

# Software Product Description

**PRODUCT NAME:** PATHWORKS for DOS (TCP/IP), Version 1.1A

**SPD 33.45.02**

## DESCRIPTION

PATHWORKS for DOS (TCP/IP) 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 VMS, ULTRIX, DOS, OS/2®, and Macintosh® environments. PCSA provides a framework for integrating personal computers into an organization's total information system so different types of users can share information, large system resources, and network services across the entire organization.

PCSA is implemented in the PATHWORKS product set. The PATHWORKS family of software products includes:

- PATHWORKS for DOS (TCP/IP) — Software required for the DOS personal computer running DOS Operating System to use the facilities provided by PATHWORKS for VMS (described in SPD 30.50.xx) and PATHWORKS for ULTRIX (described in SPD 32.44.xx) using Ethernet as the physical media type and PATHWORKS for OS/2 server (described in SPD 55.24.xx) using either Ethernet or Token Ring as the physical media type. All three servers can utilize TCP/IP as the network transport.

This product contains the TCP/IP networking software and various TCP/IP network management utilities for the DOS client. The PATHWORKS for DOS product is a prerequisite product. Refer to this SPD for a complete description of the functionality provided to the DOS client when the TCP/IP network transport is used.

The features described in this SPD are supported with the following Digital servers, PATHWORKS for DOS clients, and physical media types unless otherwise noted:

- PATHWORKS for VMS V4.0 (if using PATHWORKS for DOS V4.0 client; Ethernet only)
- PATHWORKS for VMS V4.1 (if using PATHWORKS for DOS V4.1 client; Ethernet only)
- PATHWORKS for ULTRIX V1.0 and V1.1 (if using either PATHWORKS for DOS V4.0 or V4.1 client; Ethernet only)

— PATHWORKS for OS/2 V2.0 (if using PATHWORKS for DOS V4.1 client; Ethernet or Token Ring)

- PATHWORKS for DOS — Software that allows a DOS personal computer (described in SPD 55.07.xx) running the DOS Operating System to use the facilities provided by PATHWORKS for VMS (described in SPD 30.50.xx), PATHWORKS for ULTRIX (described in SPD 32.44.xx), or PATHWORKS for OS/2 server software (described in SPD 55.24.xx) using Ethernet or Token Ring as physical media types and DECnet as the network transport.
- PATHWORKS for DOS (NetWare® Coexistence) — Software for the DOS personal computer (described in SPD 34.76.xx) running the DOS Operating System to use the facilities provided by PATHWORKS for DOS (described in SPD 55.07.xx), while concurrently using the facilities provided by NetWare client software, when both are utilizing a single Ethernet controller.
- PATHWORKS for VMS — Software that allows a VAX system, using the VMS Operating System, to act as a file, print, disk, and mail server to DOS- or OS/2-based personal computers (described in SPD 30.50.xx). PATHWORKS for VMS supports Ethernet and Token Ring as physical media types and DECnet and TCP/IP as network transports.
- PATHWORKS for ULTRIX — Software that allows a VAX or RISC system, using the ULTRIX Operating System, to act as a file, print, and mail server to DOS- or OS/2-based personal computers (described in SPD 32.44.xx). PATHWORKS for ULTRIX supports Ethernet as the physical media type and DECnet and TCP/IP as network transports.
- PATHWORKS for Macintosh — Software that allows a VAX system, using the VMS Operating System, to act as a file, print, mail, and database server to Macintosh computers (described in SPD 31.53.xx) using Ethernet as the physical media type and DECnet as the network transport.

- PATHWORKS for OS/2—Required software for the OS/2 personal computer (described in SPD 55.24.xx) to use the facilities provided by PATHWORKS for VMS (described in SPD 30.50.xx), PATHWORKS for ULTRIX (described in SPD 32.44.xx) and/or make the file and print facilities of an OS/2 system available to other personal computers (described in SPD 55.24.xx) using Ethernet or Token Ring as physical media types and DECnet or TCP/IP as network transports.

The PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) software allows Digital, selected IBM®, and selected IBM compatible personal computers to participate in a TCP/IP networked environment.

Refer to the *Supported Base Systems* Table in the System Support Addendum (SSA 33.45.02-x) for detailed configuration information.

### Features

The combination of PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) software provides:

- Communications
- File Services
- Permit Services
- Print Services
- Print Screen Support
- Mail Services
- Date and Time Services
- Broadcast and Receive
- LAN Manager V2.0 Support
- Task-to-Task Communications (via Socket Library)
- Memory Savings Techniques
- Installation and Configuration Utilities
- PC DECwindows Motif®
- Microsoft® Windows™ V3.0/3.00A Support
- Terminal Emulators
- TCP/IP Network File Operations via FTP
- SEDT Screen Editor
- Enhanced DOS Utilities
- TCP/IP Network Management Facilities
- Multilinguality
- Domain Name Resolver
- RFC 1001/1002 NETBIOS Interface Support
- Network Device Interface Specification

- EtherWORKS Support

### Communications

PATHWORKS for DOS (TCP/IP) nodes can be connected to a network via an Ethernet or Token Ring controller in a Local Area Network (LAN). PATHWORKS for DOS (TCP/IP) provides wide area network access to other TCP/IP systems using either the File Transfer Protocol (FTP) or the TELNET protocol included in this software product. Refer to the *OPTIONAL HARDWARE* section the System Support Addendum (SSA 33.45.02-x) for details on supported Ethernet and Token Ring configurations.

The functions available to the PATHWORKS for DOS (TCP/IP) user depend largely upon the configuration of the rest of the network. Each TCP/IP server product offers users its own level of capability and set of features.

PATHWORKS for DOS (TCP/IP) supports one of the following connections on any given personal computer:

- Direct connections to baseband or twisted pair (10baseT) Ethernet local area networks via Ethernet controllers. Digital recommends the use of the multi-buffered DEC EtherWORKS controllers in networks which carry heavy traffic.
- Direct connections to shielded or unshielded twisted pair Token Ring local area networks via Token Ring controllers.

PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) software utilizes Ethernet or Token Ring as its physical media type through the use of an Ethernet or Token Ring controller in conjunction with Digital's baseband Ethernet components or selected Token Ring components.

PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) supports inter-networking between local and/or remote Token Ring and/or Ethernet local area networks via a supported internet-working device.

Support is provided for source routing in Token Ring environments (with a PATHWORKS for OS/2 V2.0 server only). PATHWORKS for DOS V4.1 in conjunction with PATHWORKS for DOS (TCP/IP) V1.1A can gain access to the PATHWORKS for OS/2 V2.0 server resources within an extended Token Ring only LAN (that is where those Token Rings are connected via source routing bridges).

Applications which modify the network node address are not supported in a PATHWORKS for DOS Token Ring environment.

*File Services*

The client is provided with a remote DOS file system that appears as a transparent extension of the client's local facilities through the integration of Microsoft's LAN Manager file and print protocol with TCP/IP and RFC 1001/1002 NETBIOS.

*Permit Services*

PATHWORKS for DOS software provides DOS client systems with the ability to offer other users access to local resources via the PERMIT command. A client may offer other client systems access to its local disk; only a single connection is possible at any given time.

*Print Services*

The client is provided with a remote DOS printing system that appears as a transparent extension of the client's local facilities. This allows the redirection of local printing to a server-based printer. This functionality is provided through the integration of Microsoft's LAN Manager with TCP/IP and RFC 1001/1002 NETBIOS.

Refer to the System Support Addendum (SSA 33.45.02-x) for a list of supported printers.

Refer to PATHWORKS for VMS (SPD 30.50.xx), PATHWORKS for ULTRIX (SPD 32.44.xx), or PATHWORKS for OS/2 server software (SPD 55.24.xx) for more information on remote printer support.

*Print Screen Support*

Users can print the contents of a screen to a local or remote printer over the network by using Print Screen functionality while using a DOS-based application (including the SETHOST terminal emulator).

If using the PATHWORKS for DOS V4.1 client software, users can print the contents of a screen while using the VT320 terminal emulator under Microsoft Windows by pressing the F2 key instead.

Print Screen Support is not available while using PC DECwindows Motif.

*Mail Services*

The MAIL component included in the PATHWORKS for DOS product allows DOS clients to send and receive messages and documents to and from users of MAIL software on systems that operate within the same TCP/IP network. The PATHWORKS for ULTRIX V1.0 or V1.1 mail server must already be installed to utilize MAIL.

MAIL is a PC-style utility for sending and reading mail. It contains horizontal menu bars, pull-down menus, and help listed by topics. MAIL allows the user to read mail without having to log into the server.

The PATHWORKS for DOS MAIL utility enables the DOS client to:

- Read, delete, forward, file, print, annotate, and reply to messages.
- Send messages to a distribution list as well as to a remote address. Messages can be sent to primary addressees and to carbon copy addressees.
- Create messages with the built-in editor (or a selected callable editor, such as SEDT) which can output an ASCII file.
- Organize messages into folders which may be stored remotely on a server or locally on the system's hard disk.
- Receive notification of new messages upon login and during PATHWORKS sessions.
- Receive notification of incoming messages using the Receive utility. In most cases, notification is achieved via sound while using a graphics application, and via a pop-up window on the user's display while using character cell applications. This feature may be optionally disabled.
- Send a binary file attachment (one binary file per message).
- Configure the user interface as either command line or menu-driven.

**Note:** The client implementation of mail services is not implemented via the Simple Mail Transport Protocol (SMTP) or Postoffice Protocol (POP).

Mail services with PATHWORKS for VMS or PATHWORKS for OS/2 servers utilizing the TCP/IP transport are currently not available.

*Date and Time Services*

Clients can receive the date and time from the PATHWORKS server. The benefit of this feature is that the user is assured of consistent timestamps on any given file that is created, shared, or updated by other users.

*Broadcast and Receive*

The Broadcast feature allows users to send (broadcast) messages to DOS and/or OS/2 clients. The Receive feature allows DOS clients to receive the messages. This feature allows DOS clients to notify other DOS clients of various network events, such as system shutdowns for backups.

Broadcast and receive functionality is only supported between PCs utilizing the same network transport. For example, users can send a message from a PC using TCP/IP to another PC using TCP/IP as the network transport; users cannot send a message from a PC using TCP/IP to a PC using DECnet as the network transport.

#### *LAN Manager V2.0 Support*

Because the PATHWORKS for DOS V4.1 client software includes Microsoft's LAN Manager V2.0 software, the PATHWORKS for DOS (TCP/IP) client has access to the full set of LAN Manager capabilities with a PATHWORKS for OS/2 server:

- Full set of LAN Manager Application Programming Interface (API) functions (such as named pipes) which allow for the development and support of distributed applications.

**Note:** Support of distributed applications requires full API support on both the client and server system. Therefore, a LAN Manager server-client application is currently only supported between a PATHWORKS for DOS or PATHWORKS for OS/2 client and a PATHWORKS for OS/2 server.

- Net commands.
- Basic Redirector — Use the Basic Redirector to access the file and print services of a PATHWORKS for VMS, ULTRIX, and/or OS/2 server(s). The Basic Redirector supports user names (share names) up to 32 characters.
- Enhanced Redirector — Use the Enhanced Redirector to access the full LAN Manager V2.0 capabilities with a PATHWORKS for OS/2 server.

**Note:** The Enhanced Redirector supports user names (share names) up to eight characters.

#### *Task-to-Task Communications (via Socket Library)*

A Berkeley Software Distribution (BSD) V4.3 compatible socket library is included. It allows developers to easily develop or port UNIX® - style socket applications to their PCs running PATHWORKS for DOS (TCP/IP).

#### *Memory Savings Techniques*

PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) software supports several techniques for saving conventional PC memory. By using these techniques, additional conventional PC memory becomes available for user applications.

- Several network components can be optionally loaded into expanded memory simultaneously. For 80386 and 80486 Intel™ processors, the PC must be configured with a user-supplied Expanded Memory Specification (EMS), V4.0 software driver. For

8088, 8086, and 80286 Intel processors, the PC must be configured with both a user-supplied EMS, V4.0 software driver and hardware.

- The LAN Manager Basic Redirector (if using either the PATHWORKS for DOS V4.0 or V4.1 client software) can be loaded into the High Memory Area (HMA) portion of extended memory.

The Enhanced Redirector (if using PATHWORKS for DOS V4.1 client software) can be loaded into HMA or into Expanded Memory (EMS). Users should use the Enhanced Redirector to take advantage of the full LAN Manager capabilities in conjunction with a PATHWORKS for OS/2 server.

The configuration must have a minimum of 64KB of extended memory (if either redirector is loaded in extended memory) and either the Digital-supplied driver, HIMEM.SYS, or a vendor-supplied high memory manager which supports Extended Memory Specification (XMS), V2.06.

- Provides the ability to unload several network components from either conventional or EMS memory. The exact amount of conventional memory available for user applications will vary depending on:
  - Availability and size of EMS drivers
  - Whether the LAN Manager Basic or Enhanced Redirector is used and what portion of memory they are loaded into
  - Whether an Ethernet or Token Ring controller is used
  - NDIS driver size
  - DOS version
  - Parameters and drivers specified in CONFIG.SYS and PROTOCOL.INI
  - Other features of the TCP/IP network environment that may be loaded, such as TELNET, SOCKETS
  - Other Terminate and Stay Residents (TSRs) that may be loaded

PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) software supports the use of Expanded Memory Specification (EMS) applications that are V4.0 compliant. Every effort has made to ensure the software adheres to the EMS, V4.0 specification. However, individual applications may have interpreted the specification differently and, therefore, may not function in Digital's PATHWORKS for DOS (TCP/IP) network environment.

Background EMS applications are usually device drivers and terminate and stay resident programs (TSRs). When PATHWORKS for DOS software is loaded into EMS with other background EMS applications, unpredictable results may occur.

Some EMS drivers and disk caching programs provided by PC vendors may conflict with HIMEM.SYS which provides XMS support.

#### *Installation and Configuration Utilities*

PATHWORKS for DOS includes an automated installation procedure to install the client software to the PATHWORKS for VMS, OS/2, or ULTRIX server systems.

A DOSLOAD utility is provided to simplify management of various versions of the DOS Operating System to the PATHWORKS for VMS or ULTRIX server system.

PATHWORKS for DOS includes a configuration utility, NETSETUP, which guides the user through the configuration process using a series of screen selections and online help. The user's input to the procedure establishes the PATHWORKS for DOS node's network configuration and copies the startup software to the key disk. NETSETUP has two operational modes depending upon the configuration choices desired. In many cases, defaults can be selected for fast and easy configuration.

**Note:** If either Token Ring or LAN Manager V2.0 functionality is desired, the NETSETUP utility contained in the PATHWORKS for DOS V4.1 client software must be used to configure the client system.

#### *PC DECwindows Motif*

PC DECwindows Motif is an MS-DOS application. It implements an X server that uses the industry-standard Release 4 of the X Window System, V11 (X11), protocol. An X Window System application, such as a DECwindows application, executing on a remote VMS, ULTRIX system with TCP/IP may be displayed on and receive keyboard and mouse input from the personal computer.

Only one transport, either DECnet or TCP/IP, is supported at any one time regardless of the number of applications running in various windows.

PC DECwindows Motif is only supported on Intel 80286, 80386, and 80486 machines listed in the System Support Addendum (SSA 33.45.02-x). Use:

- DWDOS286 for Intel systems with 80286, 80386, and 80486 processors
- DWDOS386 for Intel systems with 80386 and 80486 processors

PC DECwindows Motif requires additional extended memory over and above the conventional, EMS, and XMS memory required by the other components of the PATHWORKS for DOS (TCP/IP) product.

A minimum of 1 MB of system memory must be free and accessible to start PC DECwindows Motif after configuring the system with the required PATHWORKS network components. This memory may be made up of free conventional and extended memory.

Between 1 - 4 MB of system memory must be free and accessible to run X Window System applications. The specific amount of X Server memory required will depend on the memory requirements of the application(s) chosen by the user.

Depending on the number of X Window System applications being displayed and the memory requirements of each application, the user should test these types of configurations with PC DECwindows Motif prior to production use.

Two utilities are provided which report the amount of memory available to the X Server:

- DWINFO2 is for Intel systems with 80286, 80386, and 80486 processors and reports the amount of memory available to DWDOS286.
- DWINFO3 is for Intel systems with 80386 and 80486 processors and reports the amount of memory available to DW DOS386.

Because PC DECwindows Motif includes its own extended memory manager, it will conflict with expanded memory managers that do not support the Virtual Control Program Interface (VCPI) or the DOS Protected Mode Interface (DPMI) specification. PC DECwindows Motif may also conflict with other drivers using extended memory, such as disk caching programs and RAM drives, if their presence cannot be detected by the PC DECwindows Motif extended memory manager.

DWDOS386 is not compatible with DPMI.

**Note:** XMS memory managers are not compatible with DWDOS386 server if using the PATHWORKS for DOS V4.0 client software.

DECwindows and X Window System applications that do not take into account the PC hardware characteristics (such as screen resolution, screen aspect ratios, keyboard layouts, and number of mouse buttons) can not function optimally with a PC as a display server.

In addition to the supported VMS and ULTRIX DECwindows window managers, Digital provides a VMS window manager designed specifically for PC screens that allows users to move windows off the top of the screen.

**Note:** The VMS window manager will be discontinued with the next release of this product.

A configuration utility, DWCONFIG, is provided so users can figure the X Server for their hardware and configure the user preferences parameters.

A KEYSYM compiler, DWKEYSYM, is provided so users can build custom keyboard layouts to support applications.

A font compiler, DWFONT, is provided which compiles fonts in the Adobe Bitmap Distribution Format, V2.1 into a format for the X Server.

The REXEC shell is required on the ULTRIX system to start applications from the X Server over TCP/IP.

On a VMS system with the VMS/ULTRIX Connection product, the X Server uses a TELNET login to communicate with the DECnet Remote Application Startup Program to start applications. Therefore, the DECnet Remote Application Startup Program must be installed on VMS systems with the VMS/ULTRIX Connection product.

Print Screen Support is not available while using PC DECwindows Motif.

#### *Microsoft Windows V3.0/3.00A Support*

PATHWORKS for DOS (TCP/IP) software supports Microsoft Windows, V3.0, including:

- Access to file services provided through the Microsoft Windows, V3.0 File Manager.
- Access to print services provided through the Microsoft Windows, V3.0 Control Panel.
- The ability to run the networking software in expanded memory (EMS) with Windows, V3.0 in Real, Standard, or 386 Enhanced modes.

If using Microsoft Windows, V3.0 in 386 Enhanced Mode, the Basic Redirector must be loaded into conventional memory.

EMM386.SYS is the memory manager shipped with Microsoft Windows, V3.0. PATHWORKS for DOS (TCP/IP) does not support the use of other third-party memory managers while using Microsoft Windows, V3.0.

- A windowed VT320-like terminal emulator supporting TELNET is provided (if using PATHWORKS for DOS V4.1 client software). (See Terminal Emulators section for more detail.)
- A DOS-based menu-driven utility (WIN3SETU) is provided to simplify the installation of PATHWORKS for DOS Microsoft Windows, V3.0 support software.
- A Terminal Access Library (TRMNLXAS) that provides TELNET access to Microsoft Windows, V3.0 applications is included if using PATHWORKS for DOS V4.1 client software). The library is provided for programmers who wish to write terminal emulators that execute under Microsoft Windows, V3.0.

- Programmers can program to Microsoft Windows, V3.0 with the standard socket library. The TELNET and BAPI interfaces may be used. Programs can run in a full screen, exclusive mode window if they use synchronous socket operations only. Any asynchronous calls to the socket library will produce unpredictable results.
- PIFs (Program Information Files) for most DOS-based PATHWORKS for DOS (TCP/IP) applications /utilities are provided. (These PIFs are provided as examples and should work with most configurations. The user may need to tailor them given the application mix and specific personal computer configuration.)

Only one transport, either DECnet or TCP/IP, is supported at any one time regardless of the number of windows running.

#### *Terminal Emulators*

The PATHWORKS for DOS software includes two terminal emulators that can be used in conjunction with the PATHWORKS for DOS (TCP/IP) software that allows users to establish terminal sessions with a host computer such as VMS or ULTRIX:

- VT320 for Microsoft Windows, V3.0 (A VT320-like Microsoft Windows terminal emulator if using PATHWORKS for DOS V4.1 client software) — The VT320 does not support full modem control or replaceable character sets (DRCS).
- SETHOST (A VT320-like character-cell terminal emulator) — SETHOST supports control of asynchronous modems but does not support replaceable character sets (DRCS).

Terminal sessions can be established using either a serial communications port, or through an Ethernet or Token Ring controller on the client.

**Note:** Both terminal emulators are not fully VT320 compatible; for example, SETHOST does not support double-height, double-width characters.

#### *VT320 Features for Microsoft Windows, V3.0*

The VT320 is included with the PATHWORKS for DOS V4.1 client software.

- Support for TELNET and serial terminal communication.
- User-definable color attributes, background/foreground, reverse, bold, underline.
- Support for the Microsoft Windows Clipboard to cut and paste information.
- Ability to log characters received from the host into a file.

- Ability to send characters to the host from a file instead of from the keyboard.
- Setup feature allows selection and saving of terminal characteristics.
- Printing to a Digital remote or local printer; printing may be a screen at a time or a toggle-like function may be used to print everything from the screen until the toggle is switched off.
- Digital multinational and ISO multilingual character sets and compose sequences as defined below:
  - ISO (default) — International Standards Organization character set
  - IBM extended and IBM Norway/Denmark extended character sets
  - MCS — DEC Multinational Character set
  - NRC — Supports a 7-bit National Character Replacement set of countries:

United States	German
Swiss/French	Denmark
Sweden	United Kingdom
Italy	Swiss/German
Norway	Spain
France	Finland
Canada	

- Support for scripting facilities. The script processing language enables the automation of frequently executed functions.

*SETHOST Features*

- Support for TCP/IP's TELNET protocol via the BAPI interface (BAPI is an INT 14 interface), and serial terminal communication.
- Terminal sessions can be established using either a serial communications port, or via an Ethernet or Token ring port on a supported Ethernet or Token Ring controller on the client.
- Support for a maximum of four simultaneous SETHOST sessions via TELNET. Only one session can be enabled when SETHOST uses the asynchronous communication port for an asynchronous terminal connection.
- Ability to use SETHOST with TELNET and BAPI in EMS. The TELNET protocol and the BAPI interface are dynamically loaded into EMS as needed.
- Support of asynchronous modems.
- Setup feature allows selection and saving of terminal characteristics.

- Support for the following list of character sets (but does not support replaceable character sets (DRCS)): ISO Latin-1 (ISO), DEC Multinational (MCS), DEC Technical (TCS), and the following 7-bit National Character Replacement Sets (NRCS):

ASCII	British
French	German
Italian	Spanish
Finnish	Swedish
Norwegian/Danish	Swiss
Canadian	Dutch
Portuguese	

- Support for PC code page character sets. Translation table files between the Digital character sets and the PC code page character sets (437, 865, 850, 860, 863) are used by SETHOST and MAIL to provide code page support.
- Support for scripting facilities. The script processing language enables the automation of frequently executed functions.
- Printing to a Digital remote or local printer; printing may be a screen at a time or a toggle-like function may be used to print everything from the screen until the toggle is switched off. SETHOST sessions can also be logged to a file for future examination.
- Ability to log characters received from the host into a file.
- Ability to send characters to the host from a file instead of from the keyboard.

*TCP/IP Network File Operations via FTP*

File transfer is supported via the File Transfer Protocol (FTP) utility. FTP commands can be used to perform network file operations. Once a FTP session is established to a remote host, users can choose from a wide variety of commands.

*SEDT Screen Editor*

SEDT is a text editor which allows the display and editing of a full screen of text. It may be used as the callable editor for creation of text messages within the PATHWORKS for DOS MAIL utility. The features and capabilities of SEDT include:

- Simultaneous editing of up to four files in separate buffers
- Text selection, insertion, deletion, and search
- Cut and paste capability
- Use and definition of multiple rulers, with tab, margin and justification settings

- An information line which displays the current editing modes, such as forward versus reverse search, insert versus replace, and cut and paste modes
- A file information line which displays the name of the file being edited, the current line and column position in the file, and the file buffer in use
- Customization of commands and configuration
- Definable keyboard maps

#### *Enhanced DOS Utilities*

These utilities include support for Digital's LK250 keyboard (including international versions) and Microsoft Mouse emulation, V7.0 of the Digital VSXXX-AA mouse (for use with a DEC EtherWORKS Ethernet controller that is equipped with a mouse port).

#### *Multilinguality*

Some PATHWORKS for DOS components are available in languages other than English. More than one language variant can be run from the PC without rebooting. Refer to the following SPDs for further information.

Swedish (SPD 55.17.xx)  
 Spanish (SPD 55.18.xx)  
 Dutch (SPD 55.19.xx)  
 French (SPD 55.20.xx)  
 German (SPD 55.21.xx)  
 Italian (SPD 55.22.xx)

#### *TCP/IP Network Management Facilities*

The following network management facilities are provided for system administrators to manage the TCP/IP network environment:

- PING (Packet INTERNET Groper) — An exercise program used to test the INTERNET communications channel between stations.
- ARP — An INTERNET utility that uses the Address Resolution Protocol to translate INTERNET names to INTERNET addresses.
- NETSTAT — A utility that displays network statistics. Totals of received and transmitted packets, retries, and jams (Ethernet) are counted. Data may be displayed over any time interval in seconds.

#### *Domain Name Resolver*

The Domain Name Resolver resolves network domain names to INTERNET addresses, allowing applications (for example: FTP, TELNET) to use domain names rather than INTERNET addresses. The Domain Name Resolver communicates with the domain name server to resolve names to INTERNET addresses.

#### *RFC 1001/1002 NETBIOS Interface Support*

TCP/IP supports the session level NETBIOS interface through interrupt 5C HEX. Applications written to the RFC 1001/1002 NETBIOS specification can be layered on TCP/IP. This TCP/IP network is an RFC 1001/1002 NETBIOS B-node implementation.

This allows computers running TCP/IP and NETBIOS applications to communicate with other computers running TCP/IP and RFC 1001/1002 NETBIOS applications. This feature preserves the user's investment in industry standard applications.

The NETBIOS naming service and datagram service is supported only in Ethernet LAN configurations as a B-node implementation.

The INETNAME utility is included to define remote adapter names, which allows wide-area NETBIOS connections.

**Note:** Users can program to one NETBIOS interface only.

#### *Network Device Interface Specification*

PATHWORKS for DOS and PATHWORKS for DOS (TCP/IP) networking software is Network Device Interface Specification (NDIS), V2.0.1 compatible. NDIS is a standard developed by Microsoft Corporation and 3Com® Corporation.

Digital's implementation of the NDIS standard is intended to allow users a greater choice of Ethernet or Token Ring controllers. This implementation is not intended to support the simultaneous operation of the PATHWORKS for DOS product and other vendors' networking products.

Because the PATHWORKS for DOS (TCP/IP) software is written to the NDIS interface, users can use third-party Ethernet or Token Ring controllers if accompanied by an NDIS V2.0.1 driver. Every effort has been made to ensure that the software adheres to the NDIS V2.0.1 specification. However, individual vendors' interpretation of the specification may vary and therefore may not function in Digital's PATHWORKS for DOS network environment.

The PATHWORKS for DOS product contains several NDIS drivers for the convenience of our users. The NDIS drivers are furnished "As Is", and Digital cannot be held liable for any special, indirect, incidental, or consequential damages.



*EtherWORKS Support*

PATHWORKS for DOS (TCP/IP) supports Digital's family of EtherWORKS controllers via Digital's NDIS drivers. (These drivers are included in the PATHWORKS for DOS client software package.) The family of EtherWORKS controllers include: EtherWORKS LC, EtherWORKS LC/TP, EtherWORKS MC, EtherWORKS MC TP/BNC, EtherWORKS Turbo, EtherWORKS Turbo/TP, and EtherWORKS Turbo TP/BNC.

**Note:** The Digital Ethernet NDIS drivers can also be used with previous versions of the Digital Ethernet controller family, DEPCAs.

Digital recommends the use of the Digital multi-buffered EtherWORKS controllers in networks which carry heavy traffic.

*Restrictions and Limitations*

To create a floppy key disk, a disk greater than or equal to 720KB is required for booting purposes.

Any application which does not properly mask and unmask interrupts is incompatible with this product. For example, applications which use IBM BASICA, V1.0 interpreter or compiler, or GW-BASIC, V1.0 do not unmask the interrupts when they exit. In these cases, a BASIC program must be interpreted or recompiled using a version of BASIC that would unmask the interrupts.

For IBM PC/AT compatible configurations with EGA or VGA graphics adapter, the DEPCA Revision E or later is required to utilize EMS.

Simultaneous Ethernet network activity and non-TCP/IP asynchronous communication via the asynchronous port results in character loss on the asynchronous port.

The "Autosense Mode" of the Zenith Enhanced EGA card (Z-449) is incompatible with PATHWORKS for DOS (TCP/IP) and must be disabled. Refer to the *Zenith Owner's Manual* for more information.

**HARDWARE REQUIREMENTS**

Processors and/or hardware configurations, as specified in the System Support Addendum (SSA 33.45.02-x) are supported.

PATHWORKS for DOS, V4.0 and V4.1 and PATHWORKS for DOS (TCP/IP), V1.1A software have been tested on several supported configurations (refer to SSA 33.45.02-x). If a customer problem with PATHWORKS for DOS (TCP/IP) software can be reproduced by the customer on one of these supported configurations, Digital will work the problem to resolution on these supported configurations. If the customer problem cannot

be reproduced by the customer on one of these supported configurations, it is the responsibility of the customer to resolve the issue.

**SOFTWARE REQUIREMENTS***Client Software*

If the PATHWORKS for DOS (TCP/IP) software is used in a server/client environment, the following client product is required:

PATHWORKS for DOS (SPD 55.07.xx)

*Server Support*

PATHWORKS for VMS (SPD 30.50.xx)

PATHWORKS for ULTRIX (SPD 32.44.xx)

PATHWORKS for OS/2 (SPD 55.24.xx)

Refer to the System Support Addendum for availability and required versions of prerequisite/optional software (SSA 33.45.02-x).

**ORDERING INFORMATION**

## Software Licenses:

PATHWORKS for DOS (TCP/IP): QL-YV9\*\*\*-\*\*

Prerequisite PATHWORKS for DOS: QL-0TL\*\*\*-\*\*

## Software Media and Documentation:

PATHWORKS for DOS (TCP/IP): QA-YV9\*\*-HW

Prerequisite PATHWORKS for DOS: QA-0TL\*\*\*-\*\*

## Software Documentation Licenses:

TCP/IP User's Reference: QA-YV9AA-GZ

TCP/IP Programmer's Guide: AA-PESZA-TK

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

**SOFTWARE LICENSING**

The PATHWORKS for DOS (TCP/IP) license gives the user the right to use the TCP/IP network transport software on a single DOS personal computer running PATHWORKS for DOS client software.

A PATHWORKS for DOS client license is a prerequisite (SPD 55.07.xx).

The required licenses must be obtained in advance for each system on which the PATHWORKS for DOS (TCP/IP) software is installed.

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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AV-PJEYA-TH

To PATHWORKS for DOS (TCP/IP) Customers:

Enclosed is an updated version of PATHWORKS for DOS (TCP/IP) software, Version 1.1A.

This release:

- Includes several bug fixes. (Read the online release notes for details.)
- Provides Token Ring support, in conjunction with the PATHWORKS for DOS Version 4.1 client software.
- Operates with the PATHWORKS for DOS Version 4.0 client software, if you choose not to update to PATHWORKS for DOS Version 4.1.

Depending on which PATHWORKS for DOS version you have, you may not need to use all the components contained in this release.

Refer to the following chart for guidance:

<b>If you currently have...</b>	<b>And you receive PATHWORKS for DOS (TCP/IP) V1.1A...</b>
PATHWORKS for DOS V4.0 and PATHWORKS for DOS (TCP/IP) V1.1	1. Install the utilities only if you want bug fixes.
PATHWORKS for DOS V4.0 and No connection from your DOS client to a server	1. Configure the initial connection. 2. Install the utilities.
PATHWORKS for DOS V4.1 and PATHWORKS for DOS (TCP/IP) V1.1	1. Install the utilities only if you want bug fixes.
PATHWORKS for DOS V4.1 and No connection from your DOS client to a server	1. Configure the initial connection. 2. Install the utilities.

We hope you find this release useful. We appreciate your use of Digital's PATHWORKS family of PC Integration products and look forward to your future business.

Sincerely,

Digital Equipment Corporation  
Personal Computing Systems Group  
The Makers of PATHWORKS