Software Product Description

PRODUCT NAME: DECimage Application Services for VMS, Version 3.0 SPD 25.E8.02

DESCRIPTION

DECimage Application Services provides an application programming interface (API) and programming tools for a family of image capture, processing and display services. The services are library resident routines (included with VMS DECwindows Motif®) that include the following sets:

Image Input Services	-	image scanner device drivers, device setup, and image data acquisition
Image Services Library	-	image datatype support, file i/o, image processing and manipulation, data encoding conversion
Image Display Services	-	device independent image rendition control, image display, and X Image Extension support
X Image Extensions	-	extension to the X Core protocol for communicating image resource request with an X Image Server Extension

DECimage Application Services is language independent and intended to enable application developers and systems integrators handle bitonal, gray scale (photographic), and RGB (red, green, blue) color image data. DECimage Application Services offer a consistent interface that conforms to the VAX–11 Procedure Calling and Condition Handling Standard and MIT C bindings and routine names for source code transportability. Examples are provided in BASIC, FORTRAN, and C.

DECimage Application Services supports CCITT, Group III (1D and 2D) and Group IV (2D) [CCITT Standards T.4 and T.6] recommendations for bitonal (facsimile) image data compression schemes, and the JPEG R5 Baseline recommended standard for continuous tone image data compression. It also supports the X Window System standard, DECwindows, Motif and the PostScript® Language Reference industry standard. It complies with Digital's Imaging System Architecture (DISA), Document Interchange Format (DDIF), and Compound Document Architecture (CDA).

DECimage Application Services features a condition handling facility (CHF) to provide error signaling portable between VMS and ULTRIX. CHF provides one common interface for both VMS and ULTRIX applications and includes messaging support services.

Features

Image Input Services (IIS)

- Device drivers for the MD300, MD400, and MD410 image scanners.
- Assign/deassign local or remote image input device reserving the device for exclusive use and then releasing the device. This includes support for remote node access and mixed VMS and ULTRIX scanner environments.
- et, set, and reset the device attributes.
- Read image data synchronously from the device and combine the data with the image attributes to create and deliver an image frame to the application.
- Acquire image data synchronously or asynchronously from the device to a specified buffer preallocated by the application.
- Cancel asynchronous image data acquisition.

Image Services Library (ISL)

- Frame services
  - — Create/delete image frame in memory
  - — Allocate/free/deallocate/store data plane in buffer
  - — Get/set single image and image frame attributes
- Import/export bitmap to/from application buffer
- Create/delete region of interest within a frame for processing
- Formatting services
  - — Open/close a DDIF file
  - — Create/delete a DDIF stream for reading or writing
  - — Import/export a DDIF frame
  - — Export DDIF page break (hard or soft) into a DDIF stream or file
  - — Export bitonal sixel or PostScript

  - — Compress/decompress bitonal image data using CCITT, Group III (1D and 2D) and Group IV (2D) facsimile compression schemes
  - — Compress/decompress grayscale and color image data using JPEG R5 Baseline compression scheme
- Domain adjustment
  - — Copy all or a portion of an image into a new image frame
  - — Dither or reduce the bits per pixel
  - — Flip or mirror the image, either horizontally and/or vertically
  - — Rotate the image around the Z axis
  - — Scale or change the dimensions of the image
- Image operator services
  - — Combine (16 logical point operations)
  - — Filters for enhancement, edge detection, and noise reduction
  - — Pixel remapping based on look-up tables or remapping functions provided by the programmer
  - — Tone scale adjustment to enhance contrast
- Statistical services
  - — Create/delete histogram of intensities for in-memory image
- Image processing primitive services
  - — General purpose convolution engine for filtering functions

Image Display Services (IDS)

- Services for display of images on DECwindows workstations, DECwindows terminals and supported hardcopy devices
- Rendition of bitonal, continuous tone monochrome, and continuous tone RGB color images
- DECwindows and Motif image widgets with scroll bars to render and display an image or portion of an image, and to interactively roam through the image
- Widget creation routines and tools
- Manage sharing of colors and grayscale shades between applications
- Color sixel output for the LJ250 color printer
- Transparent utilization of X Image Server Extension capabilities, if available, via X Image Extension protocol

X Image Extension Client

- Session Services — allow clients to initialize and terminate a session with an X Image Server Extension.
- Resource Services — allow clients to create, query, copy, and delete one of the following X Image Extensions Server resources:

Photomap	-	image objects that contain the image data and closely associated attributes
IDC	-	image domain context to define the subset or region of an image or process and act as an area operand in area image operations
Photoflo	-	image process context that describes the relationship among the various transfer, enhancement, and rendition processes

- Server/Client Image/Export Services — allow clients to read and write image data within the X Image Server Extension resource from and to core DECwindows X server drawables.
- Transport Services — allow the transfer of image data to and from the client and X Image Server Extension in compressed or uncompressed form.
- Process Services — provide form for the application of low level image operators and image data, primarily in support of preparation for or improvement of a display.
- Statistic Services — provide clients with the procedures to generate statistical information such as the mean, variance, standard deviation, maximum, and minimum about the data within an image.
- Process Control Services — provide clients with the ability to define and apply pipelines containing transport, process, and display operations.
- Event Services — allow clients to select or query X Image Server Extension specific events.

DCL IMAGE is a command line interface to specific functions. DCL IMAGE commands include:

- IMAGE SCAN (only supports the MD300 Scanner) allows the user to create a new revisable form image file (DDIF) by feeding a page through a scanner and directing the resulting image data into the specified image file. It provides limited control over these scanner features: brightness, compression, contrast, mode (line art or halftone) and resolution.
- IMAGE RENDER converts a DDIF bitonal or continuous tone image file into a format suitable for output, display, or printing on a specific device. It adjusts the image file to match the type, characteristics and presentation level protocol of the output device.

- IMAGE VIEW permits the user to see a final form bitonal or continuous tone image file on a display device which supports sixel, DDIF, or X Window System format.
- IMAGE ADJUST allows the user to create a new revisable form image file from an existing revisable form image file (bitonal or continuous tone), allowing three adjustments: Crop or extract a piece of the original image; scale (enlarge or reduce) the original image; and rotate or reorient the original image.
- IMAGE CONVERT provides conversion of the Microtek® Eyestar™ bitonal image file format to DDIF format for inclusion in compound documents.

SOURCE CODE INFORMATION

Source code examples in VAX C, VAX BASIC, and VAX FORTRAN are provided to show the programmer interface to Application Services.

Language-specific files for definition of structures, flags, and constants needed to interface with Application Services are provided.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXserver, or VAXstation configuration as specified in the System Support Addendum (SSA 25.E8.02-x).

SOFTWARE REQUIREMENTS

- VMS Operating System
- VMS DECwindows Motif

Refer to the System Support Addendum (SSA 25.E8.02-x) for availability and required versions of prerequisite /optional software and for information regarding components of VMS DECwindows.

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Software Licenses: QL-892A*-**
Software Media: QA-892AA-H*
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