Software Product Description

PRODUCT NAME: hp DECforms for OpenVMS, Version 3.3 SPD 29.90.12

DESCRIPTION

HP DECforms for OpenVMS (DECforms) is a software product for the development and deployment of forms-based user interfaces for interactive applications running on OpenVMS systems. DECforms is a complete user interface management system (UIMS), providing applications with not only the look and feel of a forms interface, but also a robust set of dialog management and validation functions to control the user interface at application execution time.

DECforms offers application programmers a set of form development tools for creating forms-based user interfaces for the following end-user environments:

- VT-based character-cell terminals
- Web browsers (in conjunction with the optional DECforms Web Connector product)
- Motif workstations and X terminals
- PostScript printers

Tools are also included for enabling application developers to upgrade existing VT-based DECforms applications to take advantage of the more powerful bitmap displays of Motif-based desktop devices.

DECforms embodies the following fundamental principles:

- True separation of form and function
- Efficient distribution of forms processing
- Ease of use
- Flexibility of user interface control
- Programming language independence

One of the most powerful principles reflected in the DECforms architecture is complete separation of form and function. User interface processing is completely removed from the application program and totally isolated within the form itself. In DECforms, a form is not simply a collection of fields and background text describing the form's appearance. A DECforms form includes not just elements related to appearance, but also data and procedural elements that control the processing of the user's interaction with the form. The application program is only concerned with the processing of data, not with the gathering and display of data at the user interface. This makes application programs much simpler to develop and easier to maintain, and it also allows a *single* application to support multiple end-user device environments with user interfaces tailored to the capabilities of the device and to the needs of the end-user. In other words, a single application program can use DECforms to interact with users on character-cell terminals, Motif devices, and Web browsers.

Forms comprise one or more panels that can be of any width and height (for VTs, panels must be no larger than the size of the physical display device). If the data required to satisfy an application program's request cannot be physically or aesthetically fit onto a single screen, multiple panels can be defined within a single form to contain all the necessary fields and background text. Thus, a form can be as large as needed.

When panels are displayed on the screen, they are displayed in viewports (windows) that can be located any place on the screen. For VT devices, DECforms provides a complete windowing system to manage these viewports. For Motif-based devices or Web browsers, the services of the associated windowing system are used—each viewport is associated with a separate win-

dow. On VT devices, viewports are static—they cannot be moved by the user. On Motif devices or Web browsers, the user can move, resize, and minimize viewports as needed. DECforms automatically displays and removes viewports with their associated panels to gather and display all the data required by the application program.

A form is described by the Independent Form Description Language (IFDL). The IFDL, although primarily declarational, includes procedural constructs as well. Field level control, screen navigation, panel management, and cross field and relational validations are among the many form processing activities that can be performed by the IFDL without the need to return to the application program.

DECforms allows a single application to support multiple types of users with interfaces tailored to their particular end-user environments, where those environments are differentiated by such factors as desktop device and natural language. This tailoring is accomplished by utilizing another DECforms structure called a layout. Sets of panels tailored for a particular environment can be grouped together in a layout. A form can consist of multiple layouts, each tailored for a different environment—for instance, one form can contain layouts for both VT devices and Motif devices as well as layouts for English users, French users, and German users. For simplicity, Web browsers use the VT layouts. At run-time, DECforms chooses the one layout from within the form appropriate for the end-user environment.

Features

The application program interacts with DECforms through a very simple, six-call record-level interface. Either single or multiple records can be transferred in a single request.

All field-level processing is performed by the DECforms Run-Time System, not by the application program. The DECforms Run-Time System provides a wide variety of form, panel, and field-level control and processing capabilities, including:

- Multiline text fields
- Simple arithmetic operations within the form
- Scrolled regions with the following characteristics:
  - — Vertical or horizontal scrolling
  - — Containing one- or two-dimensional arrays
  - — Partial or full-line scrolling
  - — Multiple lines per scrolled entry
- Conditionally protecting, highlighting, and concealing fields
- Changing video attributes dynamically based on real-time events
- Highlighting fields when the cursor is present
- Color support on VT241 and VT340 terminals via mapping to video attributes
- Format validations:
  - — Character type
  - — Entry required
  - — Minimum length
  - — Full field
  - — No data input
- Content validations:
  - — Range check
  - — List check
- Context validations:
  - — Against a general expression
  - — Cross-field validations
- Calling a user-defined routine (procedural escape routine) to perform more complex validations, including file lookups
- Built-in flexible field navigation capabilities on VTs allowing the operator to move among fields in any manner desired
- Timeouts on field entries on character-cell terminals and Motif devices
- Toggling between insert/overstrike mode on character-cell terminals and Motif devices

For Motif devices, DECforms provides the following additional graphical user interface (GUI) control and appearance capabilities:

- Use of the mouse for random field navigation and other screen functions
- Full font and color support
- Push buttons
- Slider fields (scale widget)
- Horizontal and vertical scroll bars on data arrays, multiline text fields, and panels
- Cut and paste text within fields, between fields, between panels, and between windows
- Shadows and borders for 3D appearance
- Open and closed polylines with different line styles
- Grey scale fill patterns

For Web browsers, DECforms provides the following additional GUI control and appearance capabilities:

- Selectable panel display style
- Use of the mouse for random field navigation and other screen functions
- Changeable background and foreground colors, screen size, font, and font size
- Push buttons
- Horizontal and vertical scroll bars on multiline text fields and panels

DECforms also provides an extremely flexible mechanism for defining functions and redefining keyboards to suit the operator environment. This includes support for multikey function definitions.

- On Motif devices, chorded key functions are supported.
- On Web browsers, different default mappings are provided for those function keys not present on PC keyboards, typically F13-F20.

DECforms supports most OpenVMS data types, which means that data type conversion does NOT have to be performed by the application program in most cases.

DECforms can be used with HP DATATRIEVE to provide powerful, window-like forms interfaces for queries and reports on data stored in RMS, Oracle Rdb, and Oracle CODASYL DBMS files.

Internationalization Features

DECforms includes numerous internationalization features, allowing applications to support user interfaces in multilingual environments. These features include:

- Multiple natural language layouts per form
- International date formats
- Numeric data formatting, including replacing decimal point with comma
- Multiple character currency signs
- Multiple character sets
- Flexible positioning of fields and literals to allow for translation
- OpenVMS Message Files to allow for translation
- Integrated support for Hebrew language form development and processing, including right-to-left text path on character-cell terminals and Motif devices

Printing Support

Through the use of the printing layout, DECforms provides the capability for rendering high-quality, bitmap hardcopy forms for printing on PostScript printers.

The printing layout contains the specification of a user interface that is output only and specifies its output device as a file, rather than a physical device. This file can serve as input to other DDIF-capable applications, for ultimate printing or inclusion in compound documents.

Through the use of the printing layout, DECforms also supports the concept of "batch printing" in which applications can use DECforms for high-volume forms printing without the need for a physical display device.

Components

Form Manager

The Form Manager is the interface between an application program and a display device. It is a run-time system that controls form display and operator input on terminals. The Form Manager provides six requests for communication between the form and the application. These requests (routines in the Form Manager) allow the application to enable the form for use, send data to the form, receive data from it (separately or in one call), disable the form at the end of a session, or asynchronously cancel a request.

The Form Manager is included with the DECforms Development System and is also offered separately in the optional DECforms Run-Time System. The only DECforms component available in this latter option is the Form Manager. The Run-Time System allows the execution of applications using DECforms on a machine other than the one used to develop the application.

The Server Wrapper Object (SWO) process is an extension to the run-time capabilities of the Form Manager and is used in conjunction with the DECforms Web Connector.

Form Development Environment (FDE)

The FDE allows a form designer to create a form interactively. The FDE provides menus that help the designer step through various tasks of form creation and modification. The FDE is used with either the VT-based Panel Editor or the Motif-based Panel Editor to create the appearance of the form. The FDE also provides access to text editors, including the Language Sensitive Editor (LSE), part of HP DECset for OpenVMS Systems, to allow a designer to write statements in the Independent Form Description Language (IFDL) that describes a DECforms form.

Independent Form Description Language (IFDL)

The IFDL is a semi-procedural language that completely describes a DECforms form. It allows the form designer to create a form (noninteractively), specifying its appearance and functions. While the appearance of a form can be entirely created by the panel editors, procedural aspects of the form, such as specialized responses to

function keys and specialized data validation, must be specified directly with IFDL statements. An IFDL source file is a text file that can be created or modified with any text editor.

LSE templates are available for the IFDL language to aid in the creation and maintenance of IFDL source code. DECforms also supports the Compile and Review capabilities of the LSE.

The IFDL also includes a COPY statement that provides for the copying of record and field definitions from the Oracle CDD/Repository. DECforms supports Oracle CDD/Repository pieces tracking by depositing information in the dictionary indicating that a particular form has used a certain record. DECforms can also use Oracle CDD/Repository records defined with the BASED ON attribute and those referenced through RDB$RELATIONS.

IFDL Translator

The IFDL translator compiles an IFDL source file into a binary form file. This form file is then ready for use with its application. Its appearance can be tested on a terminal screen or printed. The binary form file may be analyzed by other DECforms utilities, or edited in the FDE or the appropriate panel editor.

Back Translator

The Back Translator converts a binary form file into an IFDL source file. Essentially, it performs the reverse function of the IFDL Translator. As a result, it provides a method of editing the IFDL source for a form created or modified by the FDE or panel editor. The IFDL source statements that the Back Translator produces also provide a complete textual description of the form.

Panel Editors

The VT-based Panel Editor and the Motif-based Panel Editor allow the user to create graphic form elements in an interactive, "What You See Is What You Get" (WYSIWYG) fashion. The panel editors support the interactive creation of the visual elements of a form's panels: background text and graphics, and the locations, sizes and attributes of fields.

VT-to-Pixel Layout Converter

The VT-to-Pixel Layout Converter takes as input a DECforms binary .FORM file containing a character-cell layout and produces as output an .IFDL source file containing a pixel layout in addition to the original character-cell layout. The new layout is a "first-pass" pixel layout that requires some additional manual modifications to effectively take advantage of the additional characteristics of the pixel device, such as the use of the mouse and the full range of fonts and colors.

Extract Utility

The Extract Utility performs three functions:

- Produces a printable representation of a form's panels from a form file.
- Creates object modules containing a form. These object modules can then be linked in an executable image with a program as a memory-resident form for use by the same program in a single session or in multiple sessions. The modules can also be linked in shareable images for use by multiple sessions from multiple processes.
- Produces an object module that contains pointers, or vectors, to procedural escape routines named in the form file. Escape routines are calls from the form to user-supplied subroutines created to do additional processing outside the form.

Test Utility

The Test Utility allows certain aspects of the form to be tested separately from its application program. It allows a form designer to check the appearance of a form's panels without having to first write a program.

Sample Applications and Demonstration Forms

The sample applications show how a form and an application program can interact. One of the samples includes a simple form with a few panels and a simple application program that makes requests of the form through the Form Manager. This introductory sample application is available only in FORTRAN and C.

The more complex sample application includes a form with many panels and many responses to various events, as well as an application program that makes several requests of the form. This application is available in Ada, BASIC, C, COBOL, DIBOL, FORTRAN, Pascal, and PL/I.

In addition to the sample applications, the DECforms development kit contains a package of demonstration forms, their sources, and a demonstration guide illustrating a number of key features of DECforms.

FMS Converter

The FMS Converter is a migration tool that converts forms or form libraries created with HP FMS for OpenVMS (Forms Management System) into a DECforms IFDL source file. This process converts the appearance of the FMS forms into a similar appearance described by the DECforms IFDL. The converter does NOT convert the application program or the User Action Routines (UAR) associated with the FMS forms. The FMS Converter works with forms created with FMS V2.0 or later.

TDMS Converter (available on OpenVMS VAX only)

A TDMS Converter is available from Praxa Limited. This tool converts forms and request definitions created with Compaq TDMS for OpenVMS VAX (Terminal Data Management System) into DECforms IFDL. The tool also includes a COBOL translator for converting TDMS calls in a COBOL application program to equivalent DECforms calls. For more information, contact TDMS@praxa.com.au.

Developing Forms for IBM 3270 Terminals

A special version of DECforms V1.4, *shipped exclusively as part of the HP SNA 3270 Application Services software*, allows remote SNA-networked IBM 3270 terminal and PC users to access forms-oriented VAX and Alpha applications. This special version of DECforms provides users with additional features in the *OpenVMS VAX development tools* to develop and maintain forms for display on 3270 class devices and Run-Time Systems on both *OpenVMS VAX and OpenVMS Alpha* that can generate and interpret a 3270 data stream. This version of DECforms is not available as a standalone product and can only be used in conjunction with HP SNA 3270 Application Services software and the HP SNA Domain Gateway. The media and documentation for this version of DECforms are available as part of the HP SNA 3270 Application Services product; however, a standard DECforms development license is required to use this version. Refer to the HP SNA 3270 Application Services Software Product Description (38.70.xx) for more details.

Documentation

The DECforms documentation set is available with the DECforms development option and is available separately. It is not available with the DECforms run-time only option. The documentation set consists of:

- *Guide to Developing an Application*
- *Guide to Commands and Utilities*
- *Programmer's Reference Manual*
- *IFDL Reference Manual*
- *Style Guide for Character-Cell Devices*
- *Guide to Converting FMS Applications*
- *Installation Guide for OpenVMS Systems*
- *Keypad Card*
- *Release Notes*

HARDWARE REQUIREMENTS

Hardware Configurations

DECforms for OpenVMS is supported on all hardware configurations referenced in the OpenVMS Operating System for Alpha and VAX, Software Product Description (SPD 25.01.xx).

Terminals Supported

Terminal[1]	Notes
VT100, VT100 w/AVO	
VT101, VT102, VT103, VT125	
VT131	2
VT220, VT240, VT241	
VT320, VT330, VT340	3
VT420	4
VT510, VT520, VT525	4
VT1200, VT1300	
VXT2000	
IBM 3270 compatible	5

1. DECforms also supports the Hebrew versions of the VT100, VT200, and VT300 series terminals.
2. The VT131 is supported in VT102 mode only.
3. DECforms does not support the use of the 25th status line nor the use of the locator device on VT300-series terminals.
4. DECforms panels of up to 72 lines may be defined for VT420 and VT500 series terminals. These terminals can display 24, 36, or 48 lines on a single screen. Panels consisting of a number of lines greater than the screen size can be panned under local hardware control by the terminal. DECforms does not support access to the F1-F5 function keys or to the ALTERNATE key. The COMPOSE key is supported when configured for LOCAL COMPOSE.
5. DECforms supports display of forms on directly connected IBM 3270-class terminals only when those terminals are connected to the CXM04 3270 Terminal Option Card of a DECserver 550. This option card makes the IBM 3270-compatible device appear as a VT220 to the application.

Terminal Emulators

Terminal emulators on workstations and personal computers are supported only to the extent that the emulator conforms to the environment it is emulating.

Printers

DECforms printing layouts can be converted to PostScript files that can then be printed on any device compatible for printing PostScript files.

DECforms character-cell panels and forms can be printed on any printer. Video attributes are not printed and lines are drawn using the characters "-", "+", " " rather than the line-drawing character set.

Disk Space Requirements (Block Cluster Size = 1)

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.

DECforms Kit	VAX	Alpha
Development Installation	33,500 blocks 16.8 MB	41,000 blocks 20.5 MB
Development Permanent	32,500 blocks 16.3 MB	40,000 blocks 20.0 MB
Run-Time Installation	3,000 blocks 1.5 MB	5,400 blocks 2.7 MB
Run-Time Permanent	2,600 blocks 1.3 MB	4,900 blocks 2.5 MB

Memory Requirements for DECwindows Motif

The minimum supported memory for this application running in a standalone DECwindows Motif environment with both the client and the server executing on the same system is 16MB.

The performance and memory usage of DECwindows Motif applications are particularly sensitive to system configuration. Less memory may be required on the client system (the system where the software is installed and executed) if the server (the component that displays the application) resides on another system. More memory may be required on a system with several applications running, or may be desirable to improve the performance of an application.

SOFTWARE REQUIREMENTS

For Systems Using Terminals

- HP OpenVMS Operating System Alpha, V6.2, 7.3, or 7.3-1
- HP OpenVMS Operating System VAX, V6.2 or 7.3

For Workstations Running DECwindows Motif

- OpenVMS Operating System Alpha, V6.2, 7.3 or 7.3-1
- OpenVMS Operating System VAX, V6.2 or 7.3
- DECwindows Motif for OpenVMS, V1.2-5 or higher

OPTIONAL SOFTWARE

- HP DECforms Web Connector, V3.0 or later
- Oracle CDD/Repository for OpenVMS, V5.3–V7.0
- HP DECset for OpenVMS Systems, Release 11.2 or later
- Any programming language that conforms to the OpenVMS calling standard.

SOFTWARE LICENSING

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LICENSE MANAGEMENT FACILITY (LMF)

This layered product supports the OpenVMS License Management Facility.

License units for the Development System are allocated on an Capacity Basis by hardware tier or a Personal Use basis. Each Personal Use license allows one identified individual to use the layered product. License units for the Run-Time System are allocated on an Capacity Basis by hardware tier or a Concurrent Use basis. Each Concurrent Use license allows any one individual at a time to use the layered product. Some number of concurrent use licenses must be purchased to support the concurrent number of users.

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

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VMScluster configuration without restrictions. The *Hardware Requirements* section of this Software Product Description details any special hardware required by this product.

VMScluster configurations are fully described in the VMScluster Software Product Description (SPD 29.78.xx) and include CI, Ethernet and Mixed Interconnect configurations.

DISTRIBUTION MEDIA

This product is distributed on CD-ROM (as part of the OpenVMS Software Product Libraries)

The software documentation is also available as part of the OpenVMS Online Documentation Libraries on CD-ROM.

ORDERING INFORMATION

OpenVMS Alpha	Part Number
Development License, Unlimited Use	QL-0J8A*-AA
Development License, Personal Use	QL-VCHAA-2B
Development Software Product Services	QT-0J8A*-**
Run-Time License, Unlimited Use	QL-0J9A*-AA
Run-Time License,Concurrent Use	QL-VNSAA-2B
Run-Time Software Product Services	QT-0J9A*-**
Media and Documentation (OpenVMS Alpha Software Product Library)	QA-03XAA-H8
Hardcopy Documentation	QA-VCHAA-GZ

OpenVMS VAX	Part Number
Development License, Unlimited Use	QL-VCHA*-AA
Development License, Personal Use	QL-VCHAA-2B
Development Migration License, Unlimited Use	QL-VUVAA-J*
Development Software Product Services	QT-VCHA*-**
Run-Time License, Unlimited Use	QL-VNSA*-AA
Run-Time License, Concurrent Use	QL-VNSAA-3B
Run-Time Migration License, Unlimited Use	QL-VUWAA-J*
Run-Time Software Product Services	QT-VNSA*-**
Media and Documentation (OpenVMS VAX Software Product Library)	QA-5G88A-H8
Hardcopy Documentation	QA-VCHAA-GZ

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

OpenVMS VAX Migration Licenses

Users of FMS or TDMS that want to use DECforms on the same OpenVMS VAX system as FMS or TDMS can purchase DECforms Development or Run-Time Migration Licenses at a significant discount using the order numbers listed above. Order numbers for media, documentation, and services are the same as the standard DECforms Development or Run-Time system.

The Development Migration License would be purchased when DECforms development tools are to be used on the same OpenVMS VAX system as existing FMS or TDMS development tools. The Run-Time Migration License would be purchased when the DECforms run-time system is to be used on the same OpenVMS VAX system as existing FMS or TDMS run-time systems.

SOFTWARE PRODUCT SERVICES

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

GROWTH CONSIDERATIONS

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

SOFTWARE WARRANTY

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