Software Product Description

PRODUCT NAME: VXT Software, Version 2.1 **SPD 31.34.05**

DESCRIPTION

The VXT Software supports each member of the VXT 2000 family of X Windowing Terminals. It enables a user to access data and applications on UNIX®, DEC OSF/1 AXP, ULTRIX and OpenVMS host systems by establishing one or many X Window System sessions over Ethernet using TCP/IP, DECnet or LAT protocols. Users can also create terminal emulation sessions to host systems over Ethernet using Telnet, DECnet and LAT protocols. A single terminal emulation session can be created via the VXT 2000 X Windowing Terminal serial communications port. The VXT Software is downline loaded into a VXT 2000 or 2000+ X Windowing Terminal from a host system utilizing BOOTP/TFTP or MOP protocols, or from a InfoServer utilizing LASTport protocol.

The VXT Software provides local client applications that run in the VXT 2000 X Terminal. Compared to host-based applications, local client applications improve user response time and reduce network traffic. They can also reduce host CPU loading. The following local client applications are included in the VXT Software: Terminal Manager, OSF/Motif Window Manager, Configuration Manager, DECterm Terminal Emulator, Local Application Launcher and Host Launcher. The VXT Software also supports an optional VXT 3270 TE local client.

VXT Software provides a set of fonts to support local clients. Users can also access additional fonts through an X11 R5 font server using TFTP, or directly from other host systems using TFTP, NFS or LAT. Fonts can also be stored on an InfoServer and accessed via LASTport protocol.

When VXT 2000 X Windowing Terminals load VXT Software from an InfoServer, they can take advantage of the InfoServer's virtual memory capability. In this configuration, the InfoServer's disk can be used as a shared memory resource among many VXT 2000 X Windowing Terminals.

VXT Software supports the X Imaging Extensions (XIE), which have been submitted to the X Consortium for inclusion into the X Window System standard.

Features:

Local Clients

All VXT local clients provide a menu-driven interface.

Terminal Manager - The VXT Terminal Manager provides menus to create X sessions and terminal emulation sessions to different host systems. Users can customize VXT Software features such as security, font path, communications and screen colors. The Autostart feature let users determine which VXT services will start up automatically when the VXT 2000 X Windowing Terminal is booted. The Software Options feature lets users determine which local clients and communications protocols will be available. VXT Software lets users start and stop the local execution of any local client. These two features optimize desktop resources in terms of performance and memory utilization.

Window Manager - VXT Software includes a local OSF/Motif V1.1 window manager. This window manager manages the placement and appearance of windows and icons for local and remote applications. Users can also choose to use an alternative window manager on a host system, if preferred. Users can customize the local window manager features through a graphical user interface.

Local Application Launcher - The local application launcher enables users to start local clients, service connections and remote clients via the local window manager. This is accomplished by supporting f.exec commands in the local window manager.

Host Application Launcher - The host application launchers enables users to start remote client applications from the local window manager or local terminal manager.

Terminal Emulation - A local DECterm terminal emulator is provided which is compatible with DECterm Version 3.0.

- DECterm emulates VT300 series terminals
  - — VT300 escape sequences
  - — REGIS graphics support

- Multiple LAT, DECnet and Telnet sessions are supported

Local Printing - VXT Software supports local printers connected to VXT 2000 X Windowing Terminals. Support includes:

- Local print Screen - Users can print text, graphics or sixel images on the local printer.
- Users can access the local printer from a host system. Queued LAT printer support and TCP/IP LPR support is provided.

Configuration Management - Configuration management enables users to customize VXT Software features for one or many VXT 2000 X Windowing Terminals, from one central location. VXT Software supports three configuration management options:

- Menu-driven, InfoServer based:

  When VXT 2000 X Windowing Terminals are used with an InfoServer, the Configuration Manager enables a system manager to customize and manage work groups of terminals as well as individual terminals. The customization files are stored on the InfoServer and can be copied from work group to work group and terminal to terminal. Multi level password protection is supported as well as the ability to backup customization files. This configuration management option is supported in LAN environments.

- Menu-driven, Individual Terminal:

  In LAN environments without an InfoServer, individual terminals can be customized using the Configuration Manager. No work group operations are supported, and password protection is on a per terminal basis. Customization data is stored in the terminal's NVRAM and can be copied from one terminal to another.

- Host-based configuration management:

  VXT Software can read host-based resource files using TFTP or NFS protocols. The files can include customizations for individual or groups of VXT 2000 X Windowing Terminals. Host-based resource files are standard X resource files that you create using a host editor or X Resource editor. These resource files are stored on the host system. Users have the option to apply terminal customizations from a host-based resource file. In addition, access to host based .mwmrc file is supported for remote customization of the local window manager. Host based configuration management supports WAN environments.

Font Support

Font Access

VXT Software supports X11 Server Release 5 (X11R5) Font Server which helps users centrally manage fonts in multi-X server environments.

VXT Software can access fonts from:

— X11R5 font servers using TFTP.

— UNIX hosts using NFS and TFTP

— OpenVMS hosts using LAT

— InfoServers using LASTport

All fonts are accessed via a font path. Users can create font paths that include multiple sources (host systems, InfoServers, and X11R5 font servers) and protocols. This enables users to access fonts concurrently using any combination of NFS, TFTP, LASTport, LAT and TCP/IP. There are 18 default memory resident fonts.

The alias mechanism, font.alias is supported for NFS and TFTP. For LASTport, a font path is a list of services specifying LASTport font sets. This use of services allows fonts paths to failover to services offering the same name in the event of a lost connection to a service.

Font Management

Each font access protocol requires the font to be in a specific format:

— OpenVMS SNF for LAT

— PCF (little and big endian) for NFS and TFTP

— VXT fonts sets on an InfoServer for LASTport

For NFS and TFTP hosts, a font compiler is provided to convert BDF files to PCF format. In order to install the font compiler, the host system must have the necessary X11 header files.

For LAT hosts, all fonts must be converted to OpenVMS SNF using the font compiler provided with DECwindows.

For LASTport, users can create fonts sets on an InfoServer using the VXT Font Manager. Users can create fonts sets that include PCF fonts available through TFTP and OpenVMS SNF fonts through LAT. The facility to manage LASTport font sets is available only when VXT Software is used with the InfoServer.

Establishing X Sessions

VXT Software provides several methods to create X sessions:

— through Create X session options in the VXT Terminal manager,

— from the Autostart feature in the VXT Software,

— by directly addressing the terminal from a host originated client.

VXT Software supports X window clients accessing the terminal using TCP/IP, LAT Service Class 3 and DECnet Phase IV transports. Access can be restricted for each of these protocols using the Customize Security feature of the VXT Software Terminal Manager. For suitably configured hosts, the VXT allows a user to create an X session from the terminal. For TCP/IP X sessions, VXT Software uses XDMCP which requires XDM (X Display Manager) on the host. For LAT X sessions, a host must support LAT Service Class 3. For DECnet X sessions, a DECnet object must be present on the host that can display the Login box. The DECnet object is supplied for OpenVMS with the VXT host software.

Establishing Terminal Sessions

Terminal sessions can be created by using either the Create Terminal Session in the VXT Terminal Manager or using the Autostart feature. VXT Software provides DECterm V3.0 terminal emulation for terminal sessions.

VXT Software supports terminal sessions over TCP/IP, LAT, DECnet Phase IV and serial lines as follows:

- LAT Service Class 1 terminal connections to LAT hosts
- Telnet terminal connections for TCP/IP environments
- CTERM for hosts supporting DECnet Phase IV
- RS232C serial connection with full modem control

Network Protocol Support

Downline loading of VXT terminal software using:

- BOOTP and TFTP in the ROM of the VXT 2000 family
- MOP V3.0 and MOP V4.0 provided in the ROM of the VXT 2000 family
- LASTport V3.1 used with VXTLDR supplied with VXT Software

Internet Suite Protocol Support

- Full implementation of IP, ICMP, UDP and TCP for Ethernet
- TFTP, NFS for accessing fonts
- X server transport over TCP/IP
- XDMCP over UDP for creating X sessions
- Telnet for creating terminal sessions
- RIP for dynamic routing
- PING for testing availability of host systems
- BIND Domain Name Support
- SNMP MIB-II support
- GET and GET-NEXT support to remotely monitor windowing terminal
- Determine IP address

DECnet Support

- DNA compliant Phase IV end node
- X server over DECnet
- Creation of X sessions to remote DECnet hosts
- CTERM for creating terminal sessions
- Automatic Name translation using Network Information and Control Exchange (NICE) protocol for X sessions and CTERM connections
- Remote node level loopback to Mirror object for testing connectivity
- Remote Network Management to NML Object (for example, Show Executor)
- MOP listener V3.0 (includes MOP trigger support to remotely restart VXT)
- Use MOP listener (LAN only), and loop node (Mirror), and Show Executor

LAT Support

- Full implementation of LAT protocol V5.2 with delayed acknowledgment
- LAT Service class 1 for terminal sessions and remote access to local serial and parallel ports
- LAT Service Class 3 for X protocol transport
- LAT Service Class 4 for font access with OpenVMS VAX LAT font daemon

LASTport

- Full implementation of LASTport 3.1
- Downline loading of VXT system image via VXTLDR
- Demand paging of system image
- Workgroup and terminal configuration management
- Access to VXT font sets and local clients

X Window Server (Supports systems with X11 R5 compliant applications)

- Multiple X sessions supported with TCP/IP and/or LAT Service Class 3 and/or DECnet Phase IV
- XDMCP
- Backing store (Never, when requested by application)
- Server reset (Customizable for reset, reboot, ignore)
- X server extensions (XTRAP, XSME, XIE, shape)

VXT Software enables the VXT user to use the X Image Extensions (XIE) as proposed to the X Consortium. The X Imaging Extensions are delivered in two modes:

- Software XIE - VXT Software implements the full set of functions of the proposal that is being reviewed by the MIT X consortium. The functionality includes:
  - — Decompression
  - — Zooming
  - — Rotating images
  - — Convolution modification
- When the DECimage accelerator option board is installed in the VXT 2000, the software automatically senses its existence, thus providing the accelerated bitonal imaging capability.

Virtual Memory

When VXT Software is used with an InfoServer, the VXT 2000 family of windowing terminals can use a network served virtual disk as an extension to the physical memory of the VXT 2000 terminal. The LASTport is an optimized protocol is used for paging to the networked storage server.

VXT EX (Essential X Server) Software

The is a server-only variant of the VXT Software that supports X11R4 server software. It has no local clients. The first time a user boots, VXT EX will prompt the users for which systems they would like to connect to for X sessions specifying the protocol and the single system for font access. Once supplied, every subsequent reboot "autoconnects" to the specified systems.

HARDWARE REQUIREMENTS

Digital Processors Supported — Load Host for System Image

For OpenVMS VAX Systems

VAX:
VAXft Model 110,
VAXft Model 310,
VAXft Model 410,
VAXft Model 610,
VAXft Model 612

VAX 4000 Model 100,
VAX 4000 Model 200,
VAX 4000 Model 300,
VAX 4000 Model 400,
VAX 4000 Model 500,
VAX 4000 Model 600

VAX 6000 Model 200 Series,
VAX 6000 Model 300 Series,
VAX 6000 Model 400 Series,
VAX 6000 Model 500 Series,
VAX 6000 Model 600 Series

VAX 7000 Model 600 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 300 Series,
VAX 9000 Model 400 Series

VAX 10000 Model 600 Series

VAX–11/730, VAX–11/750,
VAX–11/780, VAX–11/785

MicroVAX:
MicroVAX II, MicroVAX 2000,
MicroVAX 3100 Model 10/10E,
MicroVAX 3100 Model 20/20E,
MicroVAX 3100 Model 30,
MicroVAX 3100 Model 40,

MicroVAX 3100 Model 80,
MicroVAX 3100 Model 90,
MicroVAX 3300, MicroVAX 3400,
MicroVAX 3500, MicroVAX 3600,
MicroVAX 3800, MicroVAX 3900

VAXstation: VAXstation II, VAXstation 2000,
VAXstation 3100 Model 30,
VAXstation 3100 Model 38,
VAXstation 3100 Model 40,
VAXstation 3100 Model 48,
VAXstation 3100 Model 76,
VAXstation 3200, VAXstation 3500,
VAXstation 3520, VAXstation 3540

VAXstation 4000 Model 60,
VAXstation 4000 Model 90,
VAXstation 4000 VLC

VAXserver: VAXserver 3100 Model 10/10E,
VAXserver 3100 Model 20/20E,
VAXserver 3300, VAXserver 3400,
VAXserver 3500, VAXserver 3600,
VAXserver 3602, VAXserver 3800,
VAXserver 3900

VAXserver 4000 Model 200,
VAXserver 4000 Model 300,
VAXserver 4000 Model 500

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,
VAXserver 6000 Model 610,
VAXserver 6000 Model 620,
VAXserver 6000 Model 630

Processors Not Supported

MicroVAX I, VAXstation I, VAX–11/725, VAX–11/782, VAXstation 8000

For OpenVMS AXP and DEC OSF/1 AXP Systems

Alpha AXP: DEC 3000 Model 300 AXP Workstation,
DEC 3000 Model 300L AXP Workstation,
DEC 3000 Model 400 AXP Workstation,
DEC 3000 Model 400 AXP Server,
DEC 3000 Model 500 AXP Workstation,
DEC 3000 Model 500 AXP Server,
DEC 3000 Model 600S AXP Server,
DEC 3000 Model 800S AXP Server

DEC 4000 Model 610 AXP System

DEC 7000 Model 610 AXP System

DEC 10000 Model 610 AXP System

For ULTRIX Systems

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 210,
VAX 9000 Model 410,
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 100, 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

Personal DECstation 5000 Model 20/25 HX,
Personal DECstation 5000 Model 20/25 MX,
Personal DECstation 5000 Model 20/25 TX,
Personal DECstation 5000 Model 20/25 PXG+,
Personal DECstation 5000 Model 20/25 PXG Turbo+

DECstation 5000 Model 120/125/133 CX,
DECstation 5000 Model 120/125/133 HX,
DECstation 5000 Model 120/125/133 MX,
DECstation 5000 Model 120/125/133 PX,
DECstation 5000 Model 120/125/133 TX,
DECstation 5000 Model 120/125/133 PXG,
DECstation 5000 Model 120/125/133 PXG+,
DECstation 5000 Model 120/125/133 PXG Turbo,
DECstation 5000 Model 120/125/133 PXG Turbo+

DECstation 5000 Model 200 CX,
DECstation 5000 Model 200 HX,
DECstation 5000 Model 200 MX,
DECstation 5000 Model 200 PX,
DECstation 5000 Model 200 TX,
DECstation 5000 Model 200 PXG,
DECstation 5000 Model 200 PXG+,
DECstation 5000 Model 200 PXG Turbo,
DECstation 5000 Model 200 PXG Turbo+

DECstation 5000 Model 240 HX,
DECstation 5000 Model 240 MX,
DECstation 5000 Model 240 TX,
DECstation 5000 Model 240 PXG+,
DECstation 5000 Model 240 PXG Turbo+

DECsystem: DECsystem 3100,
DECsystem 5000 Model 200,
DECsystem 5100, DECsystem 5400,
DECsystem 5500, DECsystem 5810,
DECsystem 5820, DECsystem 5830,
DECsystem 5840

Processors Not Supported

MicroVAX I, VAXstation I, VAX–11/725, VAX–11/782, VAXstation 8000

Other Processors Supported—Host Based Option for VXT System Image

- Hewlett-Packard® Apollo® Series 700 with HP®-UX V8.05
- Sun® 4 system SPARCstation™ 2 with SunOS V4.1.1, V4.1.2
- IBM® RS/6000 with AIX® V3.1, V3.2
- X86 processors running SCO® UNIX™ V3.2.2

Hardware Requirements for X Terminal Server Based Option

- InfoServer 150VXT/InfoServer 100 for VXT (minimally supports twenty VXT 2000 terminals) with InfoServer Software V2.2 or V3.0 and VXT Software V2.1
- InfoServer 100/150/1000 with InfoServer Software V2.2, V3.0 and VXT Software V2.1 (minimally supports eight VXT 2000 terminals)
- VXT 2000 terminal with minimum of 4MB memory (if XIE option is installed, minimum of 6MB memory)
- VT1300 with minimum of 4MB memory (if XIE option is installed, minimum of 8MB of memory)

Hardware Requirements for Host Based Option

- Host load system as previously specified
- VXT 2000 terminal with minimum of 10MB memory (if XIE option is installed, 12MB of memory is required)

Processor Restrictions

A TK50 Tape Drive is required for standalone MicroVAX 2000 and VAXstation 2000 systems.

Other Hardware Required

- Ethernet connection

Other Hardware Supported

- Attached printers supported: LA50, LA75 Companion Printer, LA75 PLUS, LN03 PLUS, LA424, ScriptPrinter, LJ250 DEC ColorWriter, LA324 Multiprinter, DEClaser family of printers, ColorMatePS
- Attached mouse port device supported: VSXXX-AB Tablet with stylus and puck
- Additional memory may be added to VXT up to 18MB with 4MB SIMMs (16MB limit in integrated VXT units)
- DECimage hardware option for VXT 2000

Disk Space Requirements (Block Cluster Size = 1):

For OpenVMS Environment

Disk space required for installation:	70,000 blocks
Disk space required for use (permanent):	70,000 blocks

For ULTRIX Environment

Disk space required for installation:	50 Mb
Disk space required for use (permanent):	50 Mb

For UNIX® Environment

Disk space required for installation:	50 Mb
Disk space required for use (permanent):	50 Mb

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VMScluster* configuration without restrictions. The *HARDWARE REQUIREMENTS* sections of this product's Software Product Description and System Support Addendum detail any special hardware required by this product.

* VMScluster configurations are fully described in the VMScluster Software Product Description (29.78.xx).

SOFTWARE REQUIREMENTS

One of the following for system containing load image:

- OpenVMS VAX Operating System V5.3 - V6.0
- OpenVMS AXP Operating System V1.5
- DEC OSF/1® AXP Operating System V1.2
- ULTRIX Operating System V4.2, V4.3, V4.3A
- SunOS V4.1.1, V4.1.2 (requires local BOOTP daemon)
- HP-UX V8.05
- IBM AIX V3.1, V3.2
- SCO UNIX V3.2.2
- InfoServer Software V2.2

One of the following systems for the following operations:

Operation	Operating System	Communications Protocol
Establishing	ULTRIX V4.1 or later	LAT Telnet DECnet Phase IV
Terminal Session	OpenVMS VAX V4.6 or later	LAT DECnet Phase IV
	OpenVMS AXP V1.5	LAT DECnet Phase IV
	DEC OSF/1 AXP V1.2	Telnet LAT
	AIX V3.1, V3.2 HP-UX V8.05 SCO UNIX V3.2.2 SunOS V4.1.1, V4.1.2	Telnet
Establishing	OpenVMS VAX V5.3-1 or later. DECwindows Motif for OpenVMS V1.1 or later is required for OpenVMS V6.0 or later.	LAT (LAT-master recommended for performance improvements)
		DECnet Phase IV
	OpenVMS AXP V1.0 DECwindows Motif for OpenVMS V1.1 or later is required for OpenVMS V6.0 or later.	DECnet Phase IV LAT
	DEC OSF/1 AXP V1.2	TCP/IP
X Window Session	AIX V3.1, V3.2 HP-UX V8.05 SCO UNIX V3.2.2 with ODT V2.0 SunOS V4.1.1, V4.1.2 (X11 R4 compliant)	TCP/IP
	ULTRIX V4.2	TCP/IP DECnet Phase IV
Font Services	OpenVMS VAX V5.4-2	LAT
	OpenVMS AXP V1.5	LAT
	DEC OSF/1 AXP V1.2	TFTP, NFS

Operation	Operating System	Communications Protocol
	AIX V3.1, V3.2 HP-UX V8.05 SCO UNIX V3.2.2 SunOS V4.1.1, 4.1.2	TFTP, NFS
	ULTRIX V4.1 or later	TFTP, NFS
	InfoServer Software V3.0	LASTport
Remote Print Services	OpenVMS VAX V4.6 or later	LAT
	OpenVMS AXP V1.5	LAT
	DEC OSF/1 AXP V1.2	LAT
	ULTRIX V4.1 or later	LAT TCP/IP

DECprint Supervisor (DCPS) for OpenVMS V1.0 is recommended to manage network file printing to a locally attached Digital printer.

DECwindows Motif for OpenVMS must be installed on host systems with OpenVMS VAX V6.0 Operating System for the following operations:

- to create X sessions to the OpenVMS host
- to use the Host Application Launcher from the OpenVMS host

Open VMS Tailoring

For OpenVMS 5.x systems, the following OpenVMS classes are required for full functionality of this layered product:

- OpenVMS Required Saveset
- Network Support
- Secure User Environment
- Utilities

OPTIONAL SOFTWARE

DECprint Supervisor (DCPS) is recommended software to manage network file printing to locally attached Digital printers.

GROWTH CONSIDERATIONS

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

SOFTWARE LICENSING

The VXT Software is installed on a load host and downline loaded into the VXT 2000 or VT1300 X Terminal; the VXT Software license applies to the X Terminal on which the software is executed, not the host CPUs in the network.

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.

License Management Facility

This software does not provide support for the VMS License Management Facility. A Product Authorization Key (PAK) is not required for the installation or use of this version of the product.

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.

DISTRIBUTION MEDIA

9-track 6250 BPI Magtape, TK50 Streaming Tape, QIC24 Cartridge, 4mm DAT Tape Cartridge, CD-ROM

Note: QIC24 cannot be used with Hewlett-Packard tape drives.

ORDERING INFORMATION

Software License: QL-XNGA9-AA
Software Media: QA-XNGA*-**
Software Product Services: QT-XNGA*-**

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

The above information is valid at time of release. Please contact your local Digital office for the most up-to-date information.