VXT Software Version 2.1

Installation And System Management

Order Number: AA–PJHFE–TE

January, 1994

This document describes installation and system management tasks for VXT software, used with VXT 2000 windowing terminals. The document applies to VXT Version 2.1 software and all maintenance updates throughout that version. You can install VXT software on any of the following operating systems:

InfoServer Version 2.2
OpenVMS VAX Version 5.4–2
OpenVMS AXP Version 1.5
ULTRIX Version 4.2
DEC OSF/1 AXP Version 1.2
SunOS Version 4.1.2
HP–UX Version 8.05
IBM AIX Version 3.1
SCO ODT Version 1.1
SCO ODT Development System Version 1.1

Internet Address for Reader Comments

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About This Guide

Purpose

This guide describes installation and system management tasks for VXT Version 2.1 software, used with VXT 2000 windowing terminals. You can install VXT Version 2.1 software on a variety of operating systems.

VXT Software

VXT software is the system image for VXT 2000 windowing terminals. The software lets you create, configure, and manage X window, VXT DECterm, and VXT 3270 terminal window sessions on a variety of hardware and operating systems, using a Motif window environment.

You can choose host-based or server-based operation. In host-based operation, terminals download a VXT Version 2.1 system image from a host computer system. In server-based operation, terminals download a VXT Version 2.1 system image from one of Digital's InfoServer 100, 150, or 1000 systems.

Who Should Use This Guide

This guide is for software installers and system managers. The guide assumes that you are familiar with performing system management functions on your operating system, such as setting system privileges and process account quotas. The guide describes how to install and manage VXT Version 2.1 on the following systems:

Operating System	Version Number (or later)
InfoServer	2.2
OpenVMS VAX	5.4–2
OpenVMS AXP	1.5
ULTRIX	4.2
ULTRIX workstation (UWS)	4.1
DEC OSF/1 AXP	1.2
DEC OSF/1 worksystem	1.2
SunOS	4.1.2

Operating System	Version Number (or later)
HP–UX	8.05
IBM AIX	3.1
SCO ODT	1.1
SCO ODT Development System	1.1

Keep this document with your distribution kit. You will need it to install maintenance updates or to reinstall VXT software for any other reason.

Organization

This guide is divided into sections that cover VXT installation and system management on different operating system platforms. The overview section describes some general system requirements for running VXT software and provides sample system configurations.

Each section includes a table of contents and index. A master index and glossary is included at the end of the guide.

Read the overview...

- **VXT Software: System Management Overview**

Read the section for your system...

- **VXT Software on InfoServer Systems**
- **VXT Software on OpenVMS Systems**
- **VXT Software on ULTRIX Systems**
- **VXT Software on DEC OSF/1 AXP Systems**
- **VXT Software on SunOS Systems**
- **VXT Software on HP–UX Systems**
- **VXT Software on IBM AIX Systems**
- **VXT Software on SCO ODT Systems**

Read how to configure terminals...

- **VXT Software: Managing Terminals and Work Groups**

Refer to appendixes, glossary and index...

- **VXT Software Appendixes**

Related Documents

The following documents on VXT software and VXT 2000 windowing terminals are available from Digital:

Document	Order Number
VXT Software Version 2.1 Release Notes	AA–PKSWE–TE
VXT 2000+/VXT 2000 Windowing Terminal Installing and Getting Started	EK–VXT20–IN
VXT 2000+/VXT 2000 Windowing Terminal User Information	EK–VXT20–UG
VXT 2000+/VXT 2000 Windowing Terminal Release Notes	EK–VXT20–RN

Comments?

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When making comments, please include the manual title and part number listed on the front cover. For specific comments, please include a page number, section number, or section title for reference.

Conventions

This guide uses the following conventions:

Convention	Meaning
VXT 2000 windowing terminal	Refers to all models of the VXT 2000 windowing terminal.
UNIX based systems	Refers to ULTRIX, DEC OSF/1 AXP, SunOS, HP–UX, IBM AIX, SCO ODT, and other UNIX based operating systems.
Return	Key names appear in a box.
Ctrl *x*	For control key sequences, you hold down the Ctrl key and press another key.
Bold text	In command examples, bold text indicates user input. For example: `* Are you ready?` **YES**
[ ]	In installation examples, square brackets enclose default answers. In command examples, square brackets enclose options.
Caution	Provides information to prevent damage to equipment or software.
Note	Provides general information about the current topic.
Index entries	In the index, the following abbreviations are used: (CM) for Configuration Manager (TM) for Terminal Manager
UNIX Based System Conventions	
UPPERCASE and lowercase	UNIX based systems differentiate between lowercase and uppercase characters. Enter commands exactly as shown.
%	The default user prompt is your system name followed by a right angle bracket (>). In this guide, a percent sign (%) is used to represent this prompt in UNIX.
#	A number sign is the default superuser prompt.
OpenVMS System Conventions	
UPPERCASE characters	In command examples, uppercase characters represent elements of a command that you should enter exactly as shown.
Lowercase characters	In command examples, lowercase characters represent elements of a command for which you supply a value. For example: VMSINSTAL saveset-name device-name

1

VXT Software: System Management Overview

Chapter Overview

This chapter introduces VXT software concepts and lists some general system requirements to help you plan and manage your VXT network configuration.

The following sections of this guide describe how to install and set up VXT software on different types of host operating systems. After you read this chapter, refer to the appropriate section for your host system.

1.1 VXT Software Concepts

X Window System

VXT software provides a downloadable system image for VXT 2000 windowing terminals in a network. VXT software is based on the X Window System developed at the Massachusetts Institute of Technology.

The X Window System uses a standard client–server model. An X server in the terminal sends your keyboard and mouse information over the network to client applications running on host systems. The clients send back requests to display graphic information in windows on the terminal. You can also use local clients that run on the terminal.

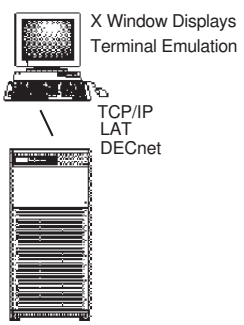
VXT Version 2.1 software implements the X Version 11 Release 5 (X11R5) server.

Host- or Server-Based Operation

VXT 2000 windowing terminals download VXT software from a host system or one of Digital's InfoServer systems. InfoServer systems offer some memory and work group management features. See Sections 1.1.1 and 1.1.2 for an overview of host-based and server-based configurations.

X Window or Terminal Window Sessions

The VXT 2000 windowing terminal lets users access hosts running a range of operating systems, including the OpenVMS, ULTRIX, DEC OSF/1 AXP, SunOS, HP–UX, IBM AIX, and SCO ODT operating systems.



Users can create multiple X window sessions or terminal window sessions on hosts.

- In **X window sessions**, users can access X applications on host systems. Applications run on the host and send X window requests over the network to the terminal, where the applications are displayed.

- **Terminal window sessions** provide a DECterm (VT320) or 3270 terminal emulator and graphics support, allowing users to run traditional terminal applications. The VXT 3270 terminal emulator requires a separate license and access to a DECnet/SNA gateway.

Network Protocols

VXT software supports several industry-standard network protocols for X displays and direct terminal access. Supported protocols include the transmission control protocol/Internet protocol (TCP/IP), LAT protocol, and DECnet protocol. See Section 1.2 to determine your network protocol requirements.

Downloading Process

When you power up the terminal, it tries several methods to download a VXT system image from a host system or an InfoServer system (Section 1.3). The downloading process includes booting the VXT software. **Booting** means to initialize software and bring it to an operable state.

Fonts

The terminal downloads fonts from a host system, font server, or an InfoServer system. Each VXT software kit provides a set of fonts and font utilities. You can specify font paths to additional fonts on a host system, font server, or InfoServer system. See Section 1.4 to determine font requirements.

VXT Software (with Clients)

You can download full-function VXT software or a workstation companion version, called VXT EX (essential X server) software.

VXT software includes **local VXT clients**, such as the terminal manager and a Motif window manager. You can conserve terminal memory by customizing terminals to load only those clients you plan to use. See Section 1.6.

See Section 1.3.5 for a list of system image files and some naming conventions that simplify file maintenance.

VXT EX Software (Without Clients)

The VXT EX system image is a clientless version of VXT software. It lets you use a VXT 2000 windowing terminal with minimal memory to make X window connections to host systems. VXT EX software

- Supports X session connections only
- Supports the TCP/IP and LAT protocols only
- Works with a minimum of 4 MB of terminal memory installed
- Requires host-based clients for window management and terminal emulation
- Does not support printing from a host to the terminal's printer
- Requires a mouse or pointing device

Terminal Resource Files, Customizations, and the Configuration Manager

A VXT 2000 windowing terminal stores the user's customized operating settings (**customizations**) in a **native resource file**. You can use the terminal's **configuration manager** to centrally manage the settings for all the VXT 2000 windowing terminals in your network. Users can customize settings from their terminal, unless you lock the settings in the configuration manager.

In TCP/IP environments, you can manage terminals from a host system by creating your own **host-based resource files**.

See Section 1.5 for a brief overview. For details, see the *Managing Terminals and Work Groups* section of this guide.

Local and Remote Application Launching

The Terminal Manager window provides a Create dialog box for connecting to host systems, starting local VXT clients, or starting remote applications on host systems.

Users can also define commands in the terminal's Motif window manager to start connections or applications from menu items, keyboard key sequences, or mouse buttons. This method is called **application launching**. In TCP/IP environments, users can also launch local VXT clients remotely from a host system.

Before launching a remote application, users must run the VXT application launcher. After installing VXT software, notify users of the launcher's name and location. See the system management chapter for your host operating system in this guide. *VXT 2000+/VXT 2000 Windowing Terminal User Information* describes how to launch applications.

Printer Port Access

VXT software supports remote access of the serial and parallel ports on VXT 2000 terminals, using the TCP/IP or LAT transports.

1.1.1 Host-Based Configurations

In host-based configurations, a VXT 2000 windowing terminal downloads a VXT system image directly from a host system in one step. The downloading process occurs each time you power up or reboot the terminal. You must perform some system management tasks at the host before users can access services at their terminals.

Customizations in Local Memory

All VXT 2000 windowing terminals load their VXT system image into the terminal's memory. Host-based terminals also use the terminal's nonvolatile memory (NVRAM) to store the native resource file with the user's customizations . You can use the terminal's configuration manager to centrally manage individual terminals.

Customizations on the Host

In a TCP/IP environment, you can centrally manage terminals from a host system instead of from the configuration manager. To do this, you create host-based resource files for individual terminals or groups. You can include multiple files within composite resource files.

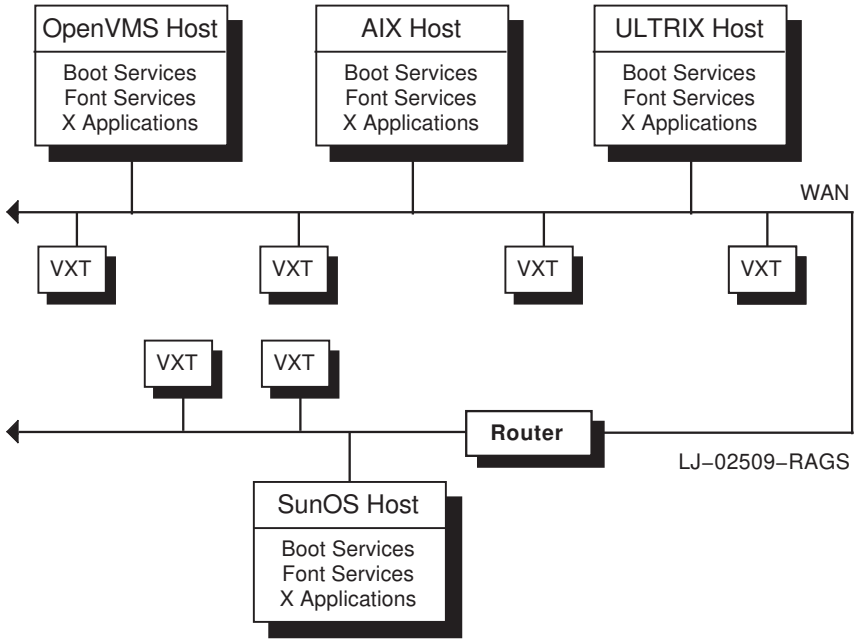
Typical Use

You may choose host-based operation for networks with a small number of terminals, where users prefer to manage their own terminal customizations. However, you can centrally manage terminals through the terminal's configuration manager or your own host-based resource files.

Terminals in routed networks typically must use host-based mode, because server-based terminals use the nonroutable LASTport /Disk protocol to access services on an InfoServer system. This restriction does not apply if you have an InfoServer system in the same LAN segment as the terminals.

Example: Host-Based Configuration

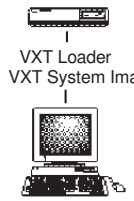
The following figure shows a sample host-based configuration in which hosts provide terminals with boot, font, and application services. The terminals use Digital's maintenance operation protocol (MOP) or the boot protocol/trivial file transfer protocol (BOOTP/TFTP) to load the VXT system image; they use TFTP, or NFS protocol to access fonts.



1.1.2 Server-Based Configurations

In server-based configurations, VXT 2000 windowing terminals load their VXT software and fonts from one of Digital's InfoServer systems. An InfoServer is a high-performance virtual disk server that can efficiently download software to many terminals. InfoServer 150 VXT systems have VXT software preinstalled at the factory.

The server-based model provides true plug-and-play operation. Users can unpack, power up, and use VXT 2000 windowing terminals without performing any system management tasks.



When you power up a server-based VXT 2000 windowing terminal, it downloads VXT software in two steps.

1. The terminal solicits for an InfoServer system to download a VXT loader file, using the MOP protocol.

   If the InfoServer system is in a different Ethernet segment than the terminal, you can download the VXT loader file from a host system.

2. The VXT loader then uses the LASTport/Disk protocol to download the VXT system image from the InfoServer system.

A single InfoServer system can handle up to 100 simultaneous downloads and perform these operations more efficiently than host-based loaders, which usually start processes to assist in the loads.

Virtual Memory

Server-based terminals can operate with a minimum amount of 4 MB of memory installed, because they can use an InfoServer system's virtual disks for memory paging services.

Typical Use

Server-based configurations are appropriate for networks with large numbers of terminals that typically require central management.

Customizations on an InfoServer

Server-based terminals store user customizations in a native resource file on an InfoServer system rather than in local memory. You can use the terminal's configuration manager to centrally manage server-based terminals. You can create terminal work groups and InfoServer font sets. When you power up or reboot terminals, they access their terminal and work group resource files from the InfoServer system.

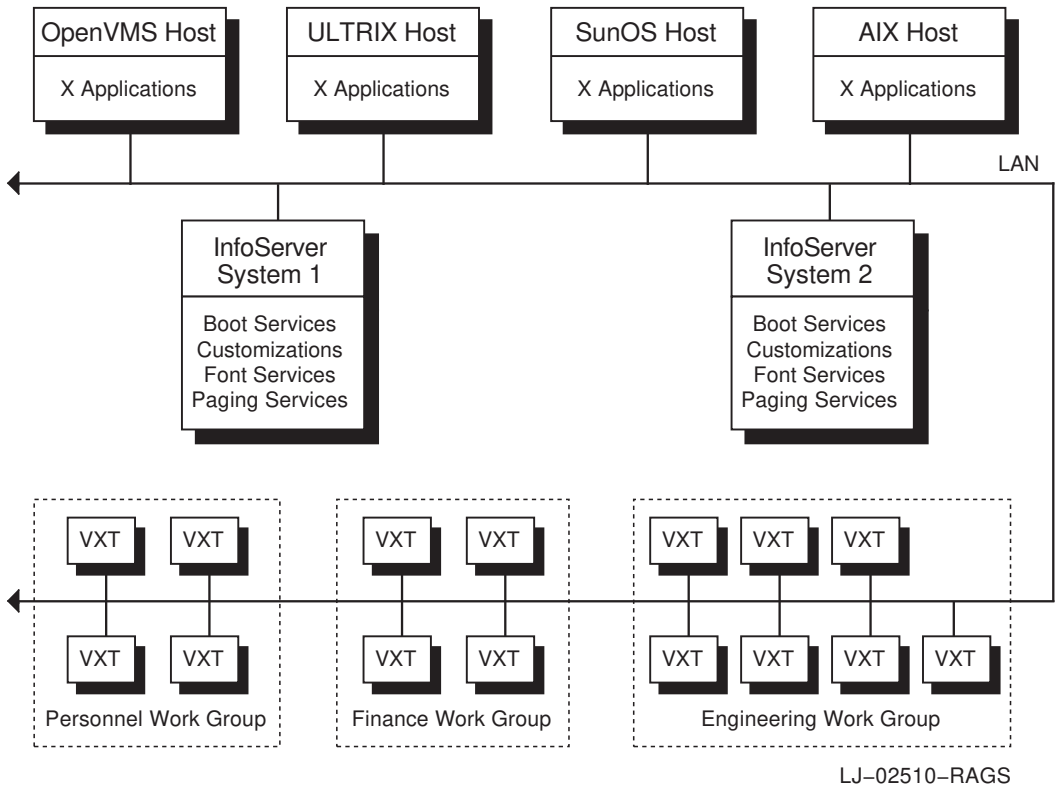
Terminals can dynamically create native resource files on an InfoServer system. For example, when a user saves customized terminal settings, the InfoServer system automatically creates a disk partition to hold the information and creates a network service name for that partition. The user can recall the saved customizations at any time, even after rebooting the terminal.

Booting and Font Services

InfoServer systems provide services such as booting and font access, so there is reduced system demand on application hosts. As a result, users can experience enhanced performance.

Example: Server-Based Configuration

The following figure shows a possible server-based configuration. One InfoServer system provides services and stores customizations for the small Personnel and Finance work groups, while the other system supports the larger Engineering work group. Users in all three work groups can access X applications on all hosts.



1.2 Managing Network Protocols

Protocols Used

The X windowing protocol and VXT DECterm terminal emulator need a network transport to communicate with hosts. Digital provides the DECnet, LAT, and TCP/IP transports. For terminal emulation, the DECnet Cterm and Telnet protocols are available. For font access NFS, TFTP, and LASTport are available.

When users create a session from the Terminal Manager window's Create dialog box, they choose from a list of transports. A dimmed entry indicates the transport is not enabled.

To configure terminals in your environment, you must determine which network transport protocols the terminals need to communicate with hosts.

Determining Network Protocol Requirements

Table 1–1 lists your choices for network protocols to support individual VXT features on different types of systems. For example, an ULTRIX system manager might use TCP/IP to allow users to access X services.

Note that the InfoServer system does not provide user application services. Its role is to supply terminals with support services such as booting, paging, access to fonts, and the storage of customized settings.

Table 1–1 Network Protocol Choices

VXT Features	InfoServer System	OpenVMS System	ULTRIX or DEC OSF/1 AXP System	Other UNIX Systems
Downloading VXT software (Section 1.3)	MOP by name LASTport/Disk MOP by Ethernet address	MOP by name MOP by Ethernet address	MOP by name MOP by Ethernet address IP (BOOTP/TFTP)	IP (BOOTP/TFTP)
X services (Section 1.2.1)	None	LAT TCP/IP DECnet	TCP/IP X11R5 xdm DECnet	TCP/IP X11R5 xdm
VXT DECterm terminal services (Section 1.2.2)	LAT	LAT IP (Telnet) DECnet	LAT IP (Telnet) DECnet	IP (Telnet) DECnet * LAT*
Fast access to non-LAT/Master OpenVMS systems (Section 1.2.4)	LAT responder	LAT/Master LAT responder	–	–
Terminal customizations (resource files) (Section 1.5)	LASTport/Disk	None†	TFTP NFS†	TFTP NFS†
Online documents (Section 1.7)	LASTport/Disk	–	–	–

*Supplied by third-party vendors.

†Host-based terminals store their native resource file in the terminal's NVRAM memory. ULTRIX, DEC OSF/1 AXP, and UNIX systems can use TFTP or NFS to access optional host-based resource files.

1.2.1 X Support and Services

Host-based X clients can communicate with the X window server in the terminal by using the TCP/IP, LAT, or DECnet transport. For details, see the system management chapter for your host system.

1.2.2 VXT DECterm Services

VXT DECterm windows provide emulation of Digital's VT series character cell terminals. Users can select from three terminal application protocols to access host systems on the network. The host must offer LAT Service Class 1, Telnet over TCP/IP, or Cterm over DECnet. You can also access terminal applications from a host connected directly to the terminal's serial port.

1.2.3 Conserving Memory by Managing Network Protocol Use

To conserve VXT 2000 terminal memory, users that have terminals with 4 MB of memory should use no more than two network protocols simultaneously. Users can enable or disable either the DECnet or TCP/IP protocol. The LAT protocol cannot be disabled.

1.2.4 LAT Responder Service

The LAT responder service speeds up connections to non LAT/Master OpenVMS hosts.

Connecting to non LAT/Master OpenVMS hosts can be slow, because the terminal does not maintain a list of known nodes. (LAT/Master eliminates the need for this list.) The terminal might need to wait as long as 2 minutes for the next multicast message from a requested host before starting a connection.

Speeding Up Connections

If you have an InfoServer system, you can speed up this process considerably by enabling the server's LAT responder function. The LAT responder allows the server to monitor the network for multicast messages, store a list of known services, and immediately respond to nodes that offer those services. The terminal can make its connection to the service as though the list were stored in the terminal.

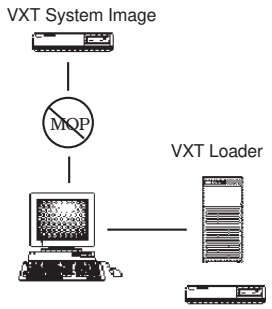
You can also enable LAT responder service on an OpenVMS system with LAT/Master support.

Resource Load

You should enable LAT responder service only on two or three nodes on the LAN, as backups to each other. LAT responder service uses many resources on the nodes where it is enabled. Therefore, enable it only on the two or three nodes that are needed.

1.2.5 VXT Loader and Bridges

If you download VXT software from an InfoServer system, the terminal typically uses the MOP protocol to access a VXT loader file. However, some networks may use bridges that filter MOP messages to isolate network traffic, because large numbers of network requests can affect host performance.



If a bridge that filters MOP messages separates a terminal from the InfoServer system that has VXT system images, you must install the VXT loader file on another InfoServer system or host on the same LAN segment as the terminal.

1.2.6 Network Diagonostic Tools

VXT Version 2.1 software provides a variety of network diagnostics tools:

- SNMP MIB II (Simple Network Management Protocol Management Information Base)
- ping (to send ICMP ECHO_REQUEST packets to hosts)
- DECnet Network Management Listener (NML) and MIRROR
- LAT and Ethernet counters

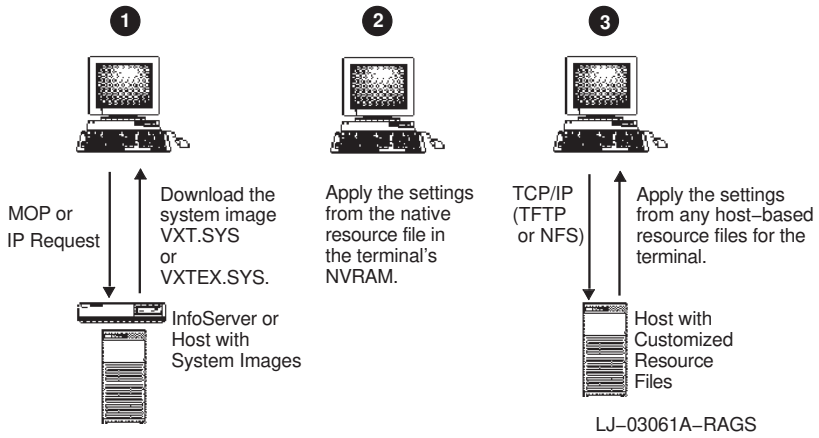
You can view Ethernet and LAT counters in the Terminal Manager window (Session menu, Status menu item).

1.3 Downloading VXT Software

The VXT 2000 windowing terminal does not have local disk storage, so the VXT system image must be downloaded from a remote system. The system images use compression technology to minimize memory consumption.

1.3.1 Downloading from a Host

Downloading a VXT system image from a host system is usually a one-step procedure. You can also download an image in host mode from an InfoServer system.



❶ The terminal requests one of the following hosts to load the appropriate system image:

- An OpenVMS system, using MOP
- An ULTRIX, DEC OSF/1 AXP, or other UNIX system, using MOP or using IP with BOOTP/TFTP
- An InfoServer system, using MOP

You must preconfigure the host system to load the appropriate system image, as described in this guide. If needed, you can specify a version in the Terminal Manager window's Customize Boot dialog box; make sure this version exists on the host system.

If you load an image in host mode from an InfoServer system, the default system image names are VXT.SYS (VXT software) or VXTEX.SYS (VXT EX software).

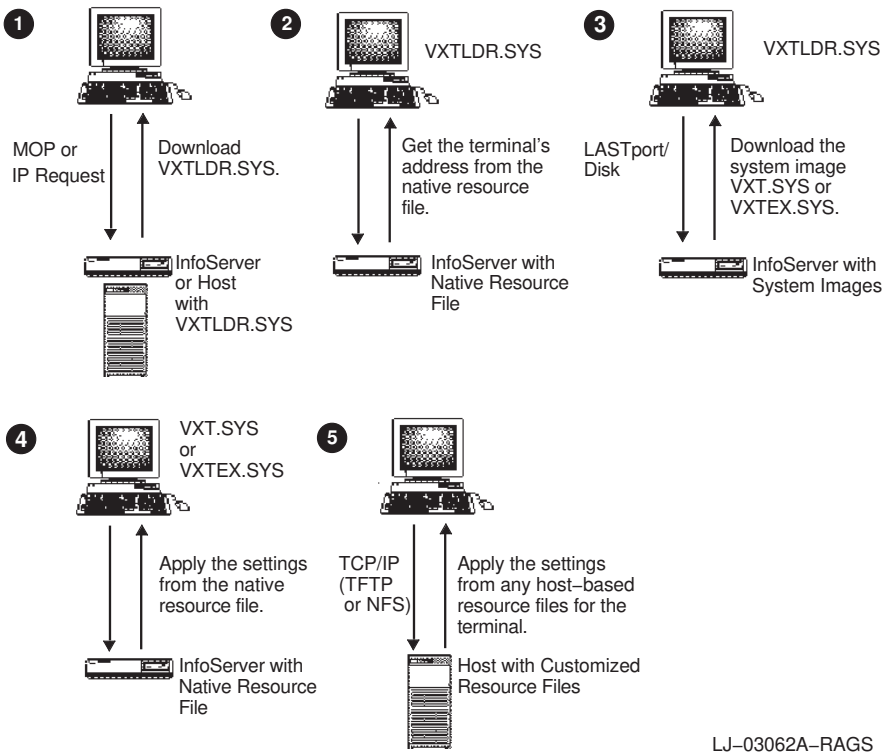
❷ After the VXT system image is downloaded, it applies the terminal's customizations from the native resource file in the terminal's nonvolatile memory.

❸ If you have created host-based resource files, the terminal applies those customizations.

1.3.2 Downloading from an InfoServer System

Downloading a VXT system image from an InfoServer system is usually a two-step procedure. First, the terminal downloads a VXT loader file from an InfoServer system or host system. Then the VXT loader file downloads a VXT system image from an InfoServer system.

Downloading Process



❶ The terminal requests the VXT loader from an InfoServer system or host:

- An InfoServer system, using MOP
- An OpenVMS system, using MOP
- An ULTRIX, DEC OSF/1 AXP, or other UNIX system, using MOP or using IP with BOOTP/TFTP

❷ The loader locates the terminal's native resource file and retrieves the minimum customizations needed to continue the boot process. For example, the loader retrieves the terminal's network addresses.

❸ Using the LASTport/Disk protocol, the loader reads the appropriate system image. The default system image name is VXT.SYS (VXT software) or VXTEX.SYS (VXT EX software). If needed, you can specify a version in the Terminal Manager window's Customize Boot dialog box; make sure that version exists on the InfoServer system.

❹ The loader transfers control to the system image, which applies the remaining customizations from the native resource files for the work group and terminal.

❺ If you have created host-based resource files, the terminal applies those customizations.

1.3.3 Protocols for Downloading

This section describes the loading protocols you use to download VXT software from various host systems.

MOP by image name

- The MOP protocol allows terminals to request a system image by name. This is the most efficient loading method for the host system. The VXT loader is usually loaded by name from the following systems:
  - InfoServer (VXT loader or VXT host-based image only)
  - OpenVMS system
  - ULTRIX or DEC OSF/1 AXP system

MOP by Ethernet address

- The MOP protocol allows terminals to use their Ethernet address to request a system image. Using this method, the system manager can configure terminals to automatically load a particular VXT system image from one of the following systems:
  - OpenVMS System
  - ULTRIX or DEC OSF/1 AXP system
  - InfoServer Version 3.0 system

BOOTP/TFTP by Ethernet address

- The BOOTP/TFTP protocol allows terminals to use their Ethernet address to request a system image. Using this method, the system manager can configure terminals to automatically load a particular VXT system image from one of the following systems:
  - ULTRIX or DEC OSF/1 AXP system
  - Any IP host with BOOTP and TFTP support

LASTport/Disk by service name

- On server-based systems the VXT loader (VXTLDR.SYS) is downloaded first, using one of the three preceding methods. Then the VXT loader uses the LASTport/Disk protocol to load the system image by service name. This method is only supported on InfoServer systems.

1.3.4 VXT Software Request at Power-Up

When you initially power up the VXT 2000 windowing terminal, it requests its software by trying each of the following in sequence:

1. **MOP request by Ethernet address**
   Requires a host system with MOP. The host must be configured to recognize the Ethernet address of the terminal and to respond by downloading the appropriate VXT software image.

The VXT 2000 windowing terminal supports MOP Version 4.0 (which is compliant with IEEE 802.3 and 802.2 standards) and MOP Version 3.0.

2. **BOOTP/TFTP by Ethernet address**
   Requires a host system with BOOTP and TFTP. The host must be configured to recognize the Ethernet address of the terminal and to respond with the terminal's IP address and the path name to the VXT software, so it can be accessed using TFTP.
3. **MOP request by name**
   If no system is configured to respond to the terminal by Ethernet address, the terminal requests the VXT loader file by name, using MOP. The loader file can be on an InfoServer system or host system. The loader file loads the VXT system image from an InfoServer system. The VXT loader file is initially named VXTLDR. An InfoServer system that has InfoServer Version 2.2 or later software and VXT software installed is automatically configured to support this load request.
4. If steps 1 through 3 are unsuccessful, the terminal repeats the sequence.

   If needed you customize a terminal to load a specific version of a VXT system image or loader file (Section 1.3.6).

1.3.5 VXT System Image Files

VXT Version 2.1 software provides two system image files, plus a VXT loader file for server-based systems (Table 1–2). The system images work on all VXT 2000 windowing terminals.

Table 1–2 System Image Files

OpenVMS	InfoServer	UNIX*	Description
VXT.SYS	VXT.SYS VXT021.SYS	vxt	VXT software
VXTEX.SYS	VXTEX.SYS VXT020.SYS	vxtex	VXT EX software
VXTLDR.SYS	VXTLDR.SYS VXTLDR021.SYS	vxtldr	VXT loader file

*UNIX, DEC OSF/1 AXP, and ULTRIX image file names.

Server-Based Images—Two Service Names

To simplify software maintenance on InfoServer systems, each VXT image has two service names created at installation – with the version number and without (Table 1–2). Terminals can request either image name. Having two service names does not increase the installation time or disk space requirements. Only one partition is created for each image.

By default, the VXT loader requests a versionless image name. The VXT loader first requests the VXT software image (VXT.SYS). If the VXT software image is not available, the VXT loader requests VXT EX software (VXTEX.SYS).

1.3.6 Customize Boot Dialog Box

If needed, you can customize a terminal to load a particular version of a VXT system image or the VXT loader file. For example, you may want to test a new VXT software version on a few terminals before making that version available on the network.

To specify a VXT system image or loader file, you use the Customize Boot dialog box (Terminal Manager window, Customize menu, Startup submenu). *VXT 2000+/VXT 2000 Windowing Terminal User Information* describes in detail how to use the dialog box.

Specifying a VXT Loader

To specify a VXTLDR file version, enter the file name in the MOP Boot File field in the Customize Boot dialog box. For VXT Version 2.1 software, make sure to specify the Version 2.1 loader VXTLDR021.SYS.

Specifying a Host-Based VXT Image

You can also use the MOP Boot File field to specify a host-based VXT system image instead of the VXT loader. In this case, the terminal loads the host-based image from a host system or InfoServer.

Specifying a Server-Based Image

To specify a server-based VXT system image, first click on the Other button in the Version section of the Customize Boot dialog box. Then enter the three-digit version number. For example, enter **021** for VXT Version 2.1 software.

1.4 Managing Fonts

VXT Version 2.1 software implements the X Version 11 Release 5 (X11R5) server, so you can access fonts from multiple systems. As a system manager, you must choose one or more hosts to provide fonts for VXT 2000 windowing terminals. Use Table 1–3 to determine how to configure fonts on your host system.

Accessing Fonts from Multiple Systems

If you want to run X window clients from different hosts, you may need to provide fonts from more than one host. With X11R5 font management, you can specify a font path that lets the terminal access fonts concurrently from multiple sources (host systems, network font servers, and InfoServer systems) using multiple transports (NFS, TFTP, LASTport, LAT, and TCP/IP) in multiple formats (PCF, SNF, BDF, Speedo, and Type1).

Table 1–3 Font Management Choices

Item	InfoServer System	OpenVMS System	ULTRIX or DEC OSF/1 AXP System	Other Systems
Access (Section 1.4)	LASTport/Disk	LAT Service Class 4	IP (TFTP) NFS Font server[2]	IP (TFTP) NFS Font server[2]
Format (Section 1.4)	VXT font sets Compressed PCF	SNF (VAX) PCF (AXP)	PCF Speedo[1] Type1[1]	PCF Speedo[1] Type1[1]
Compilation (Section 1.4.1)	On host	DECwindows font compiler: BDF to SNF (VAX) BDF to PCF (AXP)	DECwindows font compiler: BDF to PCF	VXT font compiler: BDF to PCF
Conversion (Section 1.4.1)	VXT font manager	Not required	Not required	For Sun, Open Look font converter
VXT kit contents (Section 1.4.2)	X11R5, and OSF DECwindows	DECterm (subset of OSF DECwindows)	X11R5 and OSF DECwindows	X11R5 and OSF DECwindows
Other fonts	Compile on host, then import to InfoServer font set with VXT font manager.	Compile from BDF to SNF (VAX) or PCF (AXP).	Compile from BDF to PCF.	Compile from BDF to PCF. On Sun, convert to BDF from Open Look font format, then compile to PCF.

[1]Fonts in this format are not shipped with VXT software and need a vendor supplied font server, but are supported using X11R5 font management.

[2]Not supplied with VXT software.

1.4.1 Font Compilation and Conversion

Each VXT image provides 23 local fonts, enough to support basic features of X windowing terminals. If you need more fonts, you can add them using the font tools supplied with your VXT host kit.

With X11R5 font server, the terminal supports vendor supplied Speedo and Type1 fonts.

1.4.2 Supplied Fonts and Tools

The following VXT software installation kits are available:

VXT kit for InfoServer systems

- This kit provides a default font set containing all MIT X11R5 fonts and DECwindows Motif Version 1.0 fonts. The fonts are in compressed portable compiled format (PCF). You can copy other fonts from host systems by using the Configuration Manager: Font Management dialog box from the VXT Terminal Manager window's Customize menu.

VXT kit for OpenVMS systems

- This is a standard OpenVMS distribution kit. The DECwindows on OpenVMS software provides fonts suitable for use with the VXT software. If DECwindows Motif is not available on the host, you must install the extra DECterm fonts from the installation kit so you can use all VXT DECterm features.

  If you have other fonts for X terminal applications, you can install them on an OpenVMS system. You can use the font compiler supplied with DECwindows Motif Version 1.0 to convert bitmap distribution fonts (BDF) to the appropriate format for you system:

  – Server normal format (SNF) for VAX systems
  – PCF format for AXP systems

VXT Kit for UNIX Based Systems

- This kit is in `tar` format. The kit provides all MIT X11R5 fonts and DECwindows Motif Version 1.0 fonts in PCF format. This kit also provides some utilities for converting existing fonts to the required format for VXT 2000 windowing terminals:

  – A font compiler that converts fonts from the source BDF format to the compiled PCF format. On ULTRIX systems, use the font compiler provided with DECwindows software.
  – A script for use with Sun tools, to convert fonts from the Sun compiled format to the source BDF format. You can compile the resulting BDF fonts with the BDF-to-PCF font compiler.

1.5 Managing Terminals and Work Groups

You can centrally manage the customized settings of all VXT 2000 windowing terminals or VT1300 terminals running VXT software in your network. You have two options:

Configuration Manager (Native Resource Files)

- You can use the configuration manager on any terminal.

  When users save settings in their terminal's dialog boxes, the terminal stores the settings in its native resource file. You can use the configuration manager to enter settings for any terminal. You can also lock settings, preventing users from changing settings at their terminal.

Host-Based Resource Files

- In TCP/IP environments, you can create and manage your own resource files on a host system.

  Terminals can read the host-based resource files by using the TFTP or NFS transport. The settings in host-based resource files override the settings in native resource files entered from the terminal's dialog boxes.

Host-Based VXT 2000 Windowing Terminals

Host-based VXT 2000 windowing terminals save their native resource file in the terminal's nonvolatile memory (NVRAM).

If you use the configuration manager, you can centrally manage individual terminals.

If you use your own host-based resource files, you can create files for individual terminals or groups of terminals.

Server-Based VXT 2000 Windowing Terminals

Server-based VXT 2000 windowing terminals save their native resource file on an InfoServer system, using the LASTport/Disk protocol.

If you use the configuration manager, you can centrally manage individual terminals or groups of terminals. The configuration manager provides many work group management features for server-based terminals. You can also manage font sets on InfoServer systems.

If you use your own host-based resource files, you can create files for individual terminals or groups of terminals.

Unregistered Terminals Work Group

When you install VXT software on an InfoServer system, you can install a special work group called the Unregistered Terminals work group to help you track and configure new terminals. See the *VXT Software on InfoServer Systems* section of this guide.

VT1300 Terminals

Host- and server-based VT1300 terminals running VXT software always store their native resource file on an InfoServer system.

1.6 Managing Local VXT Clients

VXT software provides the following local clients:

- Terminal manager
- Messages box
- Motif window manager
- DECterm
- VXT 3270 terminal emulator (separate license required)
- Configuration manager
- Application launcher

System managers and users can customize a terminal to run only those clients that are needed. Local VXT clients use memory only when active. This improves memory usage, especially in a host-based terminal.

Customize AutoStart Dialog Box

You can use the Customize AutoStart dialog box to specify the local VXT clients and host sessions you want to start each time the terminal is booted. You access this dialog box from the Terminal Manager window (Customize menu).

Software Options Dialog Box

The Software Options dialog box lets you choose which VXT software options in the VXT system image to load. By disabling unused options, you can free more of the terminal's memory to perform other functions. You access this dialog box from the Terminal Manager window (Customize menu, Startup submenu).

1.7 InfoReader: Viewing VXT Documents Online

Server-based VXT configurations provide the option to install the InfoReader online documentation library. You can select the InfoReader library from the Terminal Manager window's Getting Started menu. Documents are in Bookreader format. You can view the following documents:

- *Using InfoReader*
- *VXT Software Version 2.1 Release Notes*
- *VXT 2000+/VXT 2000 Windowing Terminal Installing and Getting Started*
- *VXT 2000+/VXT 2000 Windowing Terminal User Information*
- *VXT Software Version 2.1 Installation and System Management*
- *InfoServer System Operations Guide*

1.8 Version 2.1 New Features

Installation

ULTRIX, DEC OSF/1 AXP, and UNIX Installations

The installation script prompts you for all required information before installing any files on your system. After you answer the questions, you can leave your terminal while the software is being installed.

Network and Font Services

X11R5 Server

VXT Version 2.1 software supports the X Version 11 Release 5 (X11R5) server. The server supports use of the save under and improved backing store features.

NFS Transport

VXT Version 2.1 software supports the use of the NFS protocol for faster access to fonts, as well as access to existing resource files.

Font Access and Support

The X11R5 server allows the terminal to access fonts from multiple systems over different transports. The server also supports access to Speedo, Type1 and Speedo SNF type fonts.

Customize Font Path and Font Server

The Customize Font Path dialog box now lets you specify the NFS transport to access fonts from hosts. You can also specify font servers over TCP/IP. If you use the NFS transport, you specify NFS mount points in the Customize NFS dialog box.

Configuration Management

Host-Based Configuration Management for Terminals

In TCP/IP environments, system managers can remotely manage terminals by creating terminal resource files, group resource files, and composite files on a host system. A composite file lets you include many resource files in a single file.

After you create the resource files, you use the Customize Resource Files dialog box to point to their location on the host. Terminals can use the TFTP or NFS transport to access the host-based resource files.

The user can check the name of the resource file in use by looking at the System Configuration dialog box in the Terminal Manager window (Session menu, Status submenu).

Configuration Manager Changes

Customizing LASTport, DECnet, and Boot Settings

A system manager can now remotely customize LASTport group code, DECnet, and primary boot settings from the configuration manager. Before customizing these settings, the system manager must use the Synchronize NVRAM dialog box to synchronize the settings in the terminal's NVRAM and with the settings in the configuration manager. See the *Managing Terminals and Work Groups* section of this guide.

Options Menu

The Configuration Manager: Resource Management dialog box has a new Options menu. This menu provides access to the LASTport Group Code and Synchronize NVRAM dialog boxes. Previously, the LASTport Group Code menu item was on the File menu.

Customizing Your Own Terminal

VXT Version 2.1 software lets use the configuration manager to customize the terminal you are currently using. Previously, you had to customize your terminal from the configuration manager on another terminal.

Startup Features

Startup Items

The Customize AutoStart, Boot, and Software Options dialog boxes are now grouped for convenience on the Startup submenu of the Terminal Manager window's Customize menu.

The Customize Software Options dialog box lets you choose which VXT software options in the VXT system image to load. By disabling unused options, you can free more of the terminal's memory to perform other functions.

Display Language Options

You can now display VXT screens and dialog boxes in the following languages on your terminal:

- English
- French
- German
- Italian
- Spanish
- Dutch
- Hebrew

The Hebrew language setting applies only to VXT DECterm windows.

Sun Style Keyboard

A Sun style keyboard is available in a North American version, model LK460.

Launching Applications

Remote Applications

If you install the VXT application launcher, users can start remote applications on a host that they are connected to. The user must first start a session on the host and run the VXT application launcher. Then the user can start the remote application from the Create dialog box. Knowledgeable users can also bind remote applications to menus, keys, or mouse buttons, using the window manager's Workspace: Customize Resource Configuration dialog box.

In a TCP/IP environment, the VXT application launcher also lets users start local VXT applications from a remote host. The user must first start a session on the host and run the VXT application launcher. Then the user can start the local VXT applications by using special rsh (r shell) commands.

The launcher is provided with the kit. To use the launcher, see *VXT 2000+/VXT 2000 Windowing Terminal User Information*.

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