

Software Product Description

PRODUCT NAME: PATHWORKS for ULTRIX, Version 1.3

SPD 32.44.03

DESCRIPTION

PATHWORKS for ULTRIX™ is based on the Personal Computing Systems Architecture (PCSA), which is an extension of Digital Equipment Corporation's systems and networking architecture that merges the VAX™, RISC, and personal computer environments. The PATHWORKS product family, developed under the PCSA architecture, provides a framework for integrating personal computers into an organization's total information system so that different types of users can share information and network services across the entire organization.

The PATHWORKS family of software products includes:

- PATHWORKS for ULTRIX™ — Software that allows an ULTRIX-based VAX or RISC system to act as a file, printer, and mail server to DOS and OS/2® personal computers. This product is further described in this Software Product Description.
- PATHWORKS for VMS™ — Software that allows a VMS-based VAX system to act as a file, printer, mail, and disk server to DOS and OS/2 personal computers, described in SPD 30.50.xx.
- PATHWORKS for OS/2® — Includes client software that allows a personal computer running the OS/2 Operating System to use the facilities provided by PATHWORKS for VMS, PATHWORKS for ULTRIX, or the PATHWORKS for OS/2 server software. Also includes server software that allows an OS/2-based personal computer to act as a file, printer, and mail server to other personal computers, described in SPD 55.24.xx.
- PATHWORKS for OS/2® (TCP/IP) — Software required for a personal computer running the OS/2 Operating System to access services of a PATHWORKS for VMS, PATHWORKS for OS/2, or PATHWORKS for ULTRIX server over the TCP/IP network transport, described in SPD 36.58.xx.
- PATHWORKS for Macintosh® — Software that allows a VMS-based VAX system to act as a file or printer server to Macintosh computers. Also includes

Macintosh client applications and utilities, described in SPD 31.53.xx.

- PATHWORKS for DOS — Software that allows a personal computer running the DOS Operating System to use the facilities provided by PATHWORKS for VMS, PATHWORKS for ULTRIX, or the PATHWORKS for OS/2 server software described in SPD 55.07.xx.
- PATHWORKS for DOS (TCP/IP) — Software required for a personal computer running the DOS Operating System to access services of a PATHWORKS for VMS, PATHWORKS for OS/2, or PATHWORKS for ULTRIX server over the TCP/IP network transport, described in SPD 33.45.xx.

The PATHWORKS for ULTRIX software allows VAX and RISC computers running the ULTRIX Operating System (SPD 26.40.xx) or ULTRIX Worksystem Software (SPD 28.22.xx) to provide network services to DOS and OS/2 users. PATHWORKS for ULTRIX works in conjunction with PATHWORKS for DOS and PATHWORKS for OS/2 client software to integrate personal computers into the Digital computing environment.

The ULTRIX server can offer file, printer, and mail services to personal computer users. By using servers, users can share applications, data, and valuable computing resources. Information can be accessed from local and remote systems, and that information can be applied to DOS and OS/2 applications.

PATHWORKS for ULTRIX supports the DECnet/OSI and TCP/IP network transports, in both Local Area Network (LAN) and Wide Area Network (WAN) environments.

Features

PATHWORKS for ULTRIX provides the following services for personal computers running PATHWORKS for DOS and/or PATHWORKS for OS/2 client software:

- Network Transport Support
- NetBIOS Interface Support

- File Services
- Printer Services
- Mail Services
- Time and Date Services
- Server Management and Control
- Broadcast Utility
- Installation Utility

Network Transport Support

PATHWORKS for ULTRIX supports both DECnet/OSI and TCP/IP network transport software. The TCP/IP transport is provided with the ULTRIX Operating System. By means of TCP/IP, supported personal computer clients can access servers in both local area and wide area networks. Client support for the TCP/IP transport is currently available for PATHWORKS for DOS and OS/2 clients. Some DOS and OS/2 client functionality is not supported under TCP/IP. Refer to PATHWORKS for DOS (SPD 55.07.xx), PATHWORKS for DOS (TCP/IP) (SPD 33.45.xx), PATHWORKS for OS/2 (SPD 55.24.xx) and PATHWORKS for OS/2 (TCP/IP) (SPD 36.58.xx) for detailed information on supported features.

When DECnet/OSI for ULTRIX (SPD 34.97.xx) network transport software is used in conjunction with PATHWORKS for ULTRIX, personal computer clients can access servers in both local area and wide area networks. Both DOS and OS/2 clients are supported by PATHWORKS for ULTRIX via the DECnet/OSI network transport running on the server and the DECnet component running on the DOS or OS/2 clients. DECnet/OSI is currently not a component of the DOS or OS/2 client software.

Refer to the SOFTWARE REQUIREMENTS section of this document for information on required network transport software.

NetBIOS Interface Support

PATHWORKS for ULTRIX supports the NetBIOS interface in both TCP/IP and DECnet networks. NetBIOS support under TCP/IP includes a B-node RFC 1001/1002 implementation. Digital's RFC implementation accommodates ULTRIX systems with multiple network controllers installed, as well as support for multiple RFC 1001/1002 NetBIOS scopes.

File Services

PATHWORKS for ULTRIX file services provide DOS and OS/2 clients with a remote file system that appears as a transparent extension of the client system's local computing environment.

PATHWORKS for ULTRIX file services are based on Microsoft® LAN Manager SMB (Server Message Block) protocols.

Each DOS or OS/2 file stored in a file service is stored as an ULTRIX file. The files stored in a file service are accessible to PC clients, ULTRIX users, and to applications that can interpret the contents and organization of the file as written by the client application.

The server also allows client applications to read files written by an ULTRIX user or application.

Multiple DOS and/or OS/2 clients can concurrently access files stored on the server through the file access modes and byte range locking support that is provided by the ULTRIX Operating System. Because PATHWORKS for ULTRIX supports the native ULTRIX Lock facility, it is possible to develop ULTRIX-based applications that share data files with PC-based applications. In addition, PATHWORKS for ULTRIX provides a byte-range locking manager that the server can use instead of or in addition to the native lock manager in the ULTRIX operating system to enhance system performance in some of the PC applications.

PATHWORKS for ULTRIX running on the ULTRIX Operating System provides support for ISO 9660 CDROM devices to be used as read-only file services.

PATHWORKS for ULTRIX files services are supported on NFS (Network File System), allowing remote NFS files to be shared by PATHWORKS LAN Manager (SMB) clients. The NFS files can be made available to PATHWORKS clients via a PATHWORKS for ULTRIX file service.

Further information on controlling access to server resources is provided in the Server Management and Control section of this SPD.

Printer Services

PATHWORKS for ULTRIX software allows DOS, OS/2, and ULTRIX users to share printers connected to VAX and RISC computers, as well as network-based printers such as LAT printers and Digital's PrintServer 20, Turbo PrintServer 20 and PrintServer 40. Printer services are available in local area and wide area network environments. PC clients can print files from the DOS and OS/2 operating systems as well as from PC applications.

PC clients can list all printer queue entries.

The system administrator can assign a printer service name to an ULTRIX printer queue. The PATHWORKS for DOS and PATHWORKS for OS/2 client software redirects printer input and output from a client printer logical name to the defined printer service.

The PATHWORKS for ULTRIX server administration utility can be used to create queues and define forms for selected printers. Refer to the System Support Addendum (SSA 32.44.03-x) for a list of supported printers. Default setup parameters are provided for some of these printers.

Multiple queues may be defined for the same printer. For example, separate queues may be created for Digital mode and IBM® ProPrinter® mode for a single Digital LA75 printer. Similarly, separate queues for landscape and portrait modes may be created for a Hewlett-Packard® LaserJet® printer.

In addition, printer queues can be set up using native ULTRIX utilities, to support those printers not directly supported by PATHWORKS for ULTRIX.

PATHWORKS for ULTRIX supports the important set of ULTRIX lpr options. This allows PATHWORKS clients to take advantage of all features available on Digital printers.

Mail Services

The mail server software that is part of PATHWORKS for ULTRIX provides DOS and OS/2 clients with the ability to send and receive electronic mail messages. A mail account is established on the ULTRIX server for each PC user. Mail can be sent to this account by other PC users as well as users of ULTRIX and VMS mail software. The mail server then routes messages to the appropriate user upon login to the server.

The PATHWORKS for ULTRIX mail server provides the PC user with folders, local and remote distribution lists, and delivery capabilities. Notification of new messages occurs both upon login to a network session, and as they are received during a session. Real-time notification of incoming messages can be optionally disabled by the client.

PATHWORKS for ULTRIX allows PC users to read mail without having to log in to the ULTRIX system.

Like the ULTRIX DECwindows mail utility, the PATHWORKS for ULTRIX mail server is based on the RAND Mail Handler (MH/sendmail). This implies that mail folders residing on the ULTRIX system can be read by both ULTRIX DECwindows users and PC users.

Time and Date Services

DOS and OS/2 clients can request date and time information from the server system and set the local workstation date and time equal to them.

Server Management and Control

Two styles of server management interface are provided by PATHWORKS for ULTRIX: a menu-driven user interface and a command line interface.

The Manager Menu is a PC-style interface with a horizontal menu bar and pull-down menus. It requires only minimal knowledge of the ULTRIX Operating System commands for use. The Manager Menu allows the system administrator to:

- Manage file and printer services, user accounts, groups, and the client workstation database.
- Display and control server resources currently in use, such as active sessions, connections, services, open files, and server statistics.
- Broadcast information to users.
- Use system utilities.
- View context-sensitive help for each screen.

The system administrator can limit the number of simultaneous client connections to a particular service. This allows the system administrator to control access to DOS and OS/2 applications that are stored on the server to ensure compliance with vendor licensing agreements. Other restrictions on the use of the server can be imposed to help meet performance and security goals.

File service access may be controlled through username, password, and group permission.

Kerberos authentication environment is supported with PATHWORKS for ULTRIX.

In addition, the Manager Menu is used to modify the server configuration and to view the following log files:

- The audit log file, which tracks events such as connections and disconnections, the opening of files, and failed attempts to access server resources.
- The error log file, which is used to log server related errors.
- The message log file, which is used to log messages broadcast by the server administrator.

The Manager Menu allows read-only access to ULTRIX system databases in a Yellow Pages (YP), Berkeley Internet Domain Name Server (BIND) and Hesiod name server environment. In these environments, maintenance of system files must be done with utilities provided with the ULTRIX Operating System.

In addition to the Manager Menu, a command line interface is provided for commonly used server management functions. These commands may be used to add or delete file services, stop the file server, and manage the NetBIOS name tables. They may also be used in batch files.

PATHWORKS for ULTRIX logs network and server errors and events, such as notices about connections being started and stopped, to the ULTRIX system log (syslog) file.

Broadcast Utility

PATHWORKS for ULTRIX includes a message broadcast facility that allows the system administrator to send messages to workstations on the local area network. A message can be sent to a single client workstation or to all currently active client workstations on the LAN. All messages broadcast from the server can be logged in the message log file.

The broadcast utility can be used to inform users of system events, such as the creation of new services or the shutdown of the system.

The broadcast utility is implemented using the NetBIOS interface.

Installation

PATHWORKS for ULTRIX includes a software utility that guides the administrator through the installation procedure. The installer is able to selectively install optional portions of the product, while mandatory portions are installed automatically. Choices are verified during the procedure, and informative messages are displayed as the installation proceeds. The Installation Verification Procedure (IVP) is also included, which can be used to confirm that the software has been installed properly.

PATHWORKS for ULTRIX can be installed and operated in a YP, BIND/Hesiod, Kerberos, RIS, or NFS environments.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, VAXserver, DECstation, or DECsystem configuration as specified in the System Support Addendum (SSA 32.44.03-x).

SOFTWARE REQUIREMENTS

For Systems Using Terminals:

- ULTRIX Operating System (SPD 26.40.xx)

For Workstations:

- ULTRIX Worksystem Software (SPD 28.22.xx)

Network Transport Software

The TCP/IP network transport software is supplied with the ULTRIX Operating System, and is required for use of the server in conjunction with TCP/IP-based personal computer clients.

For use of this product with DECnet-based personal computer clients, the following is required:

- DECnet/OSI for ULTRIX (SPD 34.97.xx)

PATHWORKS Client Software

One of the following software products is required on personal computers that are used to access a PATHWORKS for ULTRIX server.

- PATHWORKS for DOS (SPD 55.07.xx)
- PATHWORKS for OS/2 (SPD 55.24.xx)

DOS-based clients that access the services of a PATHWORKS for ULTRIX server over TCP/IP require the following additional software:

- PATHWORKS for DOS (TCP/IP) (SPD 33.45.xx)

OS/2-based clients that access the services of a PATHWORKS for ULTRIX server over TCP/IP require the following additional software:

- PATHWORKS for OS/2 (TCP/IP) (SPD 36.58.xx)

Support for the DOS Operating System is provided by PATHWORKS for DOS.

Support for the OS/2 Operating System is provided by PATHWORKS for OS/2.

Refer to the System Support Addendum (SSA 32.44.03-x) for availability and required versions of prerequisite /optional software.

Documentation

The PATHWORKS for ULTRIX documentation includes:

- Server Installation Guide
- Server Administrator's Guide
- Network Troubleshooting Guide

ORDERING INFORMATION*VAX-Based Systems:*

Software Media/Documentation: QA-YNGAA-H*
 Software Product Services: QT-YNGA*-**

RISC-Based Systems:

Software Media/Documentation: QA-YNGAB-H*
 Software Product Services: QT-YNGA*-**

Additional Documentation:

PATHWORKS for ULTRIX
 Documentation: QA-YNGAA-GZ

* Denotes variant fields. For additional information about available licenses, services, and media, refer to the appropriate price book.

SOFTWARE LICENSING*PATHWORKS Products*

The right to use the PATHWORKS for ULTRIX server software is granted by the PATHWORKS for DOS Client License (SPD 55.07.xx) and the PATHWORKS for OS/2 Client License (SPD 55.24.xx). A client license must be obtained for each personal computer that uses a PATHWORKS for ULTRIX server.

The PATHWORKS for DOS and PATHWORKS for OS/2 Client Licenses grant the user the right to use one or more PATHWORKS servers over the DECnet network transport.

A PATHWORKS for DOS (TCP/IP) License (SPD 33.34.xx) is required for each DOS personal computer that uses one or more PATHWORKS servers over the TCP/IP network transport.

A PATHWORKS for OS/2 (TCP/IP) License (SPD 36.58.xx) is required for each OS/2 personal computer that uses one or more PATHWORKS servers over the TCP/IP network transport.

Associated Products

An ULTRIX Operating System (SPD 26.40.xx) or ULTRIX Worksystem Software (SPD 28.22.xx) License is required for each server system (except when otherwise specified by Digital).

A DECnet/OSI for ULTRIX License (SPD 34.97.xx) is required for each ULTRIX system that uses DECnet/OSI as its network transport software.

This software is furnished under the licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions. For more information about Digital's licensing terms and policies, contact your local Digital office.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Digital. For more information, contact your local Digital office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

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System Support Addendum

PRODUCT NAME: PATHWORKS for ULTRIX, Version 1.3

SSA 32.44.03-A

HARDWARE REQUIREMENTS

PATHWORKS for ULTRIX is supported on VAX and RISC systems running the ULTRIX Operating System or ULTRIX Worksystem Software.

Processors Supported

VAX-Based Processors:

VAX:

VAX 6000 Model 200 Series

VAX 6000 Model 300 Series

VAX 6000 Model 400 Series

VAX 6000 Model 500 Series

VAX 8200, VAX 8250, VAX 8300, VAX 8350

VAX 8500, VAX 8530, VAX 8550

VAX 8600, VAX 8650

VAX 8700

VAX 8800, VAX 8810, VAX 8820, VAX 8830, VAX 8840

VAX 9000 Model 110, VAX 9000 Model 210

VAX 9000 Model 310, VAX 9000 Model 410

VAX 9000 Model 320, VAX 9000 Model 420

VAX-11/750, VAX-11/780, VAX-11/785

MicroVAX:

MicroVAX II, MicroVAX 2000

MicroVAX 3100, MicroVAX 3300

MicroVAX 3400, MicroVAX 3500

MicroVAX 3600, MicroVAX 3800

MicroVAX 3900

VAXstation:

VAXstation II, VAXstation II/GPX

VAXstation 2000, VAXstation 3100

VAXstation 3200, VAXstation 3500

VAXstation 3520, VAXstation 3540

VAXserver:

VAXserver 2000

VAXserver 3100, VAXserver 3300

VAXserver 3400, VAXserver 3500

VAXserver 3600, VAXserver 3602

VAXserver 3800, VAXserver 3900

VAXserver 6000 Model 210

VAXserver 6000 Model 220

VAXserver 6000 Model 310

VAXserver 6000 Model 320

VAXserver 6000 Model 410

VAXserver 6000 Model 420

VAXserver 6000 Model 510

VAXserver 6000 Model 520

RISC-Based Processors:

DECstation:

DECstation 2100, DECstation 3100,

DECstation 3100s

DECstation 5000 Model 120/125

DECstation 5000 Model 120/125CX

DECstation 5000 Model 120/125PX

DECstation 5000 Model 120/125PXG

DECstation 5000 Model 120/125PXG TURBO

DECstation 5000 Model 200

DECstation 5000 Model 200CX

DECstation 5000 Model 200PX

DECstation 5000 Model 200PXG

DECstation 5000 Model 200PXG TURBO

DECstation 5000 Model 200PXG TURBO+

Personal DECstation 5000 Model 20/50

DECstation 5000 Model 125/133

DECstation 5000 Model 240

DECsystem:

DECsystem 3100

DECsystem 5000 Models 133/150

DECsystem 5000 Model 200

DECsystem 5100, DECsystem 5400

DECsystem 5500, DECsystem 5810

DECsystem 5820, DECsystem 5830

DECsystem 5840

DECsystem 5000 Models 25/33/50

DECsystem 5000 Model 240

DECsystem 5900

DECsystem 5900 Model 260

Memory Requirements:

A minimum of 1 Mbyte of memory is recommended for use of the product. Guidelines for additional system memory are:

- For VAX systems, an additional 160 Kbytes is recommended per active PC client.
- For RISC systems, an additional 150 Kbytes is recommended per active PC client.

Memory requirements vary according to the server CPU, the number of clients using the server and their activities, and other applications running on the server system. The memory requirements indicated above are related to the use of PATHWORKS for ULTRIX and support of PC clients. They are over and above the memory required for the operating system.

Disk Space

4 Mbytes of disk space is required for installation of the product on both VAX and RISC systems.

This requirement refers to space on the server system disk for installation and use of PATHWORKS for ULTRIX software only. Total disk space requirements will vary according to server operating system software, system environment, configuration, number of clients and their activity, and software options.

OPTIONAL HARDWARE

- Apple® LaserWriter®
- EPSON
- HP® LaserJet®
- HP LaserJet with Adobe PostScript® cartridge
- IBM® LaserPrinter
- NEC Silentwriter®
- Digital:
 - LA50 Personal Printer
 - LA70 Personal Printer
 - LA75 Companion Printer
 - LA75 Plus
 - LA324
 - LJ250 Companion Color Printer
 - LN03 Laser Printer
 - LN03R ScriptPrinter
 - DEClaser 2200 (LN06)
 - DEClaser 1100
 - DEClaser 2100
 - DEClaser 3200
 - DEClaser 1150
 - DEClaser 2150
 - DEClaser 2250
 - DEClaser 3250
 - DECJET 1000
 - DECJET 2000

Many of the printers listed above are capable of printing in multiple modes (that is, they support two or more protocols). In many cases, PATHWORKS for ULTRIX includes default setup parameters for each of the modes supported by these printers.

Other Digital printers, such as the PrintServer 20 (LPS20), Turbo PrintServer 20 and PrintServer 40 (LPS40) can be used by PATHWORKS clients. Default setup parameters for these printers are included with the ULTRIX Operating System. Optional printers may be configured using the ULTRIX lprsetup utility.

SOFTWARE REQUIREMENTS*For Systems Using Terminals:*

ULTRIX Operating System V4.3, 4.3A (RISC)

For Workstations:

ULTRIX Worksystem Software V4.3, V4.3A (RISC)

For minimum hardware requirements of the operating system refer to the Software Product Description and System Support Addendum for each product; ULTRIX Operating System (SPD 26.40.xx), ULTRIX Worksystem Software (SPD 28.22.xx).

Network Transport Software

TCP/IP and/or DECnet/OSI network transport software is required by PATHWORKS for ULTRIX.

The ULTRIX Operating System comes with TCP/IP network transport software.

When PATHWORKS for ULTRIX is to be used in a DECnet/OSI network environment, DECnet/OSI software is required. This is not supplied with the operating system and must be purchased separately. The following versions of DECnet software are supported:

- DECnet/OSI for ULTRIX V5.1
- DECnet/OSI for ULTRIX V5.1A

Refer to the Software Product Description for the ULTRIX Operating System (SPD 26.40.xx), ULTRIX Worksystem Software (SPD 28.22.xx), System Support Addendum for DECnet/OSI for ULTRIX (SSA 34.97.xx-x) to determine version requirements for your configuration.

PATHWORKS Client Software

The following versions of PATHWORKS client software are supported for use in conjunction with PATHWORKS for ULTRIX:

- PATHWORKS for DOS V4.1
- PATHWORKS for OS/2 V2.0

Note: All of Digital's products developed under the Personal Computing Systems Architecture (PCSA) are known by the family name of PATHWORKS. Versions of the products listed above are shown as they appear in the actual product releases. DECnet PCSA Client for DOS is now known as PATHWORKS for DOS, and PCSA for OS/2® is now known as PATHWORKS for OS/2.

Each of the client products listed above is supported for use in conjunction with PATHWORKS for ULTRIX via DECnet or DECnet/OSI.

In addition, DOS clients running PATHWORKS for DOS V4.0 at a minimum (SPD 55.07.xx) software are supported for use with PATHWORKS for ULTRIX by means of TCP/IP. DOS clients operating in a TCP/IP network environment require one of the following additional network transport software products:

- PATHWORKS for DOS (TCP/IP) V2.0

Note: Some DOS client features are not supported under TCP/IP. Refer to the Software Product Descriptions for PATHWORKS for DOS (SPD 55.07.xx) and PATHWORKS for DOS (TCP/IP) (SPD 33.45.xx) for detailed information on supported features.

OS/2 clients running PATHWORKS for OS/2 V2.0 or later (SPD 55.24.xx) are supported for use with PATHWORKS for ULTRIX via TCP/IP. OS/2 clients operating in a TCP/IP network environment require the following additional software:

- PATHWORKS for OS/2 (TCP/IP) V1.0

OPTIONAL SOFTWARE

None

GROWTH CONSIDERATIONS

The minimum hardware and software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

9-track 1600 BPI Magtape (PE), TK50 Streaming Tape

For each media type, both VAX format and RISC format are available.

ORDERING INFORMATION*VAX-Based Systems:*

Software Media/Documentation: QA-YNGAA-H*
Software Documentation Only: QA-YNGAA-GZ
Software Product Services: QT-YNGA*-**

RISC-based Systems:

Software Media/Documentation: QA-YNGAB-H*
Software Documentation Only: QA-YNGAA-GZ
Software Product Services: QT-YNGA*-**

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