Software Product Description

PRODUCT NAME: VMS DECwindows Motif®, Version 1.0 **SPD 36.09.00**

DESCRIPTION*

The DECwindows desktop environment provides a graphical user interface to VMS. DECwindows incorporates the Open Software Foundation's Motif user interface as the design center for DECwindows applications. OSF®/Motif® is a graphical user interface widely acknowledged as the industry standard. This user interface defines a powerful model for interacting with the VMS Operating System using a point-and-click metaphor. DECwindows includes a set of integrated desktop applications that demonstrate the power of this metaphor and provide VMS users with a base set of desktop tools.

VMS DECwindows Motif is based on MIT's specification for the X Window System, Version 11, Release 4 and OSF/Motif V1.1.1.* X Window System standards supported as part of DECwindows include the X11 network protocol, a base set of workstation fonts, the C language binding for the Xlib programming library and the C language binding for the Xtoolkit library. For workstations users, DECwindows support for the Adobe Display PostScript® System is integrated into X11.

Support of the X11 network protocol in the client library and display server components provides VMS with the ability to interoperate with other X11-compliant systems in a distributed fashion.

DECwindows supports the client-server distribution inherent in the X Window System. This client-server model provides for running X Window clients on one node and displaying output to another node, using a transport to communicate between the nodes. DECwindows provides three transport interfaces — local shared memory, DECnet, and TCP/IP (using Digital's VMS /ULTRIX Connection (UCX) layered product). Users can also provide their own transport subsystems and transport interfaces.

* Licensee agrees to execute Display PostScript on only those Digital computer systems identified as licensed systems in this Software Product Description, and that in any event licensee agrees not to make use of the software, directly or indirectly, to print bitmap images with print resolutions greater than 150 DPI, or to generate fonts or typefaces for use other than with the Digital licensed system.

* Software supplied by OSF may not be upward compatible with future DECwindows releases.

To determine whether a separately orderable DECwindows or X application runs on or can communicate with a VMS DECwindows Motif system, consult the application's software product description.

The VMS DECwindows Motif user environment consists of four basic components:

1. The Session Manager provides the top-level user interface to a DECwindows workstation. It performs application activation, session-wide customization, security management, and session control. The Session Manager also lets users specify the language user interface for supported DECwindows applications, provided they have ordered, installed, and are licensed to use the appropriate VMS DECwindows Motif language variant kit(s). For the supported language variants, refer to the *User Interface Language Support* section of this SPD. For a description of which applications have translated user interfaces and specific local hardware and software support provided in the language variant kits, refer to the relevant language variant System Support Addendum (SSA).

2. The Window Manager provides user control for managing windows. The OSF/Motif Window Manager is provided as the default window manager. The DECwindows X User Interface (XUI) Window Manager is also available, allowing the user to choose the type of window management preferred.

3. FileView, a graphical interface to VMS file management, allows users to navigate the VMS file system and to perform operations on files.

4. The DECterm terminal emulator provides workstation users with a traditional character-cell interface for existing VMS features and applications. It is a VT320 terminal emulator. It supports ReGIS and sixel but is not fully VT340 compatible. Programs written for VT52, VT100, VT220, or VT320 class terminals and using VMS terminal driver features operate without modification in this workstation window. DECterm also provides workstation-oriented features such as mouse-based cursor positioning, variable screen sizes, and cutting and pasting of text between

terminal emulators and other DECwindows applications. Many programs can also use these features without modification.

Applications

A set of integrated desktop applications is provided as a base component of the DECwindows environment. These applications establish and demonstrate the consistent DECwindows user model. They also provide significant end-user capabilities.

The following applications have been ported to OSF /Motif and are available in this version of VMS DECwindows Motif:

- Bookreader — A tool for viewing the contents of books that are distributed and stored online
- Calculator — A basic scientific calculator
- Calendar — A personal time management system
- Cardfiler — A hierarchical information storage application similar to an online address and/or phone book
- Clock — An analog and/or digital date and time display with an alarm notification
- Compound Document Viewer — A tool for reading documents containing compound text, graphics, and image data on terminals and DECwindows workstations
- Computer Based Instruction — An online tutorial for novice Motif users. Users can learn how to use the mouse and do other simple operations with Motif
- Linkworks Manager — A tool for creating and managing links between different types of computer information, like mail messages, cards from cardfiles, or information from online books
- Mail — A DECwindows user interface to the VMS mail facility
- Message Window — A window that displays system messages, like new mail notification or system manager messages
- Paint — A simple bitmap graphics editor
- Print Screen — A tool for capturing images on the screen and either saving the image to a file or printing it directly
- Puzzle game — A game that challenges the player to sort numbered puzzle tiles

DECwindows workstation users can display PostScript files featuring WYSIWYG (what you see is what you get) compatibility between the display and any of Digital's PostScript printers. Display PostScript ability is available within the Compound Document viewer and DECwindows Mail.

User Interface Language Support

Please contact your local Digital office for the latest information on availability of options and supported multilingual configurations. For more details on the language variants, refer to the specific language variant SPD /SSAs. Refer also to the *ORDERING INFORMATION* and *SOFTWARE LICENSING* Sections of this SPD.

Programming Support

The VMS DECwindows Motif environment includes an extensive set of programming libraries and tools for use by developers of new applications. The libraries are provided in the form of shareable images.

There are four categories of libraries provided: standard X Window System libraries such as Xlib and the Intrinsics, libraries needed to support the current base of XUI applications, OSF/Motif toolkit support for developing applications using the Motif user interface style, and Digital added-value libraries that give users additional capabilities.

The eight libraries provided with VMS DECwindows Motif include:

- X Window System programming library (Xlib) support
- X Window System Intrinsics support (Xtoolkit)
- OSF/Motif User Interface support
- Digital's Extensions to OSF/Motif
- X User Interface (XUI) support
- Porting tools to be used to change applications from the XUI interface to the OSF/Motif user interface style
- Compound Document Architecture (CDA) support
- Display PostScript (DPS) support

Components from each of these areas can be used in any combination to address the needs of applications. These components can also use the tools from a variety of different programming languages. The programming libraries have been provided with procedural language bindings in either the style of the VAX calling standard, the style of the MIT C language programming conventions, or both conventions.

Motif language bindings are provided for the following programming languages:

VAX Ada
VAX FORTRAN
VAX C
VAX Pascal

XUI language bindings are provided for the following programming languages:

VAX Ada
VAX FORTRAN
VAX BLISS-32 Implementation Language
VAX Pascal
VAX BASIC
VAX MACRO
VAX C (VAX calling standard or MIT convention)
VAX PL/I

The eight programming support libraries are described in more detail below.

X Window System (X) Programming Support

The X Window System compatible X programming library (Xlib) provided by the VMS DECwindows Motif environment supplies basic resource management (windows, color maps, input devices) and bitmap graphics services. It defines a mapping of the X network protocol to a procedure library.

X Window System Intrinsics Support

VMS DECwindows Motif provides a library that contains both the MIT Release 3 (R3) and MIT Release 4 (R4) Intrinsics (Xtoolkit). The Xtoolkit provides low-level routines allowing the creation of user interface objects called widgets. The R3 intrinsics are included in the library to provide binary compatibility for images created using previous versions of VMS DECwindows.

Note: All libraries that Digital ships with VMS DECwindows Motif and any applications that are relinked will use the new R4 Intrinsics.

OSF/Motif User Interface Programming Support

OSF/Motif is the new user interface model for Digital and third-party software tailored for the DECwindows environment. It establishes the conventions and styles that are encouraged for applications that share a DECwindows workstation. Applications use Motif components to build user interfaces that look and feel like integrated members of the Digital computing environment. OSF /Motif also provides more efficient user interface objects called gadgets.

The OSF/Motif Style Guide, available in the VMS DECwindows Motif Programming Kit, describes the principles, philosophy, and components used to build consistent and well-integrated OSF/Motif applications. In addition, VMS DECwindows Motif provides the DECwindows Companion to the OSF/Motif Style Guide. This document provides additional information concerning the style of OSF/Motif user interfaces. It also provides guidelines concerning additional features that Digital provides in the VMS DECwindows Motif offering, and includes a Digital preferred terminology list for a number of supported languages for developers producing OSF /Motif applications in these languages.

The OSF/Motif style concepts are implemented by the OSF/Motif Toolkit. The OSF/Motif Toolkit uses the MIT Xtoolkit. It contains three components:

- OSF/Motif widgets and gadgets for implementing common user interface objects such as scroll bars, menus, and push buttons
- Utility routines that provide applications with functions for performing common tasks such as cut and paste
- Resource manager routines for loading user interface definition files and creating widgets and gadgets based on the contents of the definition files

The OSF/Motif toolkit is used in conjunction with the OSF/Motif User Interface Language (UIL) compiler. The user interface definition files produced by this compiler contain the data that describes the form of DECwindows applications and allows OSF/Motif toolkit widget and gadget details, such as menu item labels, to be stored separately from the toolkit and application runtime code. This capability allows application developers to prototype and easily modify user interface designs, separate form from function in applications, and support translatable products that do not require recompilation of source files.

Digital's Extensions to OSF/Motif

Digital provides added value to the standard OSF/Motif toolkit. Digital ships a library that includes a set of Digital developed widgets and runtime routines that are not available from OSF. The widgets provide a common DECwindows interface for some commonly used DECwindows functions. The widgets provided include:

- A Color Mix widget that enables users to select and mix colors using a variety of color models
- A Compound String Text widget that provides support for international right-to-left character sets as well as left-to-right writing directions
- A Help widget that allows applications to display appropriate help text in a consistent manner
- A Print widget that allows applications to print files in a consistent manner
- A Structured Visual Navigation (SVN) widget used by applications to display hierarchical information

The runtime routines provided include:

- Three DECwindows Help System calls that enable users to display online help files using Bookreader.

- Linkworks Services that allow applications to easily participate in the Linkworks Environment. These services provide generic user interface and information object manipulation capabilities for managing Linkworks Objects. Using the Linkworks Services, an application can:
  - — Augment its user interface by adding the Linkworks navigation capabilities
  - — Create, copy, and delete Linkworks Objects
  - — Set and retrieve the values of the properties of Linkworks Objects — properties may have one or more values of a number of different types (integer, boolean, floating point, date, character string, DDIF string, and LWK object)
  - — Perform property value based queries on the Links or Surrogates contained in Linknets, and the Steps or Surrogates contained in Paths
  - — Store and retrieve Linkworks Objects in Linkworks linkbases (persistent storage)
- DECimage runtime support for applications developed using DECimage Application Services. This support includes the Image Services Library, Image Display Services and X Image Extensions.

X User Interface (XUI) Programming Support

VMS DECwindows Motif continues to provide the XUI Toolkit. The XUI Toolkit is based on the MIT R4 Xtoolkit intrinsics. This toolkit implements the XUI user interface style used by previous versions of VMS DECwindows. However, new applications should be written to OSF/Motif as Motif is the open standard user interface adopted by a wide variety of vendors.

Porting Tools

Digital provides XUI-to-Motif porting tools to aid programmers in porting applications to Motif. These tools replace occurrences of XUI names in the input source file with the correct Motif names.

Compound Document Architecture (CDA) Programming Support

The CDA Toolkit provides access routines that applications can use to create, read, and write files containing compound text, graphics, and imaging data. These files provide a vehicle for recording this information on disk, a medium for interchange of this data between applications, and an intermediate form from which high-resolution printable graphics data can be generated.

Enhanced X Windows Display PostScript (XDPS)

The Display PostScript System provided with VMS DECwindows Motif extends the native X graphical programming environment for DECwindows users displaying text or images on workstations that support the XDPS extension.

X Display PostScript adds the following capabilities to the basic X11 environment:

- All DECwindows fonts can be displayed at any size and rotation angle.
- XDPS graphics are specified in a user-defined coordinate system independent of monitor density.
- Color or gray-scale rendition is automatically modified to take advantage of the monitor type through either direct display, color dithering, or half-toning.
- DPS Display routines can be downloaded to the server and executed on command.
- Sophisticated graphics primitives, such as precisely controlled Bezier curves, can be displayed.
- Any display can be scaled and rotated arbitrarily.

Programming access to XDPS is through the Adobe Client Library. In addition, a converter called pswrap allows users to convert PostScript code into C programs that can be called from other languages.

Display Server Extension Support

The VMS DECwindows Motif Display Server supports the following extensions:

- Display PostScript: "Adobe-DPS-Extension" as defined jointly by Adobe Systems, Incorporated and Digital and registered with the MIT X Consortium. Allows the display server to execute PostScript commands to support the XDPS programming environment.
- Phigs Extension to X: "X3D_PEX" as defined by the MIT X Consortium. Allows the Display Server to provide 3D hardware support for DEC PHIGS, the Programmer's Hierarchical Interactive Graphics System.
- X Imaging Extension: "Xie" as defined by the MIT X Consortium. Allows the Display Server to provide hardware or software support for imaging operations for ISL, the image services library.
- XTRAP: "DEC-XTRAP" as defined by Digital and registered with the MIT X Consortium. Allows the display service to provide support for hands-off testing programs like DTM, the DEC Test Manager.
- Multi-Buffering: "Multi-Buffering" as defined by the MIT X Consortium. Allows the display server to provide support for multiply-buffered images.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, or VAXserver configuration as specified in the System Support Addendum (SSA 36.09.00-x).

VMS DECwindows Motif runs on any of the supported processors, but requires either a workstation, a DOS-based PC, a Macintosh® or an Xterminal for display. These display devices must be running an X Window System, Version 11, Release 4 compliant display server.

SOFTWARE REQUIREMENTS

VMS Operating System

* Refer to the System Support Addendum (SSA 36.09.00-x) for availability and required versions of prerequisite/optional software and for information regarding components of VMS DECwindows.

ORDERING INFORMATION

Software Licenses: QL-XA1A*-** or QP-XA1**-**
Software Media: QA-XA1**-H*
Software Documentation: QA-XA1**-GZ
Software Product Services: QT-XA1**-**

For Additional Language Variants:

Software Licenses: QL-XDD**-**
Software Media: QA-XDD**-**
Software Documentation: QA-XDD**-GZ
Software Product Services: QT-XDD**-**

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

SOFTWARE LICENSING

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.

Customers who wish to run DECwindows over TCP/IP need only purchase the VMS/ULTRIX Connection product media and documentation kit. The license rights for TCP/IP in a DECwindows environment are included in the VMS Operating System license. Customers who want to utilize the full VMS/ULTRIX Connection functionality (FTP, NFS, TELNET) need to purchase a separate license. Refer to the VMS/ULTRIX Connection System Support Addendum (SSA 25.A4.xx-x) for required versions.

Refer to the *Third Party Licensing* section in Appendix A, for information regarding the Adobe licensing.

For VAXstation customers, Digital provides a VMS DECwindows Motif capacity workstation license with the purchase of a VAXstation system.

Licensing of Language Variants

The VMS DECwindows Motif software license is available under a unilingual or bilingual option. The unilingual option (QL-XA1A*-**) includes the right to use VMS DECwindows Motif software with the American/English User Interface. The bilingual option (QL/QP-XA1*-**) adds another language User Interface depending on the option purchased. The bilingual option is standard outside the United States.

Supported language variants for VMS DECwindows Motif include:

Danish, Finnish, German, Dutch, Swedish, Norwegian, French, Spanish, Italian, Portuguese, Hebrew, Chinese (Simplified and Traditional), Korean, and Japanese.

If additional languages are required, in addition to the dual language combinations described above, a separate license for each standalone language variant (QL-XDD*-**) is required, as well as the relevant software kit. All the supported languages are available, but there are some restrictions on language combinations. Refer to the relevant language variant SSA for details on supported language combinations in each country.

VMS DECwindows Motif language variants are generally supported only in countries where the language is an official language. However for some countries this may vary. Consult the relevant language variant SSA or your local sales office to check for the availability of additional language support in your country/location.

LICENSE MANAGEMENT FACILITY SUPPORT

This product supports the VMS License Management Facility.

License units for this product are allocated on a CPU-capacity basis.

For more information on the License Management Facility, refer to the VMS Operating System Software Product Description (SPD 25.01.xx) or the *License Management Facility* manual of the VMS Operating System documentation set.

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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® MS–DOS is a registered trademark of Microsoft Corporation.

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