Software Product Description

PRODUCT NAME: VAX FMS, Version 2.4 **SPD 26.10.12**

DESCRIPTION

The VAX FMS Forms Management System is designed to aid in the development of application programs that use video forms. VAX FMS manages the forms for application programs that use DIGITAL's family of VT100, VT200, and VT300-compatible terminals. Users of VAX FMS on DIGITAL's VAXstations operating in VT terminal-emulation mode can create, display, and interact with long forms of up to 54 lines in 80-column mode or 63 lines in 132-column mode. When used in conjunction with the DECnet/SNA VMS Distributed Host Command Facility (DHCF), VAX FMS can be used, with restrictions, with any IBM 3270-compatible terminal supported by DHCF. Forms created using VAX FMS can be printed on any DIGITAL printer.

Forms defined using VAX FMS provide the programmer with the ability to use the following features of DIGITAL's family of VT100, VT200, and VT300-compatible terminals:

- Individual character attributes of reverse video, bold, blinking, and underline
- Line attributes of double width, double height and scrolled
- Screen wide attributes such as 80 or 132 column lines and reverse video
- Alternate character sets including the VT100 ''graphics character set'' for line drawing

VAX FMS form data structures are used by the Form Driver during run-time to display forms, and to access and validate data entered by the terminal operator. Forms can be created and modified interactively with the interactive editing facility (FMS/EDIT) or they can be defined as a source form description with the Form Language and then converted to a form data structure using the Form Language Translator (FMS/TRANSLATE). (Long forms larger than 54 lines in 80-column mode and 63 lines in 132-column mode can only be created and modified with the Form Language Translator.)

Forms usually reside in form library files on disk and are retrieved as needed by application programs at execution time. This arrangement results in a high degree of independence between form data structures and application programs. Forms can be modified without recompilation or relinking of the application program. Forms can also be converted into an object module and linked with application programs to create memory-resident forms, or forms can be dynamically loaded into memory by the application program.

VAX FMS applications use the FMS Form Driver to control the display of forms, their associated data fields, and the input and output of data into fields. All data input from the terminal and output to the terminal is passed as ASCII strings.

Data for each field in a VAX FMS form is validated by the Form Driver. Field-validation characters are used to construct a ''field validation picture''. During program execution, characters input or output to the field are compared to the picture to determine if they are valid. In most instances, the field picture can contain several different field validation characters and also field-marker characters. Field-marker characters, used to improve the readability of the displayed form, are transparent to the application program.

Attributes from the following list can be assigned to each individual field:

- Name of the Field
- A default value
- A help message
- Autotab*
- Clear Character*
- Display Only
- Fixed Decimal*
- Indexed
- Left Justify
- Right Justify*
- Must Fill
- No Echo
- Response Required

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- Supervisor Only
- Uppercase*
- User action routines and associated data parameters
- Zero Fill
- Zero Suppress*

* This feature is either modified or absent when VAX FMS is used on a 3270-compatible terminal.

The attributes assigned to each field are checked for validity when the form is created. Some combinations of attributes are not legal. Each form has attributes that apply to the form as a whole. These attributes include:

- Name of the form
- Name of an associated help form
- Screen background (black, white, or do not change)
- Screen width (80 columns, 132 columns, or do not change)
- Screen area to clear when displaying the form
- Terminal character set
- User action routines and associated data parameters
- Video attributes to be used if the field being worked on is to be highlighted at run-time
- The order in which fields are to be accessed
- Named Data

VAX FMS Utilities

Interactive Form Editor

The FMS/EDIT command invokes the interactive editing facility that is used by the form developer to create and modify video forms. The creation of forms with the interactive editing facility is accomplished in phases. The layout phase is used to specify the visual appearance of the form, the background text, and what types of characters are to be valid input to the fields. While laying out a form on the screen, one has available a set of 48 function keys and key combinations. These keys perform functions such as cursor movement, delete and undelete, cut and paste, box drawing, video attribute assignment, centering, and displaying HELP. Additional phases are used to assign form and field attributes, to enter Named Data, and to assign field access order. Named Data and all form and field attributes, including user action routines, are specified by filling in questionnaires. Highlighting is used to indicate which field is being referred to during the field attribute and the field order assignment phases. Finally, the test phase allows the developer to interact with a form just as the end user would without exiting the editing session.

Form Language Translator

The Form Language Translator provides an alternate means for defining forms. The Form Language is a free-form, keyword-oriented, declarative language that provides the means to create and modify source form descriptions with a text editor or program.

The FMS/TRANSLATE command is used to convert the source form descriptions (contained in a text file) to form data structures. The data structures created are equivalent to those created with the FMS interactive editor. Existing form data structures can be converted back into Form Language source code for modification or documentation by using the FMS/DESCRIPTION/FULL command.

Other Form Application Development Aids

The VAX FMS Forms Management System provides additional facilities to aid in the application program development process. The facilities are invoked with the following commands:

- FMS/LIBRARY — To create and maintain form libraries
- FMS/DESCRIPTION — To obtain any of the following basic types of descriptions of forms:
  - /BRIEF — summary information about a form, its fields, Named Data, and user action routines.
  - /FULL — text files containing Form Language statements suitable for input to the Form Language Translator.
  - /DECLARATIONS — To obtain data division code that can be edited by the user to create a COBOL Data Division or DATATRIEVE Domain Definition reflecting the names, lengths, and order of fields on the screen
  - /DISPLAY_IMAGE — A printable image of a form in either terminal image format (with escape sequences), line printer format (without escape sequences), or LN03/LN03-PLUS format. Note that the optionally available VT100/200 Screen Font Cartridge Set is required to actually print forms on the LN03 and LN03-PLUS laser printers with full VT100/200 video attributes. Refer to the section below on Printing Forms for more information.
  - FMS/DIRECTORY — To obtain a directory list of forms in a library or in form files
  - FMS/OBJECT — To generate an object module containing one or more form data structures that, when linked with the application program, will allow access to the forms through virtual memory
- FMS/VECTOR — To generate an object module containing a vector table of addresses that point to the user action routines that are linked with the application program
- FMS/TEST — To invoke the form testing facility which allows the application developer to display a form as an application program would, to type data into fields, and to display field help.
- FMS/CONVERT — To convert TDMS forms from the VAX Common Data Dictionary/Plus to FMS forms.

- FMS/UPGRADE — To convert VAX FMS, Version 1.1 form files and form libraries to a format compatible with the current version of VAX FMS. VAX FMS, Version 1.1 forms are not compatible with the current version of VAX FMS; they must be upgraded for use with the current version of VAX FMS.

VAX FMS Form Driver

The Form Driver is the run-time component of VAX FMS. It consists of AST reentrant, shareable subroutines that are called by application programs to control the interaction of the terminal, the user, and the application program. The Form Driver provides facilities for managing multiple work areas (each of which contains a single form data structure). Multiple forms can be displayed on a single terminal screen.

Form Driver subroutines provide for terminal input and output, display of forms, manipulation of the screen, basic input validation and formatting, calling user action routines, and responding to the terminal operator's requests for help. Input and output can be specified one field at a time or on a whole form basis.

The Form Driver has a number of features to facilitate fine tuning of the application human interface. A timeout facility allows the application program to continue execution after waiting a specified period of time for the operator to enter the next character. Field video attributes, cursor position, and Insert/Overstrike mode can be dynamically altered by Form Driver calls in the application program. Field highlighting, controlled by the Form Driver, causes the video attributes of each field to be altered as the cursor enters the field and to be restored to their original state when the operator exits the field.

The Form Driver (FDV) may be purchased separately for systems that require only run-time support for applications using VAX FMS.

Named Data

The Form Driver supports the creation of parameter-driven applications by providing Named Data. Named Data are form constants that can be stored as part of the form data structure and retrieved at execution time by calls in the application program. Named Data allows information needed by the application program (such as form linkage, operator messages and other human language information, and data validation criteria for user subroutines) to be defined, stored, and modified independently of the application program.

User Action Routines

User action routines (UARs) are procedures written by the user in any DIGITAL supported VMS programming language. UARs are associated with forms and fields during the creation of form data structures and are automatically called by the Form Driver under the following conditions:

- When processing for a field is finished
- Before and after processing the terminal operator's help request
- When the terminal operator presses a function key
- When a screen refresh operation is requested

The Form Driver transfers program control to the user action routine under the circumstances defined. The user action routine has available to it (through Form Driver calls) a parameter string of 80 characters (defined as part of the form) which can be used to give processing information and the current Form Driver context.

VAX FMS Sample Application Program

The Sample Application program is a supported VAX FMS demonstration program. The Sample Application program, included in the distribution kit, is used to certify proper installation of VAX FMS. The documentation for VAX FMS gives examples from the Sample Application program. The sample programs (in each of the documented programming languages) and form descriptions are included in the documentation and in the distribution kit. The Sample Application Program can be installed on the target system at the user's discretion.

Printing Forms

Form images can be created and written to a file for subsequent printing by either an application program using a Form Driver call, FDV$PRINT_SCREEN, or by a terminal operator using an FMS DCL command, FMS/DESCRIPTION/DISPLAY_IMAGE. The following screen images can be created:

- Line printer image — All video attributes are ignored or translated to formats printable by standard line printers. Line drawing graphic characters are converted to standard ASCII characters and all other characters in alternate character sets remain untranslated.
- Terminal image — All escape sequences and control characters are included to present an exact image of the screen if it were to be displayed on the same kind of terminal as the current terminal. This image can be output properly only to a printer that understands the same control sequences as the current terminal.
- LN03 and LN03-PLUS laser printer image — Escape sequences are included to reproduce a screen image which is printable on an LN03 or LN03-PLUS laser printer. The resident fonts in these printers support the printing of forms which include ONLY single-size characters of the ASCII, DEC Supplemental, and DEC VT100 Line Drawing character sets. To print VAX FMS forms which include the FULL range of character, line, and screen attributes of the VT100 and VT200-compatible terminals (except for blinking), the optionally available VT100/200 Screen Font Cartridge Set must be installed in the LN03 or LN03-PLUS laser printer. This font cartridge set can be ordered from DIGITAL using the following ordering information:

  LN03X-DA VT100/200 Screen Font Cartridge Set

  This set of two font cartridges contains all the fonts necessary to reproduce most of the character, line, and screen attributes available on VT100, VT200, and VT300-compatible terminals. These fonts are extensions to standard Courier fonts and include the:

- ASCII character set
- DEC Supplemental character set
- DEC VT100 Line Drawing character set
- DEC Overprint Shading character set (reverse video effect)

  in the following sizes:

  – Double-high, double-wide (double-size)
  – Single-high, double-wide (double-wide)
  – Single-high, single-wide (single-size) (Overprint only)*

  and in the following orientations:

  – Portrait (80-column)
  – Landscape (132-column)

* The LN03 and LN03-PLUS resident fonts supply the single-high, single-wide size for the other three character sets.

Bolding and underlining are also supported by the LN03 and LN03-PLUS. Blinking is not supported.

Release Notes

VAX FMS release notes are provided in machine-readable form on the distribution media. Using the VMSINSTAL procedure, release notes may be displayed at the terminal or printed prior to installing VAX FMS and can be made available on-line after installation.

HARDWARE REQUIREMENTS

VAX, MicroVAX, or VAXstation configuration as specified in the System Support Addendum (SSA 26.10.12-x).

SOFTWARE REQUIREMENTS *

VMS Operating System
VMS Workstation Software (for VAXstation VWS terminal emulation only)

* Refer to the System Support Addendum for availability and required versions of prerequisite software (SSA 26.10.12-x).

ORDERING INFORMATION

Full Development and Run-time System:

Software Licenses: QL-VD7A*-**
Software Media: QA-VD7A*-**
Software Documentation: QA-VD7AA-GZ
Software Product Services: QT-VD7A*-**

Run-time-Only System:

Software Licenses: QL-VD8A*-**
Software Media: QA-VD8A*-**

* 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's Standard Terms and Conditions. For more information about DIGITAL's licensing terms and policies, contact your local DIGITAL office.

LICENSE MANAGEMENT FACILITY SUPPORT

This layered product supports the VMS License Management Facility. License units for both the Full Development System and Run-time System 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.