (`FibrChanl-00`)” on page 89.)
 - `FibrChnl-01`: Default interrupt delay settings tuned to improve performance. (See “`FibrChanl-01`” on page 91.)
 - HP-UX Ultra320 SCSI Driver: Updated with quality and diagnostic improvements for Ultra320 SCSI solutions, including core and add-on HP adapters. (See “HP-UX Ultra320 SCSI Driver” on page 92.)
 - `RAID-01`: Delivers the driver `ciss`, which supports the A7143A, A9890A, and A9891A cards. (See “`RAID-01`” on page 93.)
 - SCSI Drivers: Support limited to PCI cards. New cards A5149A and A5838A supported, with limitations on Itanium. HVD cards A4800A, A5159A, and A5159B not supported. OLAR of A6828A and A6869A cards supported. Interrupt migration supported. (See “SCSI Drivers” on page 94.)
- Selectable Mass Storage Drivers:
 - HP-UX iSCSI Software Initiator: Now available on HP-UX 11i v2. (See “HP-UX iSCSI Software Initiator” on page 96.)
- Online Addition and Replacement (OL* or OLAR): The `rad` command no longer available. SAM no longer used for OL*. The `olrad` command now used; performs a critical resource analysis to ensure system integrity will not be compromised. (See “Online Addition and Replacement (OL* or OLAR)” on page 97.)
- On Demand Solutions:
 - Instant Capacity on Demand (iCOD) 6.03: Incremented from version 6.02 for support on HP-UX 11i 2. (See “Instant Capacity on Demand (iCOD)” on page 99.)
 - Pay Per Use B.07.00: Updated so that either pricing model can be used as the metric and so that a processor cap can be specified, as well as other changes. (See “Pay Per Use” on page 100.)

- **Supported Servers and Workstations:** Many 64-bit PA-RISC servers are supported on this release. No 32-bit servers are supported. PA-RISC workstations are not supported. (See “Supported Servers and Workstations” on page 101.)
- **Technical System Configuration (TechSysConf):** TC-OpenSource tools removed. Remaining TC-SysSetup alters kernel configurable parameters, as well as selected system configuration files, for improved system performance. (See “Technical System Configuration” on page 105.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 5: “General System Administration” (see page 109)

- **Compressed Dump:** New feature with HP-UX 11i v2. Speeds up the crash dump process. (See “Compressed Dump” on page 111.)
- **Enterprise Cluster Master Toolkit B.02.11:** DB2, Informix, and Sybase not supported. Mixed IA-PA failover for the Oracle9i package not supported. (See “Enterprise Cluster Master Toolkit” on page 112.)
- **Event Monitoring Services:** Framework and GUI available as 32-bit native applications on PA-RISC and Itanium. 64-bit EMS Itanium native libraries also available. Deprecated. Will be replaced post HP-UX 11i v3 with WBEM. (See “Event Monitoring Service” on page 113.)
- **GlancePlus Pak C.03.85:** Contains enhancements to OVPA and GlancePlus, including new parm file parameters and new process-level metrics, as well as updated default adviser symptoms and alarms. (See “GlancePlus Pak” on page 114.)
- **High Availability Monitors:** Available as 32-bit native binaries on PA-RISC & Itanium platforms. Deprecated. Will be obsoleted post HP-UX 11i v3. (See “High Availability Monitors” on page 116.)
- **HP Partitioning:**
 - **HP Process Resource Manager C.02.03:** Installing this or later versions of PRM will not result in a reboot. Installing PHKL patches will. (See “HP Process Resource Manager” on page 117.)
 - **HP-UX nPartition Configuration Commands:** Management scope of commands extended to remote partitions and complexes. Additional enhancements added. (See “HP-UX nPartition Configuration Commands” on page 118.)
 - **HP-UX Processor Sets:** Once an optional product for the HP-UX 11i v1 release, now part of the HP-UX 11i v2 core kernel. (See “HP-UX Processor Sets” on page 121.)
 - **HP-UX Virtual Partitions (vPars) A.04.01:** Will not release simultaneously with the September 2004 HP-UX 11i v2 release. Targeted to release in the middle of 2005. (See “HP-UX Virtual Partitions” on page 123.)
 - **HP-UX Workload Manager A.02.03:** In most cases, installing this version (or later) will not result in a reboot. Installing PHKL patches will. (See “HP-UX Workload Manager” on page 124.)
 - **HP-UX Workload Manager Toolkits A.01.07:** the `utilitydc` command, part of the Pay Per Use Toolkit, has been modified. (See “HP-UX Workload Manager Toolkits” on page 125.)
 - **nPartition Provider B.01.03.00.x:** Now supported on both PA-RISC and Itanium-based systems. (See “nPartition Provider” on page 127.)

- Partition Manager 2.0: Features now brought to PA-RISC partitionable systems (as well as Itanium-based), including improved GUI, support for CLM, and ability to configure nPartitions on remote complexes. (See “Partition Manager (parmgr)” on page 128.)
- HP Serviceguard A.11.16: Now supports clusters with mixed servers (HP Integrity and HP 9000). (See “HP Serviceguard” on page 129.)
- HP Serviceguard Quorum Server: Supported on both PA-RISC and Itanium. (See “HP Serviceguard Quorum Server” on page 132.)
- HP-UX 11i v2 Required Patch Bundle (BUNDLE11i): Delivered with this release. Consists of patches for HP-UX 11i v2 that are required to install and update the operating system (OS). (See “HP-UX 11i v2 Required Patch Bundle (BUNDLE11i)” on page 133.)
- HP-UX Kernel Configuration: The `kcweb` application incorporates changes and new features. The `maxusers` tunable obsoleted. Kernel Configuration (KC) commands replaced by a new set of commands. Changes made in kernel location, boot-time selection, and automatic backup creation. The `/stand/system/` file enhanced. (See “HP-UX Kernel Configuration” on page 134.)
- The Peripheral Device Tool (`pdweb`) B11.23.02: New for customers migrating from HP-UX 11i v1. (See “HP-UX Peripheral Device Tool” on page 138.)
- Ignite-UX, version B.6.0.x: Includes ability to install and recover the HP-UX releases 11.0, B.11.11, B.11.22, B.11.23 PA-RISC, and B.11.23 Itanium-based clients from a single Ignite-UX server. Also includes booting of both PA-RISC and Itanium-based, known as dual boot, from a single media source; and installing one unified PA-RISC/Itanium-based core HP-UX operating system bundle. (See “Ignite-UX” on page 139.)
- Improved Database Startup and Shutdown Times: Database startup and shutdown times have been drastically reduced. (See “Improved Database Startup and Shutdown Times” on page 143.)
- Interrupt Migration: New for customers migrating from HP-UX 11i v1, this feature can be used to view and modify the interrupt configuration of the system. (See “Interrupt Migration” on page 144.)
- MySQL: Updated with tightened security. Product has been deprecated. (See “MySQL” on page 145.)
- Obsolescence Product: New product, used in an update when obsolete software on the system needs to be removed. (See “Obsolescence Bundle” on page 146.)
- OnlineDiag: Includes cell-local memory (CLM) support for PA-RISC platform, as well as various bug fixes and enhancements. Support added for new devices. (See “OnlineDiag” on page 147.)
- Quality Pack Patch Bundle: All patches that were in the March 2004 HP-UX 11i v2 Quality Pack will be superseded by dual-architecture patches, which will be placed in BUNDLE11i. (See “Quality Pack Patch Bundle” on page 148.)
- SAM-NNC: Added support for VLAN, IPoIB, large send, and DHCPv6 functionality, plus other changes. (See “SAM - Nodal Network Configuration (NNC)” on page 150.)
- Servicecontrol Manager: Contains only minor updates. All functionality remains the same. Product has been deprecated. (See “Servicecontrol Manager” on page 151.)

- Software Distributor (SD): Updated to a new version to support this new release of HP-UX 11i v2. (See “Software Distributor (SD)” on page 152.)
- Software Package Builder A.02.00: Updated to incorporate defect fixes. (See “Software Package Builder” on page 153.)
- System Administration Manager (SAM): Includes new tools, HP-UX Kernel Configuration tool and HP-UX Peripheral Devices tool. (See “System Administration Manager (SAM)” on page 154.)
- System V Shared Memory: Incorporates the functionality of the now-obsolete ShmemExtensions product. Maximum for the *shmmni* tunable parameter increased. (See “System V Shared Memory” on page 156.)
- Update-UX: Updated to incorporate defect fixes. (See “Update-UX” on page 157.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 6: “Disk and File Management” (see page 159)

- 16 Terabyte (TB) File System Support: VxFS 3.5 file systems of up to 16 TB now certified. (See “16 Terabyte File System Support” on page 160.)
- AutoFS 2.3: Upgraded to include the features of the SUN ONC AutoFS version 2.3 product, as well as performance enhancements, including on-demand mounting. (See “AutoFS/Automounter” on page 160.)
- DeviceIDS: Provides a significant performance improvement for AutoFS at unmount time. (See “DeviceIDS” on page 162.)
- File Systems Backup and Recovery Commands: The commands *fbackup* (1M), *frecover* (1M), and *ftio* (1) deprecated. (See “File Systems Backup and Recovery Commands (Deprecated)” on page 163.)
- Hierarchical File System (HFS): Deprecated. Will be removed in a future release. (See “Hierarchical File System (HFS) (Deprecated)” on page 164.)
- HP CIFS Client A.01.09.02: Provides 64-bit PAM-NTLM libraries support and defect fixes. (See “HP CIFS Client” on page 165.)
- HP CIFS Server 2.2i (A.01.11.01): Provides new LDAP support functionality, as well as other new features and defect fixes. (See “HP CIFS Server” on page 166.)
- Logical Volume Manager (LVM) and MirrorDisk/UX: Performance improved. LVM no longer performs software bad block relocation. Defects fixed. (See “Logical Volume Manager (LVM) and MirrorDisk/UX” on page 168.)
- Network File System (NFS): New option added to the `umount` command. Compatibility exception noted. (See “Network File System (NFS)” on page 169.)
- Network Information Service Plus (NIS+): Deprecated and planned for future obsolescence. Valid modification requests to update NIS+ tables will now fail if the size of the request is larger than 9000 bytes. (See “Network Information Service Plus (NIS+) (Deprecated)” on page 171.)
- Portable File System (PFS): Obsolete. (See “Portable File System (PFS) (Obsolete)” on page 173.)
- VERITAS File System (VxFS/HP OnlineJFS/JFS) 3.5: Contains new and changed features, including new and/or enhanced tunable parameters, enhanced VxFS commands, new I/O error handling policy, new default intent log mode, new default

system block size, VxFS system activity reporter, forced unmounts, and more. Enables creation of file systems up to 32 TB (16 TB has been certified). (See “VERITAS File System 3.5 (HP Online JFS/JFS 3.5)” on page 175.)

- VERITAS Volume Manager (VxVM) 3.5 for HP-UX (Base): Includes new versions of VEA and SIG Licensing, as well as defect fixes. (See “VERITAS Volume Manager 3.5 for HP-UX (Base)” on page 177.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 7: “Internet and Networking” (see page 179)

- HP Data Link Provider Interface (DLPI): Includes enhancements to the Streams interface; new third-party driver interface for non-native Streams drivers; consolidation of `.h` files; obsolescence of the dump read capability of the `lanscan` (1M) command; support for TCP Segmentation Offload (TSO or Large Send), InfiniBand technology, and 64-bit MIB. (See “HP Data Link Provider Interface (DLPI)” on page 181.)
- HP Openview Emanate Agent 15.3: Agents are now SNMPv3 compatible. IPv6 agent added. (See “HP Openview Emanate Agent” on page 183.)
- HP-UX LAN Provider: New with this release of HP-UX 11i v2. Client applications can use this Provider to determine 100bt and Gigabit links available on the system and collect information about them. (See “HP-UX LAN Provider” on page 185.)
- HP-UX Mobile IPv6 A.01.01: Offers the same functionality as A.01.00, but delivery method has changed. (See “HP-UX Mobile IPv6” on page 186.)
- HP-UX Web Server Suite 2.09 (see “HP-UX Web Server Suite” on page 188):
 - HP-UX Apache-based Web Server 2.0.50.01: Primarily a security, bug fix release with enhancements. (See “HP-UX Apache-based Web Server” on page 190.)
 - HP-UX Webmin-based Admin A.1.070.01: Primarily a security, bug fix release. (See “HP-UX Webmin-based Admin” on page 193.)
- Internet Services:
 - BIND 9.2.0: Includes incremental zone transfer, DNSSEC, dynamic DNS update, TSIG-based security, lightweight resolver library and daemon, improved logging mechanism, and other features. (See “BIND” on page 195.)
 - BOOTP and DHCP: Both implement a new tag to configure the IP address of the `tftp` server. Two new options included in the `/etc/dhcptab` file. (See “BOOTP and DHCP” on page 197.)
 - DHCPv6: New product with HP-UX 11i v2. (See “Dynamic Host Configuration Protocol (DHCP) v6” on page 198.)
 - The `inetd` daemon: New variable and new command-line option added. (See “inetd” on page 200.)
 - IPv4 Address Display: The IPv4-mapped-IPv6 address display is now changed to display an IPv4 address. (See “IPv4 Address Display” on page 201.)
 - IPv6-enabled Internet Services products: Several products, including `inetd`, `telnet`, and R-commands, are IPv6 enabled. (See “IPv6 Support for All Internet Services Products” on page 202.)

- **Logging User Accounting Information:** The `telnetd`, `rlogind`, `remshd`, `rexecd` and `ftpd` utilities now use the new scalable `utmps/wtmps/btmps` interfaces to log user accounting information. (See “Logging User Accounting Information” on page 203.)
- **Multimedia Streaming Protocols (MSP):** Upon upgrade to HP-UX 11i v2, MSP will be removed. MSP will be available later as a Web upgrade. Customers who have not installed MSP on HP-UX 11i v1 will be unaffected. (See “Multimedia Streaming Protocols (MSP)” on page 204.)
- **The `rbootd` remote boot server for RMP clients:** Obsolete. Clients using the RMP protocol no longer supported; you must move from RMP to BOOTP. (See “`rbootd`” on page 206.)
- **The `remsh/rexec` command and remote execution server:** The `remshd()` function has been changed to display an error message under certain circumstances. The `remsh/rexec` process may appear hung when a user executes certain remote commands. (See “`remsh/rexec`” on page 206.)
- **The `rexecd` remote execution server:** New option added to prevent a user from logging in as superuser. The `[use_psd]` option cannot be specified in the `/etc/pam.conf` file for `rexecd`. (See “`rexecd`” on page 208.)
- **Route Administration Manager for IPv6 Routing Protocols (RAMIPv6):** Upon upgrade to HP-UX 11i v2, RAMIPv6 will be removed. RAMIPv6 will be available later as a Web upgrade. Customers who have not installed RAMIPv6 on HP-UX 11i v1 will be unaffected. (See “Route Administration Manager for IPv6 Routing Protocols (RAMIPv6)” on page 209.)
- **The `rwhod` server:** Updated to use the `utmps` interfaces to read the user accounting information. Now supports valid hostname characters as per RFC 952 only. (See “`rwhod`” on page 210.)
- **Secure Internet Services:** New options added. IPv6 enabled for R-commands. Kerberos supported in an IPv6 environment for `ftp`, r-commands, and `telnet`. (See “Secure Internet Services” on page 211.)
- **Sendmail 8.11.1:** Offers several new features, including multiple queue directories, enhanced status codes as defined by RFC 2034, client port options, daemon port options, IPv6 support, and more. (See “Sendmail” on page 212.)
- **SLP 0.8:** New with HP-UX 11i v2. Includes dynamic service tracking, ease of administration, and ease of development. (See “Service Location Protocol (SLP)” on page 214.)
- **TCP Wrappers 7.6:** Includes features such as monitoring incoming requests for Internet Services, controlling access to services spawned by `inetd`, and enforcing access control in stand-alone daemon programs, among others. (See “TCP Wrappers” on page 216.)
- **The `telnetd` function:** Contains two new options. (See “`telnetd`” on page 217.)
- **WU-FTPD 2.6.1:** Offers several new features, including virtual hosts support, the `privatepw` utility, IPv6 support, and new command-line options, as well as other changes. (See “WU-FTPD” on page 218.)
- **LAN Administration Commands:** Include support for IPoIB, 64-bit MIB, and Native and Non-Native DLPI drivers developed by IHVs, plus new command-line options for `lanadmin`. (See “LAN Administration Commands” on page 220.)

- Mozilla Application Suite 1.4.0.01: Contains full Japanese localization as well as other defect fixes and enhancements. Security bulletin posted. (See “Mozilla Application Suite” on page 221.)
- Netscape Directory Server 6.11: Includes enhancements to Multi-Master replication, login enhancements, virtual attribute search, new plug-ins support, and a data interoperability feature. (See “Netscape Directory Server” on page 223.)
- Network Tracing and Logging (NetTL): Changes include formatting support for IPoIB and new CLI option to support configurable trace buffer timer value. (See “NetTL Network Tracing and Logging” on page 224.)
- Network Transport (ARPA): Changes include support for enhancements of HP-UX DLPI; enhancements to CKO interfaces between HP-UX transport and DLPI; removed support for dump reading by `netstat` and `arp`; IPv6 transport supported, and other changes. Problem and work-around noted: HP-UX sends TCP packets with incorrect window size. (See “Network Transport (ARPA)” on page 226.)
- Point-to-Point Protocol (PPP): Available on HP-UX 11i v2. Includes changes to Point-to-Point Protocol over Ethernet (PPPoE) and Point-to-Point Protocol for IPv6 (PPPo6). (See “Point-to-Point Protocol” on page 231.)
- STREAMS/UX: For non-blocking writes, during flow control conditions, STREAMS now returns failure in the case of partial writes on STREAMS-based pipes. (See “STREAMS/UX” on page 232.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 8: “Security” (see page 235)

- Boot Authentication: Now available on all Standard Systems. Standard Mode Boot Authentication feature can be configured by two parameters. (See “Boot Authentication” on page 236.)
- Generic Security Service Application Programming Interface (GSS-API): IPv6 enabled. (See “Generic Security Service Application Programming Interface (GSS-API)” on page 237.)
- HP-UX Bastille 2.1: New product for customers migrating from HP-UX 11i v1. (See “HP-UX Bastille” on page 238.)
- HP-UX IPFilter A.03.05.10.02: Includes additional defect fixes. (See “HP-UX IPFilter” on page 241.)
- HP-UX Secure Shell A.03.71.000: Contains several new features, including enhanced `ssh_prng_cmds` file for random number generation, new escape character for requesting a pseudo terminal, and support for generating KEX-GEX groups in the `ssh-keygen` file. (See “HP-UX Secure Shell” on page 242.)
- HP-UX Strong Random Number Generator: New product with HP-UX 11i v2. (See “HP-UX Strong Random Number Generator” on page 244.)
- HP-UX Host Intrusion Detection System 2.3: Product bundle renamed and restructured to improve product installation and maintenance. (See “HP-UX Host Intrusion Detection System” on page 239.)
- Install-Time Security B.01.x.x: New product for customers migrating from HP-UX 11i v1. (See “Install-Time Security” on page 245.)
- Kerberos Client (KRB5-Client): Changes include support for `appdefaults` section in the `/etc/krb5.conf`; multidomain support; IPv6 support. (See “Kerberos Client (KRB5-Client)” on page 247.)

- OpenSSL A.00.09.07-d: A self-signed host certificate is automatically generated while installing OpenSSL. (See “OpenSSL” on page 249.)
- PAM: 64-bit framework now supported on both PA-RISC and Itanium. New PAM module introduced. Defect fixes included. (See “Pluggable Authentication Modules (PAM)” on page 250.)
- PAM-Kerberos v1.23: Supports both Itanium and PA-RISC applications in 32-bit mode and 64-bit mode. The `pam_sm_acct_mgmt()` function returns `PAM_USER_UNKNOWN` instead of `PAM_SUCCESS` when the user is not present in the kerberos database. (See “PAM Kerberos” on page 251.)
- Security Patch Check 2.0: New product for customers migrating from HP-UX 11i v1. (See “Security Patch Check” on page 252.)
- Shadow Passwords: New feature enhances system security by hiding user-encrypted passwords in a shadow password file. Now supported by SAM. (See “Shadow Passwords” on page 254.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 9: “Commands and System Calls” (see page 257)

- The `execve[*]()` system calls: Beginning with HP-UX 11i v1.6, the kernel ignores `setuid` and `setgid` bits on scripts for security reasons. In addition, buffer overflow protection is now enabled. (See “The `execve()` System Calls” on page 258.)
- The `fuser` Command: Performance improved. (See “The `fuser` Command” on page 260.)
- The `insf`, `lssf`, and `mksf` Commands: Now support IHV drivers. (See “The `insf`, `lssf`, and `mksf` Commands” on page 261.)
- The `mmap()` Function: Now possible to perform mappings between a process's address space and I/O device registers or memory. (See “The `mmap()` Function” on page 262.)
- The `olrad` Command: The `rad` (1M) command replaced by the more robust `olrad` (1M) command. (See “The `olrad` Command” on page 263.)
- Post/Wait: New. Provides a fast, lightweight synchronization facility for user applications. (See “Post/Wait” on page 264.)
- The `ps` command: The default width is now set to 128 characters and a default file has been provided to define the length of the command field, which can be between 64-1020. (See “The `ps` command” on page 265.)
- The `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 “The `rc` Shell Script” on page 266.)
- The `scsimgr` and `scsiscan` Commands: Deprecated. Planned for obsolescence in HP-UX 11i v3. (See “The `scsimgr` and `scsiscan` Commands (Deprecated)” on page 267.)
- The `settone` and `settone_txn` System Calls: Post HP-UX 11i v2, tunables set using these kernel system calls will not be persistent across reboots. (See “The `settone` and `settone_txn` System Calls” on page 268.)
- The `sfd` Daemon: Deprecated. Planned for obsolescence in HP-UX 11i v3. (See “The `sfd` Daemon (Deprecated)” on page 269.)

- The `sysdef` command: **Deprecated.** Reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`. (See “The `sysdef` Command (Deprecated)” on page 270.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 10: “Libraries and Programming” (see page 273)

- **Absolute Debugger (adb):** Improved program includes support shared library, threads, multiprocessor dump reading, 64-bit DLKM dump reading, among others. Also includes improved command-line syntax, enhanced capabilities in expressions and format strings, and better file searching and writing capability, among others. (See “Absolute Debugger (adb)” on page 274.)
- **HP aC++ Compiler for PA-RISC A.03.55.02:** Includes numerous new features for customers migrating from HP-UX 11i v1. (See “HP aC++ Compiler for PA-RISC Systems” on page 276.)
- **HP C Compiler for PA-RISC:** Includes numerous changes to version B.11.11.02 in each subsequent release (B.11.11.04, B.11.11.06, B.11.11.08, B.11.11.10). (See “HP C Compiler for PA-RISC Systems” on page 281.)
- **HP Fortran for HP-UX 2.8.2:** Includes performance tuning enhancements. (See “HP Fortran for HP-UX” on page 285.)
- **HP MLIB 8.6:** FFT routines support data sizes of any positive length. (See “HP MLIB” on page 287.)
- **HP MPI 2.0.1:** InfiniBand interconnect on PA-RISC supported. (See “HP Message Passing Interface (MPI)” on page 288.)
- **HP-UX Buffer Cache Tunable Parameters:** All tunables associated to the sizing of the buffer cache (`nbuf`, `bufpages`, `bufcache_max_pct`, `dbc_min_pct`, and `dbc_max_pct`) have been deprecated and will be obsolete in HP-UX 11i v3. (See “HP-UX Buffer Cache Tunable Parameters (Deprecated)” on page 289.)
- **Java 2 Standard Edition Platform:**
 - **HP 3D Technology for the Java 2 Standard Edition Platform:** Only for Itanium-based systems. PA-RISC-based systems not supported. (See “HP 3D Technology for the Java 2 Standard Edition Platform” on page 290.)
 - **Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE:** Now included in HP-UX 11i v2. (See “Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE” on page 292.)
- **Math Library (libm):** Although the C Math Library's API for PA-RISC is unchanged from HP-UX 11i v1, differences between it and the API for Itanium-based systems should be noted. (See “Math Library (libm), C Headers, and C++ Headers” on page 294.)
- **POSIX Threads:** Augmented for PA-RISC systems to support two modes of scheduling, system scope (1x1) and process scope (MxN). (See “POSIX Threads” on page 303.)
- **The Software Transition Kit (STK):** Available on the Web or Application Release media is a collection of tools and documents designed to help transition HP-UX applications from earlier versions of HP-UX to the latest version of HP-UX on the PA-RISC or the Itanium-based platform. (See “Software Transition Kit” on page 305.)

- Transition Links: Deprecated. Will become obsolete in post-HP-UX 11i v2 releases. (See "Transition Links (Deprecated)" on page 305.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 11: "Internationalization" (see page 309)

- Internationalization Features: Changes include Unicode 3.0 support, GB18030 standard, simplified Chinese input methods, mainframe `iconv` converters for Japanese characters, system support for Latin and South American locales, new locale binaries and `iconv` converters, Hong Kong supplementary character set (HKSCS), TrueType fonts for Asian languages, and other changes. (See "Internationalization Features" on page 310.)
- Deprecated Functionality: Several commands, library routines, and `lp` model files deprecated. Will be removed in next major release of HP-UX. (See "Deprecated Functionality" on page 315.)

What's New for Customers Migrating from HP-UX 11i v1

Chapter 12: "Other Functionality" (see page 317)

- ccNUMA: Changes include: greater performance for some work loads; ability to configure systems for optimal performance with regard to interleaved versus cell local memory; ability to give guidance to OS for most appropriate memory allocation according to an application's usage model; ability to control how processes are distributed among localities. (See "ccNUMA" on page 318.)
- Common Desktop Environment (CDE): Changes include IPv6 support; greater accessibility for physically challenged users; `dtlogin` does not start X server when the mouse is not connected; large file (greater than 2GB) support provided by `dtfile`; and other changes. In addition, CDE requires a number of services and resources; if these are disabled either manually or with Bastille, there are several impacts on CDE. (See "Common Desktop Environment (CDE)" on page 322.)
- Distributed Computing Environment (DCE) Client and Integrated Login: Has new filesets and new product, Integrated Login. Now IPv6 enabled. (See "Distributed Computing Environment (DCE) Client and Integrated Login" on page 328.)

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

In the following summaries, you can obtain a general picture of how the current release of HP-UX 11i v2 differs from the March 2004 release of HP-UX 11i v2. For further details, see the indicated sections in the remainder of this document.

For a general picture of how this release differs from the June 2004 release of HP-UX 11i v1, you should review the list "What's New for Customers Migrating from HP-UX 11i v1?" on page 38.

What's New for Customers of HP-UX 11i v2

Chapter 4: "Workstation- and Server-Specific Information" (see page 71)

- HP Instant Support Enterprise Edition: New with this release of HP-UX 11i v2. (See "HP Instant Support Enterprise Edition" on page 73.)
- HP StorageWorks Secure Path V3.0E for HP-UX: Provides EVA Boot and Dump support on HP-UX 11i v2 September 2004 and later releases. (See "HP StorageWorks Secure Path for HP-UX" on page 75.)

- Networking and Mass Storage Drivers
 - Always-Installed Networking Drivers:
 - Gigabit Ethernet and Fast Ethernet: Includes TCP Segmentation Offload (TSO) support for `iether` and `igelan` drivers; 64-bit MIB statistics support; HP-UX LAN provider support; Virtual LAN (VLAN) support. (See “Gigabit Ethernet and Fast Ethernet” on page 80.)
 - Selectable Networking Drivers:
 - HyperFabric: Now supports a transparent local failover feature. (See “HyperFabric” on page 84.)
 - PCI ATM: Support for A5513A (155 Mbps ATM adapter over MMF) available on I/O expander slots of rp8400 platform. (See “PCI ATM” on page 85.)
 - PCI Token Ring: Deprecated and planned for future obsolescence. (See “PCI Token Ring” on page 86.)
 - Always-Installed Mass Storage Drivers:
 - `disc3` Driver: Obsolete. (See “`disc3` Driver” on page 88.)
 - `FibrChnl-00`: Online diagnostic tool changed to support A6826A. (See “Fibre Channel Tachlite Driver (`FibrChanl-00`)” on page 89.)
 - `FibrChnl-01`: An option has been added to the `fcmsutil` utility that updates the EFI driver stored in the flash ROM of an A6826A HBA port. (See “`FibrChanl-01`” on page 91.)
 - HP-UX Ultra320 SCSI Driver: Updated with quality and diagnostic improvements for Ultra320 SCSI solutions, including core and add-on HP adapters. (See “HP-UX Ultra320 SCSI Driver” on page 92.)
 - `RAID-01`: Delivers the driver `ciss`, which supports A7143A, A9890A, and A9891A cards. (See “`RAID-01`” on page 93.)
 - SCSI Drivers: Cards A4800A, A5159A, and A5159B obsoleted. (See “SCSI Drivers” on page 94.)
 - Selectable Mass Storage Drivers:
 - HP-UX iSCSI Software Initiator: Now available on HP-UX 11i v2. (See “HP-UX iSCSI Software Initiator” on page 96.)
- Online Addition and Replacement (OL* or OLAR): Now available for both PA-RISC and Itanium-based systems. (See “Online Addition and Replacement (OL* or OLAR)” on page 97.)
- On Demand Solutions:
 - Instant Capacity on Demand (iCOD) 6.03: Incremented from version 6.01 to incorporate defect fixes. (See “Instant Capacity on Demand (iCOD)” on page 99.)
 - Pay Per Use B.07.00: Updated so that either pricing model can be used as the metric and so that a processor cap can be specified, as well as other changes. (See “Pay Per Use” on page 100.)
- Secure Path V3.0E for HP-UX: Provides EVA Boot and Dump support on HP-UX 11i v2 September 2004 and later releases. (See “HP StorageWorks Secure Path for HP-UX” on page 75.)

- **Supported Servers and Workstations:** Many 64-bit PA-RISC servers are supported on this release. No 32-bit servers are supported. PA-RISC workstations are not supported. (See “Supported Servers and Workstations” on page 101.)
- **Technical System Configuration (TechSysConf):** Now supported on PA-RISC servers that run HP-UX 11i v2 (See “Technical System Configuration” on page 105.)

What's New for Customers of HP-UX 11i v2

Chapter 5: “General System Administration” (see page 109)

- **Enterprise Cluster Master Toolkit B.02.11:** New scripts added: HP Apache, HP Tomcat, HP CIFS. (See “Enterprise Cluster Master Toolkit” on page 112.)
- **Event Monitoring Services:** Framework and GUI available as 32-bit native applications on PA-RISC and Itanium. 64-bit EMS Itanium native libraries also available. Deprecated. Will be replaced post HP-UX 11i v3 with WBEM. (See “Event Monitoring Service” on page 113.)
- **GlancePlus Pak C.03.85:** Contains enhancements to OVPA and GlancePlus, including new `parm` file parameters and new process-level metrics, as well as updated default adviser symptoms and alarms. (See “GlancePlus Pak” on page 114.)
- **High Availability Monitors:** Available as 32-bit native binaries on PA-RISC and Itanium-based platforms. Deprecated. Will be obsoleted post HP-UX 11i v3. (See “High Availability Monitors” on page 116.)
- **HP Partitioning:**
 - **HP Process Resource Manager C.02.03:** Installing this or later versions of PRM will not result in a reboot. Installing PHKL patches will. (See “HP Process Resource Manager” on page 117.)
 - **HP-UX nPartition Configuration Commands:** Includes changes to the `parmodify`, `parcreate`, and `parstatus` commands, as well as notes regarding the side effects of using WBEM's Trust Store file. (See “HP-UX nPartition Configuration Commands” on page 118.)
 - **HP-UX Virtual Partitions (vPars) A.04.01:** Will not release simultaneously with the September 2004 HP-UX 11i v2 release. Targeted to release in the middle of 2005. (See “HP-UX Virtual Partitions” on page 123.)
 - **HP-UX Workload Manager A.02.03:** In most cases, installing this version (or later) will not result in a reboot. Installing PHKL patches will. (See “HP-UX Workload Manager” on page 124.)
 - **HP-UX Workload Manager Toolkits A.01.07:** The `utilitydc` command, part of the Pay Per Use Toolkit, has been modified. (See “HP-UX Workload Manager Toolkits” on page 125.)
 - **nPartition Provider B.01.03.00.x:** Now supported on both PA-RISC and Itanium-based systems. Now supports WBEM 2.0. (See “nPartition Provider” on page 127.)
 - **Partition Manager 2.0:** Supported on both PA-RISC and Itanium. Now interacts with nPartition Provider using WBEM 2.0. (See “Partition Manager (parmgr)” on page 128.)
- **HP Serviceguard A.11.16:** Updated with new functionality, defect repairs, and support for future new hardware configurations. (See “HP Serviceguard” on page 129.)

- HP ServiceGuard Manager A.04.00: Allows administrators to create/configure clusters and packages, as well as monitor and manage clusters. (See “HP Serviceguard Manager” on page 131.)
- HP Serviceguard Quorum Server: Supported on both PA-RISC and Itanium. (See “HP Serviceguard Quorum Server” on page 132.)
- HP-UX 11i v2 Required Patch Bundle (BUNDLE11i): Delivered with this release. Consists of patches for HP-UX 11i v2 that are required to install and update the operating system (OS). (See “HP-UX 11i v2 Required Patch Bundle (BUNDLE11i)” on page 133.)
- HP-UX Kernel Configuration tool: TUI changed from earlier version. The `/stand/system/` file enhanced. (See “HP-UX Kernel Configuration” on page 134.)
- The Peripheral Device Tool (`pdweb`) B11.23.02: TUI introduced. (See “HP-UX Peripheral Device Tool” on page 138.)
- Ignite-UX, version B.6.0.x: Includes ability to install and recover 11.0, B.11.11, B.11.22, B.11.23 PA-RISC, and B.11.23 Itanium-based clients from a single Ignite-UX server. Also includes booting of both PA-RISC and Itanium-based, known as dual boot, from a single media source; and installing one unified PA-RISC/Itanium-based core HP-UX operating system bundle. (See “Ignite-UX” on page 139.)
- Improved Database Startup and Shutdown Times: Database startup and shutdown times have been drastically reduced. (See “Improved Database Startup and Shutdown Times” on page 143.)
- MySQL: Updated with tightened security. Product has been deprecated. (See “MySQL” on page 145.)
- Obsolescence Product: New product, used in an update when obsolete software on the system needs to be removed. (See “Obsolescence Bundle” on page 146.)
- OnlineDiag: Includes various bug fixes and enhancements. Support added for new devices. (See “OnlineDiag” on page 147.)
- Quality Pack Patch Bundle: All patches that were in the March 2004 HP-UX 11i v2 Quality Pack will be superseded by dual-architecture patches, which will be placed in BUNDLE11i. (See “Quality Pack Patch Bundle” on page 148.)
- SAM-NNC: Added support for VLAN, IPoIB, and large send functionality, plus defect fixes. (See “SAM - Nodal Network Configuration (NNC)” on page 150.)
- Servicecontrol Manager: Contains only minor updates. All functionality remains the same. Product has been deprecated. (See “Servicecontrol Manager” on page 151.)
- Software Distributor: Updated to a new version to support this new release of HP-UX 11i v2. (See “Software Distributor (SD)” on page 152.)
- Software Package Builder A.02.00: Updated to incorporate defect fixes, as well as support new features, including the ability to edit multiple PSFs at the same time. (See “Software Package Builder” on page 153.)
- System Administration Manager (SAM): Updated TUIs in the kernel configuration functional area and the Cards and Devices subarea. Will support shadow mode only for password aging. (See “System Administration Manager (SAM)” on page 154.)
- System V Shared Memory: Maximum for the `shmmni` tunable parameter increased. (See “System V Shared Memory” on page 156.)

- Update-UX: Updated to incorporate defect fixes. (See "Update-UX" on page 157.)

What's New for Customers of HP-UX 11i v2

Chapter 6: "Disk and File Management" (see page 159)

- 16 Terabyte (TB) File System Support: VxFS 3.5 file systems of up to 16 TB now certified. (See "16 Terabyte File System Support" on page 160.)
- Hierarchical File System (HFS): Deprecated. Will be removed in a future release. (See "Hierarchical File System (HFS) (Deprecated)" on page 164.)
- HP CIFS Client A.01.09.02: Provides 64-bit PAM-NTLM libraries support and defect fixes. (See "HP CIFS Client" on page 165.)
- HP CIFS Server 2.2i (A.01.11.01): Provides new LDAP support functionality, as well as other new features and defect fixes. (See "HP CIFS Server" on page 166.)
- Logical Volume Manager (LVM) and MirrorDisk/UX: Performance improved. LVM no longer performs software bad block relocation. Defects fixed. (See "Logical Volume Manager (LVM) and MirrorDisk/UX" on page 168.)
- Network File System (NFS): New option added to the `mount` command. Compatibility exception noted. (See "Network File System (NFS)" on page 169.)
- Network Information Service Plus (NIS+): Deprecated and planned for future obsolescence. Valid modification requests to update NIS+ tables will now fail if the size of the request is larger than 9000 bytes. (See "Network Information Service Plus (NIS+) (Deprecated)" on page 171.)
- Portable File System (PFS): Obsolete. (See "Portable File System (PFS) (Obsolete)" on page 173.)
- VERITAS File System (VxFS/HP OnlineJFS/JFS) 3.5: File systems of up to 16 TB now certified. (See "VERITAS File System 3.5 (HP Online JFS/JFS 3.5)" on page 175.)
- VERITAS Volume Manager 3.5 for HP-UX (Base): Includes new versions of VEA and SIG Licensing, as well as defect fixes. (See "VERITAS Volume Manager 3.5 for HP-UX (Base)" on page 177.)

What's New for Customers of HP-UX 11i v2

Chapter 7: "Internet and Networking" (see page 179)

- HP Data Link Provider Interface (DLPI): Includes support for VLAN functionality, TCP Segmentation Offload (TSO or Large Send), InfiniBand technology, and 64-bit MIB, as well as other changes. (See "HP Data Link Provider Interface (DLPI)" on page 181.)
- HP Openview Emanate Agent 15.3: Incorporates a defect fix. (See "HP Openview Emanate Agent" on page 183.)
- HP-UX LAN Provider: New with this release of HP-UX 11i v2. Client applications can use this Provider to determine 100bt and Gigabit links available on the system and collect information about them. (See "HP-UX LAN Provider" on page 185.)
- HP-UX Mobile IPv6 A.01.01: Offers the same functionality as A.01.00, but delivery method has changed. (See "HP-UX Mobile IPv6" on page 186.)
- HP-UX Web Server Suite 2.09 (see "HP-UX Web Server Suite" on page 188):

- HP-UX Apache-based Web Server 2.0.50.01: Updated as a security, bug fix, and feature release which contains support for Microsoft® FrontPage 2002, more pHP extensions, and numerous version upgrades. (See “HP-UX Apache-based Web Server” on page 190.)
- HP-UX Tomcat-based Servlet Engine 4.1.29.03: Updated with Tomcat version upgraded to 4.1.29; `mod_jk` and related configuration files shipped with HP-UX Apache-based Web Server; and defect fix to the Tomcat Admin application. (See “HP-UX Tomcat-based Servlet Engine” on page 192.)
- HP-UX Webmin-based Admin 1.070.00.01: Updated as security, bug fix, and full-feature release that contains the numerous enhancements. (See “HP-UX Webmin-based Admin” on page 193.)
- HP-UX XML Web Server Tools 2.00: Updated as primarily a version upgrade release, with upgrades to Xerces-J, Xalan-J, Cocoon, and FOP. (See “HP-UX XML Web Server” on page 194.)
- Internet Services:
 - BIND 9.2.0: Option to enable or disable the Extended DNS (EDNS) option provided. (See “BIND” on page 195.)
 - BOOTP and DHCP: Both implement a new tag to configure the IP address of the `tftp` server. (See “BOOTP and DHCP” on page 197.)
 - IPv4 Address Display: The IPv4-mapped-IPv6 address display is now changed to display an IPv4 address. (See “IPv4 Address Display” on page 201.)
- LAN Administration Commands: Includes support for IPoIB and VLAN interfaces, along with new command-line options. (See “LAN Administration Commands” on page 220.)
- Mozilla Application Suite 1.4.0.01: Contains full Japanese localization as well as other defect fixes and enhancements. Security bulletin posted. (See “Mozilla Application Suite” on page 221.)
- Netscape Directory Server 6.11: New product for customers of HP-UX 11i v2. (See “Netscape Directory Server” on page 223.)
- Network Tracing and Logging (NetTL): Changes include formatting support for IPoIB, Mobile IPv4 extension headers, tunneled IPv6 packets, and Mobile IPv6 packets, as well as new CLI option to support configurable trace buffer timer value. (See “NetTL Network Tracing and Logging” on page 224.)
- Network Transport (ARPA): Changes include Limited Transmit (IPv4 only); support for TCP Segmentation Offload and for IPoIB links; IPv6 router advertisement daemon; Multicast Listener Discovery support for IPv6 (host only); and other changes. Problem and work-around noted: HP-UX sends TCP packets with incorrect window size. (See “Network Transport (ARPA)” on page 226.)

What's New for Customers of HP-UX 11i v2

Chapter 8: “Security” (see page 235)

- HP-UX Host Intrusion Detection System 2.3: Product bundle renamed and restructured to improve product installation and maintenance. (See “HP-UX Host Intrusion Detection System” on page 239.)
- HP-UX IPFilter A.03.05.10.02: Includes defect fixes and performance enhancements. (See “HP-UX IPFilter” on page 241.)

- HP-UX Secure Shell A.03.71.000: Contains several new features, including enhanced `ssh_prng_cmds` file for random number generation, new escape character for requesting a pseudo terminal, and support for generating KEX-GEX groups in the `ssh-keygen` file. (See “HP-UX Secure Shell” on page 242.)
- OpenSSL A.00.09.07-d: New to HP-UX 11i v2. (See “OpenSSL” on page 249.)
- PAM: 64-bit framework now supported on both PA-RISC and Itanium. New PAM module introduced. Defect fixes included. (See “Pluggable Authentication Modules (PAM)” on page 250.)
- PAM-Kerberos v1.23: Supports both Itanium and PA-RISC applications in 32-bit mode and 64-bit mode. The `pam_sm_acct_mgmt()` function returns `PAM_USER_UNKNOWN` instead of `PAM_SUCCESS` when the user is not present in the Kerberos database. (See “PAM Kerberos” on page 251.)
- Security Patch Check 2.0: Now provides update and manual action analysis, whereas prior releases only analyzed patches. (See “Security Patch Check” on page 252.)
- Shadow Passwords: Now supported by SAM. (See “Shadow Passwords” on page 254.)

What's New for Customers of HP-UX 11i v2

Chapter 9: “Commands and System Calls” (see page 257)

- The `fuser` Command: Performance improved. (See “The `fuser` Command” on page 260.)
- Post/Wait: New. Provides a fast, lightweight synchronization facility for user applications. (See “Post/Wait” on page 264.)
- The `ps` command: The default width now set to 128 characters and a default file provided to define the length of the command field. (See “The `ps` command” on page 265.)
- The `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 “The `rc` Shell Script” on page 266.)
- The `scsimgr` and `scsiscan` Commands: Deprecated. Planned for obsolescence in HP-UX 11i v3. (See “The `scsimgr` and `scsiscan` Commands (Deprecated)” on page 267.)
- The `settune` and `settune_txn` System Calls: Post HP-UX 11i v2, tunables set using these kernel system calls will not be persistent across reboots. (See “The `settune` and `settune_txn` System Calls” on page 268.)
- The `sfd` Daemon: Deprecated. Planned for obsolescence in HP-UX 11i v3. (See “The `sfd` Daemon (Deprecated)” on page 269.)
- The `sysdef` command: Deprecated. Reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`. (See “The `sysdef` Command (Deprecated)” on page 270.)

What's New for Customers of HP-UX 11i v2

Chapter 10: “Libraries and Programming” (see page 273)

- HP aC++ Compiler for Itanium-Based Systems: No changes except for defect fixes. (See “HP aC++/HP ANSI C Compiler for Itanium-based Systems” on page 275.)
- HP aC++ Compiler for PA-RISC Systems: The new `placement delete` feature now supported. (See “HP aC++ Compiler for PA-RISC Systems” on page 276.)

- HP Fortran for HP-UX 2.8.2: Includes performance tuning enhancements. (See “HP Fortran for HP-UX” on page 285.)
- HP MLIB 8.6: FFT routines support data sizes of any positive length. (See “HP MLIB” on page 287.)
- HP MPI 2.0.1: InfiniBand interconnect on Itanium supported. (See “HP Message Passing Interface (MPI)” on page 288.)
- HP-UX Buffer Cache Tunable Parameters: All tunables associated to the sizing of the buffer cache (`nbuf`, `bufpages`, `bufcache_max_pct`, `dbc_min_pct`, and `dbc_max_pct`) have been deprecated and will be obsolete in HP-UX 11i v3. (See “HP-UX Buffer Cache Tunable Parameters (Deprecated)” on page 289.)
- Java 2 Standard Edition Platform:
 - HP 3D Technology for the Java 2 Standard Edition Platform: Only for Itanium-based systems. PA-RISC-based systems not supported. (See “HP 3D Technology for the Java 2 Standard Edition Platform” on page 290.)
 - HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition: For this release of HP-UX 11i v2, the full SDK as well as the RTE for versions 1.3 and 1.4 are being delivered. (See “HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition” on page 291.)
 - Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE: Now included in HP-UX 11i v2 for Java developers on PA-RISC. (See “Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE” on page 292.)
 - Java Out-of-Box 2.03: Includes defect fixes. (See “Java Out-of-Box” on page 293.)
- Math Library (`libm`): Current release includes Math Library Cumulative Patch, which contains new functions, performance and accuracy enhancements, and minor defects. (See “Math Library (`libm`), C Headers, and C++ Headers” on page 294.)
- POSIX Threads: Defect correction applied to Itanium-based systems to make the thread library, source and relocatable compatible with release HP-UX 11i v1. (See “POSIX Threads” on page 303.)
- The Software Transition Kit (STK): Available on the Web or Application Release media is a collection of tools and documents designed to help transition HP-UX applications from earlier versions of HP-UX to the latest version of HP-UX on the PA-RISC or the Itanium-based platform. (See “Software Transition Kit” on page 305.)
- Transition Links: Deprecated. Will become obsolete in post-HP-UX 11i v2 releases. (See “Transition Links (Deprecated)” on page 305.)

What's New for Customers of HP-UX 11i v2

Chapter 11: “Internationalization” (see page 309)

- Internationalization Features: Includes defect fixes. No new features beyond those supplied in the initial (October 2003) release of HP-UX 11i v2. (See “Internationalization Features” on page 310.)
- Deprecated Functionality: Several commands, library routines, and `lp` model files deprecated. Will be removed in next major release of HP-UX. (See “Deprecated Functionality” on page 315.)

**What's New for
Customers of
HP-UX 11i v2**

Chapter 12: "Other Functionality" (see page 317)

- ccNUMA: Additional platforms supported. (See "ccNUMA" on page 318.)
- Common Desktop Environment (CDE): X11R6-based Xfree86 `xterm` delivered as supported under `/usr/bin/X11`. X11R5-based `xterm` moved. (See "Common Desktop Environment (CDE)" on page 322.)
- Distributed Computing Environment (DCE) Client and Integrated Login: New PA-RISC filesets added. Integrated Login, a new product, added. (See "Distributed Computing Environment (DCE) Client and Integrated Login" on page 328.)

What's New in the March 2004 Release?¹

The following summaries pertain to the March 2004 HP-UX 11i v2 release. For further information, see the indicated chapters in the *HP-UX 11i Version 2 March 2004 Release Notes*, available in its most current version at <http://www.docs.hp.com>. The following is not an exhaustive list, so it is strongly recommended that you consult the *HP-UX 11i Version 2 March 2004 Release Notes* for information that is not included here.

March 2004 Release Notes, Chapter 4: "Workstation- and Server-Specific Information"

- Hardware Enablement Program added to support new systems, processors, and I/O adapters. Support for optical devices updated.
- Networking and Mass Storage Drivers:
 - FibrChanl-00 driver bundle updated to incorporate defect fixes.
 - FibrChanl-01 driver bundle now supports the A6826A card.
 - FibrChanl-01 and GigEther-01 driver bundles now support the A9782A and A9784A cards.
 - GigEther-01 driver bundle now supports the A7109A card.
 - IEther-00 driver bundle now supports the A7011A and A7012A cards.
 - RAID-01 driver bundle now supports the A9890A card.
 - The scsiU320-00 driver bundle added to pre-enable cards to be released in the future.
- On Demand Solutions:
 - Instant Capacity on Demand (iCOD) updated to version 6.01 to incorporate defect fixes.
 - Pay Per Use (PPU) updated to version 6.04 to incorporate defect fixes.
- Xserver updated to version B.11.23.01 with support for multiple graphics cards.

March 2004 Release Notes, Chapter 5: "General System Administration"

- Diagnostics (Online):
 - EMS Hardware Monitor added to monitor the operation of the iSCSI Software Initiator. IPMI Event Viewer Web Interface Tool added.
- HP Partitioning:
 - HP Process Resource Manager updated to version C.02.02 with support of a version option, support of SSL encryption of login/password data, more consistent syslog messaging, and other changes.
 - HP-UX Workload Manager updated to version A.02.02 with a new GUI that allows local and remote management of WLM systems; automatic resizing of nPartitions (nPars) that use iCOD software; support for more WLM configuration options by the Configuration Wizard; and other changes.

1. This release is supported on Itanium-based systems. It is not supported on PA-RISC systems.

- HP-UX Workload Manager Toolkits updated to version A.01.05. Utilities now use `/opt/perl/bin/perl`; ApacheTK begins supporting Apache 2.x; the `cntl_smooth` configuration file keyword now offered; `utilitydc` modified; and other changes.
- The nPartition Provider updated to version B.01.02.00.02 to incorporate several minor defect fixes to improve the overall quality of the product.
- Partition Manager updated to version B.11.23.02.00.02 to incorporate several minor defect fixes, as well as changes to functionality, including checking of the complex for configuration problems, and validation of SSL certificates sent from the CIM server.
- HP WBEM Services for HP-UX updated to version A.01.05.08 to use OpenSSL 0.9.6k.
- Ignite-UX updated to version B.5.2 with several enhancements, including updating the `make_*_recovery` tools.
- MC/ServiceGuard NFS Toolkit updated to version A.11.23.02 to deliver the File Lock Migration enhancement.
- The Quality Pack Patch Bundle now delivered on the Core OE media as well as the Web.
- Servicecontrol Manager updated to version 3.05 to incorporate defect fixes.
- Software Distributor updated to incorporate defect fixes.
- Software Package Builder updated to version A.01.04 to allow the setting of corequisites and prerequisites attributes using the OR relationship. SPB also now able to detect ambiguous objects.
- Update-UX updated to provide the flexibility to “deselect” bundles through an alternate to the default selections file. Update-UX will also create two backup kernel configurations from the update process.

March 2004 Release Notes, Chapter 6: “Disk and File Management”

- HP CIFS Client updated to version A.01.09.01 to incorporate a defect fix.
- HP CIFS Server 2.2g updated to version A.01.10 to incorporate fixes and minor enhancements developed since Samba version 2.2.5.
- VERITAS File System 3.5 (HP OnlineJFS 3.5) now enables creation of file systems of up to 8 TB.

March 2004 Release Notes, Chapter 7: “Internet and Networking”

- HP-UX Apache-based Web Server updated to version v.1.0.10.03 as primarily a security and bug fix release which addresses vulnerabilities and problems.
- HP-UX Tomcat-based Servlet Engine updated to version 1.0.10.01 to correspond with the HP-UX Apache-based Web Server v.1.0.10.03 with Apache 2.0.48. Upgraded `mod_jk` to v1.2.5.
- LAN Commands:
 - The `lanadmin` command’s hard link, `/usr/bin/landiag`, deprecated.
 - The file `/etc/lanscan` deprecated.

— The file `/etc/linkloop` deprecated.

- Mozilla updated to version 1.4.00.01 with full Japanese localization as well as other defect fixes and enhancements. Netscape is no longer included, but can be downloaded at <http://www.hp.com/go/netscape>.

March 2004 Release Notes, Chapter 8: “Security”

- HP-UX Host Intrusion Detection System v2.2 updated to include a defect fix for the detection of logins.

March 2004 Release Notes, Chapter 9: “Commands and System Calls”

- Topics in this chapter are unchanged for March 2004.

March 2004 Release Notes, Chapter 10: “Libraries and Programming”

- GTK+ Libraries updated to version 1.4.gm.46.4 to support changes to the Operating Environments. No new functionality added.
- HP Message Passing Interface (MPI) updated to version 2.0 with full MPI-2 Standard functionality and other enhancements.
- Perl updated to version 5.8.0 build 806 with several bug fixes and other improvements.

March 2004 Release Notes, Chapter 11: “Internationalization”

- ATOK 8 Japanese input method now deprecated.

March 2004 Release Notes, Chapter 12: “Other Functionality”

- HP-UX OpenGL Run Time Environment and Developer's Kit updated to version B.11.23.02.01 to incorporate defect fixes.

What's New in the Initial (October 2003) HP-UX 11i v2 Release?¹

The following summaries pertain to the initial HP-UX 11i v2 release (October 2003). For further information, see the indicated chapters in the initial *HP-UX 11i Version 2 Release Notes*, available in its most current version at <http://www.docs.hp.com>. The following is not an exhaustive list, so it is strongly recommended that you consult the initial *HP-UX 11i Version 2 Release Notes* for information that is not included here.

Initial Release Notes, Chapter 3: "Workstation/Server Specific Information"

- Always-installed Network Drivers:
 - 100Base-T Driver, `btlan`: Updated to support interrupt migration and OLAR on Itanium®-based platforms.
 - 1000Base-T (Gigabit Ethernet): `GigEther-01` supported and `IEther-00` introduced. 1024~9000 MTU supported.
 - PCI FDDI: Enhanced to provide FDDI network connectivity for Itanium-based platforms.
- Mass Storage Drivers:
 - Fibre Channel Tachlite Driver: Updated to support interrupt migration and OLAR.
 - SCSI Drivers: Support limited to PCI cards. New cards A5149A and A5838A supported, with limitations. HVD cards A4800A, A5159A, and A5159B not supported. OLAR of A6828A and A6869A cards supported. Interrupt migration supported.
- Selectable Network Drivers:
 - ATM Networking Solution: Now available on Itanium-based platforms. Only ATM adapter A5513A supported.
 - HyperFabric: `/opt/clic/bin/clic_ping` utility not available in HP-UX 11i v2.
 - INTL100: Required for HP Integrity rx2600 server, as well as HP zx6000 workstation. A6792A add-on card not supported on HP-UX 11i v2.
 - Online Addition and Replacement (OLAR): New `olrad` command provides critical resource analysis routines. New `hotplugd` daemon provides Doorbells capability. The `rad` command deprecated.
 - PCI Mux Networking Solution, `TermIO-00`: Now available on Itanium-based platforms.
 - PCI Token Ring Networking Solution: Now available on Itanium-based platforms.
- ATI FireGL X1 and ATI FireGL Z1: Provide compatibility with, and performance increase from, ATI FireGL4 card. Appropriate drivers shipped with the products.

1. This release is supported on Itanium-based systems. It is not supported on PA-RISC systems.

- Instant Capacity on Demand (iCOD) 6.0: Now always-installed and supported on HP Integrity Superdome, HP Integrity rx7620 and rx8620.
- Pay Per Use 6.0: Available as a selectable product. Supports HP Integrity Superdome, HP Integrity rx7620 and rx8620.
- Technical System Configuration (TechSysConf): TC-OpenSource tools removed. Remaining TC-SysSetup alters kernel configurable parameters, as well as selected system configuration files, for improved system performance.

Initial Release Notes, Chapter 4: “General System Administration”

- Compressed Dump: New feature. Speeds up memory dumps.
- Diagnostics:
 - Offline Diagnostic Environment: Supports new hardware platforms, including HP Integrity Superdome, HP Integrity rx2600, rx4640, rx5670, rx8620, rx7620, zx2000.
 - Online Diagnostics (EMS Hardware Monitors and Supports Tools Manager): Modified to support current systems releasing on HP-UX 11i v2. I/O tools and monitors modified to support new cards and peripherals.
- Enterprise Cluster Master Toolkit version B.01.08: Supports the Oracle 9i database in MC/ServiceGuard clusters.
- Event Monitoring Service A.04.00: Framework and GUI available as 32-bit native applications on Itanium-based platforms. HA Monitors available as 32-bit native binaries on Itanium-based platforms. New command line utility, EMS CLI, available to configure and manage persistent monitoring requests for EMS monitors.
- File Systems Tunable Parameters: HP-UX File Systems now has 13 dynamic tunable parameters available in HP-UX 11i v2. In addition, the *MAXSYMLINKS* literal traditionally included in the *<sys/param.h>* header is being deprecated in HP-UX 11i v2 and should not be used by applications. *MAXSYMLINKS* was defined as the maximum number of symbolic links that may be expanded in a path name. This limit is now a tunable parameter: *fs_symlinks*.
- GlancePlus Pak C.03.71.23: Incorporates defect repairs and enhancements, including enhancements to OVPA and GlancePlus.
- HP Caliper 3.0: Incorporates enhancements, including full multi-process support, ability to attach to a running process, new report and info modes, and usability improvements.
- HP Partitioning:
 - HP Process Resource Manager version C.02.01.01: Now supports VxVM. Various PRM utilities have wide-column option for better display of group names.
 - HP-UX nPartition Configuration Commands: Management scope of commands extended to remote partitions and complexes. Additional enhancements added.
 - HP-UX Processor Sets: The *psrset* command enhanced to display Locality Domain information. Kernel now supports Real Time Extension (RTE) to processor sets.
 - HP-UX Workload Manager version A.02.01.01: Offers greater functionality and ease of use.

- HP-UX Workload Manager Toolkits version A.01.04.01: Now has a toolkit for BEA WebLogic Server.
- nPartition Provider: New product with HP-UX 11i v2, used by Partition Manager and partition commands to configure and manage both local and remote HP systems that support nPartitions.
- Partition Manager version B.11.23.01.00: Incorporates major enhancements to the user interface, as well as support for Cell Local Memory (CLM).
- HP WBEM Services for HP-UX version A.01.05.05: Supports strong SSL encryption; simultaneous support of both SSL and non-SSL connections; local connections enhanced to use UNIX Domain Sockets; four additional providers added.
- HP-UX Kernel Configuration: The `kcweb` application incorporates changes and new features. The `maxusers` tunable obsoleted. Kernel Configuration (KC) commands replaced by a new set of commands. Changes made in kernel location, boot-time selection, and automatic backup creation.
- HP-UX Peripheral Devices: New tool; replaces the peripheral devices functionality of SAM and introduces two new commands, `pdweb` and `wacnf`.
- Ignite-UX version B.5.0: Supports the new HP-UX Service Partition, incorporates enhanced support for dual media recovery, and incorporates enhancements to support new `/stand/system` syntax.
- Interrupt Migration: New feature; can be used to view and modify the interrupt configuration of the system.
- MC/ServiceGuard version A.11.15.00: Updated with new features, including support for VxVM 3.5, Quorum Server 2.0, ServiceGuard Manager 3.0, and IPv6 (with restrictions). Operation with IPFilter requires specific IPFilter rules to ensure proper operation of ServiceGuard clusters.
- MC/ServiceGuard Extension for SAP R/3 version B.03.09: Provides same functionality as B.03.08 for PA-RISC. B.03.09 also provides means to use Secure Shell as a communication method between nodes running mySAP components.
- MC/ServiceGuard NFS Toolkit version A.11.23.01: Enhanced for better performance and easier troubleshooting. NFS-related control functions and variables now in separate NFS-specific control script. Supports VxVM 3.5 and NFS high availability over NFS TCP and NFS UDP.
- MC/ServiceGuard Quorum Server version A.2.0: Runs on both HP-UX and Linux. Supports multiple HP-UX and/or Linux clusters. Can be configured in a package in a cluster.
- MySQL version 3.23: Used instead of NDS by Servicecontrol Manager 3.0 for the repository.
- SAM - Nodal Network Communication: Supports DHCPv6.
- Scalable Boot: Reduces boot time by 5 to 95%, depending on the I/O configuration.
- Servicecontrol Manager version 3.0: Provides new features, including Linux-based central management server, certified HP ProLiant Linux agents, XML file format, and improved user interface and ease-of-use.
- ServiceGuard Extension for RAC version A.11.15.00: Provides new features, including fast detection of Oracle instance crash and rolling upgrade. ServiceGuard Manager will show RAC instances in property sheet.

- ServiceGuard Manager version A.03.00: Provides new features, including availability in five languages, support for clusters on different subnets, ability to display several sessions, and Alerts icon to show the most critical problem.
- Software Distributor: Runs in Itanium as a native application. Supports DLKM software packaging.
- Software Package Builder: New product; provides a visual method to create and edit software packages using the HP-UX Software Distributor package format.
- System Administration Manager: Introduces the HP-UX Kernel Configuration and HP-UX Peripheral Devices tools. SAM is available as PA-RISC binaries on HP-UX 11i v2 and requires the Aries translator.
- System-V IPC Kernel Tunable Parameter (`semmap`)(Obsolete): The memory allocation of semaphore sets previously controlled by `semmap` is now done dynamically by the kernel. The `semmap` kernel parameter is no longer tunable.
- System-V IPC Kernel Tunable Parameter (`semmsl`): Minimum value now 1; default value 2048; upper limit remains 10240.
- The `update-ux` Command: New with HP-UX 11i v2. Allows update of the HP-UX operating system from HP-UX 11i v1.6 (11.22) to HP-UX 11i v2 (11.23).

Initial Release Notes, Chapter 5: “Disk and File Management”

- AutoFS: Upgraded to include the features of the SUN ONC AutoFS version 2.3 product, as well as performance enhancements, including on-demand mounting. The system C library, `libc`, changed to improve AutoFS performance.
- Automounter: Obsoleted. AutoFS is the recommended replacement.
- HP CIFS Client version A.01.09: Provides defect fixes and new features, including Kerberos authentication, integration with the system Kerberos cache, and improved interoperability with third-party CIFS servers that do not support older SMB infolevels.
- HP CIFS Server version 2.2e: Based on Samba version 2.2.5. Incorporates new tools and new configuration parameters.
- Logical Volume Manager (LVM): Supports SLVM in configurations of up to 16 nodes. LVM powerfail message changed.
- VERITAS File System (VxFS/HP OnlineJFS/JFS) 3.5: New version contains new and changed features, including new and/or enhanced tunable parameters, enhanced VxFS commands, new I/O error handling policy, new default intent log mode, new default system block size, VxFS system activity reporter, forced unmounts, and more. Enables creation of file systems up to 4 TB (maximum file size is 2 TB).
- VERITAS Volume Manager (VxVM) 3.5: New features include VERITAS Cluster Volume Manager 3.5 for HP-UX (purchased separately); Device Discovery Layer; SIG Licensing Product; and VERITAS Enterprise Administrator. VxVM 3.5 offers significant enhancements over the previous VxVM 3.1, which speed transactions, reduce processing time, and improve bandwidth usage.

Initial Release Notes, Chapter 6: “Internet and Networking”

- HP OSI Transport Services/9000 version C.12.00: Provides `otsshowsaps` (lists NSAPs configured on OTS/9000) and expedited data transfer on RFC1006 subnet.

- HP-UX Data Link Provider Interface (DLPI): Includes enhancements to the Streams interface; new third-party interface for non-native Streams drivers; updates to the native Stream driver models; obsolescence of the dump read capability of `lanscan`; status logging for DLPI through `nettl`; and other changes.
- HP-UX Web Server Suite: Includes HP-UX Apache-based Web Server, HP-UX Webmin-based Admin, HP-UX Tomcat-based Servlet Engine, and HP-UX XML Web Server Tools. Each component includes fixes and/or enhancements. Installation changes have been made.
- Internet Services:
 - BIND 9.2.0: New options added. New commands added in `rndc` remote name daemon control program. Supports IXFR and all DNS security features.
 - Dynamic Host Configuration Protocol (DHCP) v6: New features include new message types, multiple IP address request, configuration parameters from a DHCPv6 server, and reconfiguration messages.
 - The `gated` Routing Daemon: `ospfagt` available to obtain OSPF routing information from the `gated` product.
 - The `inetd` Daemon: New option added for use by `inetd` to identify a UDP service as broken or in-loop. New variable added to enable or disable `inetd` during system startup.
 - IPv6 Support for Internet Service Products: BIND 9.2, DHCPv6, `inetd`, name and address resolution resolver routines, R-commands, `telnet`, WU-FTPD 2.6.1, and Secure Internet Services are IPv6 enabled.
 - Logging User Accounting Information: `telnetd`, `remshd`, `rexecd`, and `ftpd` now use new scalable `utmps/wtmps/btmps` interfaces to log user accounting information.
 - The `named-xfer` Ancillary Program: Obsolete; replaced by the `dig` utility.
 - The `rbootd` remote boot server for RMP clients: Obsolete; clients using the RMP protocol no longer supported. You must move from RMP to BOOTP.
 - The `rexecd` utility: New option added. Now uses `utmps/wtmps/btmps` interfaces to log user accounting information.
 - The `rwhod` sever: Updated to use `utmps` interfaces to read user accounting information.
 - Secure Internet Services: New options added. IPv6 enabled for R-commands. Kerberos supported in an IPv6 environment for `ftp`, R-commands, and `telnet`.
 - Sendmail 8.11.1: New options added.
 - SLP 0.8: New with HP-UX 11i v2. Includes dynamic service tracking, ease of administration, and ease of development.
 - TCP Wrappers 7.6: Includes features such as monitoring incoming requests for Internet Services, controlling access to services spawned by `inetd`, and enforcing access control in stand-alone daemon programs, among others.
 - WU-FTPD 2.6.1: The `ftp` daemon audits all login activities irrespective of success/failure login. Logs bad login attempts in `/var/adm/btmps` file. New options added.

- IPv6 Support: IPv6 support by Transport, Internet Services, DCE, DLPI, FDDI, SAM-NNC, libc, HP-UX commands, Desktop (CDE), X11R6-based applications, C2 Audit, EMS, Online Diagnostics, SNMP, NetTL, IPSec, Kerberos Client, ServiceGuard, GlancePlus Pak, HP-UX Secure Shell, HP-UX Web Server Suite, and the Runtime Environment (RTE) for the Java. 2 platform.
- IPv6 Network Transport Software: Features include IPv4/IPv6 dual stack support; enablement of IPv4/IPv6 host and router connections over existing IPv4 network; Ethernet and FDDI links; IPv6 stateless address auto configuration; IPv6 Neighbor Discovery; network configuration and troubleshooting utilities; name service switch, and more.
- IPv6 Support by Common Desktop Environment (CDE): CDE 2.1 supports IPv6, in addition to IPv4.
- IPv6 Support by HP Openview Emanate Agent: Relevant MIB support with the IPv6 subagent, `ipv6agt`. RFCs supported as part of the IPv6 stack.
- IPv6 Support by HP-UX libc and HP-UX Commands: While providing support for IPv6, new solution addresses previous performance and feature scalability problems. New daemon and library introduced to manage user accounting. Various commands modified and options added to support IPv6. Solution speeds response time for users to log in to large server systems which support a large number of users/login sessions.
- Kernel Logging: Deprecated. Will not be supported post-HP-UX 11i v2.
- LAN Commands
 - Local Area Network Administration Program (`lanadmin`): New options added. Now supports third-party LAN drivers.
 - The `linkloop` Command: Now works correctly with Ethernet interfaces set for an MTU size other than 1500. Now supports third-party LAN drivers.
 - The `lanscan` Command: New option added. Can no longer be used to read from crash dumps.
- Network Information Service Plus (NIS+): Deprecated. HP-UX 11i v2 is the last release to support NIS+. HP will introduce a migration strategy to facilitate move from NIS+ to LDAP.
- Network Tracing and Logging (NetTL): Supports tracing and formatting of IPv6 packets. Improved performance. GUI `nettladm` added. Options added.
- Network Transport (ARPA): Support for enhancements of HP-UX DLPI. Enhancements to CKO interfaces between HP-UX transport and DLPI. Removed support for dump reading by `netstat` and `arp`. IPv6 transport supported.
- Networking libc APIs `getaddrinfo()` and `getnameinfo()`: Both functions have additional lookup.
- Networking libc APIs `getipnodebyname()` and `getipnodebyaddr()`: Deprecated. Both functions not supported post-HP-UX 11i v2. In applications, the APIs `getaddrinfo()` and `getnameinfo()` functions should be used instead.
- The `nslookup` Program: Extended to follow the configured host name resolution algorithm and to query NIS, DNS, and host tables.
- Router Discovery Protocol Daemon (`rdpd`): Obsolete. Functionality has been subsumed in `gated`.

- Web Browsing:
 - Mozilla Application Suite 1.2.1: Added as default browser for HP-UX 11i v2.
 - Netscape 7: Replaces Netscape Communicator 4.79.

Initial Release Notes, Chapter 7: “Security”

- Boot Authentication: Now available on all Standard Systems. Standard Mode Boot Authentication feature can be configured by two parameters.
- Generic Security Service Application Programming Interface (GSS-API): Now delivered as part of HP-UX 11i v2. IPv6 enabled.
- HP-UX Auditing System: Several system call options and event type options are accepted, but will be obsoleted in the next release.
- HP-UX Bastille 2.1: Now included in HP-UX 11i v2. New version adds finer granularity of configuration, improved question flow, better input validation, and new lockdown features.
- HP-UX Host Intrusion Detection System (HIDS) 2.2: Maintenance release with defect fixes and a few enhancements. No new functionality in this version.
- HP-UX IPFilter A.03.05.06: Supports HP-UX 11i v2 on Itanium®-based platforms. Automatically installed with all OEs. Using IPFilter and ServiceGuard requires specific IPFilter rules to ensure proper operation of ServiceGuard clusters.
- HP-UX Secure Shell A.03.10: New product. Based on OpenSSH 3.1p1, provides a secure channel for remote communication by transparently encrypting network traffic. Uses hashing to ensure data integrity and supports several authentication methods.
- Install-Time Security 1.x.x: Adds a security step to the install/update process that allows you to configure the Bastille security lockdown engine during system installation.
- Kerberos Client (KRB5-Client): Now delivered as part of HP-UX 11i v2. Changes include support for appdefaults section in the `/etc/krb5.conf`; multidomain support; IPv6 support.
- PAM Kerberos: Supports both Itanium and PA-RISC applications in 32-bit mode. Now prevents a user from changing another user's password.
- Security Patch Check 1.3: Now included in HP-UX 11i v2 OEs. Simplifies the process of determining whether you have all the relevant security patches on your system. This version does better corner-case handling; incorporates a number of defect fixes and clearer wording.
- Shadow Passwords: New feature enhances system security by hiding user-encrypted passwords in a shadow password file.
- Strong Random Number Generator: New feature provides a secure, non-reproducible source of binary sequences for applications that generate encryption keys and other cryptographic quantities.

Initial Release Notes, Chapter 8: “Commands and System Calls”

- The `envd` Environment Daemon: Now supported.

- The `groupadd`, `groupdel`, `groupmod`, `useradd`, `userdel`, `usermod` commands: In trusted mode, the commands now write audit records into the audit subsystem's audit trail. New option added to set or unset `useradd` behavior of changing ownership of an existing home directory.
- The `psrset` Command: Enhanced with new options to manage the RTE processor set.
- The `setboot` Command: Support for setting the HA Alternate boot path now added. SpeedyBoot option for next reboot now available.
- I/O Commands:
 - The `insf`, `lssf`, and `mksf` Commands: Now support IHV drivers, provided the IHV provides a shared library.
 - The `ioscan` command: New options added to allow display of the date and time at which the system hardware was last scanned and to allow display of the EFI device paths for certain devices.
- The `mmap()` Function: Now possible to perform mappings between a process's address space and I/O device registers or memory.
- The `pstat_getfile()` Interface: Obsolete. The interface `pstat_getfile2()` should be used in its place.
- Transition Links Commands: Deprecated. The `tlinstall`, `tlolist`, and `tlremove` commands will become obsolete in post-HP-UX 11i v2 releases.
- Usage of Capacity-related `ioctl`s `DIOC_CAPACITY`, `DIOC_DESCRIBE`, and `SIOC_CAPACITY`: Applications that use the `DIOC_CAPACITY` or `DIOC_DESCRIBE` `ioctl` calls should be rebuilt because `capacity_type` and `disk_describe_type` now better represent the size of newer, larger devices. Applications that use the `SIOC_CAPACITY` `ioctl` for devices that may become large at some point should now use the new `SIOC_STORAGE_CAPACITY` `ioctl`.
- Usage of `ustat()`, `statfs()`, and `statvfs()`: When old binaries that still use `ustat()`, the various forms of `statfs()`, and the various forms of the 32-bit flavor of `statvfs()`, are exposed to a truly large file system, these calls will return an `EOVERFLOW` error that the binaries have never seen before, resulting in misinterpretations.

Initial Release Notes, Chapter 9: “Libraries and Programming”

- 400K File Descriptors: The maximum supported number of file descriptors per process raised from 60000 (60K) to 400,000 (400K). Precautions apply to this new functionality.
- Adaptive Address Space (AAS) 1.0: Allows you to create binaries that provide you with a large address space and more control over it.
- Aries Binary Translator: Changes include support for MxN threads, support for Itanium 2 processor, and an optional, experimental implementation of a new dynamic translator with improved performance.
- C99 Support for HP-UX System C Library (`libc`): A set of 8 new APIs introduced, making it easier to convert strings to the “long long” data type.
- Debugging:

- Absolute Debugger (Adb): New features include support for Lazyfp, Dual pdir, debugging MxN threads in a process/core, debugging INIT and MCA crash dumps, and debugging a shared library for an attached process.
- HP Kernel Debugger (KWDB): Included in HP-UX 11i v2, but not supported.
- HP Wildebeest Debugger (WDB) 4.0: Features include performance improvements and support for Runtime Memory Checking, for enabling/disabling threads for better DDE compatibility, for unwinding through corrupted PC, for stack traces in Java/C/C++ programs, and enhanced support for C++ templates. New command: `dumpcore`. Info threads command output has changed.
- Dynamic Loader (`dld.so`) B.12.20: Changes include support for applications built with `+[no]lazyload` and `-B [direct|lazydirect|nodirect]`, lazy loading of shared library, and direct binding.
- File Descriptor Allocation: The behavior of the file descriptor allocation changed to prevent security problems such as unauthorized modification of root-owned files.
- GTK+ Libraries 1.2.10.2: Added; required for Netscape 7 and Mozilla. Consists of the component libraries GLib, GDK, and GTK.
- HP aC++ Compiler: The functionality of `Tools.h++` now available with the Standard C++ runtime (`-AA`). Transition Links product deprecated.
- HP C Compiler: The `legacy_hpc/` subdirectory no longer provided. C-Analysis-Tools product obsoleted. The tools `cb`, `cflow`, `cxref`, `endif`, `lint`, `protogen` no longer shipped. Transition Links product deprecated.
- HP Fortran v2.7: A new feature is binary I/O conversion. New or revised directives/options include `optimize openmp [on/off]`, `+Oautopar` (revised), `+Ofast` (changed implied options), `+DOosname`, `+O[no]rotating_fpregs`, `+O[no]preserved_fpregs`, and `+O[no]no_return`.
- HP Math Library (`libm`): Changes to `libm`, `math.h`, `complex.h`, `tgmath.h`, `fenv.h`, `cmath`, and complex components, including new and changed functions. Major performance upgrade for power functions: `pow[fwlq]`, `pown[fwlq]`, and `powlln[fwlq]`. Switch introduced into `math.h` to support a strict C99 namespace.
- HP Message Passing Interface (MPI) 1.8.3: New features include additional launch utility `mpirun.all`, HyperFabric/HyperMessaging Protocol (HMP) functionality, `stdio` not processed by default, argument error checking turned off by default.
- HP MLIB 8.4: Major enhancement is performance tuning. Incorporates algorithmic improvements. Several tunable parameters adjusted for improved execution performance.
- Itanium Unwind Library (`libunwind.so`): Changes include a new set of “Unwind Express” APIs that perform stack unwinding considerably faster, and new header files `<uwx.h>` and `<uwx_self.h>`.
- Java 2 Standard Edition Platform:
 - HP 3D Technology for the Java 2 Standard Edition Platform 1.3: Two new, identical Java 3D products now install: one into Java RTE 1.3 and the other into Java RTE 1.4.

- Runtime Environment (RTE) for the Java 2 Platform 1.4: New features include nonblocking I/O APIs, IPv6 support, new garbage collectors (parallel, and concurrent mark and sweep), Java Web Start application deployment technology now bundled with the RTE. RTE for Java 1.3 still included as well.
- Runtime Plug-in (JPI) for Netscape/Mozilla for the Java 2 Platform 1.4: Now added, providing the latest Java technology. JPI 1.3 still included as well.
- Link Editor (`ld`): New functionality includes lazy loading of shared libraries (`+ [no] lazyload`) and direct binding support.
- Micro Focus OO COBOL 4.2 Run-Time Libraries: Deprecated. Will not be included in future HP-UX 11i releases for Itanium®-based platforms.
- Object File Tools (`elfdump`): Option introduced to print out the version string of the symbol when printing the symbol table.
- Perl: Corresponds to Perl 5.8.0 source code release. Changes include better Unicode support, new IO implementation, new thread implementation, better numeric accuracy, safe signals, and many new modules.
- Source Code Transition from HP-UX 11i v1.6 to HP-UX 11i v2: Software Transition Kit 1.9 updated to support source code transition from HP-UX 11i v1.6 to v2.
- Thread Context: Changes include: Protection Key Registers saved/restored on context switch; lazy FP implementation; new scratch registers supported; `save_state`, `pcb`, and label structures changed.

Initial Release Notes, Chapter 10: “Internationalization”

- Simplified Chinese Input Methods: Intelligent ABC now available to support characters defined by the GB18030 standard. T-C and T-C Rapid input methods obsolete and removed.
- Mainframe `iconv` Converters for Japanese Characters: Changes include numerous fixes for mapping errors for JIS standard characters, as well as a fix to handle an incomplete shift sequence at the end of an input buffer.
- Printing Using Asian TrueType Fonts for HP PCL5 Printers: Larger set of Asian characters available for printing using Asian UTF-8 locales.
- System Support for Latin and South American Locales: Total of 51 new locales provided to enable system-level support for Latin/South American geographies. Includes support for the input, storage, retrieval, display, and printing of characters encoded in ISO-88591, ISO-885915, or UTF-8 character sets.
- Unicode 3.0 Support: Now included.
- Deprecated Functionality: Several commands, library routines, and `lp` model files deprecated. Will be removed in next major release of HP-UX.

Initial Release Notes, Chapter 11: “Other Functionality”

- ccNUMA: Changes include: greater performance for some work loads; ability to configure systems for optimal performance with regard to interleaved versus cell local memory; ability to give guidance to OS for most appropriate memory allocation according to an application's usage model; ability to control how processes are distributed among localities.

- **Common Desktop Environment (CDE):** Changes include: IPv6 support; greater accessibility for physically challenged users; `dtlogin` does not start X server when the mouse is not connected; large file (greater than 2GB) support provided by `dtfile`; and other changes. In addition, CDE requires a number of services and resources; if these are disabled either manually or with Bastille, there are several impacts on CDE.

What's in This Chapter?

This chapter describes server- and workstation-specific platforms and configurations, including:

- HP Instant Support Enterprise Edition (see page 73)
- HP StorageWorks Command View SDM (see page 74)
- HP StorageWorks Secure Path for HP-UX (see page 75)
- HP-UX 11i v2 Driver Development Kit (see page 77)
- HP-UX 3D Graphics Run Time Environment and Developer's Kit (see page 78)
- Networking and Mass Storage Drivers (see page 79)
 - Always-Installed Networking Drivers (see page 79)
 - Gigabit Ethernet and Fast Ethernet (see page 80)
 - PCI FDDI (see page 83)
 - Selectable Networking Drivers (see page 84)
 - HyperFabric (see page 84)
 - PCI ATM (see page 85)
 - PCI Token Ring (see page 86)
 - Always-Installed Mass Storage Drivers (see page 87)
 - disc3 Driver (see page 88)
 - Fibre Channel Tachlite Driver (FibrChanl-00) (see page 89)
 - FibrChanl-01 (see page 91)
 - HP-UX HSC Fibre Channel Mass Storage (FCMS) driver (see page 92)
 - HP-UX Ultra320 SCSI Driver (see page 92)
 - RAID-01 (see page 93)
 - SCSI Drivers (see page 94)
 - Selectable Mass Storage Drivers (see page 96)
 - HP-UX iSCSI Software Initiator (see page 96)
- Online Addition and Replacement (OL* or OLAR) (see page 97)
- On Demand Solutions (see page 98)
 - Instant Capacity on Demand (iCOD) (see page 99)
 - Pay Per Use (see page 100)
- Supported Servers and Workstations (see page 101)
 - Unsupported Servers and Workstations (see page 102)

What's in This Chapter?

- Unsupported Storage Devices (see page 103)
- Unsupported I/O Cards (see page 104)
- Technical System Configuration (see page 105)

HP Instant Support Enterprise Edition

HP Instant Support Enterprise Edition (ISEE) is a secure remote support platform for business servers and storage devices. The HP ISEE client software is installed on each supported device covered by an HP Support Agreement. ISEE Monitored Clients communicate directly with the HP Support Center through the firewall and/or Web proxy server to deliver hardware incident information to the HP support center for reactive support. Additionally, system information is collected and can be used for proactive support.

Summary of Change

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

ISEE was formerly delivered on the Support Plus media for HP-UX 11i v1.

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

ISEE is new to HP-UX 11i v2 with this release.

Impact

There are no impacts other than delivery with this release.

Compatibility

Before enabling or configuring ISEE, verify that you have collected the necessary information and met all of the requirements outlined in Chapter One and Appendix A of the *HP Instant Support Enterprise Edition Client Installation and Upgrade Guide*, available at <http://www.hp.com/learn/isee>. Please note that HP ISEE is only supported on servers, not HP-UX workstations.

Enabling ISEE

ISEE is installed in a disabled state. To enable the client complete the following steps:

1. In the file `/etc/rc.config.d/hpservices.conf` change the value of `START_TUNER` from 0 to 1.
2. In the file `/etc/rc.config.d/rstemsListener` change the value of `RST_LISTENER` from 0 to 1.
3. Execute `/sbin/init.d/hpservices start`.
4. Execute `/sbin/init.d/rstemsListener start`.

Configuring ISEE

The ISEE configuration process is documented in the section titled “Configuring ISEE after an Individual Installation” in the *HP Instant Support Enterprise Edition Client Installation and Upgrade Guide*. Additional information about ISEE and HP-UX servers can be found in Appendix A.

Performance

There are no known performance issues.

Documentation

Information about ISEE, including the *HP Instant Support Enterprise Edition Client Installation and Upgrade Guide*, is available at <http://www.hp.com/learn/isee>. For a complete list of ISEE-supported operating systems and hardware devices, please view the ISEE supported products Web page at http://www.hp.com/hps/hardware/hw_products.html.

Obsolescence

Not applicable.

HP StorageWorks Command View SDM

HP StorageWorks Command View SDM (CVSDM) is designed to provide storage management for the HP StorageWorks Virtual Array and HP StorageWorks Disk System products. This solution allows a user to manage an unlimited number of HP virtual arrays and Disk Systems from a graphical user interface (GUI), command line user interface (CLI), or Web browser. It provides secure device management in both direct-attach and SAN environments.

CVSDM is provided in both a CD kit release and on the Web at <http://hp.com/support/cvsdm> (click “download drivers and software”).

Summary of Change

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

CVSDM v1.08.00 supports HP-UX 11i v2 on Itanium-based platforms only. Near the release of HP-UX 11i v2 September 2004, a version of CVSDM to support HP-UX 11i v2 on PA-RISC platforms will be available on the Web.

What’s New for Customers of HP-UX 11i v2?

Currently, CVSDM supports the following operating systems:

- Windows 2000 Server SP4 (32-bit)
- Windows 2000 AS SP4 (32-bit)
- Windows Server 2003 (32-bit)
- HP-UX 11.0
- HP-UX 11i v1 (B.11.11)
- HP-UX 11i v2 (B.11.23)¹

- Red Hat Linux Advanced Server AS 3.0 with Kernel version 2.4.21-9EL

Impact

There are no impacts other than those described above.

Compatibility

CVSDM 1.08 is compatible on the following HP-UX versions:

HP-UX 11.0

HP-UX 11i v1

HP-UX 11i v2 (64-bit Itanium-based platforms only)¹

Performance

There are no performance issues.

Documentation

All the related documents are available on the CVSDM Web site at

<http://cybrary.inet.cpqcorp.net/SW/LP/SYSMGT/STORAGE/SDM/index.html?/SW/LP/SYSMGT/STORAGE/SDM/overview.html>.

Obsolescence

Not applicable.

HP StorageWorks Secure Path for HP-UX

HP StorageWorks Secure Path is a high-availability software product that manages and maintains continuous data access to the following StorageWorks storage systems on HP-UX:

- EVA5000
- EVA3000
- HSG80 (only supported on Itanium on HP-UX 11i v2)
- VA family
- XP family

1. Version 1.08.00 supports HP-UX 11i v2 on Itanium-based platforms only. Near the release of HP-UX 11i v2 September 2004, a new version of CVSDM that supports PA-RISC platforms on HP-UX 11i v2 will be available.

Secure Path eliminates the RAID controller, host bus adapter (HBA), and interconnect hardware (cables, switches, and connectivity devices) as single points of failure in the storage system.

By using redundant hardware and advanced RAID technology, Secure Path enhances fault tolerance and storage system availability by providing automated failover capability.

Redundant physical connections define separate paths in a Secure Path hardware configuration. Each path originates at a unique HBA port on a server and ends at a unique RAID controller port in the storage system.

Secure Path is available in a CD kit. Updates are available on the Web. For more information, refer to the HP StorageWorks Secure Path Web site at <http://h18006.www1.hp.com/products/sanworks/secure-path/index.html>.

Summary of Change

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

Secure Path V3.0E for HP-UX provides EVA Boot and Dump support on HP-UX 11i v2 September 2004 and later releases. Secure Path V3.0E will be available when HP-UX 11i v2 September 2004 is released.

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

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

Impact

Secure Path V3.0E for HP-UX provides EVA Boot and Dump support on HP-UX 11i v2 September 2004 and later releases. Secure Path V3.0E does not support releases of HP-UX 11i v2 earlier than the September 2004 release.

Compatibility

The Secure Path V3.0E is not supported for Ignite-UX type of installation or recovery for the following two reasons:

1. When the Secure Path V3.0E is installed on a system, the hardware address of all EVA disk luns change once the product is installed. During the recovery process, if LVM volume groups exist on the EVA array, importing those volume groups may fail. Further, if the boot disk resides on an EVA array, the system will fail to boot and is most likely due to an LVM configuration failure panic.
2. The Secure Path V3.0E is not included in the install kernel and is not part of the core HP-UX Operating System, so Ignite-UX is unable to support its use.

Performance

There are no known performance issues.

Documentation

For further information, refer to the following documents, available at the HP StorageWorks Secure Path Web site at

<http://h18006.www1.hp.com/products/sanworks/secure-path/index.html>:

- *HP StorageWorks Secure Path V3.0E for HP-UX 11i V1.0, 11i V2.0 and HP-UX 11i V1.0, 11i V2.0 Workgroup Edition Installation and Reference Guide*
- *HP StorageWorks Secure Path V3.0E for HP-UX 11i V1.0, 11i V2.0 and HP-UX 11i V1.0, 11i V2.0 Workgroup Edition Release Notes*
- *HP StorageWorks Secure Path V3.0E for HP-UX 11.00 and HP-UX 11.00 Workgroup Edition Release Notes*

Obsolescence

Not applicable.

HP-UX 11i v2 Driver Development Kit

The HP-UX 11i v2 Driver Development Kit (DDK) provides required documentation, sample code, build environment and development tools enabling IHVs to develop and test drivers on HP-UX 11i v2 PA-RISC and Itanium®-based platforms.

DDK has been enhanced with the following for the HP-UX 11i v2 September 2004 release:

- Documentation updates to cover both PA-RISC and Itanium-based systems.
- Sample drivers that work on both PA-RISC and Itanium-based systems.
- Addition of sample makefiles for PA-RISC.
- Driver build environment for both PA-RISC and Itanium-based platforms.
- Addition of PA-RISC version of driver build utilities `modmeta`, `kmsecgen` and `modlink`.
- Driver development tools for both PA-RISC and Itanium-based systems.
- DDK packages for HP-UX 11i v2.
- Resolution for HP-UX 11i v2 DDK defects.

HP-UX 3D Graphics Run Time Environment and Developer's Kit

HP-UX 3D Graphics Run Time Environment and Developer's Kit contains all of the required daemons and loadable modules for the 3D graphics run time environment, as well as all necessary source files and header files to develop applications using HP's implementation of the OpenGL 3D graphics API. The product version number is B.11.23.03.04.

Summary of Change

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

All modules for hardware-accelerated OpenGL rendering have been removed because PA-RISC Workstations are not supported by this release.¹ OpenGL rendering to remote displays is supported via GLX protocol and the HP Virtual Memory Driver.

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

There are no other changes from previous releases of HP-UX 11i v2.

Impact

PA-RISC Workstations are not supported by this release of HP-UX.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The following documents can be found at
http://www.hp.com/support/workstation_manuals:

HP OpenGL Release Notes Release Notes for HP Common 3D Graphics for HP-UX 11.0 (September 2002)

OpenGL Implementation Guide for HP-UX 11.X

Graphics Administration Guide for HP-UX 11.X

Obsolescence

Not applicable.

1. See "Supported Servers and Workstations" on page 101.

Networking and Mass Storage Drivers

HP-UX 11i v2 includes drivers for networking and mass storage adapter cards. The drivers are described in the following sections:

- “Always-Installed Networking Drivers” on page 79
- “Selectable Networking Drivers” on page 84
- “Always-Installed Mass Storage Drivers” on page 87
- “Selectable Mass Storage Drivers” on page 96

For a list of unsupported cards, see “Unsupported I/O Cards” on page 104.

Always-Installed Networking Drivers

The following table lists networking drivers that are automatically installed. For more details about changes to these drivers, see the remainder of this section. For a list of unsupported cards, see “Unsupported I/O Cards” on page 104.

Table 4-1 Always-Installed Networking Drivers^a

Networking Driver Bundle	Driver	Card Number	Description
FDDI-00	fddi4	A3739B	PCI FDDI card
FibrChanl-01 and GigEther-01	fcd and igelan	A9782A	PCI-X 2Gb Fibre Channel/1000Base-SX (Fibre) Combination Card
FibrChanl-01 and GigEther-01	fcd and igelan	A9784A	PCI-X 2Gb Fibre Channel/1000Base-T (Copper) Combination Card
GigEther-00	gelan	A4926A	PCI 1000Base-SX (gigabit over fiber) card
GigEther-00	gelan	A4929A	PCI 1000Base-T (gigabit over copper) card
GigEther-00	gelan and c8xx	A6096A	PCI 1000Base-T/SCSI card
GigEther-01	igelan	A6794A	PCI 1000Base-T/SCSI card
GigEther-01	igelan	A6825A	PCI 1000/Base-T (gigabit over copper) card
GigEther-01	igelan	A6847A	PCI 1000/Base-SX (gigabit over fiber) card
GigEther-01	igelan	A7109A	PCI Gigabit Ethernet BaseT/Ultra 160 combo card
GigEther-01	igelan	A9782A	PCI-X 2Gb Fibre Channel/1000Base-SX (Fiber) Combination Card

Table 4-1 Always-Installed Networking Drivers^a (Continued)

Networking Driver Bundle	Driver	Card Number	Description
GigEther-01	igelan	A9784A	PCI-X 2Gb Fibre Channel/1000Base-T (Copper) Combination Card
N/A	btlan	A5230A	PCI 10/100Base-TX card for servers
N/A	btlan	A5506B	PCI 4-port 10/100Base-TX card
N/A	btlan	A5838A	PCI Combination Dual port 10/100Base-TX and Wide Ultra2 SCSI card
IEther-00	iether	A7011A	PCI-X 2-Port 1000Base-SX (Fibre) card
IEther-00	iether	A7012A	PCI-X 2-Port 1000Base-T (Copper) card

a. In addition to currently supported cards, the `swlist` report may contain the product numbers of cards that have been “pre-enabled,” but have not been released yet. Cards released after the publication of this document may be supported but not shown in this table.

Gigabit Ethernet and Fast Ethernet

For Gigabit Ethernet, HP-UX 11i v2 supplies the GigEther-00, GigEther-01, and IEther-00 driver bundles, which supply the `gelan`, `igelan` and `iether` drivers, respectively. The Gigabit drivers are all version B.11.23.05.

For Fast Ethernet, HP-UX 11i v2 supplies the `btlan` driver, version B.11.23.02/5.

Summary of Change

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

Changes since the June 2004 release of HP-UX 11i v1 include the following:

- TCP Segmentation Offload (TSO) support for the `iether` and `igelan` Gigabit Ethernet drivers. TSO offloads portions of a system CPU’s outbound TCP packet processing to a network interface card, thereby reducing system service demand.
- 64-bit management information base (MIB) statistics support. Directs the DLS provider to return 64-bit statistics.
- HP-UX LAN provider support. 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 LAN Provider” on page 185.

What’s New for Customers of HP-UX 11i v2?

Changes since the March 04 release of HP-UX 11i v2 include the following:

- TCP Segmentation Offload (TSO) support for the `igelan` and `iether` Gigabit Ethernet drivers. TSO offloads portions of a system CPU's outbound TCP packet processing to a network interface card, thereby reducing system service demand.
- 64-bit management information base (MIB) statistics support. Directs the Data Link Service provider to return 64-bit statistics.
- HP-UX LAN provider support. 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 LAN Provider" on page 185.
- Virtual LAN (VLAN) support for HP-UX 11i v2 September 2004.

Impact

- TCP Segmentation Offload (TSO) is a performance enhancement that reduces a system's service demand. New or changed APIs:
 - New option added to both the `iether` and `igelan` drivers to get and set a new tunable called `vmtu`. The syntax of the new option is described below.
 - `lanadmin -x vmtu <ppa>`
 - `lanadmin -X vmtu new_vmtu_value <ppa>`
- 64-bit management information base (MIB) statistics support. Directs the Data Link Service provider to return 64-bit statistics. Also impacts the `lanadmin` command. See manpage for details.
- HP-UX LAN provider support. 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 LAN Provider" on page 185.
- Virtual LAN (VLAN) support. For more information, refer to *Using HP-UX VLANs*, available on <http://docs.hp.com>.

Compatibility

At the time of this writing, only the Gigabit Ethernet and Fast Ethernet cards shown in Table 4-1 are supported on HP-UX 11i v2 September 2004. Gigabit cards released since the publication of this document will likely be supported but not shown in this table. There are Fast Ethernet and Gigabit Ethernet cards that worked on HP-UX 11i v1 releases or even the HP-UX 11i v2 March 2004 that will no longer work with HP-UX 11i v2 September 2004.

TCP Segmentation Offload (TSO) works only with network cards that use the `iether` and `igelan` Gigabit Ethernet drivers. If you have a version of HP-UX 11i v1 or v2 prior to the September 2004 release, you can download the TSO enhancement at <http://software.hp.com> under enhancement releases and patch bundles. TSO requires that the TOUR 2.0 transport software be installed; the TOUR 2.0 transport software is part of HP-UX 11i v2 September 2004.¹

1. See "Network Transport (ARPA)" on page 226.

Performance

TSO performance information is available in a performance paper on <http://docs.hp.com> under the “Networking and Communications” area and then under “Gigabit Ethernet” and “White papers.”

Documentation

TSO performance information is available in a performance paper on <http://docs.hp.com> under the “Networking and Communications” area and then under “Gigabit Ethernet” and “White papers.” See the `lanadmin manpage` for details of the new option.

64-bit MIB statistics comply with the RFC2863 (standard for 64-bit statistics interpretation). See the `lanadmin manpage` for details.

LAN Provider information is available in this document in “HP-UX LAN Provider” on page 185 and on your system at `/opt/lanprovider/doc/HPUX_LANProvider.pdf`.

Obsolescence

- At the time of this writing, only the Gigabit Ethernet and Fast Ethernet cards shown in Table 4-1 are supported on HP-UX 11i v2 September 2004. HP Gigabit Ethernet cards released after the publication of this document will likely be supported but not shown in this table.
- There are older Fast Ethernet and Gigabit Ethernet cards that worked on HP-UX 11i v1 releases or even HP-UX 11i v2 March 2004 that will no longer work on this September 2004 HP-UX 11i v2 release.
- Among the PCI cards that are not supported on this release are the following:
 - A3738A -- PCI 100Base-TX Combination card
 - A5172A -- PCI 100Base-FX
 - A6792A -- PCI 100Base-T
 - A8685A -- PCI 1000Base-T
- Additional LAN cards that are not supported on HP-UX 11i v2 September 2004 are EISA, HP-PB, and HSC types.
- Obsolete HSC GigE cards include the A4924A and A4925A 1000Base-SX cards.
- Obsolete HSC Fast Ethernet cards include the following:
 - J3850A
 - TX-J3514A#001
 - FX-J3514A#002
 - TX-J3516A#001
 - FX-J3516A#002.
- Obsolete EISA and HP-PB Fast Ethernet cards include the following:
 - A3658AA -- EISA 100Base-T

- A4308B -- EISA 100Base-T workstation
- A3495A/B HP-PB 100Base-T

PCI FDDI

FDDI-00 software driver supports the **A3739B** HP PCI FDDI network adapter. The adapter and the software provide system connectivity to FDDI networks, operating at 100 Mbps. The product can be installed on HP-UX systems with PCI bus and the HP-UX 11i v2 operating system.

Summary of Change

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

PCI FDDI has been enhanced to provide the FDDI network connectivity from Itanium-based platforms, in addition to existing PA-RISC platforms.

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

There are no changes since the previous release of HP-UX 11i v2.

Impact

You can now connect to FDDI networks from your Itanium-based system.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see *Installing and Administering HP9000 PCI FDDI* (product number **J3626-90032**), available at

<http://www.docs.hp.com/hpux/netcom/index.html#FDDI/9000>.

Obsolescence

PCI FDDI has been deprecated and will no longer be available in releases starting with HP-UX 11i v3.

Selectable Networking Drivers

The following table lists drivers that are not automatically installed, but can be selected during installation. For more details about changes to these drivers, see the remainder of this section. For a list of unsupported cards, see “Unsupported I/O Cards” on page 104.

Table 4-2 **Selectable Networking Drivers^a**

Networking Driver Bundle	Driver	Card Number	Description
ATM-00	atm2pci	A5483A ^b A5513A A5515A ^b	PCI ATM cards
HyprFabr-c-00	clic	A6386A	HyperFabric2 PCI 4X Fiber Adapter
TermIO-00	pci_mux0	A6748A A6749A	PCI MUX (8-port) PCI MUX (64-port)
TokenRing-00	pcitr	A5783A	PCI Token Ring card

- a. In addition to currently supported cards, the `swlist` report may contain the product numbers of cards that have been “pre-enabled,” but have not been released yet. Cards released after the publication of this document may be supported but not shown in this table.
- b. A5483A and A5515A supported only on HP 9000 Superdome, 64-bit A-Class, L-Class, and N-Class servers.

HyperFabric

HyperFabric is a high-speed network link that runs on various HP systems running HP-UX. HyperFabric supports Hyper Messaging Protocol (HMP) and the IP network protocol stack (TCP/IP/UDP).

Summary of Change

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

Hyperfabric now supports a transparent local failover feature on Hyper Messaging Protocol (HMP). This feature was previously released on the Web.

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

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

Impact

There are no impacts.

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/hpux/netcom/index.html#HyperFabric>:

- *HyperFabric Release Notes*
- *HyperFabric Administrator's Guide*
- *HyperFabric Configuration Guidelines*

Obsolescence

Not applicable.

PCI ATM

Asynchronous Transfer Mode (ATM) adapters can be used to provide ATM connectivity at 155Mbps over Multi Mode Fiber (MMF). ATM-00 software supports Classical IP and Lan Emulation over ATM protocols. Software is compliant with UNI 3.0, 3.1 and 4.0 versions of ATM Signaling. All the supported ATM adapters work with HP Serviceguard to provide local and remote recovery high availability features. ATM adapters also support Online Addition and Replacement (OLAR) of PCI cards.

The M.11.23.10 revision of the ATM-00 driver software can be installed on all HP-UX 11i v2 supported machines.

Summary of Change

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

Support for **A5513A** (155 Mbps ATM adapter over MMF) is available on IO expander slots of **rp8400** platform.

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

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

Impact

There are no impacts other than that previously listed.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further ATM documentation, go to
<http://docs.hp.com/hpux/netcom/index.html#ATM>.

Obsolescence

Not applicable.

PCI Token Ring

The PCI Token Ring adapter card, **A5783A**, is a 32-bit, bus master, high-speed token ring networking solution that supports the IEEE 802.5 Token Ring standard and is delivered with HP-UX 11i v2. The adapter provides networking on PCI-based servers and workstations via the PCI bus specifications in HP-UX and the use of the `pcitr` driver, `Token-Ring-00`.

The PCI Token Ring adapter runs at 4, 16, or 100 Mbps over Shielded Twisted Pair (STP) cabling via a 9-pin, D-shell connector and shielded twisted pair (UTP) via an RJ-45 connector without the need for a user to make a selection. No more than one data cable may be connected to the PCI Token Ring adapter at a time. This adapter also operates in full-duplex mode when connected to a full-duplex capable switch or Dedicated Token Ring (DTR). The PCI Token Ring NIC operates at a bus speed of 33 MHz.

Summary of Change

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

The PCI Token Ring networking solution is now available on Itanium-based 64-bit platforms, in addition to existing PA-RISC platforms.

What’s New for Customers of HP-UX 11i v2?

There are no changes from previous releases of HP-UX 11i v2.

Impact

There are no impacts other than what is previously listed.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

Documentation regarding PCI Token Ring networking is found at <http://www.docs.hp.com/hpux/netcom/#Token%20Ring/9000>.

Obsolescence

PCI Token Ring has been deprecated and will no longer be available in releases starting from HP-UX 11i v3.

Always-Installed Mass Storage Drivers

The following table lists mass storage drivers that are automatically installed. For more details about changes to these drivers, see the remainder of this section. For a list of unsupported cards, see “Unsupported I/O Cards” on page 104.

Table 4-3 Always-Installed Mass Storage Drivers^a

Mass Storage Driver Bundle	Driver	Card Number	Description
N/A	c8xx	A5838A	PCI Dual Port 100Base-TX and Dual Port Wide Ultra2 SCSI
N/A	c8xx	A5149A	PCI Ultra2 SCSI Host Bus Adapter
N/A	c8xx	A5150A	PCI Dual Port Ultra2 SCSI Host Bus Adapter
N/A	c8xx	A6828A	PCI Ultra160 SCSI Host Bus Adapter
N/A	c8xx	A6829A	PCI Dual Channel Ultra160 SCSI Host

Table 4-3 Always-Installed Mass Storage Drivers^a (Continued)

Mass Storage Driver Bundle	Driver	Card Number	Description
FibrChan1-00	td	A5158A	PCI Tachyon TL/TS Fibre Channel card
FibrChan1-00	td	A6795A	PCI Tachyon XL2 Fibre Channel card
FibrChan1-01	fcd	A6826A	PCI-X Dual Port 2 Gb/1 Gb Fibre Channel Adapter
FibrChan1-01 and GigEther-01	fcd and igelan	A9782A	PCI-X 2Gb Fibre Channel/1000Base-SX (Fiber) Combination Card
FibrChan1-01 and GigEther-01	fcd and igelan	A9784A	PCI-X 2Gb Fibre Channel/1000Base-T (Copper) Combination Card
GigEther-00	gelan and c8xx	A6096A	PCI 1000Base-T/SCSI card
RAID-01	ciss	A7143A	PCI 4-Channel RAID160 SA SCSI Controller
RAID-01	ciss	A9890A	Smart Array 6402 Controller
RAID-01	ciss	A9891A	Smart Array 6404 Controller
scsiU320-00	mpt	A7173A	ultra320 SCSI Adapter

- a. In addition to currently supported cards, the `swlist` report may contain the product numbers of cards that have been “pre-enabled,” but have not been released yet. Cards released after the publication of this document may be supported but not shown in this table.

disc3 Driver

The `disc3` driver is an SIO services disk driver used to claim SCSI disks connected through the NIO SCSI card.

Summary of Change

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

In the manpage for the `scsi` command, there is a reference to the `disc3` driver. The SCSI disks connected through NIO SCSI card are claimed by the `disc3` driver. Since there is no NIO card support on HP-UX 11i v2, the `disc3` driver has been obsoleted.

What’s New for Customers of HP-UX 11i v2?

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

Impact

The `disc3` driver is not supported.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The `scsi` manpage has changed to reflect the obsolescence of the `disc3` driver.

Obsolescence

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

Fibre Channel Tachlite Driver (FibrChanl-00)

FC-TACHYON-TL is the product name of the driver (`td`) bundled in `FibrChanl-00` for the PCI Fibre Channel HB adapters **A6795A** and **A5158A**.

Summary of Change

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

- In this release of HP-UX 11i v2, the Fibre Channel Tachlite driver version is B.11.23.03.
- The Fibre Channel Tachlite driver supports the **A6795A** and **A5158A** PCI FC adapter cards.
- Boot support provided on all supported platforms.
- Sequence Level Error Recovery (SLER) based on FCP-2 standards is supported.
- Changes have been made to the Fibre Channel online diagnostic tool, *fcmsutil* (1M), to support the **A6826A** adapter.¹ The manpages have been updated appropriately.
- Support provided for Interrupt Migration.
- Supports the OLAR feature.

1. See also “FibrChanl-01” on page 91.

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

- In this release of HP-UX 11i v2, the Fibre Channel driver version is B.11.23.03.
- Sequence Level Error Recovery (SLER) based on FCP-2 standards is supported.
- Changes have been made to the Fibre Channel online diagnostic tool, *fcmsutil* (1M), to support the **A6826A** adapter.¹ The manpages have been updated appropriately.

Impact

- *fcmsutil* (1M):

This tool can now be used to operate also on Dual Port Fibre Channel adapter **A6826A**.

- For Customers migrating from HP-UX 11i v1:

— Interrupt Migration:

The capability to move individual interrupts allows balancing of interrupt load, thereby improving performance.

— OLAR:

The OLAR feature enables addition and/or replacement of the Fibre Channel cards online.

(The above two features were already available in HP-UX 11i v2).

Compatibility

The A5158A PCI Tachlite Fibre Channel adapter is not supported on the HP-UX 11i v2 September 2004 release on PA-RISC platforms at this time. This card is supported on HP-UX 11i v2 on Itanium-based platforms. Please check the IT Resource Center at <http://itrc.hp.com> for updates. Search the technical knowledge base using the keyword JAGaf38985.

Performance

There are no performance issues.

Documentation

The *fcmsutil* (1M) manpages have been changed to reflect the support for Dual Port Fibre Channel adapter **A6826A**.

Obsolescence

The following cards are obsoleted:

- **A6684A**
- **A6685A**

FibrChanl-01

The FibrChanl-01 bundle delivers the `fc` driver, which supports the **A9782A**, **A9784A**, and **A6826A** cards.

Summary of Change

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

See “Performance” below.

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

An option has been added to the `fcmsutil` utility that updates the EFI driver stored in the flash ROM of an **A6826A** HBA port.¹ This option is only supported with FibrChanl-01 (`fc`) B.11.23.02 onwards on systems running HP-UX 11i v2.

See also “Performance” below.

Impact

You can update the EFI driver stored in the flash ROM of an **A6826A** HBA Port.

Compatibility

The EFI driver is used only as a boot driver on Itanium platforms. It is not used at all on PA-RISC platforms. This option is only supported with FibrChanl-01 (`fc`) B.11.23.02 onwards on systems running HP-UX 11i v2.

Performance

The default interrupt delay settings have been tuned to improve performance.

Documentation

Complete Fibre Channel documentation is available on <http://www.docs.hp.com> in the “Networking and Communications” section.

Obsolescence

Not applicable.

1. See also “Fibre Channel Tachlite Driver (FibrChanl-00)” on page 89.

HP-UX HSC Fibre Channel Mass Storage (FCMS) driver

The HP-UX HSC Fibre Channel Mass Storage Driver (driver name `fcms`) is not supported in HP-UX 11i v2. This driver was available in 11i v1 for support of cards HSC **A3404A** and **A3636A**. The HSC cards **A3404A** and **A3636A** are also not supported in HP-UX 11i v2.

HP-UX Ultra320 SCSI Driver

The HP-UX Ultra320 SCSI driver bundle, `scsiU320-00`, supplies the `mpt` driver, which supports the Ultra320 SCSI controllers for core I/O and add-in cards.

Summary of Change

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

The `scsiU320-00` bundle containing the `mpt` driver has been updated with quality and diagnostic improvements for Ultra320 SCSI solutions, including core and add-on HP adapters.

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

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

Impact

You will be able to run supported Ultra320 SCSI solutions (core I/O and add-in cards) and utilize supported Ultra320 capable storage.

Compatibility

There are no known compatibility issues at the current time.

Performance

This product enables data transfers at up to 320 Mbps. Previous SCSI solutions were limited to a data transfer rate of 160 Mbps or slower.

Documentation

For further information, refer to the `mptconfig` and `mptutil` manpages.

Obsolescence

Not applicable.

RAID-01

The RAID-01 bundle delivers the driver `ciss`, for the **A7143A**, **A9890A** and **A9891A** cards.¹

Summary of Change

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

The RAID-01 bundle delivers the driver `ciss`, which will now also support the **A9891A** Smart Array 6404 Controller.

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

The RAID-01 bundle delivers the driver `ciss`, which supports the **A7143A** PCI 4-Channel RAID160 SA SCSI Controller, the **A9890A** Smart Array 6402 Controller, and the **A9891A** Smart Array 6404 Controller.

Impact

There are no impacts other than those described above.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the following documents, available at <http://docs.hp.com>:

- *HP A7143A RAID160 SA Controller Support Guide*
- *HP Smart Array Controller Support Guide*

Also refer to the following manpages: `saconfig` and `sautil`.

When new cards are available, documentation will be made available at <http://www.docs.hp.com> in the "Networking and Communication" section.

1. In addition to currently supported cards, the `swlist` report may contain the product numbers of cards that have been "pre-enabled," but have not been released yet.

Obsolescence

Not applicable.

SCSI Drivers

The Small Computer System Interface (SCSI) product is delivered as part of each HP-UX operating environment. The SCSI product activates the mass storage stack in HP-UX. It consists of services and a disk class driver that are common layers for all the storage stacks, including Fibre Channel and interface drivers for parallel SCSI cards.

Summary of Change

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

Below are the changes in the SCSI product from the June 2004 release of HP-UX 11i v1:

- SCSI support is limited to PCI cards only.
- The following cards are now supported:
 - **A5149A**
 - **A5838A** (SCSI/LAN combination card)
- The user-level utility, `scsictl`, includes the new `-o` option for SCSI cards that are added on-line with the use of OLAR.
- The SCSI High Voltage Differential (HVD) cards, **A4800A**, **A5159A** and **A5159B**, are not supported in this release of HP-UX 11i v2.
- The capability to move individual interrupts, allowing the balancing of the system's interrupt load, is provided with interrupt migration, thereby improving performance.
- In earlier versions of HP-UX, the parameters of a card were modified through a configuration utility before booting HP-UX. In the current release of HP-UX 11i v2, as with previous releases, the parameters for cards on the system can be changed using `scsictl -o` if necessary after an on-line addition using the configuration tool from the EFI shell.
- The PCI Ultra160 SCSI HBA cards, **A6828A** and **A6829A**, can be used in multi-initiator setups. A setup with more than one SCSI initiator on the same SCSI bus is considered a multi-initiator setup.
- The OLAR feature enables the addition and/or replacement of the SCSI cards, **A6828A** and **A6829A**, without shutting down your system.
- The **A5149A**, **A5150A**, and **A5838A** cards have the following limitations on Itanium:
 - Boot Support - It is not possible to boot from these cards.
 - OLAR Support - Is not available at the time of this release though it may be available at a later date.

- SCSI Parameters - Only default parameter settings are supported; no parameter changes are supported.
- ServiceGuard Support - It is not possible to use these cards in a ServiceGuard environment.
- Multi-initiator Setups - It is not possible to use these cards for multi-initiator setup.

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

The only change in the SCSI product from the March 2004 release of HP-UX 11i v2 is as follows:

Support for **A4800A** and **A5159[AB]** FWD cards is obsolete.

Impact

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

Compatibility

The **A5149A**, **A5150A**, and **A5838A** cards have the following limitations on Itanium:

- Boot Support - It is not possible to boot from these cards.
- OLAR Support - Is not available at the time of this release though it may be available at a later date.
- SCSI Parameters - Only default parameter settings are supported; no parameter changes are supported.
- ServiceGuard Support - It is not possible to use these cards in a ServiceGuard environment.
- Multi-initiator Setups - It is not possible to use these cards for multi-initiator setup.

Performance

There are no known performance issues.

Documentation

The manpage for *scsictl* (1M) has been updated to reflect the new `-o` option.

Obsolescence

With the delivery of this release of HP-UX 11i v2, support for the SCSI HVD card, **A5159A**, is obsolete. In addition, support for **A4800A** and **A5159[AB]** FWD cards is obsolete.

Selectable Mass Storage Drivers

The following table lists the mass storage driver that is selected during installation rather than automatically installed. For more details about changes to this driver, see the remainder of this section. For a list of unsupported cards, see “Unsupported I/O Cards” on page 104.

Table 4-4 Selectable Mass Storage Drivers^a

Mass Storage Driver Bundle	Driver	Card Number	Description
iSCSI-00	iscsi	N/A	iSCSI Software Initiator

- a. In addition to currently supported cards, the `swlist` report may contain the product numbers of cards that have been “pre-enabled,” but have not been released yet. Cards released after the publication of this document may be supported but not shown in this table.

HP-UX iSCSI Software Initiator

iSCSI defines a protocol for transport of SCSI packets over TCP/IP. The HP-UX iSCSI Software Initiator is a host-based implementation of the iSCSI protocol that operates between the SCSI layer and the network layer in HP-UX. The HP-UX iSCSI Software Initiator requires no changes or modifications to existing mass storage applications.

Summary of Change

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

This is the first HP-UX media release in which iSCSI has participated. All previous releases were Web releases.

What’s New for Customers of HP-UX 11i v2?

This is the first HP-UX media release in which iSCSI has participated. All previous releases were Web releases.

Impact

The availability of the iSCSI Software Initiator driver in HP-UX 11i v2 introduces no new impact not experienced when installing the driver on previous HP-UX releases. See the *iSCSI Software Initiator Support Guide* on <http://docs.hp.com> for a complete summary of system requirements and impacts prior to installing the Software Initiator driver for the first time.

Compatibility

The iSCSI Software Initiator available with HP-UX 11i v2 is compatible with earlier Web releases of this product.

Performance

There are no known performance issues.

Documentation

In addition to the `iscsiutil` manpage, please refer to the following documents, all available at <http://docs.hp.com>:

- *HP-UX iSCSI Software Initiator Support Guide*
- *HP-UX iSCSI Software Initiator Release Notes*
- *HP-UX iSCSI Software Initiator Support Matrix*

Obsolescence

Not applicable.

Online Addition and Replacement (OL* or OLAR)

OL* is an HP-UX feature that allows interface cards to be added-in, or replaced, on supported HP-UX systems, without the necessity of a system re-boot. The `olrad` command provides the command line interface for online addition, or replacement.¹ A critical resource analysis is performed to ensure the system integrity will not be compromised by the addition or replacement of PCI I/O cards.

Summary of Change

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

The `rad` command is no longer available and SAM is not used to perform online addition or replacement of interface cards. Instead, the OL* functionality and procedure, including the `olrad` command, which was previously only available on HP Itanium-based systems running HP-UX 11i v2, will now be available on both Itanium and PA-RISC-based systems running the HP-UX 11i v2 September 2004 Release.

1. See also "The `olrad` Command" on page 263.

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

The OL* functionality and procedure, including the `olrad` command, which was previously only available on HP Itanium-based systems running HP-UX 11i v2, will now be available on both Itanium- and PA-RISC-based systems running the HP-UX 11i v2 September 2004 Release.

Impact

By upgrading to the HP-UX 11i v2 September 2004 Release, the same online addition and replacement procedure and functionality will be available on supported Itanium-based systems and PA-RISC-based systems.

Compatibility

There are no known compatibility issues.

Performance

This product provides HA by allowing addition or replacement of PCI IO cards without a system re-boot.

Documentation

For further information, see the `olrad` manpage, as well as the following documentation, available at <http://docs.hp.com>:

- *Interface Card OL* Support Guide*

Also see “The `olrad` Command” on page 263.

Obsolescence

Not applicable.

On Demand Solutions

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

- “Instant Capacity on Demand (iCOD)” on page 99
- “Pay Per Use” on page 100

Instant Capacity on Demand (iCOD)

The Instant Capacity on Demand (iCOD) version 6.03 software, HP product **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?

The iCOD version 6.02 software is incremented to version 6.03 for support on HP-UX 11i v2.

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

The iCOD version 6.01 software is incremented to version 6.03 for defect fixes on HP-UX 11i v2.

Impact

Version changes:

- On HP-UX 11i v2: from 6.01 to 6.03
- From HP-UX 11i v1: from 6.02 to 6.03

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the following documentation:

- Manpages:
 - *icod* (5)
 - *icod_modify* (1M)
 - *icod_notify* (1M)
 - *icod_stat* (1M)
- Web Sites:
 - HP Software Depot: <http://software.hp.com>
 - Technical Documentation: <http://docs.hp.com>

- Documents:
 - *Instant Capacity on Demand (iCOD) User's Guide for versions B.06.x:*
<http://docs.hp.com/hpux/netsys/index.html#On%20Demand%20Solutions%20%28ODS%29>
 - *Instant Capacity on Demand (iCOD) Release Notes for version B.06.00:*
<http://docs.hp.com/hpux/netsys/index.html#On%20Demand%20Solutions%20%28ODS%29>

Obsolescence

Not applicable.

Pay Per Use

The Pay Per Use (PPU) 7.0 software product **T2351AA** is a lease model in which customers are charged only for the processor usage on (specified) HP servers.

IMPORTANT

The Utility Meter software must be version 7.1 (or higher) for proper communication with the PPU 7.0 software.

Summary of Change

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

Pay Per Use version 7.0 is now supported on HP-UX 11i v2. (Pay Per Use version 7.0 was delivered in the June 2004 release of HP-UX 11i v1.)

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

The Pay Per Use version 7.0 software has the following changes:

- Both pricing models, percent utilization and CPU active, are supported
- A processor cap is configurable
- The `ppuconfig` command output has changed
- A proxy server for the utility meter cannot be configured

Refer to the *Pay Per Use User's Guide for version B.07.00* for details of these changes.

Impact

Pay Per Use version 7.0 (HP product **T2351AA**) supersedes Pay Per Use version 6.x and replaces Pay Per Use version 4.x (HP product **T1322AA**).

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the following documentation:

- Manpages:
 - *ppu* (5)
 - *ppuconfig* (1M)
 - *ppud* (1M)
- Web Sites:
 - HP Software Depot: <http://software.hp.com>
 - Technical Documentation: <http://docs.hp.com>
 - HP External: http://www.hp.com/hpfinancialservices/pay_per_use.html
- Documents:
 - *Pay Per Use (PPU) User's Guide for version B.07.00:*
<http://docs.hp.com/hpux/netsys/index.html#On%20Demand%20Solutions%20%28ODS%29>

Obsolescence

Not applicable.

Supported Servers and Workstations

HP-UX 11i v2 supports only the 64-bit version of the HP-UX kernel. This release of HP-UX 11i v2 release fully supports the following HP Integrity and 9000 servers and HP workstations:

PA-RISC Systems

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

Itanium-based Systems

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

NOTE

Additional information regarding these servers and workstations is found on the Web at <http://docs.hp.com/hpux/hw/>

Unsupported Servers and Workstations

- This release of HP-UX 11i v2 is not supported on the following Itanium-1 based systems:
 - rx4610
 - rx9610
 - i2000
- This release of HP-UX 11i v2 is not supported on the following PA-RISC Servers:
 - All 32-bit servers (including 32-bit A-Class servers A180 and A180C)
 - All D-Class servers
 - All R-Class servers
 - All E-Class servers
 - All K-Class servers
 - All T-Class servers
 - All V-Class servers
- This release of HP-UX 11i v2 is not supported on PA-RISC Workstations. HP recommends that PA-RISC Workstation customers use HP-UX 11i v1.
PA-RISC Workstations include the following:

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

Unsupported Storage Devices

With this release of HP-UX 11i v2, the following storage devices are no longer supported:

Table 4-5 Unsupported Storage Devices

Disk Arrays	Interface
XP256 – FWD SCSI ports	FWD SCSI
FC30	1Gb FC
AutoRAID 12	FWD SCSI
AutoRAID 12H	FWD SCSI
Nike 10	FWD SCSI
Nike 20	FWD SCSI
Nike 30	1Gb FC
JBODs	Interface
HVD10	FWD SCSI
HASS	FWD SCSI
Tape Devices	Interface
DLT 8000- 2/20	FWD SCSI
DLT 8000- 4/40	FWD SCSI
DLT 8000- 6/60+A12	FWD SCSI
DLT 8000- Rialto	FWD SCSI
Tape and MO Library Interconnects	Interface
SureStore E Bridge FC 4/2 HV	FC - HVD

Unsupported I/O Cards

EISA, HP-PB, and HSC card types are not supported on HP-UX 11i v2 September 2004. In addition, the following cards are not supported:

Table 4-6 **Unsupported I/O Cards**

Part Number	Card Description
Mass Storage	
A4800A	FWD SCSI
A5159A	2-port FWD SCSI
A5159B	2-port FWD SCSI
A3740A	FCMS - Tachyon
A5856A	RAID 4Si
Networking	
A3738A	10/100B-TX (AUI, BNC, RJ45)
A5172A	100B-FX
A6792A	Intel 82559 100 BT
Clustering	
A6092A	Hyperfabric (PCI 4X)
A4919A	Hyperfabric (PCI 1X)
Other	
J3557A	ATM 155 MMF (V Class only)
A5515A	ATM 155 (UTP5 connector)
A5483A	ATM 622 (MMF connector)
A3739A	FDDI Dual Attach
A4930A	Token Ring (4/16 Mb/s)
J3592A	8-port Terminal MUX
J3593A	64-port Terminal MUX
A5486A	PKC (Public Key Cryptography)
A5801A	HiPPi 800

Technical System Configuration

The Technical System Configuration (TechSysConf) product adjusts various configurable kernel settings, as well, as other system settings with the intent of improving system performance. TechSysConf determines the system RAM to choose a set of values for kernel and system tunables. These tunables are compared against any values you may already have set, and if the proposed value is greater than the current value the proposed value is used. The modifications that TechSysConf implements are advantageous to the vast majority of users.

Summary of Change

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

The HP-UX 11i v2 release delivers a restructured TechSysConf bundle. This bundle *no longer* includes the TC-OpenSource tools. The TC-OpenSource tools are still available, via the Internet Express Media, though are not installed as part of TechSysConf.

The changes to the TC-SysSetup product, which remains within the TechSysConf bundle, in the HP-UX 11i v2 release, are as follows:

- Alters kernel configurable parameters, assigning values that are proven to increase performance in technical environments.
- Alters selected system configuration files to facilitate easier NFS, AutoFS, and NIS+ configuration.

The TC-OpenSource product is removed from the target system during an update from HP-UX 11i v1.6 or HP-UX 11i v1, and removes approximately 140 MB of information from `/opt`. All of the TC-OpenSource tools can be installed from the Internet Express Media.

Installing the TC-SysSetup product changes kernel parameters, which results in a kernel build and system reboot. (See the following “Impact” section for a list of these parameters.) Since most of the kernel parameters are selected for the ability to improve performance in typical Electronic Design Automation (EDA) and Mechanical Design Automation (MDA) application environments, a performance increase should be realized without further kernel tuning. Specific changes, unrelated to the kernel, include:

- Configure the system as an NFS server in `/etc/rc.config.d/nfsconf`
- Set NFS daemons to 30 and BIO daemons to 16 in `/etc/rc.config.d/nfsconf`
- These values should only be changed if it increases the setting
- Modify the search sequence and fallback activities in `/etc/nsswitch.conf`
- Enable AUTOFS and AUTOMOUNT in `/etc/rc.config.d/nfsconf`
- Set read and write block size to 32Kb in `/etc/auto_master`
- Configure `/etc/passwd` and `/etc/group` to import NIS-served data

There are no unique system installation requirements or dependencies. This bundle is intended to be installed on HP Workstations and Technical Servers.

IMPORTANT Users who anticipate running a thousand or more concurrent processes under either the Technical Computing OE or Minimal Technical OE should consider decreasing the kernel parameter *maxssiz64_bit* to 256MB, or increasing swap allocation to prevent resource exhaustion issues.

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

TechSysConf is now supported on PA-RISC servers running HP-UX 11i v2.

Impact

The following table lists the kernel parameters that TechSysConf alters:

Table 4-7 TechSysConf Kernel Parameter Settings

Parameters	Values used for < 256MB	Values used for < 1GB	Values used for >= 1GB
<i>create_fastlinks</i>	Ignored	1	1
<i>dbc_min_pct</i>	Ignored	Ignored	Formula
<i>dbc_max_pct</i>	Ignored	Ignored	Formula
<i>hfs_max_ra_blocks</i>	Ignored	20	20
<i>hfs_max_revra_blocks</i>	Ignored	20	20
<i>hfs_ra_per_disk</i>	Ignored	256	256
<i>hfs_revra_per_dis</i>	Ignored	256	256
<i>max_thread_proc</i>	Ignored	2048	2048
<i>maxssiz</i>	838860	10061004	100610048
<i>maxtsiz</i>	671088	10737418	1073741824246
<i>maxuprc</i>	Ignored	819	3277
<i>maxvgs</i>	Ignored	80	80
<i>msgmap</i>	Ignored	5122	5122
<i>msgmax</i>	Ignored	32768	32768
<i>msgmnb</i>	Ignored	65536	65536
<i>msgseg</i>	Ignored	20480	20480
<i>msgssz</i>	Ignored	128	128
<i>msgtql</i>	Ignored	5120	5120
<i>ninode</i>	Ignored	4000	8192

Table 4-7 TechSysConf Kernel Parameter Settings (Continued)

Parameters	Values used for < 256MB	Values used for < 1GB	Values used for >= 1GB
<i>npty</i>	Ignored	200	200
<i>nstrpty</i>	Ignored	200	200
<i>nswapdev</i>	Ignored	25	25
<i>semnmi</i>	Ignored	1024	4096
<i>semmns</i>	Ignored	2048	8192
<i>semmnu</i>	Ignored	1020	4092
<i>semume</i>	Ignored	512	512
<i>shmmni</i>	Ignored	512	512
<i>shmseg</i>	Ignored	512	512
<i>STRMSGSZ</i>	Ignored	65535	65535
<i>vps_ceiling</i>	Ignored	64	64
<i>shmmax</i>	Ignored	2147483648	2147483648
<i>maxdsiz</i>	268435456	3221225472	3221225472
<i>maxdsiz_64bit</i>	1073741824	274877906944	274877906944
<i>maxssiz_64bit</i>	8388608	1073741824	1073741824
<i>maxtsiz_64bit</i>	1073741824	4294967296	4294967296

Compatibility

Potential conflicts with other install-time parameter specifications, such as SISP enables, have been identified and addressed in TechSysConf.

Performance

The use of TechSysConf results in an all-around performance improvement on systems with mid-range or large memory capacity.

Documentation

There are no documentation changes.

Obsolescence

Not applicable.

What's in This Chapter?

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

- Compressed Dump (see page 111)
- Enterprise Cluster Master Toolkit (see page 112)
- Event Monitoring Service (see page 113)
- GlancePlus Pak (see page 114)
- High Availability Monitors (see page 116)
- HP Partitioning (see page 117)
 - HP Process Resource Manager (see page 117)
 - HP-UX nPartition Configuration Commands (see page 118)
 - HP-UX Processor Sets (see page 121)
 - HP-UX Virtual Partitions (see page 123)
 - HP-UX Workload Manager (see page 124)
 - HP-UX Workload Manager Toolkits (see page 125)
 - nPartition Provider (see page 127)
 - Partition Manager (parmgr) (see page 128)
- HP Serviceguard (see page 129)
- HP Serviceguard Manager (see page 131)
- HP Serviceguard Quorum Server (see page 132)
- HP-UX 11i v2 Required Patch Bundle (BUNDLE11i) (see page 133)
- HP-UX Kernel Configuration (see page 134)
- HP-UX Peripheral Device Tool (see page 138)
- Ignite-UX (see page 139)
- Improved Database Startup and Shutdown Times (see page 143)
- Interrupt Migration (see page 144)
- MySQL (see page 145)
- Obsolescence Bundle (see page 146)
- OnlineDiag (see page 147)
- Quality Pack Patch Bundle (see page 148)
- SAM - Nodal Network Configuration (NNC) (see page 150)
- Servicecontrol Manager (see page 151)
- Software Distributor (SD) (see page 152)

What's in This Chapter?

- **Software Package Builder** (see page 153)
- **System Administration Manager (SAM)** (see page 154)
- **System V Shared Memory** (see page 156)
- **Tape Boot** (see page 157)
- **Update-UX** (see page 157)

Compressed Dump

To speed up the crash dump process and to save the space occupied for system dumps, in HP-UX 11i v2, a new feature, Compressed Dump, has been added to the Dump Subsystem to compress the physical pages before dumping. This feature is enabled by default on HP-UX 11i v2.

The system console interface options prior to the dump, the utility `crashconf` to configure system crash dumps on a running system, and the utilities `savecrash` and `crashutil` have been augmented to manage this new feature.

For more information, see the “Compressed Dump” white paper, version 1.3, available at <http://docs.hp.com>.

Summary of Change

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

See the “Compressed Dump” white paper, version 1.3, for a complete description of this functionality.

What’s New for Customers of HP-UX 11i v2?

The number of devices that can be configured for dump has been increased from 16 to 32.

Support for configuring EVA devices as dump devices has been added in this release and can be enabled with the Secure Path product.

Impact

Kernel dump+save times will be speeded up, and down-time will consequently be reduced. The space requirement for the system dump will also be less.

Compatibility

System crash dumps which are compressed are in a new format called `PARDIR`. This new format requires the use of new tools and utilities for processing.

The new `crashconf(2)` and `crashconf(1M)` interfaces released with HP-UX 11i v2 are required to configure compressed dumps.

System crash dumps that are in compressed format (`PARDIR`) require the new `savecrash` utility released with HP-UX 11i v2, to save the dump from the dump device to the file system.

To read these dumps in `PARDIR` format, the dump library `libcrash` released with HP-UX 11i v2 should be used. The kernel debugger tools, `q4`, `adb` and `kwdb`, should be linked with the library `libcrash` to be able to read the new compressed dump format, `PARDIR`.

To use older versions of tools with the new dump format `PARDIR`, the utility `crashutil` released with HP-UX 11i v2 can be used to convert the dump to any of the older formats.

The format of system crash dumps, if uncompressed, will be exactly the same as the `CRASHDIR` format and can be processed with the older kernel debugger tools and utilities, `savecrash`, `crashutil` and `libcrash`.

The number of devices that can be configured for taking system dumps has been increased from 16 to 32.

Performance

With the Compressed Dump feature, kernel dump+save times are speeded up. The actual speed-up and dump space usage depends on various factors like the throughput of the device configured for dump and the compressibility of memory.

With devices that give less than 15MB/sec of sustained throughput for uncompressed dumps, enabling compression will give a speedup of at least 3X for dumping the default selection of page classes.

Documentation

The following manpages have been updated:

- *crashconf* (1M)
- *crashconf* (2)
- *crashutil* (1M)
- *savecrash* (1M)
- *libcrash* (5)

See also the “Compressed Dump” white paper, version 1.3, available at <http://docs.hp.com>.

Obsolescence

Not applicable.

Enterprise Cluster Master Toolkit

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 several third-party database management systems. This unified set of high availability tools is released on HP-UX 11i v2 (B.11.23).

Summary of Change

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

- IBM and Sybase will not support this release of HP-UX 11i v2 at its introduction. Hence, the following products are not in the B.02.11 version of the ECMT:
 - DB2
 - Informix
 - Sybase

These products will be supported at a later date.

- In addition, there will be no mixed IA-PA failover for the Oracle9i package.

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

ECMT Version B.02.11 contains scripts for Oracle9i, HP CIFS/9000, HP Apache, and HP Tomcat. ECMT Version B.02.11 does not contain scripts for other database or internet applications at this time.

Impact

PA-RISC customers who migrate from ECMT B.02.10 on HP-UX 11i v1 to B.02.11 on HP-UX 11i v2 will lose support for Sybase, Informix, and DB2. This release of HP-UX 11i v2 will not be supported by these database applications until a later date.

Compatibility

See previous "Impact" section.

Performance

There are no known performance issues.

Documentation

For further information, see the *Enterprise Cluster Master Toolkit B.02.11 Release Notes*, available at <http://docs/hp/com/hpux/ha>.

Obsolescence

Not applicable.

Event Monitoring Service

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?

- The EMS framework and GUI are available as 32-bit native applications on PA-RISC and Itanium®-based platforms.
- 64-bit EMS Itanium native libraries are available on Itanium-based platforms.

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

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

Impact

There are no impacts other than those listed above.

Compatibility

EMS libraries are shipped as PA-RISC binaries on HP-UX 11i v2 Itanium-based architecture to provide compatibility for the existing PA-RISC-based monitors to run via the Aries Emulator.

Performance

There are no known performance issues.

Documentation

The *Event Monitoring Service Release Notes for HP-UX 11i v2* can be found on the Instant Information CD and at <http://www.docs.hp.com/hpux/ha>.

The *Using Event Monitoring Service* user manual is also available at <http://www.docs.hp.com/hpux/ha>.

Obsolescence

EMS has been deprecated for HP-UX 11i v2. In a future update of HP-UX, most of the EMS functionalities will be made available through the Web-based Enterprise Management (WBEM) framework.

GlancePlus Pak

GlancePlus Pak, version C.03.85, integrates the 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?

GlancePlus Pak version C.03.85 includes the following enhancements:

- For both OVPA and GlancePlus:

- New `parm` file parameters have been added to take advantage of process arguments and command strings (see the default `/var/opt/perf/parm` file for more detailed information and examples):
 - `javaarg = true/false` to collect java class or jar name processes
 - `argv1 = first command argument [,]`
 - `cmd = command name expression`
- New metrics have been added to enable more precise system performance analysis while maintaining low monitoring overhead.
- For GlancePlus:
 - New process-level metrics have been added to GlancePlus.
 - Default adviser symptoms and alarms have been updated.
 - For Motif-mode `gpm`:
 - Added the Disk Queue Graphs window, which displays a pie chart for each disk device GlancePlus is monitoring.
 - Added the Search List Dialog window, which is used to find a process in the Process List window.
 - Enabled the use of cursor Control keys for selection in all the List type windows.
 - Enabled mouse wheel scrolling in all windows for X-environments where `button2` scrolling is supported.
 - For character-mode `glance`:
 - Added the `-aos` command line option to have the same functionality as the `-adviser_only -syntax` option.

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

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

Impact

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/.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the release notes of each product (GlancePlus, OpenView Performance Agent and GlancePlus Pak) in `/opt/perf/ReleaseNotes/`, or at the following site: http://ovweb.external.hp.com/lpe/doc_serv/.

Obsolescence

Not applicable.

High Availability Monitors

High Availability (HA) Monitors help in providing high availability in an HP-UX environment by monitoring particular system resources and then informing target applications (for example, HP Serviceguard) when the resources they monitor are at critical user-defined values.

Summary of Change

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

High Availability (HA) Monitors are available as 32-bit native binaries on PA-RISC and Itanium-based platforms.

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

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

Impact

There are no impacts to the current release.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The following documents are available on the Instant Information CD and on the Web at <http://docs.hp.com>:

- *Using High Availability Monitors*
- *High Availability Monitors Release Notes*

Obsolescence

High Availability Monitors have been deprecated in HP-UX 11i v2 and are planned for future obsolescence.

HP Partitioning

Partitioning provides the ability to subdivide system resources into isolated regions that operate independently from each other (the equivalent of a box within a box). HP is the only high-end UNIX offering to provide a broad range of solutions designed to meet the diverse needs of our customers. Changes to these solutions are described in the following sub-sections:

- HP Process Resource Manager (see page 117)
- HP-UX nPartition Configuration Commands (see page 118)
- HP-UX Processor Sets (see page 121)
- HP-UX Virtual Partitions (see page 123)
- HP-UX Workload Manager (see page 124)
- HP-UX Workload Manager Toolkits (see page 125)
- nPartition Provider (see page 127)
- Partition Manager (parmgr) (see page 128)

HP Process Resource Manager

HP Process Resource Manager (PRM) C.02.03 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?

PRM C.02.03 includes the following changes:

- In most cases, installing this version (or a later version) of PRM will not result in a reboot.
- Installing PHKL patches will still reboot the system, however.

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

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

Impact

If SSL encryption is desired, you should read the *xprm* (1) manpage for information.

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

For further information, see the following:

- Manpages:
 - The *prm* (5) manpage provides an overview of PRM and points to all the other manpages.
- Web sites:
 - <http://www.hp.com/go/prm> (the “Information Library” provides white papers)
- Documents (available at <http://docs.hp.com/hpux/ha/index.html#Process%20Resource%20Manager>):
 - *HP Process Resource Manager User's Guide*
 - *HP PRM Version C.02.03 Release Notes for HP-UX 11i V1.0 and HP-UX 11i V2.0*

Obsolescence

Not applicable.

HP-UX nPartition Configuration Commands

The HP-UX nPartition Configuration Commands are a set of system administration commands to create/modify/remove partitions, control power to cells and I/O chassis, flash/turn off attention LEDs for cells, cabinets and I/O chassis, and display information about a hardware partitionable complex.

The command line interface for nPartition configuration consists of the following commands:

- *cplxmodify* (1M)
- *fruled* (1)
- *frupower* (1M)
- *parcreate* (1M)
- *parmodify* (1M)
- *parremove* (1M)
- *parstatus* (1)
- *parunlock* (1M)

Summary of Change

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

In HP-UX 11i v1, the nPartition configuration commands only support operations on a single hardware complex of a PA-RISC partitionable platform. They will not work on an Itanium-based partitionable platform due to architectural and design changes in the software stack required by the command. In addition, they cannot be used to manage hard partitions on a remote complex (a complex other than the one they run on).

With HP-UX 11i v2, the management scope of the nPartition configuration commands has now been extended to remote partitions and complexes, including support for remote management and cell local memory. The nPartition configuration commands will provide the same partition management functionality on partitionable Itanium-based and PA-RISC hardware platforms and will also allow support of remote management and cell local memory.

For HP-UX 11i v2, the HP-UX nPartition configuration commands have been enhanced to support Itanium-based systems. They have also been enhanced to support the following new features:

- Set/modify complex attributes:
 - A new nPartition configuration command (*cplxmodify*)
 - Modifies attributes of the complex of a partitionable system
 - For HP-UX 11i v2, the only modifiable attribute is the complex name (*-N* option).
- Remote partition and complex management:
 - nPartition configuration commands have been enhanced to manage remote (non-local) partitions and complexes, with appropriate authorization.
 - New options (*-u*, *-g* and *-h*) have been added to support remote management:
 - The *-u* command option enables access to a remote partition using a Web-Based Enterprise Management (WBEM) LAN connection.
 - The *-g* command option enables access to a remote complex using an Intelligent Platform Management Interface (IPMI) over LAN connection. The *-g* option is valid only on those platforms which support IPMI (hp Integrity Superdome, hp Integrity rx8620, hp Integrity rx7650, hp 9000 Superdome, hp 9000 rp8420, and hp 9000 rp7420). IPMI is not available on the hp 9000 SuperDome, hp 9000 rp8400, or hp 9000 rp7410.
 - The *-h* command option should only be used in combination with either the *-u* or *-g* option.

- The arguments to the `-u`, `-g` and `-h` options consist of partition or complex login information (username, passwd, hostname or IP address).
- Cell local memory (CLM) setting:
 - The `parcreate` and `parmodify` commands have been enhanced to allow users to specify/modify for each cell the amount of total cell memory that will be configured as cell local (non-interleaved) memory. The arguments to the `-c`, `-a` and `-m` options have been extended to include the value of CLM.
 - The `parstatus` command has been enhanced to display CLM information for individual cells and partitions.
- Integration with Instant Capacity On Demand (iCOD): `Parmodify` is fully integrated with iCOD.
- nPartition Configuration Privilege policy (restricted state) check:
 - nPartition Configuration Privilege can be set to restricted or unrestricted state, using the service processor menu, to prevent a superuser on one partition from affecting the configuration of other partitions, or from performing tasks that affect the complex.
 - The `parcreate`, `parmodify`, `parremove`, `cplxmodify`, and `frupower` commands have been enhanced to check for this restricted state. If the state is restricted, a superuser on a partition cannot modify the complex profile (also known as Group A Profile or Complex Configuration Data), including changes that only affect the local partition: cell assignment, CLM parameters. Nor can the superuser modify the cell profile (also known as Group C Profile or Partition Configuration Data) of partitions other than then local partition. Finally, the superuser cannot power on/off resources that are free or not owned.

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

- For PA-RISC systems, `parmodify` (1M) and `parcreate` (1M) commands restricts minimum of 1/32 of the total memory + 1.5GB (rounded up to the nearest .5GB units of physical memory) for interleaved memory.

NOTE

You must have appended the target partition's digital certificate to the local partition's Trust Store file. For the `npartition` commands, the Trust Store file is `/var/opt/wbem/client.pem`. This file is used by the commands that come with WBEM installation. Hence, if the commands that come with the WBEM installation trust a target partition, then `npartition` commands will also trust the target partition.

Impact

- Itanium and PA-RISC: Starting with HP-UX 11i v2, the `nPartition` configuration commands will work on both PA-RISC and Itanium-based partitionable platforms.
- CLM: The user can specify the cell local memory of any cell in the partition.
- nPartition Configuration Privilege: If set to the restricted state, the following modifications will cause the command to fail:
 - Create/remove partitions

- Add/delete cells to any partition in the complex
- Modify the CLM parameters of any cell in the complex
- Modify any attributes of cells that are not assigned to the local partition
- Modify the name of the complex or of any partition other than the local partition
- Power on/off cells it does not own, including free resources

Compatibility

There are no known compatibility issues.

Performance

The nPartition configuration commands are not performance sensitive. Overall response time depends on WBEM stack elements and network bandwidth.

Documentation

The following manpages have been modified:

- *cplxmodify* (1M)
- *fruled* (1)
- *frupower* (1M)
- *parcreate* (1M)
- *parmodify* (1M)
- *parremove* (1M)
- *parstatus* (1)
- *parunlock* (1M)

The manpages of all partition commands are updated with the side effects of using WBEM's Trust Store file.

Obsolescence

Not applicable.

HP-UX Processor Sets

The HP-UX Processor Sets allow a multi-processor system to be partitioned into two or more groups of processors (CPU's), so that CPU resources for selected applications or users can be isolated from those of other applications or users. Processor Sets (also known as psets) may be created and reconfigured dynamically by users who have the appropriate privileges.

Processor Sets was first shipped as part of the optional Software Pack on HP-UX 11i in October 2001, and is available in the kernel from HP-UX 11i v1.6 by default. Where Processor Sets is available in HP-UX, it is supported on all multi-processor systems.

Processor Sets is a full-functioning stand-alone feature, but psets functionality is also fully supported by and integrated with the optionally available products HP-UX Workload Manager (WLM) and Process Resource Manager (PRM).

The `psrset` command creates and manages processor sets.

Summary of Change

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

The HP-UX Processor Sets was as an optional product for the HP-UX 11i v1 release. However, it is now part of the HP-UX 11i v2 core kernel and is no longer a separate product.

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

There is no change to this product from the previous release of HP-UX 11i v2.

Impact

You can use the Processor Sets functionality without having to install an optional product.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The manpage for the `psrset` command, *psrset* (1M), has been modified to indicate that `psrset` will display Locality Domain information for the processor set, along with other details.

The manpage for the `psrset` command has also been updated to document the new options added for RTE processor set support.

Obsolescence

Not applicable.

HP-UX Virtual Partitions

Targeted to be released in the middle of 2005, HP-UX Virtual Partitions (vPars) A.04.01 enables multiple instances of an HP-UX 11i v2 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.

Summary of Change

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

vPars A.04.01 will not release simultaneously with the September 2004 HP-UX 11i v2 release. vPars A.04.01 is targeted to release in the middle of 2005.

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

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

Impact

vPars customers must continue to use vPars A.03.xx or earlier, which support HP-UX 11i v1.

Compatibility

Not applicable.

Performance

Not applicable.

Documentation

For more information, refer to the following:

- Software Depot Web Site:
<http://software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=T1335AC>
- Document:
<http://docs.hp.com/hpux/os/11i/index.html#Virtual%20Partitions>

Obsolescence

Not applicable.

HP-UX Workload Manager

HP-UX Workload Manager (WLM) A.02.03.01 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?

- In most cases, installing version A.02.03.01 (or later) of WLM will not result in a reboot.
- Installing PHKL patches will still reboot the system, however.

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

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

Impact

There are no impacts, except as noted previously.

Compatibility

WLM scripts that use perl now require perl to be in `/opt/perl/bin/` instead of `/usr/contrib/bin/`.

If you have modified `/etc/rc.config.d/wlm`, you should merge the new file (`/opt/wlm/newconfig/etc/rc.config.d/wlm`) with your `/etc/rc.config.d/wlm` file.

Performance

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

Documentation

For further information, see the following:

- Manpages:
 - The `wlm` (5) manpage provides a list of all the WLM manpages in its SEE ALSO section.
- Web site:
 - <http://www.hp.com/go/wlm> (the “Information Library” provides white papers)
- Documents (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.02.03 Release Notes for HP-UX V1.0 and HP-UX 11i V2.0*

Obsolescence

Not applicable.

HP-UX Workload Manager Toolkits

The Workload Manager Toolkits (WLMTK) product version A.01.07.01 enhances functionality provided by Workload Manager (WLM)¹ and simplifies the integration of various products with WLM. These products include Apache, Oracle database instances, Pay Per Use, SAS, SNMP, and WebLogic.

Summary of Change

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

With WLMTK version A.01.07.01, the `utilitydc` command, part of the Pay Per Use Toolkit, has been modified as indicated below:

- f This option was previously for specifying the number of consecutive WLM intervals over which an EMS resource must be the same value before `utilitydc` activated a processor.

Now, the -f option is for specifying the number of WLM intervals that must pass between changes in the active CPU count. For example, with -f 4, every time `utilitydc` makes a change to the active CPU count, it will wait at least 4 WLM intervals before making another change.
- u Previously, this option allowed you to specify the deactivation algorithm that `utilitydc` uses.

Now, the algorithm you specify with -u is used to determine both when to activate and deactivate processors.
- t Previously, this option allowed you to specify a tuning value for the deactivation algorithm that `utilitydc` uses.

Now, the tuning value is used in both activation and deactivation.

How `utilitydc` works:

1. See also "HP-UX Workload Manager" on page 124.

Assuming the number of WLM intervals specified using `-f` have passed since the last change in the active CPU count, `utilitydc` checks the active CPU count and determines whether the count should be changed again. `utilitydc` adds a processor only if the EMS resource `/applications/wlm/icod_reserves_needed` is TRUE. The EMS resource is not checked before deactivating a processor.

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

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

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:

- Manpages:
 - The `wlmtk` (5) manpage provides an overview of the toolkits and lists all the other manpages.
- Web site:
 - <http://www.hp.com/go/wlm> (the “Information Library” provides white papers)
- Documents (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.01.07 Release Notes for HP-UX 11.0, HP-UX 11i V1.0, and HP-UX 11i V2.0*

Obsolescence

Not applicable.

nPartition Provider

The nPartition Provider, version B.01.03.00.x, is the HP WBEM Services¹ 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.

The nPartition Provider was a new product with HP-UX 11i v2 (B.11.23).

Summary of Change

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

The nPartition Provider was not available on HP-UX 11i v1 (B.11.11).

See also “What's New for Customers of HP-UX 11i v2?” below.

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

The previous release of the nPartition Provider was only supported on Itanium-based systems. This release is supported on both PA-RISC and Itanium-based systems.

The nPartition Provider now supports WBEM version 2.0. In addition, several minor defects were fixed to improve the overall quality of the product.

Impact

This release allows Partition Manager v2.0 to connect via WBEM to remote nPartitions on both PA-RISC and Itanium-based systems.

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.

1. See also “HP WBEM Services for HP-UX” on page 184.

Partition Manager (parmgr)

Partition Manager v2.0 (version B.11.23.02.00.03.x) 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.

Partition Manager v2.0 is a Web-based application that can be launched from Servicecontrol Manager 3.0, System Administration Manager (SAM), or as a stand-alone product. Customers interact with Partition Manager through a Web browser running on their client workstation or PC.

Summary of Change

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

The previous release of Partition Manager for HP-UX 11i v1 (B.11.11) ran on PA-RISC systems only. This release runs on both PA-RISC and Itanium-based systems.

This is the first release that brings the features of Partition Manager v2.0 to PA-RISC partitionable servers. New features include an improved graphical user interface, support for cell local memory (CLM), and the ability to configure nPartitions on remote complexes.

See also “What's New for Customers of HP-UX 11i v2?” below.

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

The previous release of Partition Manager v2.0 ran on Itanium-based systems only. This release runs on both PA-RISC and Itanium-based systems.

Partition Manager can now interact with the nPartition Provider using WBEM version 2.0. Under WBEM 2.0, the location of the SSL certificate stored on the CIM Server has changed. Instructions for managing SSL certificates in the “Starting & stopping” online help page have been modified accordingly.

In addition, several minor defects were fixed to improve the overall quality of the product.

Impact

You may have to take additional steps in order to validate SSL certificates. These steps are detailed in the online help on the “Starting & stopping” page. Refer to the “CIM Server” and “Managing SSL certificates” sections of that page.

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, and also can be viewed outside of the product by pointing a Web browser to

`/opt/hpwebadmin/webapps/mxhelp/parmgr/en/overview.html`

on a server where Partition Manager has been installed.

The `parmgr` command (which can be used to start or stop Partition Manager) 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://www.software.hp.com/products/PARMGR/>

Obsolescence

Not applicable.

HP Serviceguard

HP Serviceguard (formerly known as MC/ServiceGuard) is a specialized software product that protects mission-critical applications from a wide variety of hardware and software failures, and ensures data integrity.

Summary of Change

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

HP Serviceguard A.11.16 now supports clusters with mixed servers (HP Integrity and HP 9000).

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

Serviceguard A.11.15 can be installed on 11i v2, but only on HP Integrity servers.

HP Serviceguard A.11.16 contains new functionality, defect repairs, and support for new hardware configurations (both Integrity and HP 9000 servers) in the current release of HP-UX 11i v2.

Highlights of the A.11.16 release are as follows:

- A new method for non-root access for Serviceguard commands, both on command line and with the graphical interface. Non-root access to view or to issue administration commands is now defined in the new Access Control Policy parameter in the configuration files. If a Serviceguard A.11.16 configuration has been applied to a node, Serviceguard will no longer look at the `cmclnodelist` or `.rhosts` files.

- Clusters and packages can now be configured through Serviceguard Manager¹, Serviceguard's graphical user interface (GUI), or through the command line. The Serviceguard Manager GUI now replaces all the functionality of the SAM Cluster Tool. The SAM Cluster tool has been obsoleted, and is no longer available.
- A new parameter, `NETWORK_FAILURE_DETECTION`, gives users a choice about the method Serviceguard's network monitor uses to declare a LAN card down.
- Serviceguard Extension for Faster Failover version A.01.00, a new auxiliary product, is now available on the Application Release media. It works with Serviceguard A.11.16 to improve application availability. The Release Notes are posted at <http://docs.hp.com/hpux/ha>. At the same location, there is a technical white paper, "Optimizing Failover Time in a Serviceguard Environment," that can tell you how to reduce failover time, with and without the Serviceguard Extension for Faster Failover product.
- Support for clusters with mixed Integrity and HP 9000 servers.

Impact

If you want to use new features, then you may need to edit the existing cluster configuration files and control scripts, and reapply them to the cluster.

If any node in a cluster has COM B.03.00.01, all nodes in the cluster must also have B.03.00.01.

Compatibility

HP Serviceguard A.11.16 is a new set of executables on Integrity and HP 9000 servers. Serviceguard A.11.15 can only be installed on Integrity servers.

Serviceguard A.11.16 users should install COM version B.03.00.01, which is included in this HP-UX 11i v2 update. If any node in a cluster has COM B.03.00.01, all nodes in the cluster must also have B.03.00.01. (COM version B.03.00.00 was included with Serviceguard A.11.16 on HP-UX release media prior to this release of HP-UX 11i v2 September 2004.)

Rolling update support will be supported from versions of Serviceguard 10.12 or greater.

Performance

There are no known performance issues.

Documentation

For further information, see the manpages included with the product. In addition, see the following documents, available at <http://docs.hp.com/hpux/ha>:

- *Serviceguard Version A.11.16 Release Notes*
- *Managing Serviceguard Version A.11.16 Eleventh Edition*

1. See also "HP Serviceguard Manager" on page 131.

Obsolescence

Not applicable.

HP Serviceguard Manager

Serviceguard Manager is a graphical user interface (GUI) for configuring, displaying, and managing HP Serviceguard and Serviceguard Extension for RAC clusters.

This product is available to HP Serviceguard customers at no cost and may be downloaded from the Distributed Components CD or from the HP Software Depot at <http://software.hp.com>.

Summary of Change

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

There are no changes from Serviceguard Manager A.04.00, which was delivered in the June 2004 release of HP-UX 11i v1.

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

HP ServiceGuard Manager version A.04.00 will allow administrators to create/configure clusters and packages, as well as monitor and manage clusters. HP Serviceguard Manager can be installed on and can run from HP-UX 11.0, HP-UX 11i v1 and v2, Linux, and Windows XP and 2000 Professional.

Highlights of this release are as follows:

- HP Serviceguard Manager now allows for the creation and configuration of clusters and packages.
- HP Serviceguard Manager supports the new SG Roles Based Access.
- HP Serviceguard Manager supports the new SG networking monitoring feature.
- HP Serviceguard Manager no longer supports IT Operations.
- HP Serviceguard Manager no longer supports installation on the Windows NT platform.

Impact

Serviceguard Manager A.04.00 offers greater configuration capabilities.

Compatibility

There are no known compatibility issues.

Performance

When a save operation is performed, the length of time to complete it is considerably longer due to EMS and storage data that is now being included in the saved file.

Documentation

For further information, see the *Managing HP Serviceguard* manual, available at <http://docs.hp.com>.

Obsolescence

Not applicable.

HP Serviceguard Quorum Server

The HP ServiceGuard Quorum Server (QS) provides arbitration services for ServiceGuard clusters when a cluster partition is discovered. Should equal-sized groups of nodes become separated from each other, the Quorum Server allows one group to achieve quorum and form the cluster, while the other group is denied quorum and the ability to start a cluster.

This product is available to HP Serviceguard customers at no cost and may be downloaded from the Distributed Components CD or from the HP Software Depot at <http://software.hp.com>.

Summary of Change

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

With the current release of HP-UX 11i v2, HP Serviceguard Quorum Server is supported on both PA-RISC and Itanium.

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

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

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see the *HP ServiceGuard Quorum Server Version A.02.00 Release Notes*, available on the HP ServiceGuard Distributed Components CD in the following directory:

Documentation/QuorumServer/A.02.00/ReleaseNotes

Complete information about configuring and using Quorum Server appears in the user's guide *Managing HP Serviceguard* for your Serviceguard release.

The most recent versions of user's guides, release notes, and white papers about Serviceguard and related topics are available on these HP Web pages:

- <http://docs.hp.com/hpux/ha> (High Availability)
- <http://docs.hp.com/linux> (Linux-specific)

Support information, including current information about patches and known problems, is available from the HP IT Resource Center:

- <http://itrc.hp.com> (Americas and Asia Pacific)
- <http://europe.itrc.hp.com> (Europe)

Obsolescence

Not applicable.

HP-UX 11i v2 Required Patch Bundle (BUNDLE11i)

The HP-UX 11i v2 Required Patch Bundle (BUNDLE11i) consists of patches for HP-UX 11i v2 that are required to install and update the operating system (OS). Initially delivered in September 2004, BUNDLE11i provides the filesets required to add support for PA-RISC HP 9000 systems on HP-UX 11i v2, plus defect fixes for both PA-RISC HP 9000 and Itanium2 Integrity systems.

For a complete list of supported PA-RISC HP 9000 systems, please see "Supported Servers and Workstations" on page 101. In prior HP-UX 11i v2 releases, HP-UX 11i v2 only supported Itanium2 Integrity systems.

Summary of Change

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

The BUNDLE11i patch bundle delivered with HP-UX 11i v1 was created to update HP-UX 11i v1. BUNDLE11i for HP-UX 11i v2 delivers the September 2004 update to HP-UX 11i v2, which includes PA-RISC HP 9000 support for the first time.

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

The HP-UX 11iv2 Required Patch Bundle (BUNDLE11i) was not delivered in the March 2004 release.

Impact

BUNDLE11i provides PA-RISC HP 9000 system support for HP-UX 11i v2, in addition to the following item for both PA-RISC HP 9000 and Itanium2 Integrity servers:

- 128 way support

Compatibility

There are no known compatibility issues.

Performance

You can now run HP-UX 11i v2 on both Itanium2 Integrity and PA-RISC HP 9000 systems.

Documentation

For further information, see the following:

- *readme for BUNDLE11i*, available at `/DOCS/PATCH/BUNDLE11i.readme.html`
- *HP-UX 11i Version 2 Installation and Update Guide, September 2004*, available at <http://docs.hp.com>

Obsolescence

Not applicable.

HP-UX Kernel Configuration

HP-UX Kernel Configuration is a combination of a command set and a Web-based graphical user interface (GUI), `kcweb`, that allows the user to configure an HP-UX kernel and to monitor consumption of kernel resources controlled by parameters.

The HP-UX Kernel Configuration application provides a set of commands for the following:

- tuning the kernel
- loading and unloading kernel modules
- configuring alarms

The HP-UX Kernel Configuration tool (`kcweb`) can be launched from Servicecontrol Manager (SCM) and also from the command-line. You can launch `kcweb` and the kernel configuration terminal user interface (TUI) as a separate tool from SAM.

HP-UX Kernel Configuration can also be set up to be launched automatically by a Web browser. See the `wacnf(1M)` manpage for more details.

The HP-UX system description file (`/stand/system`) describes the kernel configuration information used by the kernel configuration (`kconfig(1M)`) commands. The system description file consists of the following information:

- A line specifying the version of the system file.
- The list of packaged and traditional kernel modules to be configured.
- Planned values for system tunable parameters, and other system-wide configuration information.

Summary of Change

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

- The `kcweb` application has incorporated the following changes and new features:
 - Adds more information about a parameter's auto-tuning capability and value at last boot.
 - Supports easy DLKM configuration.
 - Enables a user to view the history of change for a specific tunable or module, or for all tunables or modules, through the change log viewer.
- The `maxusers` tunable has been obsoleted and removed in the HP-UX 11i v2 release. Changes to this tunable will have no effect on the kernel. Prior to the HP-UX 11i v2 release, the `maxusers` tunable was used to calculate the default values of `nclist`, `nfile`, and `ninode`, all of which control kernel data structures that determine the system resource allocation.

As of HP-UX 11i v2, however, no tunables depend on `maxusers`. All tunables that used to depend on it for default values have now been assigned individual numerical defaults. Changing `maxusers` will have no effect on any other tunable. Individual tunables should be changed for system tuning. Please refer to the respective tunable manpages for more information.

- In HP-UX 11i v2, the Kernel Configuration (KC) commands have been replaced by a new set of commands. The `config`, `kmadmin`, `kminstall`, `kmodreg`, `kmsystem`, and `kmupdate` commands have been removed. The `kmtune`, `kmpath`, and `mk_kernel` commands have only limited transitional support and will be removed in a future release. The new KC commands are `kconfig`, `kcmodule`, `kctune`, `kclog`, and `kcpath`.
- 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.

- `/stand/system` file:

The system file format is enhanced so that user-defined tunables are marked by a “user:” prefix on their names. This enhancement enables kernel configuration tools to distinguish between user-defined tunables and misspelled or obsolete ones. Please refer to the *kconfig* (5) and *system* (4) manpages for further information.

- In this release of HP-UX 11i v2, the terminal user interface (TUI) of the kernel configuration functional area has been introduced with a new look and feel.

What’s New for Customers of HP-UX 11i v2?

- In this release of HP-UX 11i v2, the terminal user interface (TUI) of the kernel configuration functional area has been introduced with a new look and feel.
- `/stand/system` file:

The system file format is enhanced so that user-defined tunables are marked by a “user:” prefix on their names. This enhancement enables kernel configuration tools to distinguish between user-defined tunables and misspelled or obsolete ones. Please refer to the *kconfig* (5) and *system* (4) manpages for further information.

Impact

- With the new KC commands, you have a simpler, more reliable, and more efficient management of HP-UX kernel configurations. With the new KC commands, many configuration changes that required a kernel rebuild and system reboot can now be made without them. Even when a kernel rebuild or system reboot is still required, no compilations of kernel code are needed. The new KC commands share a consistent user interface and management model.

If you are used to using the removed commands (previously listed), then you will need to use the appropriate new KC command. System administrators will need to be aware of the changes in kernel location, boot-time selection, and automatic backup creation.

- You will be able to configure the kernel from SAM in a new TUI.
- You should mark all the user-defined tunables with a “user:” prefix in the `/stand/system` file. If the “user:” keyword is not specified, then a user-defined tunable will be considered as either a misspelled or obsolete tunable.

Compatibility

The HP Apache-based Web Server¹ must be installed for `kcweb` to work. HP Apache does not need to be running on its default port 80. The `kcweb` tool can be used with a locally installed copy of Mozilla or Netscape. The Mozilla, Netscape, and Microsoft Internet Explorer Web browsers can also be used from any type of remote system.

NOTE

For the `kcweb` tool (GUI mode) to run, cookies must be enabled in your browser (Mozilla or Internet Explorer).

1. See “HP-UX Apache-based Web Server” on page 190.

Scripts or applications using the commands being removed will have to be changed. (For `kmtune` and `kmpath`, which are the most commonly used scripts, compatibility interfaces have been provided to ease the transition.) Scripts or applications that hard-code the location of the kernel should be changed.

Performance

There will be no noticeable increase or decrease in response time for Kernel Configuration tasks.

Documentation

Information is available in the white paper called “Managing Kernel Configurations in HP-UX 11i version 2,” available at http://www.hp.com/products1/unix/operating/infolibrary/whitepapers/7202__ManagingKernelConfig_WP__051403.pdf.

Information is also available in the *Managing Systems and Workgroups* manual for this release, also available at <http://www.docs.hp.com>.

Information is available in the following online manpages:

- `kcalarm` (1M)
- `kcmd` (1M)
- `kconfig` (5)
- `kconfig` (1M)
- `kcmodule` (1M)
- `kctune` (1M)
- `kcllog` (1M)
- `kcpath` (1M)
- `kcusage` (1M)
- `kcweb` (1M)
- `system` (4)
- `wacnf` (1M)

Obsolescence

The `config`, `kmadmin`, `kminstall`, `kmmodreg`, `kmsystem`, and `kmupdate` commands are obsolete and have been removed. The `kmtune`, `kmpath`, and `mk_kernel` commands have been deprecated and are obsolescent. Only some of their options are supported in this release, and they will be removed altogether in a future release. The `maxusers` tunable has been obsoleted and removed. (See “What’s New for Customers Migrating from HP-UX 11i v1?” on page 135.)

HP-UX Peripheral Device Tool

The Peripheral Device tool (`pdweb`), version B11.23.02, is an easy-to-use, powerful peripheral device management solution delivering a Web-enabled graphical user interface (GUI).

The Peripheral Device tool allows you to:

- view all available PCI/OLAR slots
- add or replace a card
- view devices and create device files
- view detailed information about cards, slots, and devices
- generate a Critical Resource Analysis (CRA) report detailing critical resources lost when a slot is powered down
- bring cards online
- light the LED of a specific slot

The Peripheral Device Tool is an easy-to-use GUI that steps system administrators through the entire process of card addition/replacement. It operates in a single-system environment.

Summary of Change

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

This tool is new to customers migrating from HP-UX 11i v1.

Peripheral device configuration and management is now supported by a combination of commands and a Web browser-based graphical user interface (GUI) in the new HP-UX Peripheral Device (v B11.23.01) tool. A terminal user interface (TUI) has also been introduced with this release to perform limited functionality of the Peripheral Device tool.

The Peripheral Device tool replaces the peripheral devices functionality of the System Administration Manager (SAM) tool and introduces two new commands:

- `pdweb` (1M)
- `wacnf` (1M)

The Peripheral Device tool operates on a single system, similar to SAM. It can be used stand-alone, is accessible from SAM, the Partition Manager tool, and Servicecontrol Manager (SCM).

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

In this release, a terminal user interface (TUI) has been introduced to perform limited functionality of the Peripheral Device tool.

Impact

You now have the ability to use the tool from a terminal rather than a Web browser.

Compatibility

There are no known compatibility issues

Performance

There are no known performance issues.

Documentation

The *pdweb* (1M) and *waconf* (1M) manpages have been updated. Additionally, the Peripheral Device tool GUI contains an on-line help facility to further assist you. Also refer to the *Interface Card OL* Support Guide*, available at <http://docs.hp.com>.

Obsolescence

Not applicable.

Ignite-UX

The Ignite-UX (Ignite-UX) product is an HP-UX administration toolset that helps you do the following:

- install HP-UX 11.0 and 11i v1 (B.11.11), v1.6 (B.11.22), v2 (B.11.23) 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 and CD-ROM;
- manage and monitor multiple client installation sessions.

Summary of Change

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

Ignite-UX, version C.6.0.x includes support for the following:

- installing and recovering HP-UX 11.0, 11i v1 (B.11.11), v1.6 (B.11.22) Itanium-based clients, v2 (B.11.23) PA-RISC and Itanium-based clients from a single Ignite-UX server;
- booting both PA-RISC and Itanium-based, known as dual boot, from a single media source;
- installing one unified PA-RISC/Itanium-based core HP-UX operating system bundle for HP-UX 11i v2.

To facilitate these new capabilities, Ignite-UX is introducing a significant change to the product architecture in order to support selection among multiple PA-RISC installation kernels. Installation kernel selection has resulted in modifications to the bootloader and relocation of operating system-specific files. When more than one viable installation kernel choice exists, you now have the opportunity to select the installation kernel you want to use for that machine. The installation kernel, installation file system, installation commands, system commands, and recovery commands are located in operating system release-specific directories.

Additionally, the *auto_adm* (1M) command, which allows you to define the installation kernel selections, is introduced.

Also included are the changes made with version B.5.4.x, which delivered the following:

- HP has identified a data integrity issue that is revealed with the latest version of the HP Ultra320 SCSI driver that is included in the HP-UX 11i v2 installation kernel delivered with the March 2004 Ignite-UX versions B.5.3.x and B.5.2. For more information, see customer bulletin Part # 5990-8532 at the HP IT Resource Center at <http://itrc.hp.com/> and the Ignite-UX Web site at the HP Software Depot at <http://www.software.hp.com/products/IUX>.
- An issue with the installation and recovery of HP-UX 10.20 and 11.00 clients that was discovered in the Ignite-UX B.5.0.x and B.5.1.x versions has been resolved. For more information, see customer bulletin Part # 5990-7242 at the HP IT Resource Center at <http://itrc.hp.com/> and the Ignite-UX Web site at the HP Software Depot at <http://www.software.hp.com/products/IUX>.
- LVM layouts in Ignite-UX, with certain LUN sizes, no longer generate errors from *vgcreate*.
- The *save_config* command has been updated to set the *contiguous_allocation* value correctly on VxVM mirrored volumes.
- The */usr/include/sys* directory has been added to the */opt/ignite/recovery/mnr_essentials* file for inclusion when using *make_[tape/net]_recovery*.
- The *is_volatile* attribute is now preserved in the */var/opt/ignite/depots/recovery_cmds* depot by *pkg_rec_depot* thus avoiding *swverify* errors when installing clients from this depot.
- The *make_[tape/net]_recovery* tools have been updated to:
 - support file sizes up to 8 GB for HP-UX 11i v1 and later, though these tools only support file sizes up to 2 GB for the 11.00 and 10.20 releases;
 - recover mount points in the essentials list that are in non-root volume group using the options of *-x include* and *-x inc_entire*;
 - describe the function of the *_hp_ignore_sw_impact* variable in the WARNINGS section of *instl_adm* (4);
 - install an archive file size that is greater than 2 GB.
- Installation and recovery of Itanium-based and PA-RISC servers and clients now occurs automatically by Ignite-UX detecting the hardware type and installing the correct operating system binaries accordingly.
- Large file impacts, where the file size is greater than 2 GB, are now computed accurately.

- The call to “vxdisk online,” when configuring VxVM layouts, was removed as it was unnecessary and could cause problems in client installs in limited circumstances.
- The GUI has been enhanced to allow the `_hp_addnl_fs_free_pct` parameter to be modified from the **Additional...** button of the **Basic** tab. This allows you to more finely tune disk space allocation. See *instl_adm* (4).

NOTE

Version B.5.4.x of Ignite-UX is the last version that contains support for installation and recovery of HP-UX 10.20. The Ignite-UX-10-20 bundle and its content will not be provided in future versions of Ignite-UX. If you want to continue to support HP-UX 10.20 clients, you must retain an Ignite-UX server that has this or an earlier version installed.

What’s New for Customers of HP-UX 11i v2?

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

Impact

Ignite-UX version C.6.0.x delivers extended support for HP-UX 11i v2 PA-RISC clients. The impact of these enhancements include the following:

- The client operating system must be known at boot time if a network boot is being executed; during network boots you are queried for which Ignite-UX installation kernel you want to load.
- If you have scripts that depend on the installation kernels and file systems being in a specific location, you must update these scripts to identify the new directory locations.
- The `-R` option has been added to the *bootsys* (1M) command, and is used to indicate the version of HP-UX to be installed on the client. For example, `bootsys -R B.11.23 -v myhost` would install HP-UX 11i v2 (B.11.23) on the client, `myhost`.
- The *auto_adm* (1M) command allows you to modify installation kernel selection defaults, timeouts, and prompt responses.
- For PA-RISC machines, the bootloader now prompts for the version of HP-UX to be installed on the client when doing network boot using `boot lan.IP install`.

Compatibility

The changes to Ignite-UX version C.6.0.x support both Itanium-based and PA-RISC clients and servers. The following major changes may affect your environment:

- The file system layout of the product has been modified so that installation kernels are now in operating system release-specific directories as follows:

- /opt/ignite/boot
- /opt/ignite/boot/Rel_B.11.00
- /opt/ignite/boot/Rel_B.11.11
- /opt/ignite/boot/Rel_B.11.22
- /opt/ignite/boot/Rel_B.11.23

- *INSTCMDS*, *INSTCMDSIA*, and *RECCMDS* are now in the same operating system release-specific directories as *SYSCMDS* as follows:
 - /opt/ignite/data/Rel_B.11.00/
 - /opt/ignite/data/Rel_B.11.11/
 - /opt/ignite/data/Rel_B.11.22/
 - /opt/ignite/data/Rel_B.11.23/
- The *make_recovery* and *check_recovery* commands are discontinued and no longer delivered in the Ignite-UX product.

Performance

There are no known performance issues.

Documentation

The following Ignite-UX manpages have been updated accordingly:

- *ignite* (5)
- *add_new_client* (1M)
- *archive_impact* (1M)
- *bootsys* (1M)
- *copy_boot_tape* (1M)
- *instl_adm* (1M)
- *instl_adm* (4)
- *instl_bootd* (1M)
- *instl_combine* (1M)
- *instl_dbg* (1M)
- *make_bundles* (1M)
- *make_boot_tape* (1M)
- *make_config* (1M)
- *make_depots* (1M)
- *make_medialif* (1M)
- *make_net_recovery* (1M)
- *make_sys_image* (1M)
- *make_tape_recovery* (1M)
- *manage_index* (1M)
- *pkg_rec_depot* (1M)
- *print_manifest* (1M)
- *save_config* (1M)
- *setup_server* (1M)

The *auto_adm* (1M) manpage is introduced.

The *Ignite-UX Administration Guide*, **B2355-90849**, Edition 17 and later, has been updated to reflect all changes to the product and can be found at <http://www.docs.hp.com>.

Ignite-UX product information and documentation, including the Release Notes, is available at <http://www.software.hp.com/products/IUX>.

Obsolescence

Support for HP-UX 10.20 client has been obsoleted.

The *add_release* (1M), *make_recovery* (1M), and *check_recovery* (1M) commands are discontinued and no longer delivered in the Ignite-UX product.

Improved Database Startup and Shutdown Times

Improved database startup and shutdown times are a new feature with HP-UX 11i v2.

Summary of Change

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

Prior to this release, startup and shutdown times could approach a 1/2 hour with very large memory systems using HP-UX 11i v1. This new HP-UX 11i v2 feature will drastically reduce these times.

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

Prior to this release, startup and shutdown times could approach an hour with very large memory systems using HP-UX 11i v2. This new HP-UX 11i v2 feature will drastically reduce these times.

Impact

Database customers should see improved startup and shutdown times.

Compatibility

There are no known compatibility issues.

Performance

HP conducted experiments in the lab to compare the startup and shutdown times of the HP-UX 11i v2 September 2004 release versus the initial release of HP-UX 11i v2. In our tests on an Itanium-based rx8620 system, the startup time is now 5.5 times faster, and the shutdown time is 2.3 times faster. In our tests on a Superdome system with PA-RISC processors, the startup improved by a factor of 4.7X, shutdown by a factor of 1.2X. Of course, the exact improvements a customer may experience depend on the choice of database, the shared memory segment size, the number of processors on the system, and so on.

Documentation

Other than these Release Notes, there are no documentation changes.

Obsolescence

Not applicable.

Interrupt Migration

The Interrupt Migration feature is part of HP-UX 11i v2 core. Interrupt Migration can be used to view and modify the interrupt configuration of the system.

The intended users of Interrupt Migration are system performance-tuning experts who need to manage the interrupt distribution of the system.

Interrupts from interface cards can be either line-based (LBI) or transaction-based (TBI) interrupts. A line-based interrupt is generated when a device that wants to generate the interrupt pulls a line on the I/O bus. A transaction-based interrupt is generated when the device does a DMA-like transaction on the I/O bus.

The `intctl` command provides options to display the interrupt configuration of the system, migrate external I/O interrupts from one processor to another, and to save and restore the interrupt configuration of the system. The `intctl` command can be used by performance tuning experts to re-distribute the interrupt load across the CPUs and to assign interrupts of Real Time Extension (RTE)-reserved cards to RTE-reserved CPUs.

The `intctl` command is not a general system administration command. It should be used only by performance-tuning experts with an advanced level of system knowledge. Improper re-distribution of interrupts across CPUs could decrease overall system performance by overloading some processors and not optimally using the remaining processors.

For further information about Interrupt Migration, see the manpage `intctl(1M)`.

Summary of Change

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

Interrupt Migration can be used to do the following:

- View the interrupt configuration of the system.
- Change the interrupt configuration of the system by migrating interrupts from one CPU to another. The system performance can be significantly improved by distributing the interrupt load across the CPUs through the Interrupt Migration command (`intctl`).
- Store and restore the interrupt configuration of the system.
- Activate, de-activate or reserve CPUs (to receive interrupts from some specific cards) for interrupts through the Processor Sets command, `psrset`.

Machines Affected This feature works on all the servers supported by the HP-UX 11i v2 release, but not on the workstations.

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

This release of Interrupt Migration includes bug fixes for the `intctl` tool.

Impact

Interrupt Migration can be used to manage the interrupt configuration of the system. Through proper distribution of the interrupt load across processors, the overall system performance can be improved. RTE uses Interrupt Migration to reserve a CPU for interrupts from RTE-reserved cards.

The Interrupt Migration command (`intctl`) can be used to display and change the interrupt configuration of the system. The interrupt configuration of the system can be saved and restored at a later time through the `intctl` command.

Compatibility

There are no compatibility issues.

Performance

The Interrupt Migration feature can be used by system administrators to distribute the interrupt load across the CPUs and thus to improve system performance.

Documentation

For further information, see the Interrupt Migration command manpage `intctl` (1M).

Obsolescence

Not applicable.

MySQL

MySQL is an open source relational SQL database developed by MySQL AB.

Summary of Change

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

MySQL has been updated with tightened security.

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

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

Impact

No impacts other than that described previously.

Compatibility

There are no known compatibility issues. There is no difference in functionality between PA-RISC and Itanium-based versions.

Performance

There are no known performance issues.

Documentation

MySQL information is available at www.mysql.com.

MySQL information as it applies to Servicecontrol Manager is available at

- <http://software.hp.com/products/SCMGR/>
- <http://www.docs.hp.com/hpux/netsys/index.html#Servicecontrol%20Manager>

Obsolescence

MySQL has been deprecated and is planned for future obsolescence.

Obsolescence Bundle

The Obsolescence product is used in an update when obsolete software on the system needs to be removed.

This product is automatically selected for both install and update. During the cold install process, The Obsolescence product checks to see if an update is being performed. If it is not an update, it does not remove anything. If it is an update, the following obsolete products and/or drivers are removed¹:

- HP-UX Visualize Conference Run Time Environment
- HP Frame Relay Link Software
- HP EISA 100BaseT Driver
- HP HPPB 100BaseT Driver
- HP I2O RAID Product

1. Note that other obsolete products not listed here may also be removed upon update to HP-UX 11i v2 September 2004. See “For Customers Migrating from HP-UX 11i v1: What’s Not Included in This Release of HP-UX 11i v2” on page 29.

- SCR
- DMI¹
- Mobile IPv4¹
- HP HPPB TokenRing Driver
- HP EISA TokenRing Driver
- HP-PB ATM Driver
- HP HSC ATM Driver
- HP HSC FDDI Driver
- HP HPPB FDDI Driver
- HP EISA FDDI Driver

For further information, see the *HP-UX 11i Version 2 Installation and Update Guide, September 2004*, available at <http://docs.fc.hp.com/hpux/os/11iv2/index.html#Installing%20and%20Updating>.

OnlineDiag

The OnlineDiag product version C.46.00 includes both the Support Tools Manager (STM) and EMS Hardware Monitors, and is a complete set of support tools for verifying, troubleshooting, and monitoring HP system hardware, including CPUs, memory, interface cards, mass storage devices, etc.

Summary of Change

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

- Cell-local memory (CLM) support for PA-RISC platform. CLM facilitates cell on-line add (OLA) and on-line delete (OLD) support.
- Various bug fixes and enhancements
- Support added for new devices
- 128-way support

For more details see the *Support Tools Manager (STM) Release Notes: HP-UX 11i v2 (September 2004)* and *EMS Hardware Monitors Release Notes: HP-UX 11i v2 (September 2004)* at <http://docs.hp.com/hpux/diag/>.

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

- Various bug fixes and enhancements

1. In the future, a supported version of these products will be available as a Web release from the Software Depot at <http://software.hp.com>.

- Support added for new devices

For more details see the *Support Tools Manager (STM) Release Notes: HP-UX 11i v2 (September 2004)* and *EMS Hardware Monitors Release Notes: HP-UX 11i v2 (September 2004)* at <http://docs.hp.com/hpux/diag/>.

Impact

There are no impacts other than those described previously.

Compatibility

OnlineDiag functionality across hardware platforms is the same; however, monitor names will vary and some monitor information displays differently between the two platforms.

Although OnlineDiag is one single product, there are multiple file sets for each platform. During installation, the appropriate file set is installed.

For more details see the *Support Tools Manager (STM) Release Notes: HP-UX 11i v2 (September 2004)* and *EMS Hardware Monitors Release Notes: HP-UX 11i v2 (September 2004)* at <http://docs.hp.com/hpux/diag/>.

Performance

There are no performance issues.

Documentation

For further documentation, go to <http://docs.hp.com/hpux/diag/>.

Obsolescence

Not applicable.

Quality Pack Patch Bundle

The Quality Pack patch bundle consists of two bundles: the Base Quality Pack bundle and the Applications Quality Pack bundle. The Base Quality Pack bundle includes all stable, defect-fix patches for the Core OS, graphics, and key networking drivers. The Applications Quality Pack bundle includes all stable, defect-fix patches for HP-UX Operating Environment (OE) applications.

Summary of Change

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

In HP-UX 11i v1 (B.11.11), the Quality Pack was not delivered on the Operating Environments (OE) media.

See “What's New for Customers of HP-UX 11i v2?” below.

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

In March 2004, the first ever Quality Pack (QPK) patch bundle for HP-UX 11i v2 (B.11.23) was delivered. In September 2004, HP-UX 11i v2 is updated to support PA-RISC and Itanium-based systems (as opposed to the initial release of HP-UX 11i v2, which only supported Itanium-based systems). This update will be delivered via updated OEs and the BUNDLE11i patch bundle.¹All patches that were in the March 2004 QPK will be superseded by dual-architecture patches (that is, patches for Itanium-based and PA-RISC platforms) and these patches will be placed in BUNDLE11i. Therefore, there will not be a QPK bundle delivered in September 2004.

In the March 2005 time frame, HP will again deliver the QPK bundle for HP-UX 11i v2 and will continue to do this every 6 months. From this point forward, each QPK bundle will contain dual-architecture patches.

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

There are no documentation changes other than these Release Notes.

Obsolescence

Not applicable.

1. See “HP-UX 11i v2 Required Patch Bundle (BUNDLE11i)” on page 133.

SAM - Nodal Network Configuration (NNC)

SAM - NNC is a GUI tool that handles the configuration of network-related resources.

Summary of Change

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

- SAM-NNC support for VLAN functionality
- SAM-NNC support for Internet Protocol Over InfiniBand (IPoIB) functionality
- SAM-NNC support for Large send functionality
- DLPI re-architecture changes for SAM-NNC
- SAM-NNC support for DHCPv6 functionality
- SAM-NNC Hyperfabric local failover support
- SAM-NNC support default routing functionality
- Porting of defects fixed

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

- SAM-NNC support for VLAN functionality
- SAM-NNC support for IPoIB functionality
- SAM-NNC support for Large send functionality
- SAM-NNC Hyperfabric local failover support
- SAM-NNC support default routing functionality
- SAM-NNC APA LACP support and defect fixes
- Porting of defects fixed

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

SAM online help has been updated to document IPoIB, VLAN, and VMTU features. See also "System Administration Manager (SAM)" on page 154.

Obsolescence

SAM support for enabling/disabling automatic tunneling is obsolete with the HP-UX 11i v2 release.

SAM is planned for integration into the System Management Homepage in the HP-UX 11i v3 release. This will provide a Web-based interface for launching the functional areas within SAM. Command line and terminal user interfaces (TUIs) will continue to be available as the SAM tool is enhanced with Web-based interfaces.

Servicecontrol Manager

HP Servicecontrol Manager (SCM) provides a convenient multi-system management solution for HP-UX and Linux systems. You can access SCM using a Web-enabled graphical user interface or a command line interface. SCM enables you to execute HP-UX and Linux manageability tools, including custom tools and scripts, across multiple systems simultaneously.

Summary of Change

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

This version contains only minor updates. All functionality remains the same.

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

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

Impact

There are no new impacts.

Compatibility

There are no known compatibility issues. There is no difference in behavior between PA-RISC and Itanium-based versions.

Performance

There are no known performance issues.

Documentation

Further information about Servicecontrol Manager can be found at the following Web sites:

- <http://software.hp.com/products/SCMGR/>
- <http://www.docs.hp.com/hpux/netsys/index.html#Servicecontrol%20Manager>

Obsolescence

Servicecontrol Manager has been deprecated and is planned for future obsolescence. HP Systems Insight Manager is its replacement and contains a superset of SCM's functionality. For further information about HP Systems Insight Manager, go to the product Web page at <http://h18013.www1.hp.com/products/servers/management/hpsim/index.html>.

Software Distributor (SD)

Software Distributor (SD) is the HP-UX administration tool set used to deliver and maintain HP-UX operating systems and layered software applications. Delivered as part of HP-UX, SD can help you:

- Manage your OS, patches, and application software on HP-UX systems.
- Organize, standardize, and distribute software to your customers.
- Handle complex delivery challenges such as testing complete solutions for the commercial and technical desktop.

Summary of Change

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

SD has been updated to a new version to support this new release of HP-UX 11i v2.

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

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

Impact

There are no impacts beyond added capability to support this release.

Compatibility

This release contains a defect fix to insure that formatted messages written to SD logfiles are only written up to column 72. Prior to this change, some formatted SD messages were written up to column 79, although most were written up to column 72. Only messages generated by packaged scripts using the `msg()` function are affected by this change. Some messages in SD logfiles are not formatted and they may go beyond column 79; those messages are not affected by this change. It's possible this fix can break existing scripts that diff SD logfiles. SD is backward compatible.

Performance

There are no known performance issues.

Documentation

The *Software Distributor Administration Guide* has been updated to reflect all changes. Visit http://www.software.hp.com/products/SD_AT_HP/ for this and other documentation.

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.

Summary of Change

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

SPB has been updated to version 2.0 to incorporate defect fixes. No new product features or functionality are introduced with this release.

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

SPB has been updated to version 2.0 to incorporate defect fixes, as well as support the following new features:

- Edit multiple Product Specification Files (PSF) at the same time.
- Open and view depot(s) in the SPB GUI.
- Convert a depot into a PSF
- Validate a depot's content

Impact

There are no impacts, beyond what was described previously.

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://software.hp.com/products/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) is an HP-UX System Administration tool that provides an easy-to-use user interface (UI) for performing various system administration tasks.

Summary of Change

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

The new HP-UX Kernel Configuration tool (*kcweb*) is used to configure kernel tunables and modules.¹ In the current release of HP-UX 11i v2, the terminal user interface (TUI) of the kernel configuration functional area has been introduced with new look and feel.

The Cards and Devices subarea in the Peripheral Devices functional area has been replaced by the new Web-based HP-UX Peripheral Devices tool (*pdweb*), and can be launched from SAM or by using the new *pdweb* command. All the existing functionality in the peripheral devices functional area will remain. Using *pdweb*, some PCI cards can

1. For more information regarding *kcweb*, see “HP-UX Kernel Configuration” on page 134.

be added or replaced online.¹ In the current release of HP-UX 11i v2, the terminal user interface (TUI) of the Cards and Devices subarea has been introduced with new look and feel.

SAM is available as PA-RISC binaries on HP-UX 11i v2, and requires the Aries translator to run on HP-UX 11i v2 Itanium systems. For more information about Aries, see the “Aries Binary Translator” section in the initial *HP-UX 11i Version 2 Release Notes* (October 2003), available at <http://docs.fc.hp.com/hpux/pdf/5990-6737.pdf>.

See also “What’s New for Customers of HP-UX 11i v2?” below.

What’s New for Customers of HP-UX 11i v2?

In this release of HP-UX 11i v2, the terminal user interface (TUI) of kernel configuration functional area has been introduced.

In this release of HP-UX 11i v2, the terminal user interface (TUI) of the Cards and Devices subarea has been introduced.

Starting with the current release of HP-UX 11i v2, SAM will support shadow mode only for password aging in SAM -> Accounts for Users and Groups -> Users subarea. A standard HP-UX system is converted to a shadow mode system by running the *pwconv* (1M) command. Refer to the *pwconv* (1M), *shadow* (4), and *pwunconv* (1M) manpages and “Users and Groups” subarea online help for more information. See also “Shadow Passwords” on page 254.

NOTE

SAM does not support shadow mode on an NIS and NIS+ configuration.

Impact

There are no impacts other than those listed previously.

Compatibility

There are no known compatibility issues.

Performance

Since SAM is available as PA-RISC binaries, performance is impacted on the Itanium platform: actions performed by a user (such as selecting a particular functional area) in the SAM GUI may be slow.

Documentation

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

See also “SAM - Nodal Network Configuration (NNC)” on page 150 and “Shadow Passwords” on page 254.

1. For more information, refer to the *pdweb* manpage, *pdweb* (1). See also “HP-UX Peripheral Device Tool” on page 138.

Obsolescence

SAM is planned for integration into the System Management Homepage in the HP-UX 11i v3 release. This will provide a Web-based interface for launching the functional areas within SAM. Command line and terminal user interfaces (TUIs) will continue to be available as the SAM tool is enhanced with Web-based interfaces.

System V Shared Memory

Shared memory is an efficient InterProcess Communications (IPC) mechanism. One process creates a shared memory segment and attaches it to its address space. Any processes looking to communicate with this process through the shared memory segment then attach the shared memory segment to their corresponding address spaces as well. Once attached, a process can read from or write to the segment depending on the permissions specified while attaching it.

Summary of Change

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

The ShmemExtensions product provided with HP-UX 11i v1 release is now obsolete. The functionality of the ShmemExtensions product has been integrated into the System V shared memory component of the HP-UX kernel.

Previous to this change, the maximum number of System V shared memory segments which could be in use by the system was limited by the kernel tunable parameter *shmmni* (Shared MemoryMax Number of Identifiers). This tunable was limited to a maximum of 8,192—and so the system was limited to a maximum of 8,192 segments.

With this change, the maximum for the *shmmni* tunable parameter has been increased to 32,768. This differs from an HP-UX 11i v1 system with the ShmemExtensions product installed: ShmemExtensions required setting an alternative tunable (*shmmni_extended*). This tunable is not needed and does not exist on HP-UX 11i v2.

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

Previous to this change, the maximum number of System V shared memory segments which could be in use by the system was limited by the kernel tunable parameter *shmmni* (Shared MemoryMax Number of Identifiers). This tunable was limited to a maximum of 8,192—and so the system was limited to a maximum of 8,192 segments.

With this change, the maximum for the *shmmni* tunable parameter has been increased to 32,768.

Impact

You can utilize this change to enable more System V shared memory segments than previously allowed.

Compatibility

There are no compatibility impacts. No changes or recompilations are required in user applications.

Performance

No performance changes are expected.

Documentation

The *shmmni* (5) manpage describes the *shmmni* tunable parameter (with the associated limits).

Obsolescence

There are no plans to obsolete System V shared memory from the core HP-UX kernel.

Tape Boot

The Ignite-UX `make_tape_recovery` command can create a system recovery tape. This tape can be used to boot and recover a system that has become unbootable due to corruption of the root disk or volume group. A system can be booted and installed from the tape without user intervention for configuration, customization, software selection, hostname, or IP address.

On a PA-RISC system, this tape alone may be used to boot and recover the system. Since HP Itanium-based servers do not support direct boot from tape devices, you will need to perform a “two-step media” recovery process. This process is documented in the *Ignite-UX Administration Guide* in the “Tape Recovery with No Tape Boot Support” section of Chapter 9, “System Recovery.”

HP hopes to support tape boot on HP Itanium-based servers in the future, but a specific availability date is not yet known.

Update-UX

The `update-ux` command updates the HP-UX operating system to a newer version.

Summary of Change

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

Update-ux has been updated to incorporate defect fixes. There are no new features or functionality in update-ux.

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

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

Impact

There are no impacts.

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 v2 Installation and Update Guide*, available at <http://docs.hp.com>
- The *update-ux* (1M) manpage.

Obsolescence

Not applicable.

What's in This Chapter?

This chapter covers directory, file system, and disk management, including:

- 16 Terabyte File System Support (see page 160)
- AutoFS/Automounter (see page 160)
- DeviceIDS (see page 162)
- File Systems Backup and Recovery Commands (Deprecated) (see page 163)
- Hierarchical File System (HFS) (Deprecated) (see page 164)
- HP CIFS Client (see page 165)
- HP CIFS Server (see page 166)
- Logical Volume Manager (LVM) and MirrorDisk/UX (see page 168)
- Network File System (NFS) (see page 169)
- Network Information Service Plus (NIS+) (Deprecated) (see page 171)
- Portable File System (PFS) (Obsolete) (see page 173)
- VERITAS File System 3.5 (HP Online JFS/JFS 3.5) (see page 175)
- VERITAS Volume Manager 3.5 for HP-UX (Base) (see page 177)

16 Terabyte File System Support

Support for VxFS 3.5 file systems of up to 16 TB has now been certified. Files can be a maximum of 2 TB. File systems larger than 2 TB must be created on a VERITAS Volume Manager volume.

For further information, see “VERITAS File System 3.5 (HP Online JFS/JFS 3.5)” on page 175.

AutoFS/Automounter

AutoFS/Automounter mounts directories automatically when users or processes request access to them, and it unmounts them automatically after they have been idle for a period of time.

Summary of Change

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

HP has obsoleted the Automounter beginning with the HP-UX 11i v2 release.

AutoFS was originally released in all versions of HP-UX beginning with HP-UX 10.30 and is the replacement for Automounter. AutoFS performs the same functions as Automounter, but it has a newer, more reliable design with additional capabilities. AutoFS co-existed with the Automounter up until the HP-UX 11i v2 release. Beginning with the HP-UX 11i v2 release, AutoFS was upgraded to include the features of the SUN ONC AutoFS version 2.3 product.

The HP-UX 11i v2 AutoFS facility was ported to HP-UX 11i v1 and released in the form of a depot bundle named ENHAUTO, thereby giving HP-UX 11i v1 the improved AutoFS version 2.3 functionality. Upon upgrading to HP-UX 11i v2, the AutoFS version 2.3 functionality is native and the only automounting facility supported; there is no need to install the ENHAUTO depot.

The AutoFS version 2.3 upgrades mentioned include:

- Only the file systems that are being accessed are automatically mounted, rather than all file systems hierarchically related to such file systems. This on-demand mounting increases performance by preventing unnecessary mounts and unmounts.
- All directories that could be mounted for an indirect map are shown, rather than just the directories that are mounted. This browsability is a convenience for users and can increase performance by not forcing mounts and unmounts in order to view directories.
- Concurrent mounts and unmounts are allowed to take place in a multi-threaded automount daemon. This increases performance and prevents hangs in the service if a server is unavailable.

- Loopback NFS mounts can be used instead of the default LOFS mounts when mounting a local file system. This provides increased reliability in a high availability NFS environment.
- Support for the CIFS Client is provided.

For both Itanium® and PA-RISC, AutoFS is now the only automounting facility and will possess the improved functionality of the AutoFS found in HP-UX 11i v2.

See also “DeviceIDS” on page 162.

What’s New for Customers of HP-UX 11i v2?

There are no changes from previous HP-UX 11i v2 releases.

Impact

For Itanium: There are no impacts.

For PA-RISC: With HP-UX 11i v2 functionality, AutoFS provides improvements in reliability and performance over its predecessors.

IMPORTANT

You should be aware of the following problem:

The `on <host.name> <command>` operation fails when running on an AutoFS managed directory where the mount is the local directory of this host (LOFS mount) and the host to execute the `on` command is not local. It fails with the following error: Mount Failed. Refer to JAGaf35426 for details.

HP provides two workaround solutions:

- Use the `automountd -L` command with AutoFS 2.3 to do NFS loopback mounts instead of loopback LOFS mounts.
 - Change the directory to another exported directory before executing an `on` command.
-

Compatibility

There are no known compatibility issues.

Performance

For Itanium: There is no performance difference in AutoFS.

For PA-RISC: With HP-UX 11i v2 functionality, AutoFS provides significant improvements in performance over its predecessors.

Documentation

The following man pages apply to the AutoFS product:

- `automount` (1M)
- `automountd` (1M)

For more information on AutoFS version 2.3 on HP-UX 11i v2, see the following:

- HP-UX 11i v2 Release Notes (HP Part Number **5990-6737**)
- NFS Services Administrator's Guide, HP-UX 11i v2 (HP Part Number **B1031-90053**)

For more information on Enhanced AutoFS on HP-UX 11i v1, see the following:

- Enhanced AutoFS Release Notes, HP-UX 11i v1 (HP Part Number **5990-7200**)
- Enhanced AutoFS Administrator's Guide, HP-UX 11i v1 (HP Part Number **5990-7199**)

Obsolescence

HP has obsoleted the Automounter beginning with the HP-UX 11i v2 release.

For both Itanium and PA-RISC, AutoFS is now the only automounting facility and will possess the improved functionality of the AutoFS found in HP-UX 11i v2.

DeviceIDS

DeviceIDS provides a significant performance improvement for AutoFS¹ at unmount time because `automountd` will no longer have to make over-the-wire calls to every server in the mount table at unmount time before unmounting a file system. This enhancement will cause file system device ID's to be stored in the system mount table (`/etc/mnttab`) along with all the other mount information. Once this is installed, applications can match file system entries in the mount table based on device ID.

Summary of Change

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

The following features were previously released on the HP-UX 11i v1 Software Pack for the June 2004 release. They are now part of the HP-UX 11i v2 core.

- Improved AutoFS performance at unmount time
- Other applications or file system types can also take advantage of this feature
- Other commands which would previously generate an over-the-wire stat call may also take advantage of this new functionality

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

This is a performance enhancement as the unmount will not have to get the information from the remote file system.

1. See also "AutoFS/Automounter" on page 160.

Compatibility

There are no known compatibility issues.

Performance

This improves performance.

Documentation

A Product Note is available on <http://docs.hp.com>.

Obsolescence

Not applicable.

File Systems Backup and Recovery Commands (Deprecated)

The `fbackup` command combines features of `dump` and `ftio` to provide a file system backup mechanism.

The `frecover` command reads media written by the `fbackup` command.

The `ftio` tool is designed specifically for copying files to tape drives.

Summary of Change

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

The commands `fbackup` (1M), `frecover` (1M), and `ftio` (1) have been deprecated. In a future HP-UX release, the ability to create new archives using the `fbackup` (1M) or `ftio` (1) commands will be discontinued.

Support will be continued for archive retrieval.

Customers should stop using `fbackup` (1M) and `ftio` (1) for creating archives. The standard `pax` (1) command (portable archive interchange) should be used as a favored replacement to create archives.

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

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

Impact

There is no immediate impact in this release of HP-UX 11i v2. This is a deprecation notice for future HP-UX releases. You can prepare by migrating to the favored replacement `pax` (1).

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

There are no documentation changes.

Obsolescence

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

Hierarchical File System (HFS) (Deprecated)

With this notice, HP is giving advanced warning to customers that the HFS (also known as UFS) file system type is now deprecated. 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 either VxFS (VERITAS File System) and/or AdvFS (Advanced File System, which will be initially available in HP-UX 11i v3) file systems. Customers can consult with HP support staff regarding the choice of file system type that best fits their site and system needs.

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.

There is no functional impact in this release of HP-UX 11i v2, as HFS will not be removed until a future release. However, performance of heavily accessed HFS filesystems may not be acceptable on machines with more than 64-processors. VxFS is required for performance and scaling on such systems,¹ as HFS is known to have CPU scaling issues.

1. See “VERITAS File System 3.5 (HP Online JFS/JFS 3.5)” on page 175.

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.

With these products, in a heterogeneous Windows and HP-UX network, any system can be a client or server to any other system.

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.

The HP CIFS Client A.01.09.02 is available for HP-UX 11i v2.

Summary of Change

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

The HP CIFS Client A.01.09.02 contains the following:

- 64-bit PAM-NTLM libraries
- Defect fixes

What’s New for Customers of HP-UX 11i v2?

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

Impact

This release of HP CIFS Client provides 64-bit PAM-NTLM libraries support and bug fixes.

Compatibility

There will be no compatibility impact.

Performance

The implementation for the new version of HP Client A.01.09.02 does not degrade performance.

Documentation

The user manual *HP CIFS Client A.01.09 Administrator's Guide* and product release note *HP CIFS Client A.01.09.02 Release Note* can be found in the "Networking and Communications" section at <http://www.docs.hp.com> and in the product directory `/opt/cifsclient/HP_docs`.

Obsolescence

Not applicable.

HP CIFS Server

The HP CIFS Server provides HP-UX with a distributed file system based on the Microsoft Common Internet File System (CIFS) protocols. It supports file sharing, printer access and authentication services to CIFS clients, including Microsoft Windows NT, XP, and 2000, and HP-UX machines running HP CIFS Client software.

Summary of Change

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

The HP CIFS Server 2.2j (version A.01.11.02) is based on Samba 2.2.9. It contains new features and bug fixes. The following lists the new features:

- HP CIFS Server A.01.11.01 provides the new LDAP support functionality. With LDAP integration support, you can store the Windows user information in an LDAP directory which had been previously stored in the `smbpasswd` file. Thus, when you invoke the `smbpasswd` program to add, delete or change Windows user information, updates are made in the LDAP user database rather than the `smbpasswd` file. Moreover, the SMBD program will use the LDAP directory to look up the Windows user information during authentication and authorization processes.
- Provides the ability to configure multiple HP CIFS servers to communicate with the LDAP directory, as LDAP provides a centralized and scalable management of user databases.
- Provides SSL (Secure Sockets Layer) support to secure communication between HP CIFS servers and LDAP directory servers. The HP CIFS Server supports SSL with password as the credential, to ensure confidentiality and data integrity between CIFS servers and LDAP directory.
- Provides LDAP support for the HP CIFS Server with HP LDAP-UX Integration product, **J4269AA**, and HP Netscape Directory Server, **J4258CA**, product configuration.
- Supports the Samba subschema, `/opt/samba/LDAP/98samba.ldif`, to extend the Netscape Directory Server with Samba account object classes and attributes.

- Supports the `import_smbpasswd.pl` migration script to automatically import users and passwords data from the existing `/var/opt/samba/private/smbpasswd` file into the LDAP directory.
- Supports Samba LDAP tools that help you to maintain users and passwords in the Netscape Directory Server. These tools are in the `/opt/samba/LDAP/smbldap-tools` directory.
- Changes have been made to deliver the following new configuration parameters for the LDAP feature support:
 - `ldap enable`
 - `ldap port`
 - `ldap server`
 - `ldap suffix`
 - `ldap admin dn`
 - `ldap ssl`

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

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

Impact

This new version of HP CIFS Server provides new LDAP support functionality. When you integrate the HP CIFS Server with LDAP support, you are able to consolidate Windows user accounts and configuration information into a central LDAP directory.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For detailed information about new features and defect fixes, see the following documentation located in the “Networking and Communications” section at <http://docs.hp.com>:

- *HP CIFS Server 2.2h Release Note version A.01.11*
- *HP CIFS Server 2.2i Release Note version A.01.11.01*
- *HP CIFS Server 2.2j Release Note version A.01.11.02*
- *HP CIFS Server 2.2i Administrator's Guide*

Obsolescence

Not applicable.

Logical Volume Manager (LVM) and MirrorDisk/UX

Logical Volume Manager (LVM) is the HP-UX proprietary Volume Manager. It provides the user with flexibility in configuring and managing mass storage resources. In HP-UX 11i v2 and earlier releases of HP-UX, the LVM kernel and commands are part of the core HP-UX product and always installed.

MirrorDisk/UX (**B2491BA**) is a separately purchasable HP-UX ISU product which enables mirroring options in LVM commands.¹ Since MirrorDisk/UX relies on the same source code base as the core LVM commands, modifications to the LVM core commands product also affect the MirrorDisk/UX product.

Summary of Change

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

- LVM's serialization of I/O requests has been greatly reduced to improve system performance.
- 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.
- Various defects have been fixed.

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

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

Impact

- Multiple defect fixes.
- Physical volumes larger than 256GB with existing software bad block entries will get media errors on those relocated blocks.
- Performance improvements (see "Performance" below).

Compatibility

All changes meet AACT compatibility requirements and there are no known regressions from previous releases.

1. MirrorDisk/UX is bundled in the Enterprise and Mission Critical Operating Environments. It may also be purchased as a standalone product.

CAUTION

The only default behavior difference between Itanium and PA-RISC systems is the requirement to specify a disk partition when running the `pvcreate` command on an Itanium boot disk. Unlike PA-RISC, Itanium boot disks contain multiple partitions. On Itanium, if you specify the entire disk (e.g., `pvcreate /dev/dsk/c2t0d0`) the same way you would on PA-RISC, your boot disk can be destroyed. Instead, on Itanium, you need to use the device file name which includes the partition information when specifying Itanium boot disks (e.g. `pvcreate /dev/dsk/c2t0d0s2`).

Performance

A performance improvement has been made to minimize I/O serialization.

Documentation

For more information about LVM, see *Managing Systems and Workgroups*, available at <http://www.docs.hp.com>.

In addition, there are over thirty existing manpages for LVM and its commands. The *lvm* (4) manpage provides an overview and list of commands. Manpages with notable changes are *pvdisplay* (1M) and *pvcreate* (1M) to correct documentation issues.

Obsolescence

Not applicable.

Network File System (NFS)

Network File System (NFS) provides transparent access to files from anywhere on the network. An NFS server makes a directory available to other hosts on the network by “exporting” 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 looks like part of the local file system.

Summary of Change

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

- A new option `-f` has been added to the `umount` command:
The `-f` option forcibly unmounts a file system. Without this option, `umount` does not allow a file system to be unmounted if a file on the file system is busy.

CAUTION Using this option can cause data loss of open files. Programs which access files after the file system has been unmounted will get an error.

- The following correct `nfsd` daemons information has been updated in all related documents:
 - The NFS server daemons (`nfsd`) handle client file system requests:

For NFS over UDP transport, the default number of `nfsd` processes is defined by the `NUM_NFSD` variable in the `/etc/rc.config.d/nfsconf` file. This default number of `nfsd` processes over UDP is a suggested number for the HP-UX kernel. At the system boot time, the kernel reads this default number and it automatically rounds up the number of NFS server daemons (`nfsds`) to be a multiple of the number of active CPUs in the system. For NFS over TCP transport, only one additional `nfsd` daemon is started to service TCP requests. For more information, refer to the `nfsd` (1M) manpage.

NOTE The default number of `nfsd` processes running on an NFS server is 16 `nfsd` processes over UDP transport (`NUM_NFSD` variable in the `/etc/rc.config.d/nfsconf` file), plus one `nfsd` process over TCP transport. Any reference to “optimal/best value” for `nfsd`'s or `biod`'s must be replaced by a default value which is 16.

- Performance Tuning:

You can use the `/usr/sbin/nfsd <num_nfsd>` command to start more NFS server daemons (`nfsds`). The value of the `<num_nfsd>` option is the suggested number of file system request daemons that will start. The actual number of daemons started is one daemon to support kernel TCP threads, plus a number of UDP daemons. The number of UDP daemons started is the value of `num_nfsd` rounded up to a multiple of the number of active CPUs in the system. There must be no `nfsd` process running on the NFS server when issuing the `/usr/sbin/nfsd <num_nfsd>` command. For more information, refer to `nfsd` (1M) manpage.
- For more information on how the number of `nfsd` processes impacts performance, refer to the “NFS Performance Tuning for HP-UX 11.0 and 11.11 Systems” white paper available at <http://docs.hp.com/hpux/onlinedocs/1435/NFSPerformanceTuninginHP-UX11.0and11iSystems.pdf>

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

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

Impact

The new option `-f` is a much-requested enhancement to HP-UX NFS.

Compatibility

Customers who use the `-o vers` option may see an increased frequency of mount failures due to a change in the existing fallback behavior.

For the most part, a normal administrator on a stand-alone system will not have a problem with this fix (i.e., they never hit the problem to begin with). The biggest risk is going to be environments where nobody notices that a PV2 mount occurred or situations where they unmounted and remounted the filesystem manually using PV3. These customers will see an increased number of mount failures.

A customer who wishes fallback behavior simply needs to remove the `-o vers` option from their mount command to get the default fallback behavior.

Performance

There are no known performance issues.

Documentation

For further information, see the following documents:

- the *nfsd* (1M) manpage
- the *NFS Services Administrator's Guide for HP-UX 11i v2* at <http://www.docs.hp.com/hpux/pdf/B1031-90053.pdf>

Obsolescence

Not applicable.

Network Information Service Plus (NIS+) (Deprecated)

Network Information Service Plus (NIS+) 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 the network. You can read or modify these databases from any host in the network, if you have the proper credentials and access permissions. NIS+ is part of the Open Network Computing (ONC) product known as NFS Services.¹

1. See “Network File System (NFS)” on page 169.

Summary of Change

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

This is to announce that HP-UX 11i v2 release is the last HP-UX release on which NIS+ is supported. NIS+ will be discontinued on HP-UX 11i v3 (B.11.31). HP will support NIS+ for the life of the OS release on 11.0, 11i v1, and 11i v2.

HP will be introducing a migration strategy to facilitate customers moving from NIS+ to Lightweight Directory Access Protocol (LDAP). HP fully supports the industry standard naming services based on LDAP. LDAP is the recommended replacement for NIS+.

As a replacement for NIS+, the LDAP-UX integration product (**J4269AA**) offers:

- LDAP for industry-wide acceptance.
- A common data repository for network-based account management in the LDAP directory.
- Integration (unified login) with other directory-enabled applications, including Windows.
- Authorization provided by the LDAP directory server and the LDAP-UX client.
- A variety of authentication mechanisms supported by the LDAP directory server.
- Login and password policies as defined by the directory server.
- Access Control and other privacy features of the directory server.
- Centralized and distributed enterprise management.

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

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

Impact

HP plans to provide the migration package, in the form of migration scripts and documentation, in early calendar year 2005. Customers will use the migration scripts to migrate data from NIS+ to the LDAP directory. The migration guidelines will document the different configurations and migration steps used to migrate NIS+ clients and servers to LDAP. The migration package will run on HP-UX 11.0, 11i v1 and 11i v2.

The migration will entail migrating the NIS+ server to the LDAP directory server by using the migration package and installing the LDAP-UX Integration product on all NIS+ clients.

For customers wishing to migrate to LDAP with current version of HP-UX 11i v2, the LDAP-UX product is available. However, there are additional considerations the customer needs to be aware of:

- The LDAP-UX Integration product will function with the Netscape directory server available on HP-UX 11.00, 11i v1, 11i v2, as well as other directory servers products and on other platforms. See the LDAP-UX product release notes for a more comprehensive directory server support statement.
- The LDAP-UX Integration product B.03.20 supports integration with shadow password.

- The LDAP-UX Integration product B.03.30, available in July 2004, supports integration with Trusted Systems.
- The migration package will be available in a future release of the LDAP-UX Integration product planned for early calendar year 2005.

Compatibility

- Valid modification requests to update NIS+ tables will now fail if the size of the request is larger than 9000 bytes. This affects the commands `nistbladm` and `nisaddent`, and the NIS+ APIs `nis_add()` and `nis_modify()`.
Depending on the record size, previously successful NIS+ updates may now fail. The failure can only be resolved by the administrator increasing the size of the `rpc.nisd` receive buffer via the new command line option `-z`. (See the *rpc.nisd* (1M) manpage for more information.)
- Customers wishing to migrate from NIS+ in a Trusted Systems environment need to know that the LDAP-UX Integration product B.03.30 will support integration with Trusted Systems.

Performance

There are no known performance issues.

Documentation

For further information, see the following documents:

- the *rpc.nisd* (1M) manpage
- the *NFS Services Administrator's Guide for HP-UX 11i v2* at <http://www.docs.hp.com/hpux/pdf/B1031-90053.pdf>

See also the drawer statement at <http://www.software.hp.com/RELEASES-MEDIA/discon/NIS+.htm>.

Obsolescence

NIS+ is currently deprecated. It will be obsoleted in HP-UX 11i v3.

Portable File System (PFS) (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. This package exists on PA-RISC and, for HP-UX 11i v2, on Itanium using the emulator to execute the PA-native code.

Summary of Change

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

PFS is obsolete, and no longer supported on any HP-UX release.

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. For HP-UX 11i v2, this new, equivalent functionality is provided with the core HP-UX OS and is default.

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

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

Impact

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. The standard Unix file systems commands and procedures can be used to access CD-ROM file systems (including ISO-9660 file systems with Rock Ridge Extensions), just as any other file system.

Customers that migrate from PFS to using CDFS to access the variety of CD-ROM file system formats, will be able to use an HP supported product.

Compatibility

The PFS interfaces are delivered but not supported with HP-UX 11i v2. The PFS file system interfaces will be discontinued (no longer delivered with HP-UX) on HP-UX 11i v3. Customers that currently access CD-ROM file systems using PFS will need to migrate to using CDFS.

Performance

The performance while accessing CD-ROM file systems using CDFS is significantly better than the performance of PFS.

Documentation

See the *mount* (1M) and *mount_cdfs* (1M) manpages for the replacement functionality.

Obsolescence

PFS is obsolete. It does not function properly and is no longer supported in 11.00, HP-UX 11i v1 or HP-UX 11i v2 releases. It will be permanently discontinued in HP-UX 11i v3.

PFS was originally adopted by HP to provide accessibility to RockRidge Interchange file format. The equivalent functionality is now provided and supported via CDFS with RockRidge Interchange extensions support.

VERITAS File System 3.5 (HP Online JFS/JFS 3.5)

The VERITAS File System 3.5 (HP OnlineJFS/JFS 3.5) product is an extent-based, intent-logging file system. This product is particularly geared toward UNIX environments that require high performance and availability, and that deal with large volumes of data. The VERITAS File System 3.5 (HP OnlineJFS/JFS 3.5) product is the next generation of the product known as HP OnlineJFS/JFS 3.3.

VxFS 3.5 has been released as the default file system for HP-UX 11i v2 operating system. VxFS 3.5 is integrated as part of core HP-UX 11i v2 and is installed by default.

The *base* VERITAS File System 3.5 (HP JFS 3.5) is a new version of the base journaled file system for HP-UX 11i and is available as part of HP-UX 11i v2, at no extra cost.

The *full* VERITAS File System 3.5 (HP OnlineJFS 3.5) enables advanced file system features and should be ordered as a separate product.

NOTE

The terms base VERITAS File System 3.5, HP JFS 3.5, and base VxFS are used interchangeably in this document.

In addition, the terms full VERITAS File System 3.5, HP OnlineJFS 3.5, and full VxFS are used interchangeably in this document.

All of these terms may appear in other related VERITAS File System (HP OnlineJFS/JFS 3.5) documentation.

Summary of Change

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

The VERITAS File System 3.5 (HP Online JFS/JFS 3.5) release contains the following new and changed features:

- New and/or enhanced tunable parameters (`hsm_write_prealloc`, `read_ahead`, `write_throttle`).
- Enhanced VxFS Commands - VxFS commands that have been enhanced are `vxdump`, `vxrestore`, `vxfsconvert`, and `mount`.
- New I/O Error Handling Policy - The `ioerror` option has been added to the `mount` command to provide four different ways to handle system I/O errors.
- New Default Intent Log Mode - To increase performance, the `mount` command `delaylog` option has replaced the `log` option as the default for base/full VxFS 3.5 file systems.
- New Default System Block Size - The new default file system block size is 1024 bytes for all base/full VxFS 3.5 file systems.
- VxFS System Activity Reporter - The `vxfsstat` command displays VxFS file system statistics, which can be used to analyze performance and aid in tuning.
- Forced Unmounts - A base/full VxFS 3.5-specific `vxumount` command is available in this release to perform forced unmounts of VxFS file systems.

- **Disable File Access Time** - The `-o noatime` option has been added to the `mount` command to disable access time updates.
- **Parallel Log Replay** - The `fsck -o p` option and `fsck -p` option allow a log replay on multiple file systems in parallel.
- **New VxFS Directory Name Lookup Cache (DNLC)** - The new DNLC caches filenames less than or equal to 32 characters instead of 39 characters as in VxFS 3.3.
- **New VxFS Buffer Cache for Meta-data only** - The new VxFS buffer cache can be tuned with the `vx_bc_bufhw` global tunable.
- **The VERITAS File System 3.5 (HP OnlineJFS/JFS 3.5) supports a theoretical file system limit of 32 terabytes.** In this release, HP supports and has tested 16 TB filesystems.
- **New Version 5 Disk Layout** - Version 5 enables the creation of file system sizes up to 16 terabytes. Files can be a maximum of 2 terabytes. File systems larger than 2 TB must be created on a VERITAS Volume Manager volume. Version 5 also enables setting up to 1024 access control list (ACL) entries.

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

The VERITAS File System 3.5 (HP OnlineJFS/JFS 3.5) supports a theoretical file system limit of 32 terabytes. In this release, HP supports and has tested 16 TB filesystems.

Machines Affected or No Longer Supported

This release is the last to support the VxFS Version 2 and Version 3 disk layouts. You can still mount these older disk layout versions, but you cannot create them using the VERITAS `mkfs` command.

VxFS 3.5 on HP-UX 11i v2 supports the following disk layout versions:

Table 6-1

Supported Disk Layout Versions

Disk Layout Version	Can Create File System	Can Mount File System
2 and 3	No (obsoleted)	Yes
4 and 5	Yes	Yes

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

This release includes manpages as part of the VERITAS File System 3.5 (HP Online JFS/JFS 3.5) product.

For further information, see the *VERITAS File System 3.5 (HP Online JFS/JFS 3.5) Administrator's Guide*, available at <http://docs.hp.com>.

Obsolescence

- VxFS 3.5 on HP-UX 11i v2 is a new release. It doesn't obsolete VxFS 3.5 on HP-UX 11i v1.
- The *vx_fancy_readahead* tunable is obsolete and has been replaced by the file system tunable *read_ahead*. Additionally, the following tunables are obsolete:
 - *vx_ncsize*
 - *vxfs_ra_per_disk*
 - *vx_max_ra_kbytes*
- The *labelit* (1M) command is obsolete starting this release.
- The *fscat* (1M) command is also obsolete.

VERITAS Volume Manager 3.5 for HP-UX (Base)

Volume Manager (VxVM) is a storage management subsystem that allows you to manage physical disks as logical devices called volumes. (A volume is a logical device that appears to data management systems as a physical disk.) VxVM overcomes physical restrictions imposed by hardware disk devices by providing a logical volume management layer. This allows volumes to span multiple disks.

With Ignite-UX installed, VxVM offers “rootability”: you can select at installation time to have your root disk managed by VxVM.

Summary of Change

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

- New version of VEA (VRTSob/VRTSobgui products in Base-VXVM bundle)
- New version of SIG Licensing (VRTSvlic product in Base-VXVM bundle)
- Fixes for defects since the initial release of HP-UX 11i v2 (October 2003) and fixes to have patch parity with VxVM 3.5 on HP-UX 11i v1.

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

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

Impact

No customer impacts expected.

Compatibility

There are no known compatibility issues.

Performance

There is no performance degradation with updated products and patches.

Documentation

The following HP-UX 11i v2 documentation for VxVM 3.5 are available on HP's documentation Web site at <http://www.docs.hp.com>:

- *VERITAS Volume Manager 3.5 Administrator's Guide for HP-UX*
- *VERITAS Volume Manager 3.5 Hardware Notes for HP-UX*
- *VERITAS Volume Manager 3.5 Installation Guide for HP-UX*
- *VERITAS Volume Manager 3.5 Migration Guide for HP-UX*
- *VERITAS Volume Manager 3.5 Release Notes for HP-UX*
- *VERITAS Volume Manager 3.5 Troubleshooting Guide for HP-UX*
- *VERITAS Volume Manager 3.5 User's Guide - VERITAS Enterprise Administrator for HP-UX*

Complete VxVM 3.5 manpages are delivered with the `VRTSvm.doc` package of the VxVM bundled product.

The following documents, all available at <http://www.docs.hp.com>, provide additional information about using VERITAS Cluster Volume Manager (CVM):

- *Managing HP Serviceguard* describes how to use and configure clusters with CVM and VxVM in an HP Serviceguard environment.
- *Configuring OPS Clusters with ServiceGuard OPS Edition* describes how to use and configure clusters with CVM in a ServiceGuard OPS Edition environment.
- *VERITAS Volume Manager 3.5 Administrator's Guide* includes a chapter, "Chapter 10, Administering Cluster Functionality," that describes CVM features.
- *VERITAS Volume Manager 3.5 User's Guide - VERITAS Enterprise Administrator's Guide* includes a chapter, "Chapter 6, Cluster Tasks," that describes how to manage cluster features with the Storage Administrator GUI.

Obsolescence

Not applicable.

What's in This Chapter?

This chapter describes new and changed Internet and networking functionality supported by the HP-UX 11i v2 release, including:

- HP Data Link Provider Interface (DLPI) (see page 181)
- HP Openview Emanate Agent (see page 183)
- HP WBEM Services for HP-UX (see page 184)
- HP-UX LAN Provider (see page 185)
- HP-UX Mobile IPv6 (see page 186)
- HP-UX Web Server Suite (see page 188)
 - HP-UX Apache-based Web Server (see page 190)
 - HP-UX Tomcat-based Servlet Engine (see page 192)
 - HP-UX Webmin-based Admin (see page 193)
 - HP-UX XML Web Server (see page 194)
- Internet Services (see page 195)
 - BIND (see page 195)
 - BOOTP and DHCP (see page 197)
 - Dynamic Host Configuration Protocol (DHCP) v6 (see page 198)
 - inetd (see page 200)
 - IPv4 Address Display (see page 201)
 - IPv6 Support for All Internet Services Products (see page 202)
 - Logging User Accounting Information (see page 203)
 - Multimedia Streaming Protocols (MSP) (see page 204)
 - rbootd (see page 206)
 - remsh/rexec (see page 206)
 - rexecd (see page 208)
 - Route Administration Manager for IPv6 Routing Protocols (RAMIPv6) (see page 209)
 - rwhod (see page 210)
 - Secure Internet Services (see page 211)
 - Sendmail (see page 212)
 - Service Location Protocol (SLP) (see page 214)
 - TCP Wrappers (see page 216)
 - telnetd (see page 217)

- WU-FTPD (see page 218)
- LAN Administration Commands (see page 220)
- Mozilla Application Suite (see page 221)
- Netscape Directory Server (see page 223)
- NetTL Network Tracing and Logging (see page 224)
- Network Transport (ARPA) (see page 226)
- Point-to-Point Protocol (see page 231)
- STREAMS/UX (see page 232)

HP Data Link Provider Interface (DLPI)

HP Data Link Provider Interface (DLPI) is an industry standard definition for message communications to STREAMS-based network interface drivers. HP's implementation of DLPI, HP DLPI, conforms to the DLPI Version 2.0 Specification as a Style 2 provider. DLPI module provides the core link layer infrastructure for networking drivers on HP-UX.

Summary of Change

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

- Enhancements to the Streams interface to provide a richer feature set for network stack feature options. This will impact existing IP Stream modules.
- New third-party driver interface for non-native Streams drivers.
- Consolidation of .h files and elimination of obsolete functions:
 - Header files obsoleted¹:
 - <sio/lanc.h>
 - <sio/lan_dlpikrn.h>
 - Header files deprecated²:
 - <sys/netio.h>
 - New header files:
 - <sio/dlpi_drv.h>
- Obsolescence of the dump read capability of the *lanscan* (1M) command. This feature has been obsoleted.
- Support for TCP Segmentation Offload (TSO or Large Send). It provides performance benefits with gigabit and aggregation products that support this feature.
- Support for the InfiniBand technology and the IPoIB driver product. It enables customers to use the TCP/IP networking stack over InfiniBand networks. (For information about InfiniBand, refer to the documents at <http://docs.hp.com/hpux/netcom/index.html#InfiniBand>.)
- Support for the 64-bit Management Information Base (MIB)³ for high-speed networking drivers.

1. No longer delivered or supported.

2. Planned for future obsolescence.

3. A Management Information Base (MIB) stores information on a collection of managed objects.

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

- Support for the Virtual LAN (VLAN) functionality. For other products required for VLAN functionality, see the following:
 - “Gigabit Ethernet and Fast Ethernet” on page 80
 - “LAN Administration Commands” on page 220
 - “SAM - Nodal Network Configuration (NNC)” on page 150
- Support for TCP Segmentation Offload (TSO or Large Send). It provides performance benefits with gigabit and aggregation products that support this feature.
- Support for the InfiniBand technology and the IPoIB driver product. It enables customers to use the TCP/IP networking stack over InfiniBand networks. (For information about InfiniBand, refer to the documents at <http://docs.hp.com/hpux/netcom/index.html#InfiniBand>.)
- Support for the 64-bit Management Information Base (MIB) for high-speed networking drivers.

Impact

- Enhancements to the Streams interface to provide a richer feature set for network stack feature options. This includes the options negotiations mechanism between the DLS user/application and the underlying drivers. This will impact existing IP Stream modules requiring recode and recompile.
- Third-party driver writers can take advantage of the non-native driver interfaces for their drivers. Third-party driver writers supporting their own native models can now hook more easily into the `lanscan` tool.
- With the consolidation of `.h` files comes a cleanup of obsolete declarations and a division of application and driver required structures.

Compatibility

- Kernel IP Stream modules that previously used options or fastpath negotiation features or looked into network data packets in previous versions *must* make changes and recompile for HP-UX 11i v2.
- Third-party driver writers can now write non-native drivers. Native driver writers will need to make changes if they want to interact with HP's `lanscan` command. This would require code and recompilation.
- Driver writers will need to recode and recompile with the new include files and remove references to obsoleted include files.

Performance

There are no known performance issues.

Documentation

For further information, see the following documentation:

- the lanadmin, lanscan, and linkloop manpages
- *DLPI Programmers Guide*, available at <http://www.docs.hp.com>
- *Driver Development Guide*, available from the Developer and Solution Partner Program (DSPP) at <http://www.hp.com/dspp>.

Obsolescence

- The dump read capability of lanscan has been obsoleted.
- The following header files have been removed:
 - <sio/lanc.h>
 - <sio/lan_dlpikrn.h>
- The following header file has been deprecated:
 - <sys/netio.h>

HP Openview Emanate Agent

HP Openview Emanate Agent (OVSNMPPAgent) consists of a master agent and a set of subagents. These subagents include the mib-2 subagent, the hp-unix subagent, the native adapter subagent, and the trap destination subagent. HP Openview Emanate Agent is responsible for responding to SNMP queries.

Summary of Change

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

Compared to the HP-UX 11i v1 release, HP Openview Emanate Agent version 15.3 includes the following additions:

- The agents are now SNMPv3 compatible. Requests coming from any SNMPv3 manager can be responded to by these SNMP agents.
- The IPv6 agent is also a new addition. Since the IPv6 stack is available on HP-UX 11i v2 by default, the IPv6 subagent is also running.

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

This release includes a defect fix.

Impact

With SNMPv3 support, you can now use SNMPv3 managers to talk to the SNMP agent. The IPv6 subagent can also be used to take care of IPv6-specific MIBs on your devices.

Compatibility

All the startup scripts and configuration files are compatible with HP-UX 11i v1 and HP-UX 11i v2. HP Openview Emanate Agent version 15.3 is not supported on HP-UX 10.20.

Performance

There are no known performance issues.

Documentation

For further information, see the following manpages:

- *snmpdm* (1M)
- *snmpd.conf* (4)
- *snmpd* (1M)
- *naaagt* (1M)

Obsolescence

The following tlink will be obsoleted in a future release:

```
/etc/snmpd --> /usr/sbin/snmpd
```

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 product is the HP-UX implementation of the DMTF WBEM standard. HP WBEM Services for HP-UX, version A.02.00.04, supports HP-UX 11i v2 and is included as a component in the HP-UX 11i v2 Foundation OE.

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?

In addition to numerous defect fixes, this release of HP WBEM Services for HP-UX introduces support for Common Information Model (CIM) Process Indications as defined by the DMTF WBEM Specification.

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

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

Impact

There is no significant change with the exception of access to the new features listed previously.

Compatibility

There are no known compatibility issues. All well-behaved WBEM clients and providers compiled with previous releases of HP WBEM Services for HP-UX are expected to interoperate with this new version.

Performance

There are no significant performance changes with this release of the product.

Documentation

- Manpages are packaged with the product and are placed in the directory `/opt/wbem/share/man`.
- The WBEM Web site is available at www.hp.com/go/wbem.
- The following documents are available at <http://www.docs.hp.com/hpux/netsys/index.html>:
 - *HP WBEM Services for HP-UX and Linux System Administrator's Guide*
 - *HP WBEM Services Version A.02.00 Release Notes (HP-UX 11i v1, HP-UX 11i v2, Linux)*

Obsolescence

Not applicable.

HP-UX LAN Provider

HP-UX LAN Provider (WBEMP-LAN or CIMP-LAN) is a CIM Provider for Ethernet-based LAN technologies on the HP-UX operating system. Client applications can use this Provider to determine 100bt and Gigabit links available on the system 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?

The first release of this product is on this release of HP-UX 11i v2.

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

The first release of this product is on this release of HP-UX 11i v2.

Impact

You can use WBEM-based clients to access the LAN Provider and collect information about the Ethernet links on your system.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more information about the LAN Provider module, see the following:

`/opt/lanprovider/doc/HPUX_LANProvider.pdf`

Obsolescence

Not applicable.

HP-UX Mobile IPv6

HP-UX Mobile IPv6 A.01.01 implements the Mobile IPv6 protocol, which uses and expands several IPv6 protocol mechanisms. HP-UX Mobile IPv6 provides mobility support for IPv6 on HP-UX servers (HP-UX Mobile IPv6 is not Mobile Node client software).

With Mobile IPv6, Mobile Nodes such as laptops, PDAs, and cellular phones, remain reachable and retain their network connections while moving and attaching to the network from different locations. Each Mobile Node sends and receives IP data packets using a single, fixed IPv6 address—known as its Home Address—for an extended period regardless of its location.

Without Mobile IPv6, Mobile Nodes cannot use a single, fixed IPv6 address while they roam. Instead, each time a Mobile Node moves and changes network attachment points, it must manually re-configure a new IP address and default router based on its current location, temporarily losing its network connections and ability to communicate in the process.

Summary of Change

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

The first release of HP-UX Mobile IPv6 was version A.01.00 and it was included in the Transport Optional Upgrade Release 2.0 (TOUR 2.0) for HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23). HP-UX Mobile IPv6 A.01.01 for this release of HP-UX 11i v2 offers the same functionality; however, the delivery method is different.

HP-UX Mobile IPv6 A.01.01 delivers the Mobile IPv6 Kernel-module, `mip6mod`, as part of the core transport functionality of HP-UX 11i v2. However, the Mobile IPv6 user-space tools, `mip6admin` and `mip6config`, are delivered in HPUXMOBILEIP, a selectable product on all Operating Environments. HPUXMOBILEIP contains HP-UX Mobile IPv6 A.01.01. (Note: the HP-UX IPv6 Router Advertisement Daemon, which HP-UX Mobile IPv6 utilizes, is also delivered as part of the core transport functionality of HP-UX 11i v2).

Customers who migrate from HP-UX 11i v2 (B.11.23) must take note of the following: even though `mip6mod` is delivered as part of the core transport functionality of HP-UX 11i v2, the kernel fileset of HP-UX Mobile IPv6 A.01.00, `MIPV6_2-KRN`, must not be removed in order for HP-UX Mobile IPv6 to function properly. This condition applies even if a greater version of HP-UX Mobile IPv6, such as A.01.01, is installed on the system.

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

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

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

Further information can be found in the following manpages:

- `mip6mod` (Information about `mip6mod`, the Mobile IPv6 Kernel STREAMS module)
- `mip6admin` (Information about `mip6admin`, the Mobile IPv6 administration tool)
- `mip6.conf` (Information about `mip6.conf`, the Mobile IPv6 configuration file)

- `mip6config` (Information about `mip6config`, the Mobile IPv6 configuration file tool)

See also the following documents, available at <http://docs.hp.com/hpux/netcom/index.html/#HP-UX%20Mobile%20IPv6>:

- *HP-UX Mobile IPv6 Administrator's Guide*
- *HP-UX Mobile IPv6 Release Notes*
- "Introducing HP-UX Mobile IPv6" (White Paper)
- *HP-UX Mobile IPv6 FAQs*

Obsolescence

Not applicable.

HP-UX Web Server Suite

The HP-UX Web Server Suite v2.09 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 190)
- HP-UX Tomcat-based Servlet Engine (see page 192)
- HP-UX Webmin-based Admin (see page 193)
- HP-UX XML Web Server (see page 194)

Installation

The following installation changes have been made in the initial HP-UX 11i v2 release (October 2003):

- Products are now separately installable into their own directory under `/opt/hpws/`.

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.

Table 7-1 Locations of Apache Products

Product	Location
HP-UX Apache-based Web Server	<code>/opt/hpws/apache</code>
HP-UX Tomcat-based Servlet Engine	<code>/opt/hpws/tomcat</code>
HP-UX Webmin-based Admin	<code>/opt/hpws/webmin</code>

Table 7-1 Locations of Apache Products (Continued)

Product	Location
HP-UX XML Web Server Tools	/opt/hpws/xmltools

- After installing, use the `README` and `GETTING_STARTED` documents for details on prerequisites and starting each component. The `README` is located at `/opt/hpws/README`. The `GETTING_STARTED` document is found in multiple locations under each component directory (i.e., `/opt/hpws/apache/GETTING_STARTED`).
- Products do *not* start automatically after installation. Previously, Apache would try to start on port 80.
- For updates, new configuration files are delivered in the standard location if the existing one is unchanged or nonexistent. Otherwise, they are delivered in an alternate location, allowing the system administrator to incorporate the changes individually. Detailed information can be found in the `GETTING_STARTED` document.
- Filenames and variables have changed for the Resource Configuration (RC) files, located in the `/etc/rc.config.d/` directory.

Table 7-2 Resource Configuration Filenames

Product	Filename
HP-UX Apache-based Web Server	hpws_apacheconf
HP-UX Tomcat-based Servlet Engine	hpws_tomcatconf
HP-UX Webmin-based Admin	hpws_webminconf
HP-UX XML Web Server Tools	hpws_xmltoolsconf

Installation Requirements

The following requirements must be fulfilled before certain components/features will work. See the following documentation section for the location of further information.

- Building Apache DSOs using `apxs` depends on Perl installed at `/opt/perl/bin/perl`.
- Fast Perl scripts and Apache modules written in Perl require `mod_perl` to be configured and Perl 5.8.0 (available with the Operating Environment) to be installed.
- HP-UX Tomcat-based Servlet Engine and HP-UX XML Web Server Tools require the HP-UX Software Developer's Kit (SDK) for Java 1.3 or later. If your Web application uses Java Server Pages (JSPs) then you will also need the SDK for Java 1.3 or later so you can compile the JSPs.
- HP-UX Webmin-based Admin depends on Perl 5 or later.

Documentation

Bundled documentation (Release Notes, Admin Guides, User Guides, Migration Guides and FAQs) now install into `/opt/hpws/hp_docs`. These documents can be accessed through HP-UX Apache-based Web Server, HP-UX Tomcat-based Servlet Engine, and HP-UX Webmin-based Admin by browsing to `http://yourserver.com/hp_docs` on the appropriate port (i.e., 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`

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, Microsoft® FrontPage Server Extensions 2002
- Security: authentication through an LDAP server, Webproxy, Chrooted environment, SSL and TLS support

Summary of Change

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

HP-UX Apache-based Web Server v.2.0.50.01:

This release of HP-UX Apache-based Web Server is primarily a security, bug fix release with two enhancements:

- Apache upgraded to 2.0.50.
- Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.

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

HP-UX Apache-based Web Server v.2.0.50.01:

This release of HP-UX Apache-based Web Server is primarily a security, bug fix release with two enhancements:

- Apache upgraded to 2.0.50.
- Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.

Plus enhancements from the previous release:

- This feature release of HP-UX Apache-based Web Server contains support for Microsoft® FrontPage 2002, more PHP extensions and numerous version upgrades.
- Apache 2.0.49 is principally a bug fix release. Of particular note is that 2.0.49 addresses three security vulnerabilities. (Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.)
- OpenSSL upgraded to 0.9.7d plus a bug fix (Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.)
- Version upgrades:
 - PHP 4.3.4
 - Stunnel 4.04
 - `mod_perl 1.99_10`, now using Perl 5.8.0
- Other Enhancements. (Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.)

Impact

There are no impacts.

Compatibility

This release is binary-compatible with Apache 2.0.42 and greater. All the modules compiled with Apache 2.0.42 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 190.

Obsolescence

Not applicable.

HP-UX Tomcat-based Servlet Engine

HP-UX Tomcat-based Servlet Engine provides customers with 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?

This version of HP-UX Tomcat-based Servlet Engine was delivered in the June 2004 release of HP-UX 11i v1.

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

HP-UX Tomcat-based Servlet Engine v.4.1.29.03 includes the following:

- Tomcat version upgraded to 4.1.29
- Now onwards `mod_jk` and related configuration files are shipped with HP-UX Apache-based Web Server
- Fix to the Tomcat Admin application that had affected numerous Tomcat administrative tasks

Impact

See "Installation" on page 188.

Compatibility

Server-side Java Servlets and JavaServer Pages (JSPs) that used Tomcat 3.x or JServ may need to be modified to use Tomcat 4.x. Configuration files have also changed in Tomcat 4.x. Details about changes can be found in the Tomcat Migration Guide which is included in the product. See "Documentation" on page 190 for more information.

Performance

There are no known performance issues.

Documentation

See "Documentation" on page 190.

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?

HP-UX Webmin-based Admin v.A.1.070.01 is primarily a security and bug fix release:

- Webmin upgraded to 1.070.
- Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.

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

HP-UX Webmin-based Admin v.A.1.070.01 is primarily a security and bug fix release:

- Webmin upgraded to 1.070.
- Please see HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`, for details.

Plus enhancements from HP-UX Webmin-based Admin 1.070.00:

This release of HP-UX Webmin-based Admin is a full feature release that contains enhancements described in the HP-UX Web Server Suite release notes, available at `/opt/hpws/hpdocs/release.notes`.

Impact

There are no impacts.

Compatibility

There are no compatibility issues.

Performance

There are no performance issues.

Documentation

See "Documentation" on page 190.

Obsolescence

Not applicable.

HP-UX XML Web Server

HP-UX XML Web Server Tools is a collection of a Java-based XML tools used for XML parsing, stylesheet and XSL processing, web-publishing and image translating from the open source projects: Xerces, Xalan, Cocoon, FOP and Batik.

Summary of Change

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

HP-UX XML Web Server Tools 2.00 was delivered in the June 2004 release of HP-UX 11i v1. The same version is delivered in this release of HP-UX 11i v2.

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

HP-UX XML Web Server Tools v.2.00 is primarily a version upgrade release:

- Xerces-J upgraded to v.2.5.0
- Xalan-J upgraded to v.2.5.1
- FOP upgraded to v.0.20.5
- Cocoon upgraded to v 2.0.4

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 190.

Obsolescence

Not applicable.

Internet Services

The Internet Services product family delivers and supports the networking services considered essential to HP-UX users interoperating on TCP/IP based networks.

This section covers the following topics:

- BIND (see page 195)
- BOOTP and DHCP (see page 197)
- Dynamic Host Configuration Protocol (DHCP) v6 (see page 198)
- inetd (see page 200)
- IPv4 Address Display (see page 201)
- IPv6 Support for All Internet Services Products (see page 202)
- Logging User Accounting Information (see page 203)
- Multimedia Streaming Protocols (MSP) (see page 204)
- rbootd (see page 206)
- remsh/rexec (see page 206)
- rexecd (see page 208)
- Route Administration Manager for IPv6 Routing Protocols (RAMIPv6) (see page 209)
- rwhod (see page 210)
- Secure Internet Services (see page 211)
- Sendmail (see page 212)
- Service Location Protocol (SLP) (see page 214)
- TCP Wrappers (see page 216)
- telnetd (see page 217)
- WU-FTPD (see page 218)

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?

BIND 9.2.0 is version of BIND available in the HP-UX 11i v2 Operating Environments (OEs). Initially, BIND 9.2.0 was released as a Web upgrade on the HP-UX 11i v1 operating system.

BIND 9.2.0 provides the following features:

- Incremental Zone Transfer
- DNSSEC
- Dynamic DNS Update
- TSIG-based Security
- Lightweight Resolver Library and Daemon
- Improved Logging Mechanism
- Extended Configuration Syntax and Options
- New Options in Options Statement
- New Options in Zone Statement
- New Option in Server Statement
- Utility to check the syntax of `named.conf` file - `named.checkconf`
- Utility to check the syntax and consistency of a zone's content - `named-checkzone`
- Utility to control the operation of a name server - `rndc`
- Utility to generate the configuration file for `rndc` - `rndc-confgen`
- An option to enable or disable the Extended DNS (EDNS) option is provided in the “option” statement in the `/etc/named.conf` file. The EDNS option determines whether the local server attempts to use EDNS while communicating with any remote server. To change the EDNS feature for all the servers, you need to only set the EDNS option to “no” in the “options” statement in the `named.conf` file. Previously, this option was available only in the “server” statement in the `named.conf` file.

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

An option to enable or disable the Extended DNS (EDNS) option is provided in the “option” statement in the `/etc/named.conf` file. The EDNS option determines whether the local server attempts to use EDNS while communicating with any remote server. To change the EDNS feature for all the servers, you need to only set the EDNS option to “no” in the “options” statement in the `named.conf` file. Previously, this option was available only in the “server” statement in the `named.conf` file.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

When the local server supports the EDNS option and the remote server does not support the EDNS option, an extra query required to query the remote DNS server is eliminated. Therefore, the performance of BIND may improve if the remote DNS server does not support the EDNS option.

Documentation

For more information on the EDNS option, refer to the *named.conf*(1M) manpage. For more information on the BIND features, refer to the manual *HP-UX IP Address and Client Management Administrator's Guide* at <http://www.docs.hp.com>.

Obsolescence

Not applicable.

BOOTP and DHCP

The Bootstrap Protocol (BOOTP) allows certain systems to discover network configuration information (such as an IP address and a subnet mask) and boot information automatically. Dynamic Host Configuration Protocol (DHCP) is an extension of the BOOTP protocol that defines a protocol for passing configuration information to hosts on a TCP/IP network. The DHCP and BOOTP daemons are a subsidiary of `inetd`, and are started or restarted automatically.

Summary of Change

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

- BOOTP and DHCP have implemented a new `sa` tag in both the `/etc/bootptab` and `/etc/dhcptab` files, respectively, to configure the IP address of the `tftp` server. The `sa` tag controls the `siaddr` field, which specifies the IP address of the `tftp` server, in the `bootp` packet header.
- The following new options are included in the `/etc/dhcptab` file:

<code>ncid</code>	This is a boolean tag that instructs <code>bootpd</code> not to send the <code>class-id</code> back to the client. This tag is applicable only for a <code>dhcp_device_group</code> .
-------------------	---

`re` This is a boolean tag that instructs `bootpd` to match the `class-id` in the client's request with the `class-id` in any `dhcp_device_group`, which contains the `re` tag, using any basic regular expression. This tag is applicable only for a `dhcp_device_group`.

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

BOOTP and DHCP have implemented a new `sa` tag in both the `/etc/bootptab` and `/etc/dhcptab` files, respectively, to configure the IP address of the `tftp` server. The `sa` tag controls the `siaddr` field, which specifies the IP address of the `tftp` server, in the `bootp` packet header.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more information, see the `bootpd(1M)` manpage.

Obsolescence

Not applicable.

Dynamic Host Configuration Protocol (DHCP) v6

Dynamic Host Configuration Protocol (DHCP) is an extension of `bootp` that defines a protocol for passing configuration information to hosts on a network. DHCPv6 supports IPv6, the next-generation Internet protocol.

DHCPv6 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?

Starting from HP-UX 11i v2, DHCPv6 has been included in the HP-UX Operating Environments (OEs).

The following features are available in DHCPv6:

- New message types
- Multiple IP Address Request
- Configuration Parameters from a DHCPv6 server
- Reconfiguration messages

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

Refer to the manual *HP-UX IP Address and Client Management Administrator's Guide* at <http://www.docs.hp.com>.

The manpages associated with this product are as follows:

- *dhcpv6d* (1M)
- *dhcpv6db2conf* (1)
- *dhcpv6client_ui* (1)
- *dhcpv6clientd* (1M)

Obsolescence

Not applicable.

inetd

The `inetd` daemon spawns the Internet server processes as needed. It must be running before other hosts can connect to the local host through `ftp`, `rcp`, `remsh`, `rlogin`, and `telnet`.

Summary of Change

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

The following new command-line option has been added:

<code>-r count [interval]</code>	This option is used by <code>inetd</code> to identify a UDP service as broken or in-loop when it receives a <i>count</i> number of connections in <i>interval</i> seconds of time. The default values for <i>count</i> and <i>interval</i> are 40 and 60 seconds respectively.
----------------------------------	--

The following variable has been added to the `/etc/rc.config.d/netdaemons` file:

<code>INETD</code>	You can use the new variable <code>INETD</code> in the <code>/etc/rc.config.d/netdaemons</code> file to enable or disable <code>inetd</code> during system startup. If you set this variable to 1 (default value), <code>inetd</code> starts during system startup. If you set this variable to 0, <code>inetd</code> is disabled during system startup.
--------------------	--

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more information, refer to the manual "HP-UX Internet Services Administrator's Guide" at <http://www.docs.hp.com>.

Obsolescence

Not applicable.

IPv4 Address Display

An IPv4-mapped-IPv6 address is a special type of IPv6 address used by TCP/IP stack to represent an IPv4 address when an IPv6 socket is used to communicate with an IPv4-only application.

Summary of Change

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

When the IPv6 software was installed on an HP-UX 11i v1 system, all IPv6-enabled commands/daemons of the Internet Services product were displaying IPv4-mapped-IPv6 addresses instead of the actual IPv4 address. Now, in HP-UX 11i v2 September 2004, these commands/daemons will display the IPv4 address on the command-line output and debug/log files. This IPv4 address is similar to the IPv4 address displayed on an HP-UX 11i v1 system without the IPv6 software.

The following Internet Services daemons and commands are affected: `inetd`, `telnet`, `telnetd`, `rlogind`, `remshd`, `rlogin`, `remsh`, `rexec`, `rdist`, `rcp`, `rwhod`, `ftp`, `ftpd`, and `identd`. The following libc APIs are affected: `rcmd_af()`, `rexec_af()`, `res_query()`, `res_send()`, and `res_update()`.

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

On an HP-UX 11i v2 system prior to this release, all IPv6-enabled commands/daemons were displaying the IPv4-mapped-IPv6 address instead of the actual IPv4 address. Following is an example of the `who -T` command that displays IPv4-mapped-IPv6 addresses of `utmps (4)` logged by `rlogind (1M)` and `telnetd (1M)`:

```
# who -T
root - pts/0 May 31 17:34 0:30 19783 ::ffff:192.1.1.2
root - pts/2 May 28 10:34 old 10863 xyz.abc.com
root - pts/4 May 31 09:08 old 15800 ::ffff:192.1.1.5
```

Now, with the September 2004 release of HP-UX 11i v2, these commands/daemons display the IPv4 address on the command-line output and debug/log files. This IPv4 address is similar to the IPv4 address displayed on an HP-UX 11i v1 system without the IPv6 software. Following is an example of the `who -T` command that displays IPv4-mapped-IPv6 addresses of `utmps (4)` logged by `rlogind (1M)` and `telnetd (1M)` after the change:

```
# who -T
root - pts/0 May 31 17:34 0:30 19783 192.1.1.2
root - pts/2 May 28 10:34 old 10863 xyz.abc.com
root - pts/4 May 31 09:08 old 15800 192.1.1.5
```

The following Internet Services daemons and commands are affected: `inetd`, `telnet`, `telnetd`, `rlogind`, `remshd`, `rlogin`, `remsh`, `rexec`, `rdist`, `rcp`, `rwhod`, `ftp`, `ftpd`, and `identd`. The following libc APIs are affected: `rcmd_af()`, `rexec_af()`, `res_query()`, `res_send()`, and `res_update()`.

Impact

You must change any script and/or utility which uses the IPv4-mapped-IPv6 address present in the command-line output or debug/log files of Internet Services.

Compatibility

The IPv4-mapped-IPv6 address display, which is present in the log/debug file and command-line output of Internet Services' commands/daemons, is now changed to display an IPv4 address. Therefore, any script and/or utility that uses the IPv4-mapped-IPv6 address must be changed.

Performance

There are no known performance issues.

Documentation

There is no other documentation.

Obsolescence

Not applicable.

IPv6 Support for All Internet Services Products

IPv6 is the next generation Internet Protocol. It provides the infrastructure for the next wave of Internet devices, such as PDAs, mobile phones and appliances; it also provides greater connectivity for existing devices such as laptop computers.

This section provides only a brief summary of the IPv6-enabled Internet Services products in the HP-UX IPv6 software product bundle.

Summary of Change

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

The IPv6-enabled Internet Services products are as follows:

- `inetd`
- `telnet`

- R-commands
- Name and address resolution resolver routines
- DHCPv6
- WU-FTPD 2.6.1
- BIND 9.2: To enable IPv6 functionality in BIND 9.2.0, specify the `listen-on-v6` option in the `named.conf` file.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The following Internet Services guides have been updated to include IPv6 information:

- *HP-UX Internet Services Administrator's Guide*
- *HP-UX Mailing Services Administrator's Guide*
- *HP-UX Routing Services Administrator's Guide*
- *HP-UX IP Address and Client Management Administrator's Guide*
- *HP-UX Remote Access Services Administrator's Guide*

Obsolescence

Not applicable.

Logging User Accounting Information

Summary of Change

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

The `telnetd`, `rlogind`, `remshd`, `rexecd` and `ftpd` utilities now use the new scalable `utmps/wtmps/btmps` interfaces¹ to log user accounting information.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The following manpages are new:

- *wtmps* (4)
- *btmps* (4)
- *utmpd* (1M)
- *getuts* (3C)
- *bwtmps* (3C)

Obsolescence

Not applicable.

Multimedia Streaming Protocols (MSP)

Multimedia Streaming Protocols (MSP) enable you to transfer audio and video files to a remote location in real time. Streaming multimedia data is a transaction between the server and client.

1. For more information on these services, see "IPv6 Support by HP-UX libc and HP-UX Commands" in Chapter 6 of the *HP-UX 11i Version 2 Release Notes* [October 2003], available at <http://docs.hp.com/hpux/os/11iv2/index.html#Release%20Notes>.

Summary of Change

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

When an HP-UX 11i v1 operating system that contains the Web upgrade version of MSP is upgraded to the HP-UX 11i v2 September 2004 operating system, the MSP software is removed during the upgrade. MSP was not part of the HP-UX 11i v1 operating system and was provided as a Web upgrade on the HP-UX 11i v1 operating system in September 2003.

MSP is not released as part of the base HP-UX 11i v2 September 2004 operating system. It will be released as a Web upgrade on the HP-UX 11i v2 September 2004 operating system one month after the release of HP-UX 11i v2 September 2004.

When MSP is available, it can be downloaded from the Software Depot at <http://www.software.hp.com>.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

If you have installed MSP on HP-UX 11i v1, the product will be removed upon update to HP-UX 11i v2. If you have not installed MSP on HP-UX 11i v1, you will not be affected. MSP will be available later for HP-UX 11i v2 as a Web upgrade.

Compatibility

When an HP-UX 11i v1 operating system that contains the Web upgrade version of MSP is upgraded to the HP-UX 11i v2 September 2004 operating system, the MSP software is removed during the upgrade. However, MSP will be available as a Web upgrade for HP-UX 11i v2 one month after the release of HP-UX 11i v2 September 2004.

Performance

There are no performance issues.

Documentation

For more information on MSP, refer to the *HP-UX Multimedia Streaming Protocols (MSP) Release Notes* at <http://www.docs.hp.com/hpux/netcom/index.html#Internet%20Services>.

Obsolescence

Not applicable.

rbootd

The `rbootd` function services initial boot-up requests from RMP clients over a local area network.

Summary of Change

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

HP-UX 11i v1.6 was the last HP-UX operating system release that included `rbootd`. Clients using the RMP protocol during bootup are no longer supported on releases subsequent to HP-UX 11i v1.6.

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

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

Impact

Users must move from old RMP clients to clients supporting BOOTP (Internet Boot Protocol).

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

There are no other changes to documentation.

Obsolescence

HP-UX 11i v1.6 was the last operating system release that included `rbootd`.

remsh/rexec

The `remshd` command is the server for the `rcp`, `rdist` and `remsh` commands, the `rcmd()` function and the `rcmd_af()` function in the case of IPv6 systems. (See the `rcp(1)`, `rdist(1)`, `remsh(1)`, `rcmd(3N)`, and `rcmd_af(3N)` manpages.)

The remote execution server `rexecd` is the server for the `rexec()` routine, and the `rexec_af()` routine in case of IPv6 systems; it expects to be started by the Internet daemon (see *inetd* (1M)). The `rexecd` remote execution server provides remote execution facilities with authentication based on user account names and unencrypted passwords.¹

Summary of Change

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

The `remshd()` function has been changed to display the following error message when users run `remsh` to execute programs on a remote system where their account is disabled:

```
Account disabled or expired
```

The `remsh/rexec` process may appear hung when a user executes certain remote commands because `remsh/rexec` waits for the remote command to finish execution before exiting. This behavior can be changed by starting `remshd/rexecd` with the `-m` option in the `/etc/inetd.conf` file.

NOTE

The `-m` option may prevent standard output or error messages to be displayed on the terminal.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

There are no impacts other than those described previously.

Compatibility

The `remshd` command fails to execute when the service name database (see the *services* (4) manpage) does not contain an entry for `<kshell>` and displays the following error message:

```
remshd: getservbyname
```

For example, if NIS is used as the service name database, `remshd` will work only if the NIS service map contains the `<kshell>` service entry. Note that all releases of the HP-UX operating system have `<kshell>` as the default entry in the service name database.

Performance

There are no known performance issues.

1. See also “`rexecd`” on page 208.

Documentation

The *rexecd* (1M) and *remshd* (1M) manpages have been updated to reflect all changes. See also “rexecd” on page 208.

Also refer to the *rcp* (1), *rdist* (1), *remsh* (1), *rcmd* (3N), and *rcmd_af*(3N) manpages.

Obsolescence

Not applicable.

rexecd

The remote execution server *rexecd* is the server for the *rexec*() routine, and the *rexec_af*() routine in case of IPv6 systems; it expects to be started by the internet daemon (see *inetd* (1M)).¹

Summary of Change

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

- The `[use_psd]` option cannot be specified in the `/etc/pam.conf` file for *rexecd*.
- A new option `-S` has been added to *rexecd* which prevents a user from logging in as a superuser.

What’s New for Customers of HP-UX 11i v2?

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The *rexecd* (1M) manpage has been updated accordingly.

1. See also “remsh/rexec” on page 206.

See also “remsh/rexec” on page 206.

Obsolescence

Not applicable.

Route Administration Manager for IPv6 Routing Protocols (RAMIPv6)

The Route Administration Manager for IPv6 Routing Protocols (RAMIPv6) software is a routing daemon that implements multiple IPv6 routing unicast protocols on the HP-UX operating system. It supports the Routing Information Protocol Next Generation (RIPng), Border Gateway Protocol (BGP4+) and Intermediate-system-to-Intermediate-system (IS-ISv6) protocol.

Summary of Change

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

When an HP-UX 11i v1 operating system that contains the Web upgrade version of RAMIPv6 is upgraded to the HP-UX 11i v2 September 2004 operating system, the RAMIPv6 software is removed during the upgrade. RAMIPv6 was not part of the HP-UX 11i v1 operating system and was provided as a Web upgrade on the HP-UX 11i v1 operating system in January 2004.

RAMIPv6 is not released as part of the base HP-UX 11i v2 September 2004 operating system. It will be released as a Web upgrade on the HP-UX 11i v2 September 2004 operating system one month after HP-UX 11i v2 September 2004 ships.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

If you have installed RAMIPv6 on HP-UX 11i v1, the product will be removed upon update to HP-UX 11i v2. If you have not installed RAMIPv6 on HP-UX 11i v1, you will not be affected. RAMIPv6 will be available later for HP-UX 11i v2 as a Web upgrade.

Compatibility

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

Performance

There are no performance issues.

Documentation

For more information on RAMIPv6, refer to the following documents at <http://www.docs.hp.com/hpux/netcom/index.html#Routing>:

HP-UX ramD Administrator's Guide

HP-UX Route Administration Manager (ramD) Release Notes

HP-UX Route Administration Manager (ramD) White Paper

Obsolescence

Not applicable.

rwhod

The `rwhod` server maintains the database used by `rwho` and `ruptime`. The `rwhod` server sends and receives status information from other nodes on the local network that are running `rwhod`.

Summary of Change

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

The `rwhod` server has been updated to use the `utmps` interfaces to read user accounting information.

The `rwhod` function now supports valid hostname characters as per RFC 952 only. The supported characters are alphanumeric characters, minus-sign ("-") and period (".").

NOTE

The `rwhod` function fails when hostnames contain invalid characters.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The *utmps* (5) manpage has been modified.

Obsolescence

Not applicable.

Secure Internet Services

Secure Internet Services (SIS) is an optionally enabled mechanism that incorporates Kerberos V5 authentication and authorization for remote access services: *ftp*, *rcp*, *remsh*, *rlogin*, and *telnet*.

Summary of Change

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

- The following new options have been added in SIS:

fallback The fallback option is available in all the SIS clients (namely *rlogin*, *ftp*, *rcp*, *remsh* and *telnet*) and are set in the *[appdefaults]* section. If the fallback option is set to true and the Kerberos authentication fails, SIS clients use the non-secure mode of authentication. Refer to the *krb5.conf* (4) manpage for more information on the *[appdefaults]* section.

-f and -F For *remsh*, *rlogin* and *telnet*, the options **-f** and **-F** are set in the *\etc\krb5.conf* file with the tag names *forward* and *forwardable*, respectively.

The **-f** option instructs *telnetd* to use the normal authentication mode whenever the *telnet* client communicates NULL type in the authentication option negotiation.

NOTE

Command-line options override the configuration file options.

- IPv6 has now been enabled for R-commands:

To enable IPv6 functionality in the SIS environment for R-commands, first change *tcp* to *tcp6* for the following two entries in the */etc/inetd.conf* file:

```
# kshell stream tcp nowait root /usr/sbin/remshd remshd -K  
# klogin stream tcp nowait root /usr/sbin/rlogind rlogind -K
```

Next, restart `inetd` using the command `inetd -c`.

NOTE

You must change the `/etc/inetd.conf` file only if the interface is configured for IPv6 functionality.

- SIS applications (such as `ftp`, `r-commands`, and `telnet`) can operate in an IPv6-enabled Kerberos environment.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

Refer to the manual *Using HP-UX Internet Services* at <http://www.docs.hp.com> for a detailed description on Secure Internet Services.

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 necessary.

Summary of Change

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

Sendmail 8.11.1 is the version of Sendmail available in the September 2004 HP-UX 11i v2 Operating Environments (OEs).

Sendmail 8.11.1 offers the following features:

- Multiple queue directories
- Enhanced status codes as defined by RFC 2034
- ClientPort options
- DaemonPortOptions
- IPv6 support (only on HP-UX 11i)
- Spam control using Message Submission Agent
- SMTP authentication
- Virtual hosting
- LDAP-based routing
- Improved anti-spam features
- New configuration options
- New command-line options
- The `AlertTmpFailure` option, which logs transient error messages as `LOG_ALERT` messages at `LogLevel >=2`
- The error code returned for unrecognized parameters to the SMTP mail and RCPT commands has been changed from 501 to 555 as per RFC 1869.
- The configuration file (`Sendmail.cf`) version number is incremented to 9.
- Aliases with no right-hand side are provided with “missing value” warnings, when `newaliases` is run instead of attempting to deliver the mail messages to an alias.
- A new mailer flag, `F=%`, is included.
- The `[]` is added to class `w` for the names of all interfaces unless the `DontProbeInterfaces` option is set.
- All numbered rulesets have been named.
- A `/Quit` command to address the test mode has been added.
- The SMTP commands are not processed when the SMTP connection drops.
- `Purgestat` and `sendmail -bH` options delete only expired files in the host status database, which have exceeded the values set by `<Timeout.hoststatus>`.
- The process ID file can now be specified with the `PidFile` option.
- The user's address is not available in the Diagnostic-Code field of delivery status notification (DSN) messages.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

The following compatibility exceptions have been identified:

- Non-root users cannot send signals to their sendmail process, and use the praliases/mailstats utilities that are generally designed for administrators.
- By default, non-root users cannot process the mail queue.
- Terminating and restarting the sendmail daemon may not be instantaneous.

Performance

There are no known performance issues.

Documentation

Refer to the manual *HP-UX Mailing Services Administrator's Guide* at <http://www.docs.hp.com>.

The following manpages have changed:

- *killsm* (1M)
- *sendmail* (1M)

Obsolescence

Not applicable.

Service Location Protocol (SLP)

The Service Location Protocol (SLP) is an emerging Internet standard network protocol that provides a framework to allow networking applications to discover the existence, location, and configuration of networked services in enterprise networks. SLP implementation on HP-UX is based on OpenSLP version 0.8.0 developed by Caldera Systems, Inc.

SLP 0.8 facilitates the following:

- Client application requests for network service location information
- Advertisement of services
- Segregation of services and users into logical or functional groups
- Managed recovery from primary server failures

Summary of Change

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

Starting from HP-UX 11i v2, SLP 0.8 has been included in the Operating Environments (OEs). The following lists the salient features of SLP 0.8:

- Dynamic Service Tracking
- Ease of Administration
- Ease of Development

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the manual *HP-UX IP Address and Client Management Administrator's Guide* at <http://www.docs.hp.com>.

The following manpages are associated with SLP 8.0:

- *slpd* (1M)
- *slpdc* (1M)
- *libslp* (3N)
- *SLPOpen* (3N)
- *SLPClose* (3N)
- *SLPReg* (3N)
- *SLPDereg* (3N)
- *SLPDelAttrs* (3N)
- *SLPFindSrvs* (3N)
- *SLPFindSrvTypes* (3N)
- *SLPFindAttrs* (3N)
- *SLPParseSrvURL* (3N)
- *SLPEscape* (3N)
- *SLPUnescape* (3N)
- *SLPFree* (3N)
- *SLPGetRefreshInterval* (3N)
- *SLPFindScopes* (3N)
- *SLPGetProperty* (3N)
- *SLPSetProperty* (3N)

- *SLPError* (3N)
- *slp.conf* (4)
- *slp.reg* (4)
- *slp_syntax* (7)

Obsolescence

Not applicable.

TCP Wrappers

The TCP Wrappers product suite provides an enhanced security mechanism for services spawned by `inetd`.

Summary of Change

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

Starting from HP-UX 11i v2, TCP Wrappers 7.6 has been included in the HP-UX Operating Environment (OEs).

TCP Wrappers 7.6 provides the following features:

- Monitoring incoming requests for Internet Services
- Controlling access to services spawned by `inetd`
- Enforcing access control in stand-alone daemon programs
- Predicting how TCP Wrappers 7.6 handles a specific request for a service
- Checking the wrapper's behavior from a remote shell

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more information, refer to the manual *HP-UX Internet Services Administrator's Guide* at <http://www.docs.hp.com>.

The following manpages are associated with TCP Wrappers 7.6:

- *tcpd* (1M)
- *tcpdmatch* (1)
- *tcpdchk* (1)
- *hosts_access* (3)
- *hosts_access* (5)
- *hosts_options* (5)
- *tcpd.conf* (4)
- *tryfrom* (1)
- *sffinger* (1)

Obsolescence

Not applicable.

telnetd

The `telnetd` daemon executes a server that supports the DARPA standard TELNET virtual terminal protocol.

Summary of Change

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

The `telnetd` function contains the following new options:

- `-n` specifies the time in seconds that `telnetd` waits for the client to respond to the initial option negotiation before timing out and closing the connection.
- `-y` causes `telnetd` to close a connection if the baud rate is set to zero. Without this option set, `telnetd` does not close a connection even on zero baud rate.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

There are no impacts other than those described previously.

Compatibility

There are no compatibility issues.

Performance

There are no performance issues.

Documentation

The *telnetd* (1M) manpage has been updated to reflect the new options.

Obsolescence

Not applicable.

WU-FTPD

File Transfer Protocol (*ftp*) enables users to transfer files between a client system and a remote server system. On the client system, a file transfer program provides the user with an interface to transfer files; on the server, the requests are handled by the file transfer daemon, *ftpd*. HP's implementation of the *ftp* daemon for HP-UX 11i and later versions is based on the replacement *ftp* daemon developed at Washington University known as WU-FTPD.

Summary of Change

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

WU-FTPD 2.6.1 is the version of FTPD available in this release of the HP-UX 11i v2 operating environments (OEs).

WU-FTPD 2.6.1 offers the following features:

- Virtual hosts support
- The *privatepw* utility
- New clauses in the */etc/ftpd/ftpaccess* file
- IPv6 support
- New command-line options:

-m number_of_tries

Specifies the number of tries for a *bind()* socket call.

-n nice

Sets the nice value for an WU-FTPD process.

-B

Sets the buffer size of the data socket to blocks of 1024 bytes.

-p and *-P*

Allows private port access (*-p*) or third party access as well as private port access (*-P*) to the client.

- w The default option that enables the `wtmps` and `btmps` logins.
- W Disables both the `wtmps` and `btmps` logins.
- Support for files greater than 2GB
- Support for large UIDs/GIDs
- Trusted system features
- Features related to data transfer
- The `/etc/ftpd/ftpservers` configuration file
- A set of virtual domain configuration files used by `ftp`
- The `ftp` daemon audits all the login activities irrespective of a success/failure login
- WU-FTPD 2.6.1 logs bad login attempts to the `/var/adm/btmps` file. Bad login attempts are not properly audited when a user fails to login as an “anonymous” or “guest” user, in the following circumstances:
 - Incorrect permission for the user's home directory in the FTP server
 - Invalid entries in the `/etc/passwd` file for the anonymous or guest user
 - Failure to set the effective user ID
- The option `sendfiletransfer` in the `ftpaccess` configuration file has been replaced with the new command-line option `-U`.
- The options `suppresshostname` and `suppressversion` have been replaced by the new `greeting` option in the `ftpaccess` configuration file.

What’s New for Customers of HP-UX 11i v2?

There are no changes from previous HP-UX 11i v2 releases.

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

Refer to the manual *Installing and Administering Remote Access Services on HP-UX 11i v2*, available at <http://www.docs.hp.com>.

The following manpages have changed:

- `ftp` (1)

- *ftpd* (1M)
- *ftpusers* (4)

Obsolescence

Not applicable.

LAN Administration Commands

The *lanadmin* (1M), *lanscan* (1M), *linkloop* (1M), and *landiag* (1M) commands constitute the LAN administration commands which permit monitoring, testing and configuration of LAN interfaces.

Summary of Change

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

- *lanadmin*:
The command has been enhanced for the following:
 - Support for Internet Protocol Over InfiniBand (IPoIB) interfaces
 - 64-bit Management Information Base (MIB) support
 - Support for Native and Non-Native DLPI drivers developed by Independent Hardware Vendors (IHVs)
 - New command-line options to clear statistics and to reset card
- *lanscan*:
 - Support for IPoIB interfaces.
- *linkloop*:
 - Support for IPoIB interfaces.

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

- *lanadmin*:
The command is enhanced for the following:
 - IPoIB and VLAN support
 - New command line option to support 64-bit MIB statistics
 - New command line options to clear statistics and to reset card

- `lanscan`:
The command is enhanced for the following:
 - Support for IPoIB and VLAN interfaces
- `linkloop`:
 - Support for IPoIB interfaces

Impact

LAN commands now support IPoIB and VLAN interfaces along with 64-bit MIB statistics. You can clear interface statistics and also reset the LAN interface card using the command-line options.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see the following manpages:

- `lanadmin` (1M)
- `lanscan` (1M)
- `linkloop` (1M)
- `landiag` (1M)

Obsolescence

The `landiag` (1M) command has been deprecated and will be obsoleted post HP-UX 11i v2. Along with the `landiag` program, the transition link for `landiag` being maintained as `/etc/landiag` will also be obsoleted. The `landiag` manpage which is currently a copy of the `lanadmin` manpage will also be obsoleted post HP-UX 11i v2.

Mozilla Application Suite

NOTE

Due to the rapidly changing status of browser security, HP recommends regularly upgrading to the latest version of Mozilla at <http://www.hp.com/go/mozilla>.

The Mozilla Application Suite (product number **B9005AA**) is an Open Source Web browser, email client, and HTML editor. Mozilla has replaced Netscape as the supported browser on HP-UX. HP will stop distributing any versions of Netscape by October 2005 or sooner.

Summary of Change

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

Mozilla 1.4.0.01 contains full Japanese localization as well as other defect fixes and enhancements.

A security bulletin has been posted for Mozilla 1.4 at <http://www2.itrc.hp.com/service/cki/docDisplay.do?docId=HPSBUX01036>. Please follow the instructions to avoid any security issues.

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

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

Impact

The changes allow customers to use the browser with complete Japanese localization and also benefit from defect fixes, enhancements, and more advanced standards compliance.

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 is started because it is creating a profile.

Documentation

Documentation is included in the Mozilla Help menu and the README files delivered with the product. You can also go to <http://www.hp.com/go/mozilla>.

Obsolescence

We will periodically release new versions of Mozilla. The HP Mozilla Web site will continue to distribute at least one previous version of the product. Source code for each release will be 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.

Netscape Directory Server

The Netscape Directory Server (NDS) for HP-UX is powerful and scalable distributed directory server based on the industry-standard Lightweight Directory Access Protocol (LDAP). The Netscape Directory Server provides the way to build a centralized and distributed data repository. The Netscape Directory uses the directory services as a common, network-accessible location to store shared data such as user and group account, server identification, and access control information. In addition, the Netscape Directory Server can be extended to support your entire enterprise with a global directory service that provides centralized management of all your enterprise's resource information.

NDS 6.11 is released on HP-UX 11i v2 September 2004 for both PA-RISC and Itanium®-based systems.

Summary of Change

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

NDS has complete directory server functionality and is capable of providing full-scale, global directory services. The product version 6.11 contains the following new features:

- Enhancements to Multi-Master Replication
 - Faster and more reliable Multi-Master replication
 - A new HTML-based interface for monitoring replication, which is accessible from the Administration Express Interface
 - A new script, `template-cl-dump.pl`, is provided to troubleshoot replication by viewing log contents
- Login Enhancements

Provides the ability to rotate logs by time of day. Logging includes port and host information in access logs for ease of archiving and exchanging log files. Enhancements have been made to improve error messages, detailing supplier and consumer replication sessions.
- Virtual Directory Information Tree Views

The virtual directory information tree view feature provides the ability to create custom DITs for specific applications without having to change the physical location of directory entries.
- Virtual Attribute Search

Supports searches based on virtual attributes and enables the use of these attributes in ACLs and regular search filters.
- New Plug-Ins Support

This release provides a new plug-in, named the Space Insensitive String Syntax Plug-In, to support space and case insensitive values.
- Data Interoperability Feature

Allows you to use a proprietary database plug-in.

For more information about new features of this release, refer to the *Netscape Directory Server 6.11 for HP-UX Release Notes*, available in the “Internet and Security Solutions” section at <http://www.docs.hp.com>.

What’s New for Customers of HP-UX 11i v2?

Netscape Directory Server is new for customers of HP-UX 11i v2.

Impact

When the HP-UX on your system is upgraded from HP-UX 11i v1 to HP-UX 11i v2, your existing Netscape Directory Server installed before the HP-UX upgrade will still work. If your Netscape Directory Server installed before the HP-UX upgrade is not 6.11, then HP recommends that you either migrate or upgrade the existing Netscape Directory Server to 6.11.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more detailed description of changes, please refer to the following documentation in the “internet and security solutions” section at <http://docs.hp.com>:

- *Netscape Directory Server 6.11 for HP-UX Release Notes* (E0904, part number **J4258-90020**)
- *Netscape Directory Server 6.1 Configuration, Command, and File Reference*
- *Netscape Directory Server 6.1 Deployment Guide*
- *Netscape Directory Server 6.1 Administrator’s Guide*
- *Netscape Directory Server 6.1 Schema Reference*
- *Netscape Directory Server 6.1 Plug-In Programmer’s Guide*

Obsolescence

Not applicable.

NetTL Network Tracing and Logging

The Network Tracing and Logging facility (NetTL) gathers important log events and packets in a network.

Summary of Change

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

- Formatting support for Internet Protocol Over InfiniBand (IPoIB)
- New command-line option to support configurable trace buffer timer value

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

- Formatting support for IPoIB
- Formatting Support for Mobile IPv4 extension headers
- Formatting support for tunnelled IPv6 packets
- Formatting support for Mobile IPv6 packets
- New command-line option to support configurable trace buffer timer value

Impact

The current release of NetTL includes a new CLI option to configure buffer flush timer value.

The *netfmt* (1M) utility will display Mobile IPv6 protocol information, Mobile IPv4 extension headers, tunnelled IPv6 packets, and IPoIB information present in a trace packet.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The *nettl* (1M) manpage has been modified for the new CLI option to configure buffer flush timer value.

Obsolescence

None.

Network Transport (ARPA)

The ARPA services are a subset of the networking services originally developed by the University of California at Berkeley for the Advanced Research Projects Agency (ARPA). ARPA services have become a *de facto* standard for multivendor network communication. ARPA Transport provides support for TCP/IP and Sockets. It also provides commands for administering TCP/IP.

Summary of Change

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

- Support for the enhancements of HP-UX DLPI:
An Options negotiations and Out-of-Packet (OOP) header has been added to the front of all IP packets for both inbound packets from the DLPI layer and outbound packets to the DLPI layer.
This change supports the enhancements of HP-UX DLPI to provide a richer feature set for network stack feature options.
For more information, please see “HP Data Link Provider Interface (DLPI)” on page 181.
- Enhancements to Check-sum Offload (CKO) interfaces between HP-UX Transport and DLPI:
This change makes the CKO interfaces more general with respect to the types of checksum offload hardware that HP will support, and adds sufficient flexibility to the interface that supports checksum offload for future transport protocols.
This change incorporates the DLPI OOP header to carry the type of checksum offload and the offloaded checksum itself.
The Transport internal kernel header file, `net/cko.h`, has been modified to support this enhancement.
Again, for more information, please see “HP Data Link Provider Interface (DLPI)” on page 181.
- Support for dump reading by `netstat` and `arp` has been permanently removed:
Up to and including HP-UX 11i v1, the commands `netstat` and `arp` have provided a means for reporting information from a crash dump as well as from a live HP-UX system. Starting with HP-UX 11i v1.5, support for reading crash dumps has not been available for Itanium-based systems. Because HP-UX 11i v1.5 and 11i v1.6 only supported Itanium-based systems, this effectively means that dump reading in `netstat` and `arp` have not been supported since HP-UX 11i v1.
- IPv6 protocol support. HP-UX IPv6 supports following features:
 - IPv6 Neighbor Discovery.
 - IPv6 Stateless Address Autoconfiguration.
 - TCP/UDP over IPv6, PMTUv6, ICMPv6, IPv6 MIBs and Socket APIs.

- Network Configuration and Troubleshooting Utilities for IPv4 and IPv6: `ifconfig`, `netstat`, `ping`, `route`, `ndd`, `ndp` (neighbor-discovery utility for IPv6 only), `traceroute`, `nettl` and `netfmt`.
- Router Advertisement daemon: Router functionality, implemented with a daemon, `rtradvd`, and an accompanying configuration file, `/etc/rtradvd.conf`.
- Multicast Listener Discovery (MLD) support (host only). The Management Information Base for MLD is also supported.
- IPv6 Link Support: Ethernet, FDDI and PPP links.
- HP Serviceguard Enablement for IPv6 support.
- IPv6 Basic Transition Mechanisms: Dual-stack, IP6-in-IP tunneling.
- Generic packet tunneling in IPv6: IP-in-IP6 and IP6-in-IP6 tunneling.
- Connection of IPv6 domains via IPv4 clouds (6to4): Host and Router support.
- Limited Transmit (IPv4 only):

Limited Transmit is a TCP loss recovery enhancement. Under certain circumstances, users will experience performance improvement. For more information see RFC 3042, “Enhancing TCP’s Loss Recovery Using Limited Transmit.”
- Support for TCP Segmentation Offload (TSO):

Transport enhancements are included to support TSO-enhanced cards and drivers. For more information on TSO-enhanced cards and drivers, refer to the HP Software Depot at <http://www.software.hp.com> and search for “TSO.”
- Support for IP over InfiniBand (IPoIB) Links:

Transport enhancements are provided to support InfiniBand links that support IPoIB. IPoIB-support applies to both IPv4 and IPv6.

The HP-UX networking utilities `ifconfig`, `netstat`, `lanadmin`, `lanscan`, `arp`, `rtradvd` and `ndp` have all been enhanced to be capable of handling IPoIB-related data. (Note that `rarp` has not been enhanced for handling IPoIB.).

For more information on InfiniBand and the IPoIB protocol, refer to the *HP-UX InfiniBand Support Guide* available at <http://www.docs.hp.com/hpux/netcom/index.html#InfiniBand>.
- Default Gateway Per Physical IPv4 Interface Support:

Support for configuration of a default gateway for each IPv4 Interface is provided.

In addition, support for outbound multiplexing on interfaces connected to the same IPv4 subnet is provided. Prior to this support, a system could receive inbound packets through multiple physical interfaces connected to the same subnet, but all outbound packets were sent out through a single interface.

Now with default gateway per physical IPv4 interface support, the system sends an outbound packet through the interface for the address to which the socket (or communication endpoint) is bound. If the socket (or communication endpoint) is not bound to a specific address, the system sends the packet out through the interface on which the inbound packet was received.

By default, these features are off. To enable these features, use the `ndd` parameter `ip_strong_es_model`. For more information, refer to the `ndd` help text for this parameter.

These features were already supported for IPv6 interfaces.

- **The `netstat` Command Enhanced to Support the Display of 64-bit MIB Counters:**
The `netstat` command has been enhanced to support the display of 64-bit MIB (Management Information Base) counters. Thus, some of the `netstat` fields have the potential to display widened output. This may cause a wraparound effect on 80-character displays.
- **Support for Mobile IPv6:**
Mobile IPv6 allows Mobile Nodes, such as laptops and PDAs, to change network attachment points, remaining reachable at all times and with no disruption in network connectivity using a single, fixed IPv6 address for extended periods of time. Without Mobile IPv6, Mobile Nodes cannot use a single, fixed IPv6 address while they roam. Instead, each time a Mobile Node moves and changes network attachment points, it must manually re-configure a new IP address and default router based on its current location, temporarily losing its network connections and ability to communicate in the process.

For more information on HP-UX Mobile IPv6, refer to documentation available at <http://www.docs.hp.com/hpux/netcom/index.html#HP-UX%20Mobile%20IPv6>.

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

- **Limited Transmit (IPv4 only):**
Limited Transmit is a TCP loss recovery enhancement. Under certain circumstances, users will experience performance improvement. For more information see RFC 3042, "Enhancing TCP's Loss Recovery Using Limited Transmit."
- **Support for TCP Segmentation Offload (TSO):**
Transport enhancements are included to support TSO-enhanced cards and drivers. For more information on TSO-enhanced cards and drivers, refer to the HP Software Depot at <http://www.software.hp.com> and search for "TSO."
- **Support for IP over InfiniBand (IPoIB) Links:**
Transport enhancements are provided to support InfiniBand links that support IPoIB. IPoIB-support applies to both IPv4 and IPv6.

The HP-UX networking utilities `ifconfig`, `netstat`, `lanadmin`, `lanscan`, `arp`, `rtradvd` and `ndp` have all been enhanced to be capable of handling IPoIB-related data. (Note that `rarp` has not been enhanced for handling IPoIB).

For more information on InfiniBand and the IPoIB protocol, refer to the *HP-UX InfiniBand Support Guide* available at <http://www.docs.hp.com/hpux/netcom/index.html#InfiniBand>.
- **IPv6 Router Advertisement daemon.** Router functionality, implemented with a daemon, `rtradvd`, and an accompanying configuration file, `/etc/rtradvd.conf`.
- **Multicast Listener Discovery (MLD) support for IPv6 (host only).** The Management Information Base for MLD is also supported.

- IPv6 Transition Mechanisms Enhancement:
 - Transition Mechanisms for IPv6 Hosts and Routers.
 - Generic packet tunneling in IPv6: IP-in-IP6 and IP6-in-IP6 tunneling.
 - Connection of IPv6 domains via IPv4 clouds (6to4): Host and Router support.
- Default Gateway Per Physical IPv4 Interface Support:

Support for configuration of a default gateway for each IPv4 Interface is provided.

In addition, support for outbound multiplexing on interfaces connected to the same IPv4 subnet is provided. Prior to this support, a system could receive inbound packets through multiple physical interfaces connected to the same subnet, but all outbound packets were sent out through a single interface.

Now with default gateway per physical IPv4 interface support, the system sends an outbound packet through the interface for the address to which the socket (or communication endpoint) is bound. If the socket (or communication endpoint) is not bound to a specific address, the system sends the packet out through the interface on which the inbound packet was received.

By default, these features are off. To enable these features, use the `ndd` parameter `ip_strong_es_model`. For more information, refer to the `ndd` help text for this parameter.

These features were already supported for IPv6 interfaces.
- The `netstat` Command Enhanced to Support the Display of 64-bit MIB Counters:

The `netstat` command has been enhanced to support the display of 64-bit MIB (Management Information Base) counters. Thus, some of the `netstat` fields have the potential to display widened output. This may cause a wraparound effect on 80-character displays.
- Support for Mobile IPv6:

Mobile IPv6 allows Mobile Nodes, such as laptops and PDAs, to change network attachment points, remaining reachable at all times and with no disruption in network connectivity using a single, fixed IPv6 address for extended periods of time. Without Mobile IPv6, Mobile Nodes cannot use a single, fixed IPv6 address while they roam. Instead, each time a Mobile Node moves and changes network attachment points, it must manually re-configure a new IP address and default router based on its current location, temporarily losing its network connections and ability to communicate in the process.

For more information on HP-UX Mobile IPv6, refer to documentation available at <http://www.docs.hp.com/hpux/netcom/index.html#HP-UX%20Mobile%20IPv6>.

Impact

For third-party kernel development, please see the *Driver Development Guide*, available from the Developer and Solution Partner Program (DSPP) at <http://www.hp.com/dspp/>.

You will no longer be able to use `arp` and `netstat` to obtain information from crash dumps.

As a result of supporting RFC 2893, tunnel configuration has changed. If you have previously set up any IPv6 tunneling on your HP-UX 11i v2 IPv6 system(s) you will need to make changes to your system (with this release of HP-UX 11i v2) for tunneling to work (applies only to HP-UX 11i v2 customers).

As a result of enhancements to `netstat`, some fields have the potential to display widened output. This may cause a wraparound effect on 80-character displays.

IMPORTANT

You should be aware of the following problem:

When the TCP connection is initiated from an HP-UX system with the window scaling option and with a window size greater than 65535 bytes, and if the remote node does not respond with the window scaling option in the SYN/ACK packet, HP-UX starts advertising the incorrect window size.

What to do:

You can avoid this problem either by changing the application to use the receive buffer size less than 65536 bytes or by setting the `nnd tunable` `tcp_recv_hiwater_max` to 65535 using the `nnd -set /dev/tcp tcp_recv_hiwater_max 65535` command.

Compatibility

Kernel IP Stream modules that previously used options or fastpath negotiation features or looked into network data packets in previous versions must make changes and recompile for this release of HP-UX 11i v2.

Performance

There are no performance issues.

Documentation

The following manpages have changed or are new:

- *bind* (2)
- *connect* (2)
- *ifconfig* (1M)
- *if_freenameindex* (3N)
- *if_indextoname* (3N)
- *if_nameindex* (3N)
- *if_nametoindex* (3N)
- *ip6* (7P)
- *nnd* (1M)
- *ndp* (1M)
- *ndp* (7P)
- *netstat* (1)
- *ping* (1M)
- *recv* (2)
- *rtradvd* (1M)
- *rtradvd.conf* (4)
- *route* (1M)

- *send (2)*
- *socket (2)*
- *tcp (7P)*
- *udp (7P)*

The following network transport documentation can be found at <http://www.docs.hp.com>, in the “Networking and Communications” topic area under “IPv6”:

- *HP-UX IPv6 Porting Guide*
- *HP-UX IPv6 Transport Administrator’s Guide*
- “HP-UX IPv6 Transition Mechanisms” (White Paper)

Obsolescence

Support for crash dump reading in `arp` and `netstat` is obsoleted as of HP-UX 11i v2.

IPv6 Automatic tunneling using IPv4-compatible IPv6 address support is obsoleted (applies only to HP-UX 11i v2 customers).

Point-to-Point Protocol

Point-to-Point Protocol (PPP) is a networking product that allows data transfer using both the Internet standard point-to-point protocol (PPP) and the non-standard but widely-used serial line internet protocol (SLIP). PPP is supplied with HP's LAN/9000 product.

Summary of Change

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

- Point-to-Point Protocol over Ethernet (PPPoE):
 - Supported over a cost-effective LAN technology, such as Ethernet.
 - Conforms to RFC 2516, “A Method for Transmitting PPP Over Ethernet (PPPoE).”
- Point-to-Point Protocol for IPv6 (PPPoE):
 - Conforms to RFC 2472, “IP Version 6 over PPP,” which defines how to transmit IPv6 packets over PPP links. It also describes how to form IPv6 link-local addresses on PPP links and to negotiate the type compression protocol to be used for compressing or decompressing IPv6 headers transmitted over serial lines.
 - New command-line options have been added to the existing `pppd` daemon.

What’s New for Customers of HP-UX 11i v2?

There are no changes from previous HP-UX 11i v2 releases.

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:

- The *PPPoE/v6 Administrator's Guide*, available at <http://docs.hp.com>
- “hp-ux ppp enhancements – pppoe and pppv6” (white paper), available at <http://docs.hp.com/hpux/netcom/index.html#HP-UX%20LAN>
- *pppd* (1M) manpage

Obsolescence

Not applicable.

STREAMS/UX

STREAMS/UX is an industry standard (developed by AT&T) programming environment. It provides a uniform way for developing and implementing networking services and other character-based I/O. STREAMS/UX is HP'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) adapter¹ with the core operating system.

Summary of Change

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

For non-blocking writes, during flow control conditions, STREAMS/UX now returns failure in the case of partial writes on STREAMS-based pipes. On HP-UX 11i v1, STREAMS used to return `EAGAIN` in the same scenario.

1. See also “HP Data Link Provider Interface (DLPI)” on page 181.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

If the non-blocking application is written as described in the *write (2)* manpage, then returning success in case of partial writes on STREAMS-based pipe will not impact you. However, if the application is programmed to manipulate the wrong behavior, then those applications must be changed to match the behavior, as specified in the *write (2)* manpage.

Compatibility

If the non-blocking application is written as described in the *write (2)* manpage, then the changes made in HP-UX 11i v2 September 2004 do not have any binary compatibility issues. However, if the application is programmed to manipulate the wrong behavior, then those applications must be changed to match the behavior, as specified for STREAMS-based pipe in the *write (2)* manpage.

Performance

There are no performance issues.

Documentation

For further information, see the *write (2)* manpage, as well as the product manual, STREAMS/UX for the HP 9000 Reference Manual, available at <http://docs.hp.com/hpux/onlinedocs/J2237-90005/J2237-90005.html>.

Obsolescence

No applicable.

What's in This Chapter?

This chapter covers changes and enhancements to security services, including:

- Boot Authentication (see page 236)
- Generic Security Service Application Programming Interface (GSS-API) (see page 237)
- HP-UX Bastille (see page 238)
- HP-UX Host Intrusion Detection System (see page 239)
- HP-UX IPFilter (see page 241)
- HP-UX Secure Shell (see page 242)
- HP-UX Strong Random Number Generator (see page 244)
- Install-Time Security (see page 245)
- Kerberos Client (KRB5-Client) (see page 247)
- OpenSSL (see page 249)
- Pluggable Authentication Modules (PAM) (see page 250)
- PAM Kerberos (see page 251)
- Security Patch Check (see page 252)
- Shadow Passwords (see page 254)
- Trusted Mode (see page 255)

Boot Authentication

The Boot Authentication feature makes it possible to configure a system so that only authorized users are allowed to boot the machine into Single-user Mode.

Summary of Change

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

Formerly, the Boot Authentication feature was only available on systems that have been converted to Trusted Mode. Starting with HP-UX 11i v2, the feature is available on all Standard Systems.

The Trusted Mode Boot Authentication feature remains unchanged, while the Standard Mode Boot Authentication feature can be configured by two parameters in the `/etc/default/security` file. They are `<BOOT_AUTH>` and `<BOOT_USERS>`. See the *security* (4) manpage for more detailed information.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

If you wish to protect your system against unauthorized booting into Single-user Mode, you may now do so without converting to Trusted Mode.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

The *init* (1M) and *security* (4) manpages have been updated.

Obsolescence

Not applicable.

Generic Security Service Application Programming Interface (GSS-API)

The Generic Security Service Application Programming Interface (GSS-API) provides security services for applications independent of the various underlying security mechanisms. The services include authentication, integrity, and/or confidentiality services.

Summary of Change

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

GSS-API is delivered as part of HP-UX 11i v2.

IPv6 support has been enabled.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

There are no impacts other than that listed previously.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

Further information may be found in the *Configuration Guide for Kerberos Client Products on HP-UX*, available on the Web at

<http://www.docs.hp.com/hpux/onlinedocs/J5849-90007/J5849-90007.html>.

See also “Kerberos Client (KRB5-Client)” on page 247.

Obsolescence

Not applicable.

HP-UX Bastille

HP-UX Bastille 2.1 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)¹ and Security Patch Check (SPC)², introduces new, out-of-the-box security functionality.

Summary of Change

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

Although HP-UX Bastille has been available on the Web for some time, it is new with respect to the HP-UX 11i v1 media release.

Version 2.1 adds finer granularity of configuration, improved question flow, better input validation, and new lockdown features to include configuration of IPFilter and password shadowing.

For further information, see the HP-UX Bastille Web site at <http://www.hp.com/go/bastille>.

HP-UX Bastille may also be downloaded from <http://www.hp.com/go/bastille>.

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

There are no changes from the previous release of HP-UX 11i v2.

Impact

Since it is included in the Operating Environments, system administrators will find Bastille easier to install and configure. In addition, Bastille can configure a system during installation (and during later system operation) at one of four predefined security configurations, ranging from default security to a level appropriate for a network Demilitarized Zone (DMZ).

Administrators can also create their own custom configurations through an interactive runtime interface that poses and explains over 70 security issues.

For the effects of changing some system settings, which can be accomplished in and out of Bastille, on the Common Desktop Environment, see "Common Desktop Environment (CDE)" on page 322.

If you have been using NIS, you can disable it with Bastille. However, if you then revert the system back to its pre-Bastilled state, the NIS service will not be completely configured. To complete the re-activation of NIS, you will have to either reboot or run the

1. See "Install-Time Security" on page 245.
2. See "Security Patch Check" on page 252.

`command /sbin/init.d/nis.client start` to complete configuration of the service. In addition, if you had also disabled `sendmail` along with NIS, you will have to execute `/sbin/init.d/sendmail` (or reboot) to regain that functionality.

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

Note that the Bastille product has incorporated the recommendations of a number of security checklists and documents, including the now-retired HP-UX Bastion-Host whitepaper into a rich and educational wizard-style interface.

Information can be found in the following documents:

- *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.hp.com/go/bastille>
- *HP-UX 11i v2 Installation and Update Guide*, online at <http://www.docs.hp.com>
- Chapter 8 of *Managing Systems and Workgroups*, online at <http://www.docs.hp.com>
- “Common Desktop Environment (CDE)” on page 322
- *HP-UX 11i Security* by Chris Wong (Prentice Hall PTR, ISBN 0-13-033062-0), see http://www.hp.com/hpbooks/prentice/ptr_0130330620.html

Obsolescence

Not applicable.

HP-UX Host Intrusion Detection System

HP-UX Host Intrusion Detection System (HIDS) provides continuous and near real-time surveillance for HP-UX servers to help identify potential malicious activities on the host.

Summary of Change

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

HIDS version 2.2 includes the following:

- The product bundle has been restructured to improve product installation and maintenance.

HP-UX HIDS contains the IDS product as well as the IDS-KRN kernel enablement. IDS is comprised of three subproducts. You may choose to install any or all of the subproducts. The subproducts you choose are dictated by the role of the machine you are installing on. The three subproducts are as follows:

— IDS.IDS-Agent

The agent software. The agent runs on servers to help protect them from intrusions.

— IDS.IDS-Admin

The administration software. The HP-UX HIDS administration System Manager manages and monitors the HP-UX HIDS agents.

— IDS.IDS-Doc

The manpages for HP-UX HIDS.

- The bundle tag name of the depot has been changed from J5083AA to HP-UX-HIDS.

NOTE

Due to restructuring of the product bundle at this release, installation or update from any prior release of HP-UX-HIDS will cause an automatic reboot of the system. The restructuring of the product was implemented to address a behavior that existed in past product releases of an orphaned fileset remaining on the system following update. Updates in future releases of the product will not require a system reboot.

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

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

Impact

You will notice a new software structure. There are no functionality impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

All documentation is available on the Web at <http://www.docs.hp.com/hpux/internet/> (select “Intrusion Detection System”), including:

- *HP-UX Host Intrusion Detection System Administrator's Guide*
- *HP-UX Host Intrusion Detection System Version 2.2 for HP-UX 11i v2 Release Notes*

Obsolescence

HP-UX HIDS (formerly known as IDS/9000) v1.0 has been deprecated and is planned for future obsolescence. Customers who are still using v1.0 are urged to upgrade to a newer version of IDS (such as v2.2) which can be downloaded for free from <http://software.hp.com>. After the release of HIDS v3.0 (planned for the fourth quarter 2004), support for v1.0 will end at the end of May 2005.

HP-UX IPFilter

The security product, HP-UX IPFilter version A.03.05.10.02, 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 (IPFilter version A.03.05.09)?

HP-UX IPFilter A.03.05.10.02 includes additional defect fixes. For details, see the IPFilter product release notes, available at <http://docs.hp.com/hpux/internet/index.html#HP-UX%20IPFilter>.

What's New for Customers of HP-UX 11i v2 (IPFilter version A.03.05.06)?

HP-UX IPFilter A.03.05.10.02 includes additional defect fixes plus support for the dynamic connection allocation (DCA) and network address translation (NAT) features. It also includes support for InfiniBand interfaces.

Impact

There is no significant impact.

Compatibility

There are no known compatibility issues.

Performance

There are no significant performance issues.

Documentation

For further information, refer to the following:

- Manpages:

<i>ipf</i> (5)	IP packet filter rule syntax
<i>ipf</i> (8)	alters packet filtering list for packet input/output
<i>ipl</i> (4)	data structure for IP packet log device
<i>ipmon</i> (8)	monitors <code>/dev/ipl</code> for logged packets
<i>ipfstat</i> (8)	reports on packet filter statistics and filter list
<i>ipftest</i> (1)	test packet rules with arbitrary input

- Documents:

The following documents are available at

<http://docs.hp.com/hpux/internet/index.html#HP-UX%20IPFilter>:

- *HP-UX IPFilter version A.03.05.09 Administrator's Guide*
- *HP-UX IPFilter A.03.05.10 Release Notes*

Obsolescence

Not applicable.

HP-UX Secure Shell

HP-UX Secure Shell A.03.71.000, based on OpenSSH 3.7.1p2, offers transparent encrypted security for HP-UX 11.0, 11i v1, 11i v1.6, and 11i v2. 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?

The new features in HP-UX Secure Shell A.03.71.000 are as follows:

- Enhanced `ssh_prng_cmds` file for random number generation

HP-UX Secure Shell A.03.71.000 contains an enhanced version of the `ssh_prng_cmds` file for random number generation on systems that do not contain the `/dev/random` and `/dev/urandom` files.

- **New escape character for requesting a pseudo terminal**

HP-UX Secure Shell A.03.71.000 supports a new escape character tilde B (~ B) that allows users to send a BREAK signal to the remote system. The new escape character works only with the SSH-2 protocol.
- **Support for generating KEX-GEX groups (/etc/moduli) in the ssh-keygen file**

The ssh-keygen file can be used to generate groups for the Diffie-Hellman Group Exchange (DH-GEX) protocol. A new option `-kex KEX` is provided in the ssh-keygen file that allows you to specify the key exchange algorithm. The valid algorithms are Diffie-Hellman, Diffie-Hellman-Group, Kerberos, and any OID (in dotted number format) supported by GSSAPI.
- **New AddressFamily Option in the Secure Shell Client**

The client configuration file, `ssh_config`, supports an `AddressFamily` directive to specify whether the address family is IPv6 or IPv4. By default, the HP-UX Secure Shell client supports the IPv4 address family.
- **New Configuration Directive to Enable or Disable PAM Support**

In HP-UX Secure Shell A.03.71.000, you can use the `UsePAM` directive in the `sshd_config` configuration file to configure the PAM support. When `UsePAM` is configured to YES in the `sshd_config` configuration file, the `sshd` server uses the PAM module for authentication.
- **Support for chroot in SSH and SFTP**

The `chroot` command is a directory “jail” that locks users at and below the specified `chroot` directory. This feature is available for both SSH and SFTP and works only when PAM support has been disabled in the `sshd_config` file using the following option:

```
UsePAM no
```
- **VerifyReverseMapping Replaced with the UseDNS Configuration Directive**

In HP-UX Secure Shell A.03.71.000, the `VerifyReverseMapping` configuration directive is renamed to `UseDNS`, with the same functionality as `VerifyReverseMapping`. By default, the `UseDNS` option is enabled in the `sshd_config` file.
- **SOCKS V5 Support for Dynamic Forwarding Mode**

HP-UX Secure Shell A.03.71.000 supports both the SOCKS V4 and V5 protocols. SOCKS is a protocol used by a proxy server to accept requests from clients in a network to facilitate the proxy server to forward requests across the Internet. The SOCKS V4 protocol makes connection requests, sets up proxy circuits, and relays application data. In addition to these functions, the SOCKSV5 protocol supports many authentication mechanisms. Therefore, SOCKS V5 can be used when a user requires a variety of authentication mechanisms, such as GSSAPI and password authentication methods.
- **Automatic Rekeying Based on Quantity of Data**

The SSH-2 protocol provides a method for the client or the server side of an SSH connection to initiate rekeying of the session while transferring a large amount of data. This facilitates the SSH client and server to negotiate new session keys while transferring data.
- **Support for /etc/default/security Directives**

Starting with HP-UX Secure Shell A.03.71.000, the `sshd` daemon checks the configuration setting in the `/etc/default/security` file for the following directives, before allowing a user to log in:

- `ABORT_LOGIN_ON_MISSING_HOMEDIR`
- `NOLOGIN`

- **Recording Bad Login Attempts**

HP-UX Secure Shell A.03.71.000 records failed login attempts to the `/var/adm/btmp` file. The `/var/adm/btmp` file contains bad login entries for each invalid log in attempt. For more information, type `man 4 btmp` at the HP-UX prompt.

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

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

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 more information, refer to the *HP-UX Secure Shell A.03.71.000 Release Notes* at <http://www.docs.hp.com> under the section “Internet and Security Solutions.”

Obsolescence

Not applicable.

HP-UX Strong Random Number Generator

HP-UX Strong Random Number Generator provides a secure, non-reproducible source of true random numbers for applications with strong security requirements, such as for generating encryption keys. Generating encryption keys from a non-random source constitutes a security risk that you can remove using this product. The `/dev/random` and `/dev/urandom` special files are created during product installation. When configured to use these special files, applications such as SSH will have a more secure environment for performing cryptographic computations.

Summary of Change

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

HP-UX Strong Random Number Generator is a new product starting with HP-UX 11i v2.

NOTE

HP-UX Strong Random Number Generator was formerly delivered as an optional core enhancement (KRNG 11I) for HP-UX 11i v1 on the Software Pack. Upon update to HP-UX 11i v2, the KRNG11I EP/NCF bundle will be removed.

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

There are no changes to the product.

Impact

Space requirements are very small. When loaded, it uses less than 100KB of memory. For security reasons, this feature does not store state or initialization data on disk or other permanent devices. The DLKM and configuration files take less than 100KB on disk.

Compatibility

There are no known compatibility issues.

Performance

The performance impact to external interrupt handling, even when the strong random number generator is heavily utilized, is very small—much less than 1% of overhead associated with interrupt handling.

Documentation

For more information, see the *random (7)* Manpage.

Obsolescence

Not applicable.

Install-Time Security

Install-Time Security (ITS) 1.x.x: 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.”

Summary of Change

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

ITS was introduced in the HP-UX 11i v2 media release.

During an installation step, you can choose among four preconfigured levels of security (the default is none):

Security Levels:

1. Sec00Tools - Install security infrastructure without applying security
2. Sec10Host - Host-Based Lockdown, without IPFilter configuration
3. Sec20MngDMZ - Lockdown + block most incoming traffic with IPFilter firewall
4. Sec30DMZ - DMZ-Appropriate, Host-Based and IPFilter Network Lockdown

For precise configuration information, please refer to the README or Chapter 2 of the *HP-UX 11i v2 Installation and Update Guide*, available at <http://docs.hp.com>.

The README is available by running the `swlist` command as follows:

```
swlist -a readme -s <depot path> <Level Bundle>
```

Example:

```
swlist -a readme -s mysystem:/var/spool/sw Sec30DMZ
```

IMPORTANT

During installation, you configure security elements on the Software Selection Screen. This screen is used to configure a wide variety of optional software.

In the box on the left side of the screen, select Security Choices. In the right side box, select which of the three SecLevel* Bastille nondefault security levels you want. You can also select Security Patch Check and other security tools. See the *HP-UX 11i v2 Installation and Update Guide* for details.

The system is only secured during the first boot of the new kernel, when Install-Time security has had a chance to run shortly after the software configuration phase. To guarantee security during installation, a local install using media is recommended.

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

There are no changes from the previous release of HP-UX 11i v2.

Impact

ITS makes it simpler for system administrators to configure the Bastille security lockdown engine prior to first boot to one of four predefined security configurations, ranging from none to DMZ.

Compatibility

There are no differences between the Itanium 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 v2 Installation and Update Guide*, available at <http://docs.hp.com>, 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:

- *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*, online at <http://www.docs.hp.com>
- Chapter 8 of *Managing Systems and Workgroups*, part number **5187-2216**, online at <http://www.docs.hp.com>
- “HP-UX Bastille” on page 238
- “Security Patch Check” on page 252

Obsolescence

Not applicable.

Kerberos Client (KRB5-Client)

The Kerberos Client (KRB5-Client) product 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?

KRB5-Client is delivered as part of HP-UX 11i v2.

The following changes have been made to the KRB5-Client:

- Support for the `appdefaults` section in the Kerberos Client configuration file:

Each tag in the `[appdefaults]` section of `/etc/krb5.conf` defines a Kerberos V5 application. The value of the tag is a subsection with relations that define the default behaviors for that application.

For example:

```
[appdefaults]
kinit = {
forwardable = true
}
```

The application defaults specified in this section are over-ridden by those specified in the `[realms]` section.

Two new APIs, `krb5_get_appdefault_string()` and `krb5_get_appdefault_boolean()`, have been added to the `libkrb5` library. Applications can now use these APIs to get the default values from the `appdefaults` section of the Kerberos Configuration file.

- **Multidomain support:**

The `krb5_parse_name()` has been modified to obtain the principal's realm name from the W2K multidomain if the LDAPUX product has been configured with the W2K multidomain. If the principal is not present in the W2K multidomain then the principal's realm will be the default realm, as specified in the Kerberos Configuration file.

The `ldapux_multidomain` flag needs to be set to 1, in the Kerberos Client configuration file `/etc/krb5.conf`, by the administrator if the realm name of the user needs to be obtained from the W2K multidomain.

- Support for IPv6 is enabled in the KRB5-Client.

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

There are no changes from previous HP-UX 11i v2 releases.

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 manpages:

- `libkrb5` (3)
- `krb5.conf` (4)

Further information may also be found in the *Configuration Guide for Kerberos Client Products on HP-UX*, available on the Web at

<http://www.docs.hp.com/hpux/onlinedocs/J5849-90007/J5849-90007.html>.

See also “Generic Security Service Application Programming Interface (GSS-API)” on page 237.

Obsolescence

Not applicable

OpenSSL

OpenSSL A.00.09.07-d is based on the open source product OpenSSL 0.9.7d, and offers a general purpose cryptography library and implementation of the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) protocols.

Summary of Change

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

OpenSSL was first introduced to HP-UX 11i v1 in the June 2004 release.

A self-signed host certificate is automatically generated while installing OpenSSL A.00.09.07-d. The self-signed host certificate is stored as `/opt/openssl/certs/host.pem`, and the private key is stored as `/opt/openssl/private/hostkey.pem`.

What’s New for Customers of HP-UX 11i v2?

OpenSSL is new to HP-UX 11i v2. See also previous “What’s New for Customers Migrating from HP-UX 11i v1?”

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For more information, refer to the *OpenSSL A.00.09.7-d Release Notes* at <http://www.docs.hp.com> under the section “Internet and Security Solutions.”

Obsolescence

Not applicable.

Pluggable Authentication Modules (PAM)

The Pluggable Authentication Modules (PAM) gives system administrators the flexibility of choosing any authentication service available on the system to perform authentication. The framework also allows new authentication service modules to be plugged in and made available without modifying the applications.

The PAM framework, `libpam`, consists of an interface library and multiple authentication service modules. The PAM interface library is the layer implementing the Application Programming Interface (API). The authentication service modules are a set of dynamically loadable objects invoked by the PAM API to provide a particular type of user authentication.

Summary of Change

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

The 64-bit PAM framework is now supported on both PA-RISC and Itanium.

A new PAM module, `pam_hpsec` (5), has been introduced. This module implements extensions specific to HP-UX for authentication, account management, password management, and session management. This module today enforces the `NOLOGIN`, `NUMBER_OF_LOGINS_ALLOWED`, and `UMASK` parameters from `security` (4). The use of `pam_hpsec` is mandatory for services like `login`, `dtlogin`, `ftp`, `remsh/rexec` and `ssh`. It is required that these services stack this module on the top of the stack above one or more non-optional modules such as `pam_unix`, `pam_krb5`, or `pam_ldap`. Application writers and system administrators must consider whether it is appropriate to use `pam_hpsec` for any given application.

A few defect fixes are also included in this release.

What’s New for Customers of HP-UX 11i v2?

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

Impact

You can now have 64-bit PAM applications running across the PA-RISC and Itanium-based architectures.

The *security* (4) parameters *NOLOGIN* and *NUMBER_OF_LOGINS_ALLOWED* are now enforced for the applications that use session management services provided by *pam_hpsec* (5) as configured in */etc/pam.conf*, in addition to those services that indirectly invoke *login* (1) command. Security parameter *UMASK* now controls *umask* (2) of all sessions initiated via *pam_unix* (5) and/or *pam_hpsec* (5) as configured in */etc/pam.conf*.

Compatibility

You should see a more consistent interpretation of some parameters in *security* (4).

Performance

There are no known performance issues.

Documentation

For further information, see the following manpages:

- *pam* (3)
- *pam_unix* (5)
- *pam_hpsec* (5)
- *pam.conf* (4)
- *security* (4)

Obsolescence

Not applicable.

PAM Kerberos

Pluggable Authentication Modules (PAM) is an easily configurable framework that provides support for multiple authentication technologies on HP-UX. PAM Kerberos v1.23 (Product number **J5849AA**) is the PAM module that provides support for the Kerberos authentication protocol as specified in the 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?

- PAM-Kerberos v1.23 in HP-UX 11i v2 supports both Itanium and PA-RISC applications in 32-bit mode and 64-bit mode.
- The PAM Kerberos `pam_sm_acct_mgmt()` returns `PAM_USER_UNKNOWN` instead of `PAM_SUCCESS` when the user is not present in the Kerberos database.

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

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

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 manpages:

- *pamkrbval* (1M)
- *pam_krb5* (5)

In addition, see the PAM Kerberos Web site at
<http://software.hp.com/portal/swdepot/displayProductInfo.do?productNumber=J5849AA>

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?

SPC is new with respect to the transition between the HP-UX 11i v1 and HP-UX 11i v2. Prior to HP-UX 11i v2, SPC was released on the Web.

See also “What’s New for Customers of HP-UX 11i v2?” below.

What’s New for Customers of HP-UX 11i v2?

SPC version 2.0 will now also perform analysis of software updates and manual actions contained in security bulletins. Many security bulletins do not resolve completely with patches. Thus customers still had to read each and every bulletin regardless of whether it had anything to do with their systems. This represents hundreds of bulletins that each customer is required to read to keep their system safe. Now, security patch check will eliminate much of that work, so that customers only have to read security bulletins that contain manual actions, special-install instructions, or, in the case of updates, where to get those updates.

In addition, SPC will now use HTTPS to download its information, which is a secure method of information exchange versus using `ftp`, a cleartext/unauthenticated protocol in the past.

Impact

SPC now 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

The output format has 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>

Obsolescence

Bundle **B6834AA** has been replaced by **SecPatchCk**.

Shadow Passwords

Shadow Passwords enhances system security by hiding user encrypted passwords in a shadow password file.

The initial HP-UX 11i v2 release (October 2003) introduced an optional, configurable Shadow Passwords feature based on the *de-facto* standard provided by other UNIX flavors, including Sun Solaris and Linux. Encrypted passwords previously stored in the publicly readable `/etc/passwd` file can be moved to `/etc/shadow`, which is accessible only by a privileged user.

In this release of HP-UX 11i v2, Shadow Passwords is not supported with NIS or NIS+.

Summary of Change

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

- After upgrading to the current release of HP-UX 11i v2:
 - HP-UX 11i v1 (June 2004) users will now have the option of enabling Shadow Passwords functionality by running the `pwconv` (1M) command.
 - HP-UX 11i v1 users who had installed the HP-UX 11i v1 (B.11.11) ShadowPassword EP/NCF bundle through a Web download will have the equivalent functionality delivered by a part of OS-Core. The B.11.11 ShadowPassword EP/NCF bundle will be removed.
- System Administration Manager (SAM) now supports Shadow Passwords.¹

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

- System Administration Manager (SAM) now supports Shadow Passwords.¹
- There are no changes to the OS-Core commands and libraries.

Impact

The Shadow Passwords feature is optionally configurable, and is inactive by default. The feature has no impact on systems running in trusted mode. In addition, systems in standard mode are not impacted until the `pwconv` (1M) command is run to activate the feature. The feature can be subsequently de-activated by running the `pwunconv` (1M) command.

Compatibility

The behavior of systems running in trusted mode is not changed. When run in standard mode, the `pwconv` (1M) command now converts the system to use Shadow Passwords. In the current release of HP-UX 11i v2, Shadow Passwords are not supported with NIS or NIS+. Do not run `pwconv` (1M) on these configurations. On a system which has been converted to use Shadow Passwords, the only applications that can be affected are those which either use the `getpwent/getpwnam` interfaces, or which directly access the

1. See also “System Administration Manager (SAM)” on page 154.

password field of the `/etc/passwd` file with the assumption that password and aging information reside there. Every password field is set to `x`, and the corresponding encrypted password is stored in the `/etc/shadow` file, which is accessible only by privileged users.

Performance

There is no performance impact.

Documentation

The following manpages provide additional information about the Shadow Passwords feature:

- *pwconv* (1M)
- *pwunconv* (1M)
- *pwck* (1M)
- *passwd* (1)
- *getspent* (3C)
- *putspent* (3C)
- *passwd* (4)
- *shadow* (4)
- *security* (4)

Obsolescence

Not applicable.

Trusted Mode

In HP-UX, users' encrypted password information is normally stored in the `/etc/passwd` file. HP-UX also supports a way of storing the same information in `/tcb` files when the system is put into trusted mode using System Administration Manager (SAM). The information from `/tcb` files can be retrieved using `prpw` family interfaces (`getprpwnam()`, `getprpwuid()`, etc). One of the major benefits of the trusted mode is that the encrypted password is not accessible to an unprivileged user.

Summary of Change

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

The trusted mode will not see any new enhancements. See the following "Impact" section.

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

The trusted mode will not see any new enhancements. See the following "Impact" section.

Impact

HP-UX now also supports a shadow password scheme (“shadow mode”) where the encrypted passwords are stored at `/etc/shadow`, also inaccessible to an unprivileged user.¹ It is recommended that the limitations of the shadow mode be weighed with the (lack of) future enhancements to trusted mode when deciding whether to use trusted mode or shadow mode.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

See also “Shadow Passwords” on page 254.

Obsolescence

Not applicable.

1. See “Shadow Passwords” on page 254.

What's in This Chapter?

This chapter includes information about new and changed commands and system calls, including:

- The `execve()` System Calls (see page 258)
- The `fuser` Command (see page 260)
- The `insf`, `lssf`, and `mksf` Commands (see page 261)
- The `mmap()` Function (see page 262)
- The `olrad` Command (see page 263)
- Post/Wait (see page 264)
- The `ps` command (see page 265)
- The `rc` Shell Script (see page 266)
- The `scsimgr` and `scsiscan` Commands (Deprecated) (see page 267)
- The `settune` and `settune_txn` System Calls (see page 268)
- The `sfd` Daemon (Deprecated) (see page 269)
- The `sysdef` Command (Deprecated) (see page 270)

The `execve()` System Calls

The `execve[*]()` system calls, in all their forms, load a program from an ordinary, executable file into the current process, replacing the current program. The `[path]` or `[file]` argument refers to either an executable object file or a file of data for an interpreter. In the latter case, the file of data is also called a script file.

Summary of Change

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

As of HP-UX 11i v1.6, the system call `execve()` has changed as described in the following two subsections:

1. Setuid/Setgid Script Support

A `setuid` file is one that, if executed, operates with the permissions of the owner of the file, not of the person executing the file. A `setgid` file operates similarly with the permissions of the group.

Details of Change:

Beginning in HP-UX 11i v1.6, the kernel ignores `setuid` and `setgid` bits on scripts for security reasons. This affects only the scripts, not the executables.

2. Buffer Overflow Protection

With HP-UX 11i v1.6, applications are not allowed to execute code from their stack segment by default. Executing code on stack is one of the most common exploits on UNIX® systems; turning off this feature protects against buffer overflow.

Details of Change:

Beginning in HP-UX 11i v1.5, HP-UX supported a kernel tunable parameter, `executable_stack`, that controlled whether applications were permitted to execute code located on their stack(s). In the initial release, this tunable parameter was disabled by default, for maximum compatibility. In HP-UX 11i v1.6, executable stacks are disabled by default, providing substantial protection from many common security exploits without hurting system performance.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

1. Setuid/Setgid Script Support

The `setuid` and `setgid` scripts will no longer function properly.

2. Buffer Overflow Protection

Well over 99% of legitimate applications will not be affected by this change. Some legitimate Java-based applications may not function. Often, this is a sign that the application is missing a critical Java security patch.¹ A few legitimate applications that use self-modifying code, such as some simulators and interpreters, may also be affected.

Compatibility

1. Setuid/Setgid Script Support

Due to these changes the `setuid` and `setgid` scripts no longer function properly. Attempting to run `setuid` or `setgid` scripts results in this warning message:

```
Warning: Ignoring setuid/setgid on "/tmp/[abc]" as the system tunable
"secure_sid_scripts" is set.
```

Additionally, this warning is sent to the controlling terminal, as well as `syslog.log`, which is located in the `/var/adm/syslog/` directory.

To obtain the HP-UX 11i v1 compatible behavior, set the dynamic tunable `secure_sid_scripts` to 0. Refer to the *kmtune* (1) manpage for syntax and more information.

CAUTION

The `setuid` and `setgid` scripts pose a security threat; hence you should use this tunable with great care.

2. Buffer Overflow Protection

Any application that attempts to execute code on its stack(s) is terminated with a `SIGKILL` signal. An error message, similar to the following, is generated to the `syslog.log` file and to the controlling terminal of the offending process:

```
PID 18459 has been terminated. See the '+es enable' option of chatr(1).
```

If a message similar to this appears, the `/var/adm/syslog/syslog.log` will also contain an error message similar to this:

```
UID 7 PID 18459 may have attempted a buffer overflow attack.
cmd: /abc/estack
```

Performance

There is no impact to performance.

1. Java patches can be found at
<http://www.hp.com/products1/unix/java/patches/index.html>.

Documentation

1. Setuid/Setgid Script Support

The `execve` (2) and `secure_sid_scripts` (5) manpages have been updated appropriately. See the manpage of each for more information.

2. Buffer Overflow Protection

Please refer to the “Restricting Execute Permission on Stacks” section of the `chatr` (1) manpage, as well as the `executable_stack` (5) manpage for additional advice on the use of this feature.

Obsolescence

1. Setuid/Setgid Script Support

As of HP-UX 11i v1.6, the kernel ignores `setuid` and `setgid` bits on scripts for security reasons.

2. Buffer Overflow Protection

Not applicable.

The `fuser` Command

The `fuser` (1M) command lists processes using a file or file structure.

Summary of Change

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

In HP-UX 11i v1, the `fuser` command can require several minutes to complete when there are hundreds of memory-mapped files. In HP-UX 11i v2, HP has provided a new support from the kernel to identify memory-mapped files or file structure quickly to improve `fuser` performance.

What’s New for Customers of HP-UX 11i v2?

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

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

This change improves performance.

Documentation

There is no change in the manpage.

Obsolescence

Not applicable.

The `insf`, `lssf`, and `mksf` Commands

The `insf` command installs special files in the devices directory, normally `/dev`. If required, `insf` creates any subdirectories that are defined for the resulting special file.

The `lssf` command lists information about a special file.

The `mksf` command creates a special file in the devices directory (normally `/dev`) for an existing device, a device that has already been assigned an instance number by the system.

Summary of Change

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

The `insf`, `lssf`, and `mksf` commands now support IHV drivers, provided the IHV drivers provide a shared library, `libsfc<drivername>.sl` (PA-RISC) or `libsfc<drivername>.so` (Itanium®-based), to support them.

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

There are no changes from previous releases of HP-UX 11i v2, other than what is described above.

Impact

There are no impacts other than that described previously.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, refer to the following manpages:

- *insf*(1M)
- *lssf*(1M)
- *mksf*(1M)

Obsolescence

Not applicable.

The `mmap()` Function

The `mmap()` function establishes a mapping between a process's address space and a file.

Summary of Change

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

By using the new `MAP_IO` flag, you may now use the `mmap()` function to establish a mapping between a process's address space and I/O device registers or memory. This functionality allows user programs to set up DMA or RDMA functionality and other I/O mechanisms without the overhead of going through a kernel driver. The `MAP_IO` functionality will be limited to superusers and processes running in Real Time Extensions processor sets.

This interface is a requirement for HP-UX Real Time Extensions functionality.

See also “ccNUMA” on page 318 for other changes to `mmap()`.

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

There are no changes from previous HP-UX 11i v2 releases.

Impact

It is now possible to perform mappings between a process's address space and I/O device registers or memory.

No existing functionality of `mmap()` is modified by this extension. Customers not using `MAP_IO` will not be impacted.

Compatibility

There are no compatibility issues. This new flag does not affect existing users of `mmap()`.

Performance

This change has no impact on system performance. User programs who previously had to use kernel driver `ioctl()` functions to memory map I/O or configure DMAs will be able to perform these tasks more quickly.

Documentation

The `mmap()` function's manpage, `mmap(2)`, now documents the `MAP_IO` flag along with the expected calling format.

Obsolescence

Not applicable.

The `olrad` Command

The new `olrad` (1M) command provides the command line interface for Online Addition/Replacement (OLAR) of PCI I/O cards.¹ It provides the ability to execute critical resource analysis routines to ensure that the system integrity is not compromised before performing an OLAR operation as well as during the actual OLAR operations.

Summary of Change

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

The `rad` (1M) command has been replaced by the more robust `olrad` (1M) command. The `rad` (1M) command does not perform critical resource analysis during an OLAR operation. The new `olrad` (1M) command performs critical resource analysis as part of an OLAR operation to ensure that the none of the resources critical for the system operation are affected.

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

The `olrad` command is now available for both PA-RISC and Itanium-based systems.

Impact

The `olrad` (1M) command enhances the overall high availability solution for the customer since the system can remain active while an I/O adapter is being added or replaced. When combined with other high availability products, like HP Serviceguard, the system availability is improved significantly.

1. See also "Online Addition and Replacement (OL* or OLAR)" on page 97.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see the *olrad* (1M) manpage, as well as the following document, available at <http://docs.hp.com>:

- *Interface Card OL* Support Guide*

See also “Online Addition and Replacement (OL* or OLAR)” on page 97.

Obsolescence

Not applicable.

Post/Wait

Post/wait is a set of five system calls that provide a fast, lightweight synchronization facility for user applications. Its main advantages over previous mechanisms are its scalability, low overhead, and simplicity of use.

Summary of Change

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

This entire facility is new. It provides five new system calls, one new header file, and one new manpage. The system calls are as follows:

- `pw_getukid` (retrieve the tag used to identify threads)
- `pw_wait` (block until posted, timed-out, or signaled)
- `pw_post` (wake a thread blocked in `pw_wait`)
- `pw_postv` (wake a whole collection of threads blocked in `pw_wait`)
- `pw_getvmax` (retrieve the maximum number threads that can be awakened with a single `pw_postv` call)

What’s New for Customers of HP-UX 11i v2?

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

Impact

Only customers who choose to use `post/wait` will be affected.

Compatibility

Customers not using `post/wait` are not affected. No existing interfaces or facilities are affected.

Performance

`Post/wait` provides an alternative synchronization method that should be faster than current methods in every way. Effective scaling to large numbers of processors is a particular strength. Customers that do not use it will not be affected.

Documentation

For further information, see the *postwait (2)* manpage.

Obsolescence

Not applicable.

The `ps` command

The `ps (1)` command is part of the core OS. This command is used to report process status.

Summary of Change

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

In HP-UX 11i v1 (B.11.11) and the previous release of HP-UX 11i v2 (B.11.23), `ps (1)` displayed a maximum of 64 characters in the command field. Starting with this release of HP-UX 11i v2, the default width is set to 128 characters and a default file has been provided (`etc/default/ps`) to define the length of the command field. The valid value of the command field width is between 64 to 1024. The default file will be part of the OS depot.

The new feature for `ps (1)` in this release is as follows:

- The `/etc/default/ps` file now defines the command-line width to be displayed.

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

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

Impact

You will see the following:

- You will have a default file which needs to be updated to whatever command field width you want.

Compatibility

The previously listed changes are compatible with all the releases. There are no regressions from previous releases.

Performance

There are no known performance issues.

Documentation

For further information, refer to the *ps* (1) manpage.

Obsolescence

Not applicable.

The 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?

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* (1M) 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 of HP-UX 11i v2?

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

Impact

You will see the following:

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.

The `scsimgr` and `scsiscan` Commands (Deprecated)

The `scsimgr` command is used to swap two existing SCSI target lun names.

The `scsiscan` command examines on-board device buffers of SCSI disk drives. It clears on-board run and fault logs and writes that information into `syslog`.

These commands were previously undocumented.

Summary of Change

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

The `/sbin/scsiscan` and `/sbin/scsimgr` commands have been deprecated and will be obsolete in HP-UX 11i v3.

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

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

Impact

If you are using these commands, you should discontinue doing so, as they will not be delivered in the HP-UX 11i v3 release.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

These commands were previously undocumented.

Obsolescence

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

The `settune` and `settune_txn` System Calls

The `settune` (2) and `settune_txn` (2) system calls are part of the kernel tunable infrastructure. The `settune` (2) function sets the value of the kernel tunable parameter, named “tunable,” to the supplied value. The `settune_txn` (2) function sets the values of kernel tunable parameters in a transaction.

Summary of Change

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

Tunables set using the kernel system calls `settune` (2) and `settune_txn` (2) will not be persistent across reboots starting from the release following HP-UX 11i v2. This means that tunable changes made using direct invocation of `settune` (2) and `settune_txn` (2) system calls will not be carried forward after the system reboots.

The supported method for making tunable changes that remain persistent across reboots is via use of the HP-UX Kernel Configuration tools. See `kconfig` (5), `kctune` (1M), and `system` (4) for details.

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

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

Impact

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

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

See the *kconfig* (5), *kctune* (1M), and *system* (4) manpages.

Obsolescence

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

The sfd Daemon (Deprecated)

The `/sbin/sfd` daemon is a process that gets started from the `init` process through an entry in the `/etc/inittab` file. This daemon sleeps on a kernel call. When woken up by the kernel, it will run `insf` to create device special files for newly added devices.

This daemon was previously undocumented, except for a reference in the *HP-UX 11i v1.6 Release Notes*.

Summary of Change

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

The `/sbin/sfd` daemon has been deprecated and will be obsolete in HP-UX 11i v3.

What’s New for Customers of HP-UX 11i v2?

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

Impact

There are no impacts.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

This daemon was previously undocumented, except for a reference in the *HP-UX 11i v1.6 Release Notes*.

Obsolescence

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

The `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?

The `sysdef(1M)` command has been deprecated in HP-UX 11i v2 and is planned for future obsolescence. Customers are advised to use the alternative `kctune(1M)`.

The `sysdef(1M)` command reports incorrect values for some tunable parameters such as `msgmap`, `sema`, and `shmem`.

What’s New for Customers of HP-UX 11i v2?

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

Impact

If you use the `sysdef(1M)` 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(1M)` 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?”

What's in This Chapter?

This chapter covers a variety of changes of particular interest to programmers, such as changes to compilers, editors, and libraries, including:

- Absolute Debugger (adb) (see page 274)
- HP aC++/HP ANSI C Compiler for Itanium-based Systems (see page 275)
- HP aC++ Compiler for PA-RISC Systems (see page 276)
- HP C Compiler for PA-RISC Systems (see page 281)
- HP Fortran for HP-UX (see page 285)
- HP MLIB (see page 287)
- HP Message Passing Interface (MPI) (see page 288)
- HP-UX Buffer Cache Tunable Parameters (Deprecated) (see page 289)
- Java 2 Standard Edition Platform:
 - HP 3D Technology for the Java 2 Standard Edition Platform (see page 290)
 - HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition (see page 291)
 - Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE (see page 292)
 - Java Out-of-Box (see page 293)
- Math Library (libm), C Headers, and C++ Headers (see page 294)
- POSIX Threads (see page 303)
- Software Transition Kit (see page 305)
- Transition Links (Deprecated) (see page 305)

Absolute Debugger (adb)

The `adb` command executes a general-purpose debugging program, the Absolute Debugger, that is sensitive to the underlying architecture of the processor and operating system on which it runs. It can be used to examine files and provide a controlled environment for executing HP-UX programs.

Summary of Change

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

For this release of HP-UX 11i v2, Absolute Debugger (adb) includes the following:

- Shared library support.
- Threads support.
- Multiprocessor dump reading support.
- 64-bit DLKM dump reading support.
- Improved command-line syntax.
- Enhanced capabilities in expressions and format strings.
- Support for ELF and SOM object files.
- Single binary for 32-bit and 64-bit.
- Better file searching and writing capability.
- Compressed dump support.
- Support for Dual `pdir`.
- Support for debugging MxN threads in a process/core.
- Support for debugging INIT and MCA crash dumps.

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

There are no changes from previous releases of HP-UX 11i v2.

Impact

With this version of Absolute Debugger (adb), you can debug the following:

- HP-UX Processes with threads.
- A dump of a multiple processor system.
- DLKMs in dumps.
- ELF and SOM object files.
- Compressed dump.
- HP-UX kernel and crash dumps with Dual `pdir` support.
- An executable, a running process, and the core with MxN threads.

- Crash dumps for INIT and MCA events.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues

Documentation

The `adb` manpage, `adb(1)`, has been changed. Further information about `adb`, including tutorials, can be found at the IT Resource Center at <http://www.itrc.com>.

Obsolescence

Not applicable.

HP aC++/HP ANSI C Compiler for Itanium-based Systems

The HP aC++ compiler is HP's implementation of the ISO/IEC 14882 Standard for the C++ Programming Language (the international standard for C++) and largely conforms to this standard.

This release of the HP C compiler has changes that provide improved similarity of functionality relative to the HP aC++ compiler while maintaining a very high level of compatibility with the previous releases of the HP C compiler.

HP C and HP aC++ on Itanium® also now generate the same warnings and error messages in comparable circumstances. The goal of the changes is to simplify and ease the development of code using a mixture of C and C++.

HP C and HP aC++ are distributed as separate software bundles. Each is bundled with separate products. In particular the HP aC++ bundle contains HP aC++ headers and the HP C bundle contains the X11MotifDevKit.

Summary of Change

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

The HP aC++ compiler for Itanium-based systems is new for customers migrating from HP-UX 11i v1.

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

The HP aC++ compiler for Itanium-based systems has no changes from the previous release of HP-UX 11i v2, except for defect fixes.

Impact

There are no impacts.

Compatibility

OpenMP: The C compiler for PA-RISC¹ supports OpenMP 1.1, while the C compiler for Itanium-based systems supports OpenMP 2.0.

The C compilers for both PA-RISC and Itanium-based systems support C89 completely and partially support C99. However, the C compiler for Itanium-based systems is more C99 compliant than on PA-RISC.

Performance

There are no known performance issues.

Documentation

Documentation for the HP aC++ compiler is delivered with the product. See also the HP aC++ Web site at <http://www.hp.com/go/cpp>.

Obsolescence

Not applicable.

HP aC++ Compiler for PA-RISC Systems

The HP aC++ compiler is HP's implementation of the ISO/IEC 14882 Standard for the C++ Programming Language (the international standard for C++) and largely conforms to this standard.

Summary of Change

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

In version A.03.55.02, the following features have been introduced for users migrating to the HP-UX 11i v2 September 2004 release from HP-UX 11i v1:

1. See "HP C Compiler for PA-RISC Systems" on page 281.

- placement delete Feature Fully Supported: The placement delete feature is fully implemented in this version.
- `-notrigraph` Option: This option inhibits the processing of trigraphs.
- `NO_SIDE_EFFECTS` Pragma: This pragma states that `functionname` and all the functions that `functionname` calls will not modify any of a program's local or global variables. It provides additional information to the optimizer which results in more efficient code.
- Precompiled Header (PCH) Feature Fully Supported under `-AA`: Precompiled Header (PCH) is now fully supported with `-AA` option.
- Debugging Optimized Code (DOC): Debugging of optimized code (at optimization level `+O2`) is more robust now. Debugging of template functions is much improved.
- `+O[no]clone` Option: This option provides user control to turn on [`off`] the cloning feature of the optimizer.
- `+O[no]memory[=malloc]`: This option enables [`disables`] memory optimizations. Specifying `malloc` in the list enables [`disables`] optimizations which consolidate memory allocation procedure calls.
- Improved Prefetching and Data Locality for PA8800: Taking advantage of the increased cache line length of PA8800 processor (128 bytes), the compiler generates better code with improved data prefetching and data locality to help improve the performance of loop intensive applications.
- Improved Optimization of Exception Handling Code Sequences at Optimization Level `+O2` with `+Oexception` Option: The compiler now does a much more robust optimization in and around the code regions containing try/catch constructs. This is expected to provide performance boost to C++ applications with a large amount of exception handling. This can be turned on with option `+Oexception`.
- `restrict` Keyword: This is a C99 feature. This keyword tells the optimizer that variables declared as `restrict` cannot have aliases (using pointers). Thus optimizer can do better alias analysis. As of the current release, only the keyword is supported without any accompanying optimizations.
- Increased `+O3/+O4` Robustness with `aCC`: Robustness and usability of optimizations levels `+O3/+O4` has been improved for C++ applications. This is expected to provide performance benefits to user applications written in C++.
- Support for `gdb steplast`: In order to use the new `steplast` command of `gdb`, C++ programs must be built with `-g0` option only.
- `+Olit=[all|none]` Option: The `+Olit` option specifies the type of data items placed in the read-only data section. `+Olit` can take the values `all` and `none`. `+Olit=all` places all string variables and all const-qualified variables that do not require load-time or runtime initialization in the read-only data section. If `+Olit=none` is specified, no constants are placed in the read-only data section.
- Dynamic Unloading of C++ Runtime Shared Library (`libCsup`): It is safe to dynamically load and unload C++ shared libraries that directly or indirectly depend on shared library, `libCsup`. It is no longer necessary to specify `-lCsup` on the link line while building a non-C++ main executable.
- Pragma `INIT` and Pragma `FINI` in 32-bit mode: Pragmas `INIT` and `FINI` now work in 32-bit mode too. Functionality of both the pragmas are similar to their functionality in the 64-bit mode.

- **Rogue Wave Tools.h++ Version 7.1.1 Compatible with -AA:** Rogue Wave Tools.h++ library version 7.1.1 can now be used with the -AA option; that is, it can be used with the Standard C++ Library 2.1.1. Note that the earlier Tools.h++ library version 7.0.6 could not be used with -AA.
- **UTF-16 Character Transformation Format Support:** The current compiler supports only ASCII strings or characters (8 bit chars with no transliteration) as UTF-16. UTF-16 is described in the Unicode Standard, version 3.0 [UNICODE]. The definitive reference is Annex Q of ISO/IEC 10646-1 [ISO-10646]. Any string or character which is preceded by `u` is recognized as a UTF-16 literal or character and is stored as an unsigned short type.
- **__restrict Keyword Support:** The `__restrict` keyword is now recognized by the compiler. Refer to the description of the C99 restrict type-qualifier keyword in ISO/IEC 9899:1999 (6.7.3).
- **+ub and +sb Options to Control Bitfield Signedness:** The `+ub` option treats unqualified bit fields as unsigned. The `+sb` option treats unqualified bit fields as signed. The `+uc` option overrides `+sb` option for char bitfields.
- **ANSI C++ Covariant Return Type:** With this release, covariant return type feature is fully supported. Basically, return type of an overriding function can be a pointer or reference to a class derived from the return type of the base class.
- **Improved Support for PACK and ALIGN Pragmas.**
- **Improved DOC (Debug Optimized Code) Support:** Ability to debug the optimized C++ code (DOC) has been improved significantly in this release. To use these improvements, set the environment variable `aCC_DOC_MODE` to `ON`.
- **Performance Improvements to -AA iostream:** Standard C++ Iostreams have been further tuned to improve the performance of I/O.
- **Thread Mutex Contention Fix on Null Strings with -AP:** Using the string template (with `-AP`) in a threaded environment may result in excessive contention on a single null string mutex. This is because of the usage of a single null string object for default initialization and string modifications. This fix is enabled with `-D__HPACC_THREAD_NULL_STRING`.
- **OpenMP Standard Supported:** This release introduces full support for version 1.0 of the OpenMP C and C++ Application Program Interface. This specification is available at <http://www.openmp.org/specs>.
- **aCC_MAXERR Environment Variable to Control Maximum Number of Compiler Errors:** The `aCC_MAXERR` environment variable allows you to set the maximum number of errors you want the compiler to report before it terminates compilation.
- **Small Block Allocator for malloc:** The aC++ runtime now automatically enables `malloc`'s Small Block Allocator (SBA) after the aCC runtime patch and `libc` patch appropriate for your system are installed.
- **Gather/Scatter Prefetch Pragma:** A pragma is now supported to prefetch specified cache lines. The behavior of this pragma is similar to `+odataprefetch` but the prefetch pragma can access specific elements in indexed arrays that are stored in cache. In addition, any valid `lvalue` can be used as an argument, but the intent of the pragma is to support array processing.
- **Support for SDK/XDK:** The SDK/XDK feature helps in selecting components, header files, and libraries installed in alternate locations. You must set either one or both of `SDKROOT` and `TARGETROOT` environment variables.

- **Support for `__declspec`:** This release supports `__declspec(dllimport)` and `__declspec(dllexport)` as keywords. These keywords have the same semantics as in Microsoft Windows compilers and ease porting of applications developed in Microsoft Windows compilers to HP-UX systems.
- **-Bhidden and -Bhidden_def Command-Line Options:** The current behavior of the aC++ compiler on HP-UX systems is to export all symbols with external linkage by default. In order to facilitate exporting only those symbols marked with `__declspec(dllexport)` and hide the rest, use the following two options to hide the symbols by default:
 - **-Bhidden Command-Line Option:** This option hides of all the symbols used in the translation unit other than the ones prefixed with `__declspec(dllexport)`, `__declspec(dllimport)`, or specified with `pragma HP_DEFINED_EXTERNAL`.
 - **-Bhidden_def Command-Line Option:** This option hides all the symbols defined in the translation unit other than the ones prefixed with `__declspec(dllexport)` or specified with `pragma HP_DEFINED_EXTERNAL`.
- **+Oprofile Option for Profile-Based Optimization:** This release enhances the usability of PBO by providing the flexibility of choosing to generate the PA-RISC machine code (SOMs) directly instead of the compiler's intermediate code (ISOMs) during the compilation phase itself.
- **-I- Option Enhanced to Perform `prefixinclude` Search:** The `-I-` option has been enhanced to do a `prefixinclude` search.
- **Improved Optimization for `HP_LONG_RETURN` and `+DA1.1`:** The code for `HP_LONG_RETURN` and `+DA1.1` has been optimized when `+Oentrysched` is used. (Code for non-static member functions always turns on `HP_LONG_RETURN`). Note that `+Oentrysched` may cause problems when using `+eh`, so is only recommended if using `+noeh`.
- **Standard C++ Library 2.0 Based on the New Rogue Wave SL 2.0:** The new `-AA` command-line option enables use of the new 2.0 Standard C++ Library, which includes the new standard conforming (templated) `iostream` library.
- **Easier Use of Threads with `-mt`:** The new `-mt` option enables multi-threading capability without the need to set any other flags, such as `-l` and `-D`. HP aC++ examines your environment and automatically selects and sets the appropriate flags.
- **Support for ANSI C Compiler:** The `-Ae` option restricts the compiler to the ANSI C mode. This option turns on the ANSI C c89 mode and allows compilation of c89 compatible C source programs just like C compiler.

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

The `placement delete` feature is fully implemented in this version. If, during object initialization, as part of a `placement new` call, an exception is thrown, then a matching `placement delete` call is made, with the same arguments as `placement new` (for example, during constructor invocation on a class object instance).

Example:

```
class A {
    public:
        void *operator new(size_t);
};
```

```
void operator delete(void*);  
void *operator new(size_t, A*);  
void operator delete(void*, A*);  
// ...  
};
```

Given the following placement new expression:

```
A *ps = new (ptr) A;
```

If the default constructor for class A exits by throwing an exception, the implementation looks for an operator delete() in the scope of class A.

For an operator delete() to be considered, it must have parameters with types that match those of the operator new() called. Because the first parameter of an operator new() is always of type size_t and the first parameter of an operator delete() is always of type void*, the first parameter of each function is not considered for this comparison.

The implementation looks in class A for an operator delete() of the following form:

```
void operator delete(void*, A*);
```

If operator delete() is found in class A, it is called to deallocate the storage. If operator delete() is not found, then it is not called.

Impact

There are no impacts other than those described previously.

Compatibility

- The following C99 pragmas are not supported on PA-RISC:
 - #pragma STDC FP_CONTRACT {ON|OFF|DEFAULT}
 - #pragma STDC FENV_ACCESS {ON|OFF|DEFAULT}
 - #pragma STDC CX_LIMITED_RANGE {ON|OFF|DEFAULT}
- The following C99 features are not supported on PA:
 - complex datatypes
 - hexadecimal floating point constants
- The following keywords are not recognized:
 - extended
 - __float80
 - __va_list__
- The following pragmas not supported:
 - #pragma callsite_[no]inline
 - #pragma no_return

- #pragma If_Convert
- #pragma Unroll_Factor
- #pragma COMDAT
- #pragma _USE_SF
- Pragmas with difference in behavior:
 - #pragma pack Unlike the PA aCC pack pragma, Itanium-based aCC supports packing members that have normal alignment in struct/class/union types.

Performance

Performance is not affected.

Documentation

Documentation for the HP aC++ compiler is delivered with the product. See also the HP aC++ Web site at <http://www.hp.com/go/cpp>.

Obsolescence

Not applicable.

HP C Compiler for PA-RISC Systems

HP C/ANSI C Developer's Bundle is HP's well-rounded compiler toolkit for HP-UX 11.0, 11.i, 11i v1.5, 11i v1.6, and 11i v2, based on the ANSI/ISO Standard. HP C Compiler on HP-UX 11i v2 supports code generation for PA-RISC processors.

Summary of Change

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

Several versions have been released since the HP C Compiler (version B.11.11.02) was delivered in HP-UX 11i v1. The following summarizes the changes in each subsequent release (B.11.11.04, B.11.11.06, B.11.11.08, B.11.11.10). There have been no changes since version B.11.11.10 was released in March 2004.

B.11.11.04

- The following C99 Features are supported:
 - *_Bool*: supports the boolean data type *_Bool*.
 - *_Pragma*: *_Pragma* is a preprocessing unary operator. This is supported now.

- Compound Literal: supports compound literal, which provides a mechanism for specifying constants of aggregate or union type.
- Designated Initializer: Designated initializer specifically initializes a particular member in a struct, union, or particular element of an array.
- Inline: This release supports inlining frequently used functions. These functions can be inlined by specifying them as inline either in the function declarator or in the function definition.
- Variable Length Array (VLA): VLA allows the integer expression delimited by [and] in an array declarator to be a variable expression or *. An identifier whose declaration has such an array declarator is a variably modified (VM) type.
- OpenMP Support: OpenMP is an industry-standard parallel programming model that implements a fork-join model of parallel execution. The HP C OpenMP pragmas included in this release are based on the OpenMP Standard for C. For more details, refer to *HP C Online Programmer's Guide*, which is packaged with the product and is also available at <http://www.hp.com/go/cpp>.
- Other Features:
 - `__declspec`: This release supports `__declspec(dllimport)` and `__declspec(dllexport)` keywords.
 - +Oprofile Option for Profile Based Optimization: HP C compiler provides the flexibility of choosing to generate PA-RISC machine code (SOMs) directly instead of the compiler's intermediate code (ISOMs) during the compilation phase itself using the +Oprofile option.
 - -notrigraph Option to Disable Trigraphs: This release has an option to disable trigraphs sequence translation, which is otherwise automatically done in ANSI extended (-Ae) mode. Now with the -notrigraph option, trigraph translation can be turned off.
 - Gather/Scatter Prefetch Pragma: This release supports pragmas for prefetching the cache lines specified in the pragma.
 - `HP_LONG_RETURN` on 11.x: The `HP_LONG_RETURN` pragma, formerly included in the HP C compiler, has been enhanced in this release of HP C for HP-UX 11i/11.x.
 - Initialized Thread Local Storage: Static linktime initialization of thread private variables is now supported. Earlier versions of the compiler supported only uninitialized thread private variables.
 - SDK/XDK Support: The SDK/XDK feature helps in selecting components, header files, and libraries installed in alternate locations. To enable this support in your compiler, you need to set either one or both of `SDKROOT` and `TARGETROOT` environment variables.
 - Specifying the Number of Errors: This release provides support to specify the maximum number of errors emitted before the compilation aborts. The maximum number of errors that the compiler emits can be tuned as required by setting the `MAXERRORS` environment variable.

B.11.11.06

HP C compiler version B.11.11.06 supports the following new features:

- `__FUNCTION__` Predefined Identifier: `__FUNCTION__` is a predefined pointer to char defined by the compiler, which points to the name of the function as it appears in the source program. `__FUNCTION__` is same as `__func__` of C99.
- `+ub` Option: The `+ub` option treats unqualified char, short, int, long and long long bitfields as unsigned. This option has no effect on signedness of enum bitfields or on signedness of non-bitfield character.
- UTF-16 Character Support: The current compiler supports only ASCII strings or characters (8 bit chars with no transliteration) as UTF-16. UTF-16 is described in the Unicode Standard, version 3.0 [UNICODE]. The definitive reference is Annex Q of ISO/IEC 10646-1 [ISO-10646]. Any string or character which is preceded by `u` is recognized as a UTF-16 literal or character and is stored as an unsigned short type.
- `-mt` Option: The new `-mt` option enables multi-threading capability without the need to set any other flags, such as `-l` and `-D`. HP C compiler sets the appropriate flags as required.

B.11.11.08

HP C compiler version B.11.11.08 supports the following new features:

- `restrict` Keyword: This is a C99 feature. The `restrict` keyword tells the optimizer that variables declared as `restrict` cannot have aliases (using pointers). Thus the optimizer can do better alias analysis. As of the current release, only the keyword is supported without any accompanying optimizations.
- `__typeof__` Operator: A `typeof` construct can be used anywhere a `typedef` name is used. For example, you can use it in a declaration, in a cast, or inside of `sizeof` or `__typeof__`, which is another way to refer to the type of an expression.
- `__restrict__` Keyword: This keyword can be used to indicate to the optimizer that the associated variable declared with this qualifier will not have aliases (using pointers). This will help in better code optimization.
- `__volatile__` Keyword: This is equivalent to the `volatile` keyword.
- C99 Mode with `-AC99` Option: This option needs to be used in order to use the C99 specific features. For example, it enables keywords like `restrict`, and `typeof` to be recognized. (Without this option, the keywords `__restrict__` and `__typeof__` need to be used).
- `+We[n1,n2,...,nN]` Option to Flag Warnings as Errors: Using this option causes the compiler warnings `n1`, `n2`, ..., `nN` to be converted into error messages. If no numbers are specified, then most warnings, except a selected few, are converted into errors.
- Non-Constant Initializers for Aggregates: Now it is possible to specify non-constant expressions as initializers in the initialization lists of aggregates, such as arrays and structures. The expressions can be any valid C expressions, such as arithmetic expressions involving variables, and even function calls.
- `-include <file>` Option: This option causes the compiler to insert `<file>` at the beginning of a set of translation units, before processing the translation units.

- `+O[no]clone` Option: This option allows the user to turn *on[off]* the cloning facility of the optimizer. Cloning is on by default. It is mainly provided for users who may see a lot of cloning adversely affecting the performance of their code. If inlining is turned off, cloning is turned off by default. You cannot specify `+Onoinline +Oclone`.
- `+Olit=[all|const|none]` Option: The `+Olit` option specifies the type of data items placed in the read-only data section. It can take the values `all`, `const` and `none`.
 - `+Olit=all` places all string variables and all `const`-qualified variables that do not require load-time or runtime initialization in the read-only data section.
 - `+Olit=const` places all string literals appearing in a context where `const char *` is legal, and all `const`-qualified variables that do not require load-time or runtime initialization in the read-only data section.
 - If `+Olit=none` is specified, no constants are placed in the read-only data section.
- `+O[no]memory[=malloc]` Option: This option *enables[disables]* memory optimizations. Specifying `malloc` in the list *enables[disables]* optimizations which consolidate memory allocation procedure calls. This option is disabled by default. It is incompatible with `+OopenMP` and `+Oparallel`, and is ignored when these options are in effect.
- Assigned `goto` Feature: Assigned `goto` is a gcc compatibility feature to use labels as values. The address of a label defined in the current function can be got using the unary operator `&&`. The value has type `void *`.
- `__label__` Feature to Locally Declare Labels: A local label is simply an identifier. You can jump to it with an ordinary `goto` statement, but only from within the compound statement it belongs to.
- `HPC_DEBUG_COMPAT` Environment Variable: HP C does not emit debug information for unused objects (structures, unions, and others) anymore with the `-g` option. For getting the older behavior (emitting debug information for all objects, irrespective of whether they are used in the program or not), the environment variable `HPC_DEBUG_COMPAT` can be set in the environment along with the `-g` option in the compilation command line. It suffices to define this environment variable to have an empty string; it does not need to be set to any particular value.

B.11.11.10

- Function Inlining: Now function inlining happens at all optimization levels, by default. Functions that should be inlined by the compiler need to be tagged with the `__inline` keyword in `-Ae` mode (`inline`, in `-AC99` mode).
- `+d` Option: This option disables function inlining at optimization levels less than `+O3`. Refer to Function Inlining above for more information.
- UNIX95 Feature: Previously, if a search directory specified for `-I` or `-L` did not exist or was invalid, the `cc` driver would ignore it silently and the compilation would proceed. This is inappropriate, since an incorrect alternate library or include directory specified on the command line to override a system one will never be detected. Now, on encountering a search directory on the command line, which either does not exist or has invalid permissions, an error is flagged and the compilation is aborted. This behavior is applicable only in strict ANSI mode when either `UNIX_STD=95` or `UNIX_STD=98` or `UNIX95=1` has been set in the environment and only when the compiler has been invoked as `c89`.

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

There are no changes except for defect fixes.

Impact

There will be no impact to the customer.

Compatibility

OpenMP: The C compiler for PA-RISC supports OpenMP 1.1, while the C compiler for Itanium-based systems supports OpenMP 2.0.

The C compilers for both PA-RISC and Itanium-based systems support C89 completely and partially support C99. However, the C compiler for Itanium-based systems is more C99 compliant than on PA-RISC.

Performance

Performance is not affected.

Documentation

For further information, see the *HP C Online Programmer's Guide*, which is packaged with the product and is also available at the HP aC++ Web site at <http://www.hp.com/go/cpp>.

Obsolescence

Not applicable.

HP Fortran for HP-UX

HP Fortran for HP-UX (version 2.8.4) is a modern, powerful mathematical and scientific language that supports array-handling, data abstraction, and data hiding.

HP Fortran is available on both PA-RISC and Itanium-based platforms, and includes the following features:

- Full Fortran 95 compiler, based on International ANSI/ISO standards
- Full OpenMP v2.0
- Object-oriented Fortran feature optimizations
- Math intrinsic inlining support
- Standard Fortran library
- Native and cross compilers for PA-RISC and Itanium-based systems
- HP WDB debugger support

- HP Caliper

HP Fortran products are increasingly the language of choice for software engineers writing scientific applications and who demand superior run-time performance, code portability, and programmer productivity.

Summary of Change

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

HP Fortran for HP-UX version 2.8.4 includes performance tuning enhancements.

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

HP Fortran for HP-UX version 2.8.4 includes performance tuning enhancements.

Impact

There are no impacts.

Compatibility

There are no known incompatibilities of any type introduced in this release of HP Fortran for HP-UX.

Performance

There is no significant change in performance in this release of HP Fortran for HP-UX.

Documentation

- Manpages:
`/opt/fortran90/share/man`
- Web site:
HP Fortran on DSPP
http://h21007.www2.hp.com/dspp/tech/tech_TechSoftwareDetailPage_IDX/1,1703,1844,00.html
- Documents:
 - *HP Fortran Programmer's Guide, 5th Edition* (HP-UX 11i v2), available at <http://www.docs.hp.com/hpux/pdf/B3908-90014.pdf>
 - *HP Fortran Programmer's Reference, 4th Edition* (HP-UX 11i v2), available at <http://www.docs.hp.com/hpux/pdf/B3908-90006.pdf>
 - *Parallel Programming Guide for HP-UX Systems, 6th Edition* (HP-UX 11i v2), available at <http://www.docs.hp.com/hpux/pdf/B3909-90015.pdf>
 - *HP Fortran v2.7.2 for HP-UX 11.0 and 11i Release Note*, available at <http://www.docs.hp.com/hpux/dev/index.html#Fortran>

Obsolescence

There are no HP Fortran for HP-UX product obsolescence plans at this time.

HP MLIB

HP MLIB version 8.6 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 four components: VECLIB, LAPACK, ScaLAPACK, and SuperLU_DIST.

Summary of Change

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

HP MLIB 8.6 includes the following change:

- FFT routines support data sizes of any positive length.

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

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

Impact

The impact of HP MLIB 8.6 is improved performance.

Compatibility

HP MLIB 8.6 is supported on PA-RISC 2.0 11i v1 or later and Itanium 2 11i V1.6 or later. There are no differences in default behavior or functionality across PA-RISC and Itanium. There are no regressions from previous releases.

Performance

There are no known performance issues.

Documentation

For further information, see the following:

- *mllib* (3M) manpage installed at `/opt/mlib/share/man`
- Web site at www.hp.com/go/mlib
- *User's Guide* and release notes at <http://docs.hp.com/hpux/dev/index.html#Performance%20Tools%20and%20Libraries>

Obsolescence

Not applicable.

HP Message Passing Interface (MPI)

HP MPI V2.0.1 is a high-performance implementation of the Message Passing Interface standard. HP MPI complies fully with the MPI-1.2 standard and provides full MPI2 functionality. 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?

HP MPI V2.0.1 includes the following change:

- Support for the InfiniBand interconnect on PA-RISC.

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

HP MPI 2.0.2 includes the following change:

- Support for the InfiniBand interconnect on Itanium.

Impact

The default behavior is to use IT-API if available. If not, it silently falls back to TCP/IP.

Compatibility

HP MPI 2.0.2 is supported on PA-RISC 2.0 11i v1 or later and Itanium 2 11i V1.6 or later. There are no differences in default behavior or functionality across PA-RISC and Itanium. There are no regressions from previous releases.

Performance

There are no known performance issues.

Documentation

For further information, see the following:

- *mpi* (3M) manpage installed in `/opt/mpi/man`
- Web site at www.hp.com/go/mpi

- *User's Guide* and release note at <http://docs.hp.com/hpux/dev/index.html#Performance%20Tools%20and%20Libraries>

Obsolescence

Not applicable.

HP-UX Buffer Cache Tunable Parameters (Deprecated)

The following tunables are associated with the sizing of the buffer cache:

- `nbuf`
- `bufpages`
- `bufcache_max_pct`
- `dbc_min_pct`
- `dbc_max_pct`

Summary of Change

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

The tunables parameters that are used to size the buffer cache will continue to be supported in HP-UX 11i v1 and v2, but their support will be discontinued in HP-UX 11i v3.

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

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

Impact

HP-UX 11i v1 and v2 customers are not impacted. If you migrate to HP-UX 11i v3, you will no longer be able to use the buffer cache size tunables. An error will be produced in HP-UX 11i v3 if you attempt to use them.

Compatibility

An error will be produced in HP-UX 11i v3 if you attempt to use the buffer cache size tunables. This includes system files or scripts that use the `nbuf`, `bufpages`, `bufcache_max_pct`, `dbc_min_pct`, and/or `dbc_max_pct` tunables.

Performance

The new re-architected file cache tunables will be introduced in HP-UX 11i v3 primarily in response to new file caching and memory management technology. File I/O performance is not expected to degrade, and is expected to improve in certain environments.

Documentation

Old buffer cache tunables man pages will be updated in HP-UX 11i v3 documentation to indicate that they are obsolete. New file cache tunable man pages will be delivered with HP-UX 11i v3.

Obsolescence

All tunables associated to the sizing of the buffer cache (`nbuf`, `bufpages`, `bufcache_max_pct`, `dbc_min_pct`, and `dbc_max_pct`) are deprecated. These tunables are still supported in HP-UX 11i v1 and v2 releases, but will be obsolete in future HP-UX releases (HP-UX 11i v3 and later). As a result of enhanced file caching technology, the file cache tunables will be re-architected and simplified, and two new dynamic tunables will be introduced in HP-UX 11i v3 that will control the amount of memory to be used for file caching in general.

Java 2 Standard Edition Platform

Java™ 2 Standard Edition(J2SE™) products for HP-UX provide solutions to develop or deploy Java applications with the best performance on HP-UX servers and workstation.

The Java 2 section covers the following topics:

- HP 3D Technology for the Java 2 Standard Edition Platform (see page 290)
- HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition (see page 291)
- Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE (see page 292)
- Java Out-of-Box (see page 293)

HP 3D Technology for the Java 2 Standard Edition Platform

HP 3D Technology for the Java 2 Standard Edition Platform version contains the classes for creating 3D applications on systems with Java 1.2.2, 1.3, and 1.4 and the HP-UX 700 OpenGL 3D Graphics Runtime Environment.

Summary of Change

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

HP 3D Technology for the Java Platform is being included in HP-UX 11i v2 only for Itanium-based systems. PA-RISC-based systems are not supported.

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

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

Impact

HP 3D Technology for the Java Platform cannot be used on PA-RISC.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see the Web site at www.hp.com/go/java.

Obsolescence

Not applicable.

HP-UX Software Development Kit and Runtime Environment for the Java 2 Platform Standard Edition

The Java 2 Standard Edition for HP-UX 11i provides the Java 2 programming tools and runtime environment which allow you to deploy Java technology with the best performance on PA-RISC systems running HP-UX 11i.

Summary of Change

What's New for Former Customers of HP-UX 11i v1?

There are no changes from the June 2004 release of HP-UX 11i v1.

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

In previous HP-UX 11i v2 releases, only the Runtime Environment (RTE) for Java was delivered, and not the Software Development Kit. For this release of HP-UX 11i v2, the full SDK as well as the RTE for versions 1.3 and 1.4 are being delivered.

Impact

HP-UX 11i v2 now provides the full SDK as well as the RTE. Previously you had to go to the www.hp.com/go/java to get the SDK.

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, please read the release notes in the SDK and RTE software. Or for the most up-to-date information, go to the Web at www.hp.com/go/java and select "information library" in the left navigation bar.

Obsolescence

Not applicable.

Java for HP-UX PA-RISC Add-On C++ Libraries for SDK and RTE

Java for HP-UX Add-on Standard C++ Runtime libraries are for the Software Development Kit (SDK) (product **T1456AAaddon**) and for the Runtime Environment (RTE) for the Java 2 Platform (product **T1457AAaddon**). Java developers on PA-RISC will need these C++ libraries if they are using the ANSI Standard C++ runtime (`-AA`) option in an application that loads Java. (See the following "Documentation" section for the location of further information.)

Summary of Change

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

Nothing has changed from the June 2004 HP-UX 11i v1 release regarding the add-on libraries. The add-on libraries were included and documented in the *HP-UX 11i June 2004 Release Notes*, available at <http://docs.hp.com>.

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

The Java add-on libraries are new for customers of HP-UX 11i v2.

Impact

Customers with Itanium-based systems are not affected. Java developers on PA-RISC will need these C++ libraries if they are using the ANSI Standard C++ runtime (-AA) option in an application that loads Java.

Compatibility

There are no regressions. The addition of the add-on libraries simply brings PA-RISC functionality up to par with Itanium.

Performance

There are no known performance issues.

Documentation

For further information, please read the release notes in the SDK and RTE software. Or for the most up-to-date information, go to the Web at <http://www.hp.com/go/java> and select "information library" in the left navigation bar.

Obsolescence

No plans for obsoleting this product at this time.

Java Out-of-Box

The Java Out-of-Box (OOB) tool is a stand-alone bundle that upon installation will install startup (RC) scripts, modify kernel parameters, rebuild the kernel, and reboot the system, to provide better out-of-the-box behavior for Java applications.

Summary of Change

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

As in the June 2004 release of HP-UX 11i v1, Java OOB version 2.03 is delivered in this release of HP-UX 11i v2.

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

Java OOB version 2.03 includes defect fixes.

Impact

Java OOB version 2.03 modifies the following kernel parameters and system tunables:

Table 10-1 Java OOB Modifications

maxusers	512
nproc	greater of either 2048 or (semnmu+4)
max_thread_proc	3000
nkthread	6000
nfile	4097
maxfiles	2048
maxfiles_lim	2048
ncallout	6000
maxdsiz	2063835136
tcp_conn_request_max	2048

Compatibility

There are no known compatibility issues.

Performance

There are no known performance issues.

Documentation

For further information, see the Java Web pages at www.hp.com/go/java.

Obsolescence

Not applicable.

Math Library (libm), C Headers, and C++ Headers

The `libm` library provides mathematical functions for C, C++, and Fortran90. The C headers (`math.h`, `complex.h`, `tgmath.h`, and `fenv.h`) provide the C interface to the `libm` library. The C++ headers (`cmath` and `complex`) provide the C++ interface to `libm`.

Summary of Change

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

For this release of HP-UX 11i v2, the C Math Library's Application Programming Interface (API) for Itanium-based systems is a major superset of the one for PA-RISC, which is unchanged from HP-UX 11i v1. The Itanium API includes some functions (in all floating-point precisions) and macros that are not available for PA-RISC. The Itanium API offers a complete set of C functions of type long double (quad) and extended, none of which are available for PA-RISC. All the C math functions for Itanium have float versions; about half of the PA-RISC C math functions have float versions. The API for Itanium provides the complex and imaginary functionality specified in C99; complex and imaginary types are not supported in C for PA-RISC. See the Libm C Function Inventory below.

The C++ Math Library API for Itanium represented in the `cmath`, `complex`, and `limits` headers has been expanded to encompass C99 functionality and support for the extended type.

Under the `-fpwidentypes` option with Itanium-based C and C++, extension names are provided for functions and macros involving the 80 and 128 bit floating-point types:

- 80-bit type

name	extended (defined in <code>math.h</code> , <code>float.h</code> , <code>complex.h</code> , and <code>stdlib.h</code>)
fcn suffix	w (e.g., <code>logw</code>)
macros	W (e.g., <code>HUGE_VALW</code>) EXT (e.g., <code>EXT_MAX</code>)
- 128-bit type

name	quad (defined in <code>math.h</code> , <code>float.h</code> , <code>complex.h</code> , and <code>stdlib.h</code>)
fcn suffix	q (e.g., <code>logq</code>)
macros	Q (e.g., <code>HUGE_VALQ</code>) QUAD (e.g., <code>QUAD_MAX</code>)

These extensions are intended to facilitate portability by providing names that are not dependent on the particular format of the long double type, which differs among compilers. These extension names are not available for PA-RISC.

Because of the expanded API, the math headers when compiled for Itanium will claim several identifiers that are available for other uses by code for PA-RISC. The identifiers associated with the quad and extended types for Itanium are available only with the `-fpwidentypes` option, hence are still available for other uses by default.

Because the Itanium math functions in HP-UX 11i v2 more carefully adhere to the C99 specification, and, to a lesser extent, because of architectural differences between Itanium and PA-RISC, there are numerous behavioral differences from PA-RISC math functions in the treatment of special cases (infinities, denorms, NaNs, signed zeros, exceptions). As `libm` supports C, C++, and F90, the differences pertain to all three languages.

For Itanium-based systems, the (non default) `+Olibmerrno` option is required for C and C++ `errno` support. This option also gives special-case return values consistent with PA-RISC and the 199x Unix standards, which in a few instances differ from the C99-specified default values. The 200x Unix standard aligns with C99.

In flush-to-zero underflow mode (not the default), both denormal operands and also denormal results are flushed to zero on PA-RISC systems, whereas only denormal results are flushed to zero on Itanium systems. As a result of this architectural difference, math functions for Itanium and PA-RISC called in flush-to-zero mode can produce different results if denorms are involved.

The sign bit of the indefinite quiet NaN, which is returned by invalid floating-point instructions, is set on Itanium systems, but clear on PA-RISC systems. Because of this architectural difference, signs of NaNs returned by Itanium and PA-RISC math functions may differ. Though respected by certain functions, such as `copysign()`, the sign of a NaN has no intrinsic meaning.

The Itanium and PA-RISC math functions are based on different algorithms. Even in ordinary cases, they may give results that differ in the least-significant bits.

These sorts of differences are not unusual: they can occur from release to release when code is tuned. In general, the math functions for Itanium are more accurate.

There are also differences in the floating-point facilities provided for Itanium and PA-RISC by the compilers and `libc`. For example, the binary-decimal conversion for Itanium is correctly rounded (for up to 36 decimal digits), whereas binary-decimal conversion for PA-RISC is not always correctly rounded.

For HP-UX 11i v2, functions in `fenv.h` previously of type `void` were changed to return `int` (0 indicating success) to conform to C99 TC1. The affected functions are `feclearexcept()`, `feraiseexcept()`, `fegetexceptflag()`, `fesetexceptflag()`, `fegetenv()`, `fesetenv()`, and `feupdateenv()`. These changes persist in HP-UX 11i v2 for Itanium but were not made for PA-RISC.

The great majority of code using the Math Library and running on PA-RISC systems is expected to recompile and run as well or better on Itanium-based systems (despite the potential pitfalls of name conflicts and different special-case behavior).

Libm C Function Inventory

s=single (float), d=double, e=extended (float80), q=quad (float128), y=yes (available)

Table 10-2 **math.h/libm**

C89	Itanium	PA-RISC
<code>acos</code>	<code>sdeq</code>	<code>sd</code>
<code>asin</code>	<code>sdeq</code>	<code>sd</code>
<code>atan</code>	<code>sdeq</code>	<code>sd</code>
<code>atan2</code>	<code>sdeq</code>	<code>sd</code>
<code>cos</code>	<code>sdeq</code>	<code>sd</code>
<code>sin</code>	<code>sdeq</code>	<code>sd</code>

Table 10-2 math.h/libm (Continued)

C89	Itanium	PA-RISC
tan	sdeq	sd
cosh	sdeq	sd
sinh	sdeq	sd
tanh	sdeq	sd
exp	sdeq	sd
frexp	sdeq	d
ldexp	sdeq	d
log	sdeq	sd
log10	sdeq	sd
modf	sdeq	d
pow	sdeq	sd
sqrt	sdeq	sd
ceil	sdeq	d
fabs	sdeq	sd
floor	sdeq	d
fmod	sdeq	sd

Table 10-3 math.h/libm

C99	Itanium	PA-RISC
fpclassify	sdeq	sd
isfinite	sdeq	sd
isinf	sdeq	sd
isnan	sdeq	sd
isnormal	sdeq	sd
signbit	sdeq	sd
acosh	sdeq	d
asinh	sdeq	d
atanh	sdeq	d
exp2	sdeq	d

Table 10-3 math.h/libm (Continued)

C99	Itanium	PA-RISC
expm1	sdeq	d
ilogb	sdeq	d
log1p	sdeq	d
log2	sdeq	sd
logb	sdeq	d
scalbn	sdeq	d
scalbln	sdeq	—
cbrt	sdeq	sd
hypot	sdeq	d
erf	sdeq	d
erfc	sdeq	d
lgamma	sdeq	d
tgamma	sdeq	—
nearbyint	sdeq	d
rint	sdeq	d
lrint	sdeq	d
llrint	sdeq	d
round	sdeq	d
lround	sdeq	d
llround	sdeq	d
trunc	sdeq	d
remainder	sdeq	d
remquo	sdeq	d
copysign	sdeq	sd
nan	sdeq	d
nextafter	sdeq	sd
nexttoward	sdeq	—
fdim	sdeq	d
fmax	sdeq	d

Table 10-3 math.h/libm (Continued)

C99	Itanium	PA-RISC
fmin	sdeq	d
fma	sdeq	—
isgreater	sdeq	sd
isgreaterequal	sdeq	sd
isless	sdeq	sd
islessequal	sdeq	sd
islessgreater	sdeq	sd
isunordered	sdeq	sd

Table 10-4 math.h/libm

X/Open	Itanium	PA-RISC
gamma	sdeq	d
isnan(function)	d	d
j0	sd	d
j1	sd	d
j2	sd	d
y0	sd	d
y1	sd	d
yn	sd	d

Table 10-5 math.h/libm

X/Open extended	Itanium	PA-RISC
scalb	sdeq	d

Table 10-6 math.h/libm

HP extensions	Itanium	PA-RISC
lgamma_r	sdeq	d
exp10	sdeq	—

Table 10-6 math.h/libm (Continued)

HP extensions	Itanium	PA-RISC
cosd	sdeq	sd
sind	sdeq	sd
tand	sdeq	sd
acosd	sdeq	sd
asind	sdeq	sd
atand	sdeq	sd
atan2d	sdeq	sd
compound	sdeq	—
annuity	sdeq	—
pown	sdeq	—
powlm	sdeq	—
rsqrt	sdeq	—
sincos	sdeq	—
sinhcosh	sdeq	—
cot	sdeq	—
cotd	sdeq	—

Table 10-7 complex.h/libm

C99	Itanium	PA-RISC
cacos	sdeq	—
casin	sdeq	—
catan	sdeq	—
ccos	sdeq	—
csin	sdeq	—
ctan	sdeq	—
cacosh	sdeq	—
casinh	sdeq	—
catanh	sdeq	—
ccosh	sdeq	—

Table 10-7 complex.h/libm (Continued)

C99	Itanium	PA-RISC
csinh	sdeq	—
ctanh	sdeq	—
cexp	sdeq	—
clog	sdeq	—
csqrt	sdeq	—
cabs	sdeq	—
cpow	sdeq	—
carg	sdeq	—
conj	sdeq	—
cimag	sdeq	—
cproj	sdeq	—
creal	sdeq	—

Table 10-8 complex.h/libm

HP extensions	Itanium	PA-RISC
cis	sdeq	—

Table 10-9 fenv.h/libm

C99	Itanium	PA-RISC
feclearexcept	y	y
fegetexceptflag	y	y
feraiseexcept	y	y
fesetexceptflag	y	y
fetestexcept	y	y
fegetround	y	y
fesetround	y	y
fegetenv	y	y
feholdexcept	y	y

Table 10-9 fenv.h/libm (Continued)

C99	Itanium	PA-RISC
fesetenv	y	y
feupdateenv	y	y

Table 10-10 fenv.h/libm

HP extension	Itanium	PA-RISC
fegetflushtozero	y	y
fesetflushtozero	y	y
fegettrapenable	y	y
fesettrapenable	y	y
fegetprec	y	—
fesetprec	y	—

What’s New for Customers of HP-UX 11i v2?

This release of HP-UX 11i v2 includes the HP-UX 11i v2 Math Library Cumulative Patch PHSS_29678, which was released in conjunction with the March 2004 release of HP-UX 11i v2. Included are a few new functions, performance and accuracy enhancements, and minor defect fixes. For details, see the patch documentation, which can be found at the IT Resource Center:
<http://www2.itrc.hp.com/service/patch/pdbMainPage.do>

Impact

Customers moving from HP-UX 11i v1 to the current release of HP-UX 11i v2 on PA-RISC will see no changes.

Customers moving from a previous release of HP-UX 11i v2 with Math Library Cumulative Patch PHSS_29678 to the current release of HP-UX 11i v2 on Itanium will see no changes.

Customers moving from a previous release of HP-UX 11i v2 without Math Library Cumulative Patch PHSS_29678 to the current release of HP-UX 11i v2 on Itanium will see just the changes described in the patch documentation.

Customers moving from HP-UX 11i v1 (on PA-RISC) to the current release of HP-UX 11i v2 on Itanium will see the API and edge-case behavior changes described above.

Compatibility

Compatibility issues for code moved from the previous release of HP-UX 11i v2 to the current release of HP-UX 11i v2 are covered in the aforementioned patch documentation.

Code moved from HP-UX 11i v1 to the current release of HP-UX 11i v2 on Itanium may encounter name conflicts because of the expanded API. Customers who have used new HP-UX 11i v2 names for other purposes may need to change their code. The Libm C Function Inventory above indicates the large number of names in the HP-UX 11i v2 API for Itanium that are not in the HP-UX 11i v1 or HP-UX 11i v2 API for PA-RISC.

The difference in the return type of `fenv.h` functions (described above) pertains to code moving from PA-RISC to Itanium. This change will not affect existing normal use, which will ignore the new return value. The return value will always be 0 (indicating success).

Performance

Specific performance enhancements since the previous release of HP-UX 11i v2 are noted in the aforementioned patch documentation. Minor performance variations for some functions are typical from release to release.

HP-UX 11i v2 math function performance is significantly better for Itanium than for PA-RISC in almost all cases.

Documentation

For further information, see the math manpages, as well as the white paper, “The Libm Library and Floating-Point Arithmetic in HP-UX for Itanium-Based Systems,” which is available at

http://h21007.www2.hp.com/dspp/files/unprotected/Itanium/FP_White_Paper_v4.pdf

In addition, see the documentation for Math Library Patch PHSS_29678, which contains the changes from the previous release of HP-UX 11i v2 to the current release, and which can be found at the IT Resource Center:

<http://www2.itrc.hp.com/service/patch/pdbMainPage.do>

Obsolescence

Not applicable.

POSIX Threads

POSIX Threads, introduced in release 11.0, provides interfaces that can be used by an application to schedule multiple threads of execution within a process.

Summary of Change

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

In the HP-UX 11i v2 September 2004 release, POSIX Threads have been augmented for PA-RISC systems to support two modes of scheduling, system scope and process scope with MxN POSIX threads library. In HP-UX 11i v1, only system scope threads were supported with 1x1 POSIX threads library.

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

In the HP-UX 11i v2 September 2004 release, POSIX Threads has a defect correction applied to Itanium-based systems to make the thread library, source and relocatable compatible with release HP-UX 11i v1.

Impact

Applications built on HP-UX 11i v1 that use the 1x1 thread scheduling model (supports only system scope threads) are not impacted by this release. Applications built on HP-UX 11i v1 can be modified to take advantage of MxN threads in this release. Applications built on earlier releases of HP-UX 11i v1.6 and HP-UX 11i v2 which depend on the default thread scheduling to be process scope will have to be modified to explicitly select process scope scheduling. Applications built on the releases of HP-UX 11i v1.6 and HP-UX 11i v2 which use the 1x1 thread model are not impacted by this release.

Compatibility

The following affects only those applications that run on Itanium-based hardware:

In HP-UX 11i v1.6, the threads library was augmented to support process scope thread scheduling in addition to the previously supported system scope thread scheduling (1x1). The default scheduling scope was changed from system scope to process scope, forcing applications which were ported to this release to be changed if the application needs to use the 1x1 thread model. This change to the default scheduling model is an incompatible change and is considered a defect in the HP-UX 11i v1.6 and HP-UX 11i v2 implementation.

The patch incorporated in the HP-UX 11i v2 September 2004 update corrects this defect. This default selection has been changed back to the HP-UX 11i v1 default, i.e., system scope. Those applications which depend on the default model of HP-UX 11i v1.6 and 11i v2 have to be modified to explicitly to create the process scope threads.

Performance

There are no known performance issues.

Documentation

For further information, see the following:

- "POSIX Threads on HP-UX 11i" white paper at <http://docs.hp.com>

Obsolescence

Not applicable.

Software Transition Kit

The Software Transition Kit (STK) is a collection of tools and documents designed to help transition HP-UX applications from earlier versions of HP-UX to the latest version of HP-UX on the PA-RISC or the Itanium-based platform.

The STK tools scan source code to identify compatibility issues between different versions of the HP-UX operating system, and the tools provide sound advice to resolve the issues. The STK reference documentation contains white papers, best practices guidelines, usage guides, and extensive developer's documentation.

The STK product is available on the Application Release CD or it can be downloaded from the following STK web site:

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

To install the STK, run the `SD swinstall` command which invokes a user interface to lead you through the installation.

Transition Links (Deprecated)

The “Upgrade” product which contains the transition links management tools will be removed from the next HP-UX release. The transition links (tlinks) management tools were intended to be temporary transition tools for application migration from HP-UX 9.x to HP-UX 10.x file system layout. The following transition links management tools are being deprecated and will become obsolete in post-HP-UX 11i v2 releases:

- `tinstall`
- `tllist`
- `tlremove`

Many of the links that were previously installed as transition links (tlinks) have continued to be industry standard and will be replaced by regular permanent symbolic links, with the following exceptions:

- All tlinks that correspond to obsolete filesets or point to obsolete binaries are deprecated and will be removed in HP-UX 11i v2 or later releases.
- All of the following individual links are deprecated and will be discontinued in HP-UX 11i v2 on both PA-RISC and Itanium:

From the `InternetSrvcs.INETSVCS-RUN` fileset:

- /etc/freeze -> /usr/sbin/freeze
- /etc/named-xfer -> /usr/sbin/named-xfer
- **All of the following individual links are deprecated and will be discontinued in HP-UX 11i v2 for Itanium only:**
 - From the OS-Core.C-MIN fileset:**
 - /usr/lib/llib-1c -> /usr/ccs/lib/lint/llib-1c
 - /usr/lib/llib-1c.ln -> /usr/ccs/lib/llib-1c.ln
- **All of the following individual links are deprecated and will be discontinued in HP-UX 11i v3 on both PA-RISC and Itanium:**
 - From the OS-Core.UX-CORE fileset:**
 - /etc/savecore -> /sbin/savecore
 - From the OS-Core.C-KRN fileset:**
 - /bin/cc -> /usr/ccs/bin/cc
 - /lib/cpp -> /usr/ccs/lbin/cpp

NOTE

The bundled C compiler is in the default path (/usr/ccs/bin) and will not be linked.

From the DCE-CoreTools.DCE-BPRG and DCE-Core.DCE-CORE-RUN filesets:

- /opt/dcelocal/lib/libdce.a -> /opt/dce/lib/libdce.a
- /usr/lib/libbomb.a -> /opt/dce/lib/libbomb.a
- /etc/dce.clean -> /opt/dce/bin/dce.clean
- /opt/dcelocal/bin/cdsclerk -> /opt/dce/sbin/cdsclerk
- /opt/dcelocal/bin/sec_clientd -> /opt/dce/sbin/sec_clientd
- /usr/bin/cdsclerk -> /opt/dce/sbin/cdsclerk

From the OVSNMPAgent.MASTER fileset:

- /etc/snmpd -> /usr/sbin/snmpd

- **Links that point to old, deprecated commands will be discontinued in HP-UX 11i v3. This includes the following links previously installed on PA-RISC systems:**

From the OS-Core.CMDS-MIN fileset:

- /usr/bin/bfs -> /usr/old/usr/bin/bfs

From the OS-Core.UX-CORE fileset:

- /usr/bin/mkpdf -> /usr/old/usr/bin/mkpdf
- /usr/bin/pdfck -> /usr/old/usr/bin/pdfck
- /usr/bin/pdfdiff -> /usr/old/usr/bin/pdfdiff
- /usr/bin/pdfpr -> /usr/old/usr/bin/pdfpr
- /usr/bin/revck -> /usr/old/usr/bin/revck

- Most of the transition links previously installed for the following products and filesets are deprecated and will be discontinued in HP-UX 11i v3:

- C-Analysis-Tools.C-TOOLS

- C-ANSI-C.C

- C-Dev-Tools.C-AUX

with the exception of the following links, which *will* be installed as regular symbolic links:

- /bin/cc -> /opt/ansic/bin/cc

- /usr/lib/cpp -> /opt/langtools/lbin/cpp

- /usr/lib/cpp.ansi -> /opt/langtools/lbin/cpp.ansi

- /usr/bin/yacc -> /opt/langtools/bin/yacc

- /usr/bin/lex -> /opt/langtools/bin/lex

What's in This Chapter?

This chapter describes internationalization functionality, including:

- Internationalization Features (see page 310)
- Deprecated Functionality (see page 315)

Internationalization Features

Internationalization features enable HP-UX applications to be customized (localized) for a wide range of countries and character sets. They enable input, display, printing and storage of data in local languages, and support numerous national and international standards.

Summary of Change

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

- Unicode 3.0 Support

Unicode 3.0 is aligned with the revised ISO 10646-1:2000 standard and includes an additional 10,194 characters from the previous version of the standard. Most notable of these additional characters are 6,582 new CJK characters (Han Extension A) for use in various Asian countries.

- GB18030 Standard

System level support has been provided since HP-UX 11i v1.6 for the GB18030 character set. GB18030 is officially referred to as Chinese National Standard GB18030-2000: Information Technology - Chinese Ideograms Coded Character Set for Information Interchange - Extension for the Basic Set. It is a government mandated conformance requirement for all products sold in China, effective as of September 1, 2001.

GB18030 is a superset Chinese character set standard, including some 30,000 characters that have been defined in either the GB2312-80 standard, the GBK specification, or Unicode's Unihan Extension A.

- Simplified Chinese Input Methods

In order to support input for characters defined by the GB18030 standard, a new Chinese input method, Intelligent ABC, has been added to HP-UX. Two obsolete Simplified Chinese input methods have been removed.

Since 2001 HP-UX has supported the China mandatory National Standard GB18030, but did not have a modern S-Chinese input method for the input of GB18030 characters, until the addition of Intelligent ABC. The Intelligent ABC Chinese input method is a very powerful and popular input method in China. It is widely used in Microsoft Windows, IBM AIX, Apple Mac OS, and Linux.

- Mainframe `iconv` Converters for Japanese Characters

Mainframe `iconv` converters between ShiftJIS/eucJP/UCS2 and NEC-JIPS/Hitachi-KEIS/Fujitsu-JEF were introduced at HP-UX 11i v1. This release includes several fixes of mapping errors for JIS standard characters.

This release of mainframe `iconv` conversion tables includes numerous fixes for mapping errors for JIS standard characters in the basic parts of those mainframe codesets. The detailed changes are described in `MFConvChanges.jips`, `MFConvChanges.keis`, and `MFConvChanges.jef` under the `/usr/share/doc` directory.

In addition, this release of mainframe `i_conv` conversion methods includes a fix to handle an incomplete shift sequence at the end of an input buffer.

- System Level Support for Latin and South American Locales

System level support for numerous additional Latin/South American countries is now provided in HP-UX.

Fifty-one new locales are provided in HP-UX to enable system-level support for Latin/South American geographies. This includes support for the input, storage, retrieval, display, and printing of characters encoded in ISO-88591, ISO-885915, or UTF-8 character sets.

The following locale binaries are delivered in PA-RISC 1.1 32-bit, PA-RISC 2.0 32-bit and 64-bit versions, and both 32- and 64-bit Itanium®-based versions:

Table 11-1 Latin/South American Locale Binaries

Locale	ISO-88591 based	ISO-885915 based	utf8 based
Brazil	pt_BR.iso88591	pt_BR.iso885915	pt_BR.utf8
Mexico	es_MX.iso88591	es_MX.iso885915	es_MX.utf8
Argentina	es_AR.iso88591	es_AR.iso885915	es_AR.utf8
Chile	es_CL.iso88591	es_CL.iso885915	es_CL.utf8
Columbia	es_CO.iso8859	es_CO.iso885915	es_CO.utf8
Peru	es_PE.iso88591	es_PE.iso885915	es_PE.utf8
Uruguay	es_UY.iso88591	es_UY.iso885915	es_UY.utf8
Venezuela	es_VE.iso88591	es_VE.iso885915	es_VE.utf8
Puerto Rico	es_PR.iso88591	es_PR.iso885915	es_PR.utf8
Bolivia	es_BO.iso88591	es_BO.iso885915	es_BO.utf8
Ecuador	es_EC.iso88591	es_EC.iso885915	es_EC.utf8
Paraguay	es_PY.iso88591	es_PY.iso885915	es_PY.utf8
Costa Rica	es_CR.iso88591	es_CR.iso885915	es_CR.utf8
Guatemala	es_GT.iso88591	es_GT.iso885915	es_GT.utf8
Nicaragua	es_NI.iso88591	es_NI.iso885915	es_NI.utf8
Panama	es_PA.iso88591	es_PA.iso885915	es_PA.utf8
El Salvador	es_SV.iso88591	es_SV.iso885915	es_SV.utf8

- Hong Kong Supplementary Character Set (HKSCS)

System level support is provided for the HKSCS (Hong Kong Supplementary Character Set) extension to the Big5 encoding for Hong Kong. HKSCS is a collection of 4,702 characters defined by the Hong Kong Special Administration Region

(HKSAR) government in September 1999. These characters are specific to the Hong Kong region and are intended to be a common set of characters in use for computing requirements throughout Hong Kong.

Systems level support has been provided to allow for the input, storage, retrieval, display and printing of HKSCS characters. This support is based on the repertoire specified in Unicode 2.1 and the ISO 10646-1:1993 standards. HKSCS support has been provided since HP-UX 11i v1.6 via a new `zh_HK.hkbig5` locale, `iconv` converters, fonts, and updates to Xlib, CDE, input method, and printer model files.

- TrueType Fonts for Asian Languages

HP-UX provides TrueType fonts for HP-UX supported Asian languages/locales including Japanese, Korean and Chinese (both Simplified and Traditional).

- Complete Edition of ATOK X Japanese Input Method

The Complete Edition of the ATOK X Japanese input method is included in this release. (HP-UX 11i v1 included the Preview Edition of ATOK X.) It includes the SuperATOK Kana-to-Kanji conversion engine and provides more comfortable and effective Japanese input. It also provides a migration capability for user-defined dictionaries and key-mappings from ATOK8, VJE-gamma and EGBridge input methods.

ATOK X has also been available in several Linux distributions as “ATOK X for Linux.” The HP-UX release provides a compatible Japanese input method with a familiar look-and-feel for Linux users.

- Printing using Asian TrueType Fonts for HP PCL5 Printers

The PCL5.asian printer model used with the `lp` command has been enhanced to print as many Asian characters as possible by accessing both printer resident fonts and host-installed TrueType fonts. In previous HP-UX releases, the PCL5.asian model supported printer-resident fonts only.

If there are no Asian resident fonts in a PCL5 printer, use the `-onodimm` option with the PCL5.asian model in order to download Asian characters rasterized from host-installed TrueType fonts.

Host-installed TrueType fonts are as follows:

- Mincho and Gothic typefaces for `ja_JP.SJIS/ja_JP.eucJP/ja_JP.utf8` locales
- Batang and Dotum typefaces for `ko_KR.eucKR/ko_KR.utf8` locales
- Sun and Hei typefaces for `zh_CN.hp15CN/zh_CN.gb18030/zh_CN.utf8` locales
- Ming typeface for `zh_TW.ccdc/zh_TW.big5/zh_TW.eucTW/zh_TW.utf8/zh_HK.hkbig5/zh_HK.utf8` locales

When the specified locale is `utf8`, the PCL5.asian model tries to use as many country typefaces as possible to print multilingual text.

- Japan Vendor Council (JVC) `iconv` Converters

New `iconv` converters are provided to allow for greater inter-operability of data sharing within Japanese computing environments.

New Japanese `iconv` conversion tables are provided which conform to the Open Group Japanese Vendor Council (TOG/JVC) CDE/Motif Technical working group recommendations in ensuring inter-operability of ISO 10646/Unicode/JIS-0221 within Japanese computing environments.

JIS-0221 is the Japanese national standard equivalent to ISO-10646:1993 and Unicode 2.1.

The TOG/JVC has formalized three possible converter mappings for several characters. These mappings are as follows:

- JIS-0221 based on a strict JIS-0201 standard interpretation
- JIS-0221 Extended which allows for greater co-existence in current ASCII-based (i.e., UNIX) environments
- JIS-0221 based on Microsoft Japanese mappings

The `iconv` converter tables are provided which convert between HP's EUC and Shift-JIS (SJIS) characters to those specified by the strict JIS-0201 interpretation as well as the Microsoft Unicode and UTF-8 mappings. The JIS-0221 Extended conversion mappings are already supported within HP-UX.

- VJE-gamma and EGBridge Japanese Input Method

Two Japanese input methods, VJE-gamma and EGBridge, have been obsoleted.

HP-UX 11i v1.6 and future releases of HP-UX do not provide the two Japanese input methods, VJE-gamma and EGBridge. HP-UX provides migration tools to assist users in moving to ATOK X.

- Japanese Specific Commands and Library Routines

HP-UX 11i v2 restores certain Japanese specific commands and library routines which were removed at the HP-UX 11.0 release.

Certain Japanese code conversion commands and routines, character handling routines, and Kana-to-Kanji conversion routines are restored in this release, in order to maintain binary compatibility with existing HP-UX 10.20/11.00/11i PA-RISC binary applications. Since there is no intention to support new application development with these functions, header files, manpages and a native Itanium-based library are not provided. These library routines are found in `/usr/lib/libjpn.1`.

- Greek Euro Support

System level support is provided for enabling the Euro within supported Greek locales. In June 2000, Greece joined 11 other countries in adopting the Euro as their currency, with the complete transition effective as of January 1, 2002.

Systems level support has been provided to allow for the input, storage, retrieval, display and printing of the Euro within the two supported Greek locales: `el_GR.utf8` and `el_GR.iso88597`.

Greek Euro support has been provided in HP-UX 11i v2 via updates to locales, `iconv` converters, fonts, Xlib and CDE. The level of Euro support provided for Greek is similar to that provided for Western European countries as of HP-UX 11.0 Extension Pack (May 1999) and HP-UX 11i v1:

- Dual currency support using `@euro` modifier
- Euro display and processing capabilities

- Euro input capabilities in Greek locales
- Printer support of Euro with other Greek characters

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

No new internationalization features are supplied in the September 2004 release of HP-UX 11i v2 beyond those provided with the initial release (October 2003) of HP-UX 11i v2.

Impact

Japanese Mainframe `iconv` converters:

If you have already used the HP-UX 11i v1 version of mainframe `iconv` converters and then use this version, the results will be different because of fixes in mapping for JIS standard characters. Therefore, HP recommends that you save the previously installed tables and rename them prior to installation of this release. You can then convert persistent data back using the old tables and then reconvert it using the new tables to achieve the correct representation.

Compatibility

In the future, you will no longer be permitted to link PA-RISC internationalized applications (i.e., those that call `setlocale()` internally) to archived `libc` routines. As has been previously documented in both the 10.x and 11.0 release notes, using the archived versions of `libc` library routines is strongly discouraged due to possible errant systems behavior caused by intermixing archived `libc` routines with other shared internationalized locale method libraries.

Performance

There are no known performance issues.

Documentation

For further information, refer to the “HP-UX 9.x - 11i Internationalization Features White Paper,” available at <http://docs.hp.com/hpux/onlinedocs/5187-3605/5187-3605.html>.

Obsolescence

Obsoleted:

Due to low customer usage, the T-C and T-C Rapid input methods have been removed from HP-UX. Two Japanese input methods, VJE-gamma and EGBridge, have been obsoleted.

Deprecated Functionality

Several Asian language specific commands, library routines and lp model files that implement internationalization functionality are being deprecated as of this release. They will be removed in the next major release of HP-UX.

Summary of Change

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

The following table shows commands, library routines and lp model files that are considered deprecated as of this release, along with suggested replacements where relevant. Many of these functions relate to hardware that is no longer supplied or supported. Others provided character set conversions that are now obsolete (such as those for C-Windows 3.1) or functionality that is available in other commands.

Table 11-2 **Deprecated Internationalization Functionality**

Name	Fileset	Replacement	Remarks
ATOK 8	ATOK	ATOK X	—
sconv	STK-SCH-RUN	<i>iconv</i> (1)	—
sptr	STK-SCH-RUN	None	—
big5-et	TTK-TCH-RUN	None	T-Chinese Eten UDC format conversion
et-big5	TTK-TCH-RUN	None	T-Chinese Eten UDC format conversion
big5-cwin	TTK-TCH-RUN	None	Microsoft C-Windows 3.1 UDC format conversion
cwin-big5	TTK-TCH-RUN	None	Microsoft C-Windows 3.1 UDC format conversion
ptr	TTK-TCH-RUN	None	Terminal transparent print tool for C2402A/B/C/D
coder	TTK-TCH-RUN	None	CNS-EUC code lookup tool
bserver	IMTERM-RUN	None	—
nlio	UTILS-RUN	None	—
nliostart	UTILS-RUN	None	—
nlioinit	UTILS-RUN	None	—
big5udfgen	TTK-TCH-RUN	<i>xudced</i> (1)	—
big5udfdwn	TTK-TCH-RUN	<i>udcloud</i> (1)	—
ccdcudfgen	TTK-TCH-RUN	<i>xudced</i> (1)	—

Table 11-2 Deprecated Internationalization Functionality

Name	Fileset	Replacement	Remarks
ccdcudfdown	TTK-TCH-RUN	<i>udcload</i> (1)	—
hpc1208a	PRT-LP-RUN	None	lp model file
PCL4.nloo	PRT-LP-RUN	PCL5.nloo	lp model file
PS.nlio	PRT-LP-JPN-RUN	PS2.nlio	lp model file
LIPS3	PRT-LP-JPN-RUN	LIPS4	lp model file
Japanese specific commands and library routines	CODE-JPN-RUN, IMX11-JPN-COM, IMX-JPN-RUN	<i>iconv</i> (1), <i>iconv</i> (3C), None	All commands and library routines described in /usr/share/doc/JpnCmdLib.txt

What’s New for Customers of HP-UX 11i v2?

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

Impact

Users should check for any usage of these items, and where applicable, begin using the commands suggested as replacements.

Compatibility

At this release, there are no impacts to compatibility, since the functionality referenced is supplied in the current release. Future compatibility impacts are expected to be minimal since equivalent functionality is being provided for those commands which do not reference obsolete hardware or character encodings.

Performance

There are no known performance issues.

Documentation

There are no other documentation changes.

Obsolescence

The functions listed in Table 11-2 will be removed at the next major HP-UX release.

What's in This Chapter?

This chapter describes other new and changed operating-system software functionality, including the following:

- ccNUMA (see page 318)
- Common Desktop Environment (CDE) (see page 322)
- Distributed Computing Environment (DCE) Client and Integrated Login (see page 328)

ccNUMA

HP's new cell-based platforms use a Cache Coherent Non-Uniform Memory (ccNUMA) Architecture. This means that memory latencies and bandwidths are not uniform across the whole system. The latency and bandwidth of a same-cell memory access is better than accessing memory on a different cell. This may have significant performance implications for some workloads. The HP-UX 11i v2 release supports the following for the ccNUMA platforms:

- Give administrators the ability to configure memory.
- Provide good default behavior for applications that are not ccNUMA-aware.
- Give ccNUMA-aware applications the ability to control their memory placement as well as process placement.

Summary of Change

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

Memory can be configured into “interleaved” and “cell local” memory. Interleaved memory is a hardware-provided feature that mixes memory from different cells with a very fine granularity. This has the effect of spreading out memory accesses and eliminating “hot spots.” Cell local memory provides faster access to processes running on the same cell as the memory, but slower access to processes running on any other cell.

The system administrator has the ability to configure how much memory will be interleaved and how much will be cell local via the command line (`parcreate` or `parmodify`) or Partition Manager GUI (`parmgr`).

Applications can now control which locality¹ they execute in using the locality binding and launch policy features.

Application requests for memory are filled by the operating system with memory of the appropriate type (if available) based on a set of heuristics. The operating system also manages processes with the goal of keeping them “near” the memory they're using. Interfaces are provided so that the placement of physical memory can be controlled by applications and users.

Changes include the following:

- `mmap()`

These new memory locality flags have been added to `mmap()`:

`MAP_MEM_INTERLEAVED`, `MAP_MEM_LOCAL`, `MAP_MEM_FIRST_TOUCH`.

- `shmget()`

These new memory locality flags have been added to `shmget()`:

`IPC_MEM_INTERLEAVED`, `IPC_MEM_LOCAL`, `IPC_MEM_FIRST_TOUCH`.

1. A locality domain consists of a related collection of processors, memory, and peripheral resources that comprise a fundamental building block of the system. All processors and peripheral devices in a given locality domain have equal latency to the memory contained within that locality domain.

- `pstat_getlocality()`, `pstat_getproclocality()`
These are two new `pstat` functions which return information about aspects of a ccNUMA system.
- `sysconf()`
The `sysconf()` system call with existing flag `_SC_CCNUMA_SUPPORT` will return a positive value if it is running on a ccNUMA system with an operating system that can take advantage of this ccNUMA capability; otherwise it returns -1.
- `mpctl()`
This system call supports user binding, system query, and launch policy operations. These operations are NUMA sensitive. There is no change in API definition.
- `pset_ctl()`
This system call provides processor set configuration query operations, and now it can return NUMA configuration information for a `pset`. There is no change in API definition.
- `pset_assign()`, `pset_destroy()`
These system calls change processor set configuration, and they need to perform some additional tasks on NUMA systems. The system administrator should be aware of NUMA boundaries when configuring processor sets with processors; they should attempt to select processors from as few locality domains as possible.
- `pstat_getpset()`
This system call now contains number of `ldoms` for the processor set.
- `mpsched`
The `mpsched` command provides following capabilities:
 - Display system's topology information (`ldoms`, processors),
 - Display current bindings for a specified process,
 - Assign locality binding or launch policy to a running process, and
 - Execute a command with specified `comm` locality binding or launch policy.
 There is no change in API definition.
- `pthread` library
The `pthread_num_ldoms_np()`, `pthread_ldom_id_np()`, `pthread_num_ldomprocs_np()`, and `pthread_spu_to_ldom_np()` interfaces provide a way to retrieve information about locality domains for the thread.
The `pthread_ldom_bind_np()` provides a way to bind a thread to a specified locality domain.
The `pthread_launch_policy_np()` provides a way to set launch policy for a thread.
There is no change in API definitions.
- `parcreate`
The existing option `-c` has been enhanced to take an additional argument to specify cell local memory (CLM) configuration for individual cells. A new option `-L` has been added to allow users to specify the CLM configuration for every cell in the partition.

- `parmodify`
The existing options `-a` and `-m` have been enhanced to take an additional argument to specify the CLM configuration for individual cells.
- `parstatus`
The display of existing options `-v -c` and `-v -p` has been enhanced to display the CLM configuration information for cells and partitions.
- `psrset`
The `psrset` utility has been enhanced to display locality domain information for the Processor Set apart from the other details when used with the option `-i` or without any option.

See also “What’s New for Customers of HP-UX 11i v2?” below.

What’s New for Customers of HP-UX 11i v2?

ccNUMA is now supported on all HP-UX 11i v2 cell-based systems, both PA-RISC and Itanium®-based. (Note that some require newer versions of firmware.) The additional platforms now supported include the following:

- hp 9000 rp8420
- hp 9000 rp7420
- hp 9000 Superdome with firmware version 35.3 or later
- hp 9000 rp8400 with firmware version 16.8 or later
- hp 9000 rp7410 with firmware version 16.8 or later
- hp 9000 rp7405 with firmware version 16.8 or later

Platforms continuing to be supported are as follows:

- hp Integrity Superdome
- hp Integrity rx8620
- hp Integrity rx7620

Impact

On HP-UX 11i v2 cell-based systems you will see greater performance for some work loads than you would have without this feature. You have the ability to configure your system for optimal performance with regard to interleaved versus cell local memory usage. Application developers have the ability to give guidance to the operating system so that the most appropriate memory is allocated according to an application's usage model. Applications can control how the processes are distributed among localities.

Compatibility

There are no known compatibility issues.

Performance

This feature can improve system and application performance when the memory of the system is appropriately configured to the proper balance between interleaved and cell local memory for the particular work load running on the system. Further performance improvements are possible if applications are modified to advise the operating system of the usage model for the memory they request.

This feature can degrade performance if the system memory configuration does not match the work load on the system: for example, if the work load largely requires interleaved memory but the system has been configured with mostly cell local memory.

This feature can also degrade performance if multithreaded applications have their threads distributed across multiple locality domains while their memory is allocated cell local.

Documentation

For further information, see the following manpages:

- *mmap* (2)
- *mpctl* (2)
- *mpsched* (1)
- *parcreat* (1M)
- *parmodify* (1M)
- *parstatus* (1)
- *pset_assign* (2)
- *pset_ctl* (2)
- *pset_destroy* (2)
- *psrset* (1M)
- *pstat_getlocality* (2)
- *pstat_getproclocality* (2)
- *pstat_getpset* (2)
- *pthread_ldom_bind_np* (3T)
- *pthread_ldom_id_np* (3T)
- *pthread_num_ldoms_np* (3T)
- *pthread_num_ldomprocs_np* (3T)
- *shmget* (2)
- *sysconf* (2)

Also see *HP System Partitions Guide*, available at <http://www.docs.hp.com>. The *HP System Partitions Guide* covers administration issues related to cell local memory (CLM) configuration and operations.

Also see the ccNUMA white paper, *ccNUMA Overview*, available at http://docs.hp.com/hpux/onlinedocs/4913/ccNUMA_White_Paper.pdf.

Obsolescence

Not applicable.

The `pstat_getnode()` function has been deprecated in HP-UX 11i v2 and will be obsoleted in a future release. The platform for which this interface was designed is no longer supported. For current ccNUMA platforms, the `pstat_getlocality()` and `pstat_getproclocality()` interfaces provide similar information.

Common Desktop Environment (CDE)

Common Desktop Environment (CDE) 2.1 is an environment for interacting with your workstation. 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?

- X11 Libraries:
 - Include 32- and 64-bit PA-RISC X11R5 and X11R6 libraries and header files.Applications which link to X11R5 may need to link to X11R6 instead. The X11 libraries are forward compatible, so application code changes, other than makefiles, should not be required.
- On HP-UX 11.x, CDE uses TPS for printing. CDE now provides an option to print using either `lp` or TPS. Through this option the user can disable TPS and print using `lp` and viceversa. The CDE components that are affected by this change are `dtdm`, `dtdmail` and `dtdpad`. Printing with `dtdm`, `dtdmail` and `dtdpad` 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 set of libraries 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 contains the VUEtoCDE transition tool that migrates HP VUE customizations to CDE during upgrade from HP-UX 10.x. This tool is not available on HP-UX 11i v1.5, v1.6 and v2 since there is no upgrade path from HP-UX 10.10/10.20 to these versions.
- With HP-UX 11i v2, CDE supports IPv6. 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.¹
- TPS has been enhanced to support IPv6.
- The audio subsystem has been enhanced to support IPv6. The audio subsystem includes the Audio server (`Aserver`), `asecure`, and Audio libraries (`libAlib.2`, `libAlibkt.1` [32 and 64-bit], `libAt.3`). The `libAlib.1` library does not support IPv6.
- 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.

- The `dtlogin` process does not start X server when the mouse is not connected to the machine. The following entry is commented out in `/etc/dt/config/Xservers`:

```
Local local@console /usr/bin/X11/X:0
```

However, the system administrator can make `dtlogin` start X Server by setting the value of `DT_LOCAL_X_START_ALWAYS` to '1' in `/etc/rc.config.d/desktop`. Please refer the manpage of `dtlogin` for further details.
- CDE provides Large File support (files greater than 2GB in size) through `dtfile`. With `dtfile`, the following functions can be done on large files:
 - File manipulations like File Move, File Copy, File Copy As Link, File Rename, and File Change Permission can be performed.
 - File search operations can be performed.
 - The size of the large file can be viewed correctly in the Detailed View mode and in the Change Permission dialog box.
- CDE applications and its libraries, XClients (`xterm`, `hpterm`, etc.), TPS, Audio Subsystem, and Imaging Subsystem are delivered as PA-RISC on Itanium-based platform. They run through Aries (PA-RISC compatibility). (For more information

1. For more information on these services, see "IPv6 Support by HP-UX libc and HP-UX Commands" in Chapter 6 of the *HP-UX 11i Version 2 Release Notes* [October 2003], available at
<http://docs.hp.com/hpux/os/11iv2/index.html#Release%20Notes>.

about Aries, see “Aries Binary Translator” in the *HP-UX 11i v2 Release Notes* (October 2003), available at <http://docs.fc.hp.com/hpux/os/11iv2/index.html>.)

- Xfree86 `xterm` is delivered as supported under `/usr/bin/X11` and the 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 and NIS+ limitations. It supports IPv6 addressing.

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

Xfree86 `xterm` is delivered as supported under `/usr/bin/X11` and the 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 and NIS+ limitations. It supports IPv6 addressing.

Impact

- Although the terminal emulator `hpterm` has not been enhanced to use the scalable `utmps/wtmps/btmps` services, the terminal emulators `dtterm` and `xterm` use the scalable `utmps/wtmps/btmps` services.

The terminal emulator `hpterm` does not support IPv6, but `dtterm` and `xterm` support IPv6 addressing.
- 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.
- Large file support is provided only by `dtfile` and not by `dtpad` and `dtlp`. Hence, the following operations which require `dtpad` and `dtlp` cannot be performed:
 - Large file opening by double-clicking on the file in the File View window.
 - Large file printing
- Itanium-based CDE shared libraries are not available to customers who want to port their applications to Itanium. This means that applications that directly or indirectly link against `libDtSvc`, `libDtTerm`, `libDtWidget`, `libtt`, `libcsa`, `libDtPrint`, `libDtHelp`, and `libDtMrm` will not be able to compile and link on Itanium-based platforms.
- Escape sequences used for reporting the window title and the window icon's title features are disabled in the `libDtTerm` widget. So, `dtterm` and any application which uses `libDtTerm` will no longer be able to use this reporting feature.
- Itanium-based Audio shared libraries `libAlib`, `libAlibkt`, and `libAt` are not available.
- Itanium-based Image libraries `libil` and `libilefs` are not available.
- The supported method to achieve these functionalities on HP-UX 11i v2 is to compile the application on a PA-RISC system and then use the Aries PA-RISC emulation facilities on HP-UX 11i v2.

- The Digital Video libraries (libyuv2.* and libv1Video.*) and Digital Video server (v1Server) are not available. (See also “Obsolescence” on page 327.)
- On configuring a user machine with Bastille’s maximum security options, the following impact can be seen in the CDE Desktop environment:¹
 - 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.
- The following describes the system services that CDE uses. Some of these may be disabled by users or by the Bastille lockdown utility:

Table 12-1 Impacts on CDE System Services

Service	Impact if Disabled	To Re-enable Service
dtspcd ^a	The user will not be able to execute CDE remote actions from a non-Bastille machine to a Bastille enabled machine.	<ol style="list-style-type: none"> 1. a. Uncomment the entry for /usr/dt/bin/dtspcd in /etc/inetd.conf <li style="padding-left: 20px;">b. Reread the newly modified /etc/inetd.conf by executing /usr/sbin/inetd -c. 2. Change the value of SecureInetd.deactivate_dttools to N in the file /etc/opt/sec_mgmt/bastille/config.
rpc.cmsd ^a	Appointments / To Do / Compare calendars and Menu Editors options available in Calendar Manager will not work.	<ol style="list-style-type: none"> 1. a. Uncomment the entry for rpc.cmsd in /etc/inetd.conf <li style="padding-left: 20px;">b. Reread the newly modified /etc/inetd.conf by executing /usr/sbin/inetd -c. 2. Change the value of SecureInetd.deactivate_dttools to N in the file /etc/opt/sec_mgmt/bastille/config.
rpc.ttdbserver ^a	Network aware mail locking feature of dtmail will not work.	<ol style="list-style-type: none"> 1. a. Uncomment the entry for rpc.ttdbserver in /etc/inetd.conf <li style="padding-left: 20px;">b. Reread the newly modified /etc/inetd.conf by executing /usr/sbin/inetd -c. 2. Change the value of SecureInetd.deactivate_dttools to N in the file /etc/opt/sec_mgmt/bastille/config.

1. If the user wishes to use the features described herein, they should not use the default high-security settings but either select a security level that does not lockdown the items CDE requires (as described in Table 11-1), create a custom level that does not include those lockdown steps, or take the actions described in Table 12-1. See the Bastille information in Managing Systems and Workgroups, available at <http://www.docs.hp.com>.

Table 12-1 Impacts on CDE System Services (Continued)

Service	Impact if Disabled	To Re-enable Service
rlpdaemon	Using TPS, user will not be able to print remotely. The request will be shown as “pending” in the lpstat.	<ol style="list-style-type: none"> 1. Use rlpdaemon running machine for remote print service. 2. a. Uncomment the entry for rlpdaemon in /etc/inetd.conf b. Reread the newly modified /etc/inetd.conf by executing /usr/sbin/inetd -c. 3. Change the value of SecureInetd.deactivate_printer to N in the file /etc/opt/sec_mgmt/bastille/config.

a. In Bastille, when “CDE Helper services” is disabled/enabled, it disables/enables all of these services. In addition, the top two security levels configure a firewall which will block off-host CDE messages. If you wish CDE messages to be received from off-host, you should select a level (Sec10Host) that doesn't set up a firewall. If you have already configured the firewall with Bastille or an Install-Time level, you can disable it through the interactive Bastille interface.

- 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.

Compatibility

- In order to provide backward compatibility, both aC++ and cfront built libraries are delivered.
- CDE is compatible with the IPv4 mode.

Performance

There are no known performance issues.

Documentation

- For further information about CDE print options TPS or LP, see the following manpages:
 - dtmail (usercmd)
 - dtpad (usercmd)
 - dtcm (usercmd)
- The manpages of the following applications have been updated for IPv6:
 - dtspcd (CDE subprocess control service)
 - xhost (server access control program for X)
 - recserv (HP SharedX Receiver Service)
 - APlaySStream (initiate a play stream transaction)

— `ARecordSStream` (initiate a record stream transaction)

For further information about IPv6, see “IPv6 Software Overview” in Chapter 6 of the *HP-UX 11i Version 2 Release Notes* [October 2003], available at <http://docs.hp.com/hpux/os/11iv2/index.html#Release%20Notes>.

- For further information about CDE’s added accessibility features, see the following:
 - The manpage and online help for `dtstyle`
 - Online help for `AccessX`
 - The manpage for `xzoom`
- For further information about the `dtlogin` change, see the `dtlogin` manpage.
- For further information about the `dtterm` escape sequences change, see the `dtterm` manpage.
- For further information about HP-UX Bastille, see *HP-UX Bastille and Managing Systems and Workgroups*, available at <http://www.docs.hp.com>.
- The Xfree86 `xterm` manpage is delivered at `/usr/share/man/man1.Z/xterm.1`.
- The X11R5 `xterm` manpage has moved to `/usr/contrib/man/man1.Z/xterm.1`.
- The README file for EFI shell users is delivered at `/usr/contrib/xf86/xterm/README`.

Obsolescence

- The VUEtoCDE transition tool is not available on HP-UX 11i v1.5 or v1.6 since there is no upgrade path from HP-UX 10.10/10.20 to these versions.
- The following Digital Video components are obsolete and no longer available with this release:
 - `/opt/video/lib/libyuv2.2`
 - `/opt/video/lib/libvlVideo.2`
 - `/opt/video/lib/libyuv2.1`
 - `/opt/video/lib/libvlVideo.1`
 - `/opt/video/lbin/vlServer`
 - `/opt/video/lbin/raReader`
- The `hpterm` terminal emulator is delivered with HP-UX 11i v2. However, `hpterm` has some limitations, and will not be supported with future releases. In addition to limitations documented in the manpage and elsewhere in release notes, `hpterm` is limited by its use of X11R5 and `libc.1` libraries. It is recommended that `dtterm` be used instead of `hpterm`. For more information on `hpterm` or `dtterm`, please see the respective manpages and release notes.¹

1. For additional information about `hpterm` and `dtterm`, see the CDE “Impact” on page 324.

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.

HP DCE version 1.9 on HP-UX 11i v2, which is shipped as part of Core OS, consists of the following:

- Remote Procedure Call daemon (Itanium Version)
- CDS client (Itanium Version)
- Security client (Itanium Version)
- DTS client (Itanium Version)
- CMA Threads: POSIX 1003.1c, a user-space implementation (PA-RISC) only
- 32- and 64-bit version of Kernel Threaded DCE runtime libraries
- DCE-CoreTools as in 11i v1 (PA-RISC Version)

Summary of Change

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

The following products are available on HP-UX 11i v2 as part of HP DCE version 1.9:

- **DCE-Core:** All filesets remain the same, except for DCE-CORE-RUN and DCE-CORE-DTS.
- **DCE-COR-IA-RUN** is a new fileset and has native Itanium daemons `dced`, `cdsadv`, `auditd`.
- **DCE-COR-IA-DTS** is a new fileset and has native Itanium binaries: `dtstd`, `auditd`, `dts_spectracom_provider`, `dts_null_provider`, and `dts_ntp_provider`.
- **DCE-COR-PA-RUN** is a new fileset and has PA-RISC daemons `dced`, `cdsadv`, `auditd`, `ep_scavanger`, `k5dcelogin`, `auditd`, `dced`, `rpcd`, and `cdsadv`.
- **DCE-COR-PA-DTS** is a new fileset and has PA-RISC deliverables: `dtstd`, `dts_spectracom_provider`, `dts_null_provider`, and `dts_ntp_provider`.
- The Integrated Login product, `ILOGIN-PA-DCE`, is a new PA-RISC fileset and has the native version of KT ported `ilogind`.
- The Integrated Login product, `ILOGIN-IA-DCE`, is a new Itanium fileset and has the native versions of 32-bit and 64-bit KT ported `libpam_dce.so.1` and `libnss_dce.so.1`. It also contains the KT version of `ilogind`.

DCE Client daemons and DCE runtime is now IPv6 enabled: two new APIs, `rpc_server_inq_all_bindings()` and `rpc_network_inq_all_protseqs()`, have been provided, which can be used to write IPv6 applications.

The following products are available on HP-UX 11i v2 through the Application Release CD:

- CDS Services: DCE-CDS-Server
- Security Server: DCE-SEC-Server
- DCE Administration Tools: DCE-CoreAdmin

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

- DCE-COR-PA-DTS is a new PA-RISC fileset and has the following new bits: `dts_ntp_provider`, `dts_null_provider`, `dts_spectracom_provider`, and `dtsd`.
- DCE-COR-PA-RUN is a new PA-RISC fileset and has the following new bits: `ep_scavanger`, `k5dcelogin`, `auditd`, `dced`, `rpcd`, and `cdsadv`.
- The Integrated Login product, ILOGIN-PA-DCE, is a new PA-RISC fileset and has the native version of KT ported `ilogind`.

Impact

See "Compatibility" below.

Compatibility

Beginning with this release, CMA DCE threads runtime library is not shipped on HP-UX Integrity servers. Only the PA-RISC version of the CMA DCE threads runtime library is shipped on HP-UX Integrity servers. The CMA DCE threads runtime library can run on both the Itanium-based and PA-RISC platforms through the Aries emulator.

Performance

There are no known performance issues.

Documentation

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

- *HP DCE Version 1.9 Application Development Tools for HP-UX 11i v2 Release Note*

Obsolescence

CMA application development is no longer supported. KRB-Support product (which was available on 11i v1) is no longer supported.

