Software Product Description

PRODUCT NAME: VAX-11 RSX, Version 2.5 **SPD 26.73.07**

DESCRIPTION

Overview

VAX-11 RSX is an emulator of the RSX Operating System family which executes on all VAX systems. VAX-11 RSX runs in compatibility mode on processors that support a PDP-11 instruction set subset in hardware or microcode, and also runs on processors without this support by providing its own software emulation of the same PDP-11 instruction set subset.

VAX-11 RSX provides special capabilities which enable PDP-11 users to develop programs for execution in the following environments:

- VMS compatibility mode (hardware-supported or software-emulated)
- RSX-11M-PLUS
- RSX-11M
- RSX-11S
- Micro/RSX
- VAX CoProcessor/RSX

VAX-11 RSX also allows for the migration of many existing RSX applications to VMS.

Program Development Capabilities

The program development facilities provided by VAX-11 RSX consist of the following:

- PDP-11 Instruction Set Emulator (CEM$EMULATOR) which emulates the PDP-11 machine instruction set and allows RSX tasks to run on VAX processors that do not contain the compatibility mode hardware.
- MCR command line interpreter (CLI) which emulates the RSX MCR CLI so users may interact with a familiar user interface. MCR also provides access to many of the native VMS program development facilities.
- RSX Application Migration Executive (AME) which emulates the RSX Executive services.
- Indirect Command File Processor (ICM) which allows RSX indirect command files to be executed on VMS.
- DCL command back translator (BACKTRANS) which allows RSX utilities to be invoked through the use of the DCL command interface.
- A subset of the RSX program development utilities and libraries.
- A subset of the RMS-11, Version 2.0 program development utilities and libraries.

The following RSX program development utilities are available to users of VAX-11 RSX:

- BRU - Backup and Restore Utility (ODS-1 only)

  Note: BRU can restore files to an ODS-2 volume. However, files on an ODS-2 volume cannot be read by BRU for backup or verify operations.
- CRF - Cross Reference Processor
- DMP - File Dump Utility
- EDI - Line Text Editor
- FLX - File Transfer Utility Program
- LBR - Librarian Utility Program
- MAC - PDP-11 MACRO-11 Assembler
- PAT - Object Module Patch Utility
- PIP - Peripheral Interchange Program
- SLP - Source Language Input Program
- TKB - Task Builder
- ZAP - Task/File Patch Program

The following RSX program development libraries and components are available to VAX-11 RSX users:

- FCSRES.STB - File Control Services symbol table
- FCSRES.EXE - File Control Services resident library
- ODT.OBJ - On-Line Debugging Tool object module

- QIOSYM.MSG - Standard RSX QIO error messages
- RSXMAC.SML - Standard RSX macros
- SYSLIB.OLB - System object library (without ANSI Magtape support)
- VMLIB.OLB - Virtual memory subroutine library

The following RMS-11 program development utilities are available to VAX-11 RSX users:

- BCK - File Backup Utility
- CNV - File Conversion Utility
- DEF - File Definition Utility
- DES - File Design Utility
- DSP - File Display Utility
- IFL - Index File Load Utility
- RST - File Restore Utility

The following RMS-11 program development libraries and components are available to VAX-11 RSX users:

- RMSRES.STB - RMS-11 symbol table
- RMSRES.EXE - RMS-11 memory-resident library
- RMSLIB.OLB - RMS-11 object library
- RMSMAC.MLB - RMS-11 macro library
- RMS11.ODL - Prototype disk-based overlay descriptor
- RMS11S.ODL - Minimum-size partial-function overlay descriptor
- RMS11X.ODL - Minimum-size full-function overlay descriptor
- RMS12S.ODL - Medium-size partial-function overlay descriptor
- RMS12X.ODL - Medium-size full-function overlay descriptor
- DAP11X.ODL - Full-function including remote support overlay descriptor
- RMSDES.IDX - Help file for the RMS DES utility

The following utilities for file transfer to and from RSX family systems and other VAX systems are available to VAX-11 RSX users:

- DTE - Data Terminal Emulator Utility
- MFT - File Transfer Utility

General Access

VAX-11 RSX users gain access to the system through the normal VMS LOGINOUT procedure. They may explicitly request MCR as their CLI, or they may have MCR as their default CLI by having it specified in the User Authorization File.

Alternatively, VAX-11 RSX users may use the DCL CLI. Under DCL, not all of the RSX and RMS program development utilities are directly available. Some of the utilities are available through DCL commands (e.g., LIBRARY/RSX-11), but for some other utilities, the user must explicitly request the utility to execute by typing either RUN SYS$SYSTEM:utility-name or MCR utility-name.

VAX-11 RSX indirect command files may be executed from either MCR or DCL, but must contain only indirect directives and MCR commands.

On VMS, it is only possible to switch from one CLI to another by logging out of the current CLI and then logging in again using the new CLI, or by using the DCL or MCR SPAWN command. This differs from RSX-11M and RSX-11M-PLUS.

Operations With Disk and Tape Volumes

In addition to a native disk file structure (Files-11 Structure Level 2), VMS provides a disk file structure (called Files-11 Structure Level 1) that is compatible with RSX Systems. This provides for easy cross migration of code and data. Both file structures are available to programs running in either compatibility or native mode. However, not all features of Files-11 Structure Level 2 are available to programs running in compatibility mode.

Note: Files-11 Structure Level 1 (ODS-1) disks cannot be shared between nodes in a cluster.

VAX-11 RSX supports general access to magnetic tape volumes. In addition, tapes created on an RSX system by BRU, FLX, PIP, and RMS BCK can all be read on VAX-11 RSX by corresponding utilities. Similarly, it is possible to create tapes on VAX-11 RSX to be read on an RSX system.

Intersystem Facilities

VAX-11 RSX includes support for the RSX Data Terminal Emulator (DTE) and File Transfer (MFT) utilities. These utilities provide for two-way file transfer to and from RSX family systems and other VMS Systems which are running VAX-11 RSX. In this manner, files of any type or size can be transferred by means of a serial line in either direction from one system to the other. The file transfer can be initiated from either system using the DTE utility available on that system.

DECnet is not available to RSX programs executing under VAX-11 RSX with one exception: applications written to use RMS-11, Version 2.0 will have access to DECnet.

Compatibility

VAX-11 RSX is an emulator of the RSX family of operating systems. Specifically, this product is designed to emulate:

- RSX-11M-PLUS, V4.3
- Micro/RSX, V4.3
- RSX-11M, V4.6
- RSX-11S, V4.6

Directive Compatibility

The following RSX executive directives are supported:

#	ABRT$						
	ACHN$		DTRG$		IHAR$S		SFPA$
%	ALTP$		ELAW$		MAP$	#	SPND$S
#	ALUN$	#	ELGF$	#	MRKT$		SPRA$
	ASTX$S		ENAR$S		QIO$	#	SPWN$
	ATRG$	#	ENCP$S		QIOW$		SRDA$
					PFCS$		
					PRMS$		
	CLEF$		EXIF$	#	RCST$		STLO$
	CLOG$		EXIT$S	#	RCVD$		STOP$S
	CLON$		EXST$	#	RCVX$		STSE$
#	CMKT$		EXTK$		RDAF$		SVDB$
	CRAW$		FEAT$		RDXF$		SVTK$
			FSS$				
#	CRGF$		GDIR$		RLOG$		TLOG$
	CRRG$	#	GLUN$		RLON$		TLON$
#	CSRQ$	*	CMCR$	#	RQST$		UMAP$
%	DECL$S		GMCX$	#	RSUM$	#	USTP$
	DLOG$	#	GPRT$	#	RUN$	%	WSIG$S
	DLON$		GREG$	#	SDAT$		WTLO$
	DSAR$S	#	GTIM$		SDIR$		WTSE$
#	DSCP$S	#	GTSK$		SETF$		

- Not entirely compatible with the same directive on RSX family systems

% - NO-OP

* - Compatible from the MCR CLI; not entirely compatible from the DCL CLI

The following RSX executive directives are NOT supported:

CLI	I/D Space	Virt. Term.	PLAS	Other
GCCI$	MSDS$	CRVT$	CPCR$	CINT$
GCII$	MVTS$	ELVT$	RREF$	GIN$
SCAA$	SCAL$S		RRST$	GSSW$
SCLI$			SREF$	RDEF$
SNXC$			SRRA$	RMAF$S
				SMSG$
				SPEA$
				SREA$
				SREX$
				STAF$
				STIM$
				SWST$
				TFEA$
				ULGF$

Parent/Offspring	Variable Send/Receive
CNCT$	VRCD$
EMST$	VRCS$
RPOI$	VRCX$
SDRC$	VSDA$
SDRP$	VSRC$

MCR Compatibility

The following RSX MCR commands are supported:

ALLOCATE	ASN	BYE	CANCEL
DEALLOCATE	DEBUG	DMOUNT	EDT
HELP	INIT	MOUNT	RESUME
RUN	TIME	UFD	

In addition, the following VMS DCL commands are available from the MCR CLI:

APPEND	ATTACH
CONTINUE	COPY
CREATE	CREATE/DIRECTORY
CREATE/NAME_ TABLE	DEASSIGN
DEFINE	DELETE
DEPOSIT	DIFFERENCES
DIRECTORY	DUMP
EXAMINE	LOGOUT
MAIL	MERGE
PRINT	PURGE
RENAME	RUNOFF
SEARCH	SET
SHOW	SORT
SPAWN	STOP
SUBMIT	TYPE

The installation procedure provides the option to install an MCR help library which contains help text on both the RSX MCR and DCL commands that are part of the MCR CLI.

Indirect Command File Compatibility

All indirect command file directives and functions are supported to some extent except .FORM, .WAIT, and .XQT. Most RSX indirect command files can be executed successfully on VAX-11 RSX.

The following system generations and network generations are specifically supported:

- RSX-11M-PLUS V4.3
- RSX-11M V4.6
- RSX-11S V4.6
- DECnet-11M-PLUS V4.3
- DECnet-11M V4.5
- DECnet-11S V4.5

Note: The MicroVAX II and VAXstation II are NOT recommended for RSX system generations or DECnet network generations due to the performance characteristics of the PDP-11 instruction set emulator on these processors.

Other Areas of Compatibility

VAX-11 RSX also supports the following features:

- Memory Resident Overlays
- Cluster Libraries
- FCSRES
- RMSRES
- VMS search lists consisting only of devices and rooted directories
- Installation on to and operation from a VAXcluster common system disk (SYSCOMMON)
- Virtual Sections
- FORTRAN-77 Virtual Arrays

General Areas of Incompatibility

Every effort has been made to make the functions this product supports as compatible as possible with the RSX environment given the constraints of the VMS Operating System environment. However, certain areas of incompatibility do exist in this product and may continue to exist in future versions. The few areas of incompatibility mentioned in the various sections of this Software Product Description (SPD) are not guaranteed to be all inclusive.

Other areas where incompatibilities exist include:

- No support for supervisor mode libraries
- No support for I-and-D space separation

Compatibility with Other Derivatives of RSX

No compatibility is expressed or otherwise implied with any other versions of the RSX family of operating systems or related operating systems, except where specifically noted.

Source License and Sources Listings Option

This option provides the user with listings of the source programs for this software product. It gives the user the right to use the listings for any CPU at the facility/location specified in the agreement which has a Single-Use License for the object code.

HARDWARE REQUIREMENTS

VAX, MicroVAX or VAXstation configuration as specified in the System Support Addendum (SSA 26.73.07-x).

SOFTWARE REQUIREMENTS *

VMS Operating system

* Refer to the System Support Addendum (SSA 26.73.07-x) for availability and required versions of prerequisite/optional software.

ORDERING INFORMATION

Software Licenses: QL-382A*-**
Software Media: QA-382A*-**
Software Documentation: QA-382A*-GZ
Software Product Services: QT-382A*-**

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