

HP-UX 9.0 Operating Environment

Series 300, 400, and 700



HP-UX 9.0 is the latest version of the HP-UX operating system for HP 9000 Series 700 and Series 300 and 400 workstations. HP-UX is HP's implementation of the UNIX operating system, and is highly optimized for use on the HP Precision Architecture (PA-RISC) on the Series 700 and the Motorola 68040 architecture on the Series 400.

HP-UX conforms to X/Open's Portability Guide Issue 3 (XPG3), Federal Information Processing Specification (FIPS) 151.1, POSIX 1003.1, and POSIX 1003.2. It conforms to AT&T's System V Interface Definition 2 (SVID 2). HP-UX also incorporates selected features from the University of California at Berkeley Software Distribution 4.3 (4.3BSD). Compliance with these standards

facilitates portability of applications developed on other standards-based operating systems.

Furthermore, Hewlett-Packard is committed to implementing industry standards as they are established, and is actively involved in establishing those standards. Hewlett-Packard is one of the original founders of the Open Software Foundation (OSF) and a member of the X/Open, MIT X-Window, and Object Management Group (OMG) consortia.

In addition to its extensive standards compliance, HP-UX 9.0 leads the industry in value-added ease-of-use features. It includes the HP Visual User Environment (VUE) 3.0 and X11 Release 5, which hides the UNIX command line interface for those who prefer a graphical, point-and-click user interface, but also provides the

full power of the UNIX operating system to more technical users. HP-UX 9.0 includes a graphical System Administration Manager (SAM) to ease day-to-day system administration. It also includes Update and Install functionality, which greatly eases the updating and installation of software, both from physical media and over the network.

HP-UX is a highly network- and communication-ready operating environment. It includes a full suite of ARPA/Berkeley networking services, full NFS functionality, and the full set of UUCP serial communications facilities. Every HP-UX workstation is capable of acting either as a diskless server or a diskless client, saving customers hardware and administration costs. With HP-UX 9.0, any HP-UX workstation can boot from a server on a Local Area Network (LAN) and do a cold install of the operating system onto its local disk.

HP-UX 9.0 is available in a number of localized versions, including both European and Asian languages. It contains features intended to fulfill the U.S. Department of Defense C2 Trusted System Requirements. And finally, HP-UX supports the popular programming languages in the computing world and a rich assortment of tools for database management, computer-aided software engineering (CASE), network and system management, and graphics.

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HP Hardware Supported by HP-UX 9.0

The workstation version of HP-UX 9.0 is available for HP 9000 Series 700 PA-RISC and Series 300 and Series 400 68000-based systems. HP-UX 9.0 is required for PA-RISC workstations and instrument controllers introduced after September 1, 1992, including Models 715, 725, 735, 745i, 747i, and 755.

HP-UX 9.0 is required to support CD-quality audio, which is included in the Series 700 workstations mentioned above and can be retrofitted into some previous Series 700 systems. HP-UX 9.0 is also required for certain HP peripherals, such as the 525MB, 1GB, and 2GB disk drives, as well as other peripherals, such as the built-in FDDI interface, HP Scanjet IIc, compressing DDS drives, the HP magneto-optical disk drive, and the HP CRX-48Z graphics adapter.

To determine if HP-UX 9.0 is required for a particular peripheral, please consult its individual data sheet or contact your local HP sales representative.

Key Ease-of-Use Features

HP VUE 3.0

HP VUE 3.0 is a simple, intuitive, point-and-click user interface for HP-UX. It includes many features, such as individual workspaces for different tasks, a "dashboard" with commonly used functions, a File Manager that performs common file operations using icons, drag-and-drop, slide-up toolboxes, a Motif-based text editor (VUEpad), a color icon editor, and a variety of productivity tools.

HP VUE 3.0 also includes VUE Lite. VUE Lite has a faster start-up time than regular VUE and uses

Benefit

Ease-of-Use

Superior Performance

Investment Protection through Standards Compliance

Choice of development environments

Security

Feature

- HP VUE 3.0 with X11 Release 5 Graphical User Interface
- System Administration Manager (SAM) with both Motif and terminal-based user interfaces
- Update and Install
- On-line context-sensitive hypermedia help
- Instant Ignition 9.0 software preloading
- Screen-oriented mail handler
- Support for audio and image applications
- Terminal Session Manager
- Localized products
- Memory mapped files
- Tuned virtual memory system
- Dynamic buffer caching
- Support for large variety of HP disk drives and peripherals
- Support for fast/wide SCSI disk drives (Series 700 only)
- Compiler optimizations
- XPG3 Base
- Worldwide Portability Interface
- SVID2
- SVVS3
- POSIX 1003.1
- POSIX 1003.2 Shells/Tools
- FIPS 151-1
- OSF/AES Level 2
- Both X11 Release 4 and X11 Release 5 libraries
- Motif 1.2
- Support for FDDI, Ethernet, IEEE 802.3, IEEE 802.5
- TCP/IP (based on 4.3BSD code)
- NFS 4.1 features
- Bundled SNMP agent
- Support for X.25.
- Bundled K&R C compiler
- C/ANSI C compiler and C/ANSI C Developers Bundle
- Fortran
- Pascal
- C++
- Cobol
- C2 Security Features

less memory. It includes all the features of regular HP VUE except drag-and-drop and the File Manager. The user can start up either a VUE Lite or a regular HP VUE session from the HP VUE login prompt.

HP VUE is localized for a number of languages, including Japanese, French, German, Korean, Traditional Chinese, and Simplified Chinese. Simplified Chinese is available on Series 400 only.

System Administration Manager (SAM)

SAM greatly eases many common system administration tasks, such as adding users, configuring peripherals, setting up diskless clusters, configuring networking, managing processes, scheduling repetitive jobs, performing system shutdown, and many others. SAM 9.0 includes both Motif and terminal interfaces. It features a task-oriented menu system, so the user can concentrate on the system administration tasks to be done.

HP-UX 9.0 Run-Time Components

Basic

HP-UX command set, run-time and shared libraries
HP-UX man pages
Local and remote printer support
Support for large variety of peripherals

User Interface

VUE 3.0
System Administration Manager (SAM)
Update and Install
HP-UX on-line hypermedia help
Menu-driven mail handler
X11R4, X11R5, and Motif 1.2 run-time libraries
Starbase and Starbase Display List runtime libraries
Terminal Session Manager
Imaging run-time libraries
Audio run-time libraries

Update and Install

Update is a unique feature of HP-UX that greatly simplifies the installation and updating of both operating system and application software. The update command provides a menu-driven interface that allows the user to perform operating system and application installations and updates from DDS tape, CD-ROM, or from Update servers on the network.

X Window and Starbase

These are the run-time components for X11R4 and X11R5, as well as Starbase and Starbase Display List. These components provide both client and server support for X Window-based applications. HP's X Window system allows applications written in GKS, Starbase, and other graphics libraries to have full access to HP graphics capabilities.

Instant Ignition

Instant Ignition provides preloading and preconfiguration of the core HP-UX operating system as well as for layered software

products on a workstation's internal hard disk drive(s). Customers save time and money by not having to worry about installation and configuration of HP-UX. The user is prompted at initial boot time for important information such as hostname and IP address. After that, the user is presented with the HP VUE login prompt and a series of friendly windows to get acquainted with the system.

In addition to preloading HP-UX Run-Time, Instant Ignition 9.0 provides the capability to specify CD backup media and swap space on one- and two-disk systems. Instant Ignition 9.0 is available in three localized versions: English, Japanese, and German. Each system comes up with VUE preconfigured in its native language.

Software Development Products

Bundled C Compiler

The bundled C compiler is used for building kernels and for

Networking/Communications

Diskless server and client capability
TCP/IP Networking
ARPA/Berkeley networking services
NFS 4.1
SNMP Agent
NetStar
Mail, mailx, and sendmail
Kernel support for Streams (Streams product available separately)
Network Computing System run-time components
Network License Server run-time components
Full set of UUCP tools

Tools

Text processing tools (vi, ed, nroff)
Kernighan & Ritchie C compiler (C/ANSI C compiler available separately)

compiling C programs where performance and code size are not priorities. This compiler works on C programs that conform to Kernighan and Ritchie (K&R) syntax. It provides access to HP-UX subsystems and other HP-UX languages.

C/ANSI C Compiler

The HP-UX C/ANSI C compiler is a highly optimized C compiler that handles both programs written in ANSI C syntax and in K&R syntax. The compiler product includes debuggers, preprocessor, header files, linker, libraries and tools. By enforcing and conforming to ANSI and POSIX standards, this product offers the C programmer a complete industry-standard development environment.

General Programming Tools

General Programming Tools are free to users of HP-UX, and only require that the media be purchased. The General Programming Tools include a macro preprocessor, basic C libraries like libc.a, prof, curses, and termcap libraries, and a number of other tools. The General Programming Tools product also includes source code control tools, such as rcs and associated commands.

HP-UX Developers Toolkit

The HP-UX Developers Kit consists of libraries used for developing user interfaces. It includes X Window Release 5 libraries, Motif 1.2 libraries, HP-UX hypermedia help development tools, Starbase programming libraries, and Starbase Display List libraries. The HP-UX Developers Kit also includes the HP-UX General Programming Tools.

C/ANSI C Developers Bundle

The C/ANSI C Developers Bundle is a complete set of tools that the programmer needs to develop HP-UX applications. It consists of the

C/ANSI C compiler, and the HP-UX Developers Kit, which also includes the HP-UX General Programming Tools. Figure 1 (at the bottom of the page) shows the relationship between the C/ANSI C Developers Bundle, the General Programming Tools, and the HP-UX Developers Toolkit.

Other Programming Languages

HP-UX has a number of other programming languages available in addition to C: Fortran, Pascal, C++, and Cobol. Lisp, Ada and other programming languages are available from third parties. Fortran 77 is a superset of the ANSI X3.9-1978 Fortran standard, conforms to MIL-STD-1753, and includes most of DEC's VMS Fortran extensions and some Fortran 90 extensions. Cobol is the Micro Focus Cobol/2, which meets the ANSI X.3.23-1985 High Level standard.

Localized HP-UX Products

HP-UX is available in a number of localized versions:

- English
- Japanese
- German
- French
- Korean
- Traditional Chinese
- Simplified Chinese (Series 400 only)

Each of the localized versions includes local language documentation and HP-UX message catalogs for that particular language. In addition, Japanese, Korean, and Chinese HP-UX include Native Language Input/Output (NLIO), which handles the pictographic characters used in those languages.

Networking

HP-UX 9.0 is an inherently networked operating system. It includes components for diskless operation, network communications via Local Area Networks (LANs) and Wide Area Networks (WANs), and asynchronous serial communications.

HP-UX Diskless

HP-UX supports diskless computing. All HP workstations are capable of acting as either diskless servers or diskless clients. A diskless client boots from a server, and can either use the server for swap or can have swap space on a local disk drive. In addition, diskless clients can have locally mounted filesystems so each client can have its own data files, but clients can share other important executables. The HP-UX diskless capability runs on top of IEEE 802.3, so it can coexist with other networked systems. HP-UX diskless is also

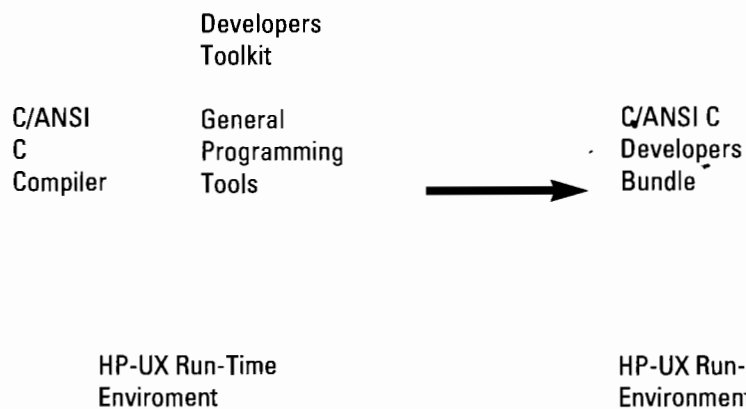


Figure 1. HP Software Development Products



completely integrated with Network File System (NFS) and ARPA services. For example, filesystems that are NFS mounted on the server are visible to all the diskless clients. As another example, both server and clients support inbound and outbound network communications, so telnet and ftp sessions can go to or from a diskless client.

HP-UX 9.0 supports the following configurations:

- Series 700 servers, Series 700 clients
- Series 700 servers, Series 400 clients
- Series 400 servers, Series 400 clients

TCP/IP Networking

TCP/IP-based services in HP-UX include:

- *ARPA/Berkeley services - telnet, ftp, rlogin, remsh, sockets, tftp, rwho, finger, gated, sendmail, BIND, and a number of others*
- These TCP/IP services are supported over FDDI, IEEE 802.3 and Ethernet. Kernel support for AT+T Streams is included in HP-UX Run-Time. Streams itself is available as a separate product. Network File System (NFS) provides transparent file sharing and distributed applications between multivendor systems. The HP-UX 9.0 implementation of NFS includes the features of NFS 4.1 with the exception of secure RPC.

NetStart

NetStart provides the capability for a workstation to do a cold boot from a server over the network, and then load enough code from the server to reboot and do a network update of HP-UX. This provides the same capability as installing HP-UX from either CD or DDS tape, but with the convenience and speed of network installation.

Network Computing System (NCS)

NCS supplies a standard Remote Procedure Call (RPC) mechanism for running distributed client/server applications.

Network License Server

HP-UX includes the License Server run-time and administration commands. Specific applications use these services to set up individual licenses. A developers kit for the Network License Server is available separately.

Other Networking Products

There are many other networking products that are available separately for HP-UX 9.0. These include:

- FDDI interface hardware
- OSI products
- X.400
- X.25
- ISDN
- Apollo Token Ring
- SNA and other IBM connectivity products

Asynchronous Data Communications

Communication services include the asynchronous multiplexer manager software, which supports CCITT modem communication, BSD job control, block-mode communication, and non-blocking I/O. The asynchronous multiplexor manager supports communication with other operating systems via one or more multiplexor channels, and hardwired or modem links using the uucp capabilities of HP-UX. The uucp commands provide file transfer, remote process execution, and virtual terminal capabilities.

Security

HP-UX 9.0 contains the features intended to fulfill the U.S. Department of Defense Trusted Computer Systems Evaluation Criteria for C2. This level of security includes an auditing facility for security relevant events, additional file access control lists for better file security, a shadow password file for storing encrypted passwords where only privileged users can read them, and security-related documentation for system administrators and end-users.

Multuser Versions

In addition to the standard 2-user configuration, HP-UX Run-Time can be ordered in an 8-user version for Series 700 workstations and a 32-user version for Series 400 workstations. These multuser versions are needed when a workstation has multiple ASCII terminals attached. Up to eight terminals may log in to a Series 700, and up to 32 terminals may be logged into a Series 400 when one of the multuser licenses is ordered.

Documentation

HP-UX 9.0 documentation is available in both CD-ROM and hardcopy versions. The advantage of the CD-ROM version is that almost all HP-UX manuals are on one compact disk, saving money and shelf space. The CD version can be shared by multiple users on a network, and includes a simple, intuitive Motif user interface, search and browse, and "bookmark" capabilities.

Hardcopy manuals are available in logical groupings for different types of users. These include general usage, system administration, general programming, advanced usage, and C programming sets.

HP-UX Media

HP-UX 9.0 Run-Time Environment is available in CD-ROM, 4 millimeter DDS (DAT) tape, and 1/4-inch tape formats (1/4-inch tape is for the Series 400 only). HP-UX 9.0 on compact disk provides the security of a rugged, long-lasting media with the convenience of large storage capacity. The HP-UX CD kit puts all of HP-UX and a large number of layered software products on a few easy-to-store compact disks.

The HP-UX 9.0 CD-ROM kit includes an Install CD, core operating system CD, an applications CD, and a diagnostics CD. The core operating system CD contains all of HP-UX 2-User Run-Time Environment in an "unlocked" format. The applications CD contains a number of HP-UX layered products, many of which are in "locked" format and require codewords for installation.

HP-UX Ordering Information

Detailed ordering information for HP-UX, Instant Ignition, related developer products and documentation can be found in the HP Apollo 9000 Configuration and Pricing Guides. There are guides for both the Series 700 and Series 400 workstation systems.

For more information, call 1-800-637-7740. In Canada, call 1-800-387-3867. Or contact your local HP sales office or authorized HP reseller.

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Greece:

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Hungary:

Tel: +38/61/5584 72

Iceland:

Tel: +354/1/67 10 00

Ireland:

Tel: +253/12/88 33 99

Italy:

Tel: +39/ 2/92 19 91

Netherlands:

Tel: +31/ 20/54 769 11

Norway:

Tel: +47/2/87 97 00

Poland:

Tel: +48/22/36 83 00

Portugal:

Tel: +35/1/130 173 30

Russia:

Tel: +007/95/923 50 01

Slovenia:

Tel: +38/61/55 84 72

Spain:

Tel: +34/1/626 16 00

Sweden:

Tel: +46/ 8/750 20 00

Switzerland:

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