

Software Product Description

PRODUCT NAME: VAX-11 RSX, Version 1.0
RSX-11 Operating Systems Emulator

SPD 26.73.00

DESCRIPTION

Overview

VAX-11 RSX is an emulator of the RSX-11 operating system family which executes on VAX/VMS. It provides special capabilities which enable PDP-11 users to develop programs for execution in any of the following environments:

- VAX/VMS compatibility mode
- RSX-11M-PLUS
- RSX-11M
- RSX-11S
- Micro/RSX
- P/OS

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

Program Development Capabilities

VAX-11 RSX provides capabilities that enable PDP-11 users to develop programs for execution in the VAX/VMS, the RSX-11, or the P/OS environments. The program development facilities provided by VAX-11 RSX consist of the following:

- The MCR command line interpreter (CLI). This CLI emulates the RSX-11 MCR CLI so that users may interact with a familiar user interface. MCR also provides access to many of the native VMS program development facilities.
- The RSX-11 Application Migration Executive (AME), which emulates the RSX-11 Executive services.
- The Indirect Command File Processor (ICM), which allows RSX-11 indirect command files to be executed on VAX/VMS.
- The DCL command back translator (BACKTRANS), which allows RSX-11 utilities to be invoked through the use of the DCL command interface.
- A subset of the RSX-11 program development utilities and libraries.
- A subset of the RMS-11, Version 2.0 program development utilities and libraries.

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

- BRU — Backup and Restore Utility
- CRF — Cross Reference Processor
- EDI — Line Text Editor
- DMP — File Dump Utility
- DSC — Disk Save and Compress Utility Program
- 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-11 program development libraries and components are available to VAX-11 RSX users:

- ODT — On-Line Debugging Tool object module
- QIOSYM — Standard RSX-11 QIO error messages
- RSXMAC — Standard RSX-11 macros
- SYSLIB — System object library (non-ANSI version)
- VMLIB — 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

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

- 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
- RSMDES.IDX — Help file for the RMS DES utility

The following utility for file transfer to and from Micro/RSX systems is available to VAX-11 RSX users:

- MFT - Micro/RSX 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/RSX11), 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 DCL but must contain only indirect directives and MCR commands.

Note that 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

Disk and Tape Volumes

In addition to its native disk file structure, VAX/VMS also provides a disk file structure (called Files-11 Structure Level 1) that is compatible with RSX-11. This provides for easy cross migration of code and data. Both file structures are available to programs running in either compatibility or native mode.

VAX-11 RSX supports general access to magnetic tape volumes. In addition, tapes created on an RSX-11 system by BRU, DSC, FLX, and PIP 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-11 system.

Intersystem Facilities

VAX-11 RSX includes support for the Micro/RSX File Transfer Program (MFT) supplied with Micro/RSX, RSX-11M-PLUS, and RSX-11M. Two-way file transfer capabilities are provided by the MFT utility that executes on the VAX host. Files of any type or size can be transferred from one system to the other in this manner.

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 full access to DECnet.

COMPATIBILITY

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

- RSX-11M-PLUS, Version 2.1
- RSX-11M/RSX-11S, Version 4.1
- Micro/RSX, Version 1.0

Every effort has been made to make the functions this product supports as compatible as possible given the constraints of the VAX/VMS operating system environment. However, certain areas of incompatibility do exist in this product and may continue to exist in future versions. The areas of incompatibility listed below are not guaranteed to be all inclusive.

Directive Compatibility

The following RSX-11 directives are supported:

# ABRT\$	# ENCP\$\$	QIOW\$	SPRA\$
% ALTP\$	EXIF\$	# RCST\$	# SPWN\$
# ALUN\$	EXIT\$\$	# RCVD\$	SRDA\$
ASTX\$\$	EXST\$	# RCVX\$	STLO\$
CLEF\$	EXTK\$	RDAF\$	STOP\$\$
# CMKT\$	# GLUN\$	RDXF\$	STSE\$
# CRGF\$	* GMCR\$	# RQST\$	SVDB\$
# CSRQ\$	# GPRT\$	# RSUM\$	SVTK\$
% DECL\$\$	# GTIM\$	# RUN\$	# USTP\$
DSAR\$\$	# GTSK\$	# SDAT\$	% WSIG\$\$
# DSCP\$\$	IHAR\$\$	SETF\$	WTLO\$
# ELGF\$	# MRKT\$	SFPA\$	WTSE\$
ENAR\$\$	QIO\$	# SPND\$\$	

- Not entirely compatible

% - NO-OP

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

The following RSX-11 executive directives are not supported:

CLI	I/D Space	Virt. Term.	PLAS	Other
GCCI\$	MSDS\$	CRVT\$	ATRG\$	CINT\$
GCII\$	MVTS\$	ELVT\$	CRAW\$	CPCR\$
SCAA\$	SCAL\$S		CRRG\$	GSSW\$
SCLI\$			DTRG\$	RDEF\$
SNXC\$			ELAW\$	RMAF\$S
			GMCX\$	SMSG\$
			GREG\$	SPEA\$
			MAP\$	SREA\$
			RREF\$	SREX\$
			SREF\$	STAF\$
			SRRA\$	STIM\$
			UMAP\$	ULGF\$

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

MCR Compatibility

The following RSX-11 MCR commands are supported:

ALLOCATE	ASN	BYE	CANCEL
DEALLOCATE	DEBUG	DMOUNT	EDT
HELP	INITIALIZE	MOUNT	RESUME
RUN	(INIT VOLUME)	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 which 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-11 indirect command files can be executed successfully on VAX-11 RSX. The following systems and netgens are specifically supported:

- RSX-11S, Version 4.1 (Minimum Update D)

- RSX-11M, Version 4.1 (Minimum Update D)
- RSX-11M-PLUS, Version 2.1 (Minimum Update D)
- DECnet-11M/S, Version 4.0 (Minimum Update D)

General Areas of Incompatibility

Other areas where incompatibilities exist include:

- No support for cluster libraries
- No support for memory resident overlays
- No support for supervisor mode libraries
- No support for I-and-D space separation
- P/OS support is limited to the P/OS directives which are identical to RSX-11M-PLUS directives and are listed in the directive table above.
- No support for VAX/VMS search lists (i.e., multi-valued logical names)

Note: VAX-11 RSX, Version 1.0 can be installed and used on a VAXcluster, but there are a few restrictions. VAX-11 RSX, Version 1.0 cannot be installed on a VAXcluster which uses a common system disk unless a number of logical names are modified before the installation to remove all references to search lists.

Compatibility with other derivatives of RSX-11

No compatibility is expressed, implied or otherwise, with any other versions of the RSX-11 family of operating systems or related operating systems.

MINIMUM HARDWARE REQUIRED

VAX-11 RSX, Version 1.0 can be run on any of the following VAX processors, which contain compatibility mode hardware:

- VAX-11/785
- VAX-11/782
- VAX-11/780
- VAX-11/750
- VAX-11/730
- VAX-11/725

Block Space Requirements (Block Cluster size = 1)

- Maximum Disk Space Required for Installation
5701 blocks (2918912 bytes)
- Minimum Disk Space Required for Installation
5597 blocks (2865664 bytes)
- Maximum Disk Space Required for Use (Permanent)
5301 blocks (2714112 bytes)
- Minimum Disk Space Required for Use (Permanent)
3882 blocks (1987584 bytes)

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.

GROWTH CONSIDERATIONS

VAX-11 RSX, Version 1.0 includes corrections to deficiencies and also includes enhancements and new facilities above those supplied by the bundled RSX-11 compatibility mode software which is part of VAX/VMS, Version 3.7. The minimum hardware requirements

(both memory size and disk space) for this product are greater than that for the RSX-11 compatibility mode software bundled as part of VAX/VMS, Version 3.7.

The minimum hardware requirements for any future version or update of VAX-11 RSX may be greater than the minimum hardware requirements for the current version.

PREREQUISITE SOFTWARE

VAX/VMS Operating System

Refer to VAX/VMS Optional Software Cross Reference Table (25.99.xx) for the required version

OPTIONAL SOFTWARE

There are several optional software products available for VAX-11 RSX. Consult the VAX/VMS Optional Software Cross Reference Table (SPD 25.99.xx) for the required version of the optional software. It is also advisable to consult the individual products SPD to insure applicability.

SOFTWARE WARRANTY

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The warranty period is ninety (90) days. It begins when the software is installed or thirty (30) days after delivery to the end user, whichever occurs first and expires ninety (90) days later. All warranty related support for this software will end 180 days after release of the subsequent version.

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IF THE SOFTWARE FAILS TO FUNCTION FOR REASONS STATED ABOVE, THE CUSTOMER'S WARRANTY WILL BE INVALIDATED AND ALL SERVICE CALLS WILL BE BILLABLE AT THE PREVAILING PER CALL RATES.

INSTALLATION

This software product can be installed by the customer using the step-by-step documentation available for this product. Optionally you can purchase DIGITAL Installation Services which provide for the installation of the software product by an experienced DIGITAL Software Specialist.

DIGITAL's Installation Services can be purchased as a separate service.

Courtesy Installation Service

This software product will be installed by DIGITAL at no additional charge if you purchase it concurrent with a Startup Service Package that includes installation service. Both the operating system and this product must be installed concurrently.

ORDERING INFORMATION

Single-Use licensed software is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of DIGITAL's copyright notice and any proprietary notices on the software) for use on such CPU.

You will need a separate license for each CPU on which you will be using the software product (except as otherwise specified by DIGITAL). Then you will select the Materials and Service Options you need to utilize the product effectively. **IF YOU ARE ALREADY FAMILIAR WITH THESE OPTIONS, YOU MAY OBTAIN THE ORDERING INFORMATION DIRECTLY FROM THE SOFTWARE OPTIONS CHART.** In most cases, you will want to review the following descriptions to determine what options you require.

LICENSE OPTIONS

Single-Use License Option

The Single-Use License is your right to use the software product on a single CPU and it includes your 90 day warranty.

For your first installation of this software product you must purchase as a **minimum**:

- Single-Use License Option, and
- Distribution and Documentation Option

The license gives you the right to use the software on a single CPU and the Distribution and Documentation Option provides the machine-readable software and related documentation.

To use this software product on additional CPUs, you must purchase for each CPU as a **minimum**:

- Single-Use License Option

In addition to the right to use, the license gives you the one-time right to copy the software from your original CPU installation to the additional CPU. Therefore, the Distribution and Documentation Option is not required, but optional.

VAXcluster License Option

You are eligible for a VAXcluster license option on your second or each subsequent CPU that is part of a VAXcluster system. This is a Single-Use License offered at a reduced price and provides all of the License rights described above. A standard, Single-Use License Option (QDxxx-UZ or QExxx-UZ) is required with the first purchase of this software product and is also required for the first CPU of a VAXcluster system.

For software configuration purposes, a VAXcluster system is a set of VAXprocessors, each running the VMS operating system, where each VAX processor has a direct path to every other VAX processor via Computer Interconnect (CI) Bus.

MATERIALS AND SERVICE OPTIONS

Distribution and Documentation Option

The Distribution and Documentation option provides the machine-readable software in binary form and the basic documentation. You must have, or order, a Single-Use License to obtain this option. You will need this option to install the software for the first time. When revised versions of this software product become available, they may also be obtained by purchasing this option again.

If you prefer to receive automatic distribution of revised versions for this product, you must purchase a Software Product Service Agreement.

Software Revision Right-To-Copy Option

The Right-To-Copy Option allows a customer with multiple CPUs to copy a revised version of a software product from one CPU to another. Each CPU must be licensed for that product. You first install the revised software on one CPU; then you can make copies for additional CPUs by purchasing the Right-To-Copy Option for each additional CPU.

If you prefer to automatically obtain the right-to-copy, you must purchase a Service Right-to-Copy for each additional CPU; this is a service added to a Software Product Service Agreement.

Documentation-Only Option

You can obtain one copy of the basic documentation by purchasing the Documentation-Only Option.

Installation Service Option

DIGITAL's Installation Service is provided by a DIGITAL Software Specialist and accelerates your productive use of this product. For more information on what is included in this service, please obtain the appropriate Service Description from your local DIGITAL office.

Installation Service will be provided at no additional charge (Courtesy Installation) under the conditions described in the Installation section above.

Software Product Service Agreements

DIGITAL offers licensed customers annual Software Product Service Agreements to maintain their software:

DECsupport Service is the most comprehensive level of service offering critical problem on-site assistance and scheduled preventative maintenance. You receive telephone support that gives you timely answers and solves most software problems. In addition, you get revised versions of the software and documentation, and system newsletters or dispatches.

BASIC Service is ideal for customers who have a staff who's experience and expertise enables them to analyze and communicate a software problem to DIGITAL remote support centers. You receive telephone support that gives you timely answers and solves most software problems. In addition, you get revised versions of the software and documentation, and system newsletters or dispatches.

Self-Maintenance Service is designed for customers who require revised versions of the software and documentation from DIGITAL. In addition, you get system newsletters or dispatches and may submit software performance questions.

A variety of service options may be added to an existing Software Product Service Agreement, such as service for multiple-like systems. Contact your DIGITAL representative for additional information and ordering details.

The Prerequisite Software, as specified by this SPD, must have the equivalent level Software Product Service.

For more information on what is included in these agreements, please obtain the appropriate Service Description from your local DIGITAL office.

Training From Educational Services

To ensure customer success with DIGITAL products, Educational Services sells training for the installation, maintenance and/or management of DIGITAL software. Course formats vary from seminars to packaged training materials that include self-paced instruction and computer-based instruction to traditional lecture/labs at DIGITAL's worldwide Training Centers.

For a complete listing of course schedules and prices, refer to the *DIGEST*, Educational Services' quarterly publication. For curriculum-specific information, training recommendations and assistance in planning training programs, please contact your Educational Services Representative.

Professional Software Services

DIGITAL Software Specialists are available on a per-call or resident contract basis to help in all phases of software development or implementation. Specialists are available to serve as technical consultants, decision support consultants or business systems analysts.

Resources are available to:

- Supplement your programming staff
- Assume project management responsibility
- Develop software
- Augment a system start-up service package with tailored services to meet specific needs

Contact your DIGITAL representative for additional information and ordering details.

SOURCE MATERIALS OPTIONS

You can obtain optional source materials for this software product by signing DIGITAL's Software Program Sources License Agreement and then purchasing the source option(s) you want. The agreement entitles you

to use the source materials at one customer facility or location which is specified in the agreement.

Most users do not require source materials. They are used primarily to make modifications to the software product. Source kits provided by DIGITAL do not necessarily contain all source files used by DIGITAL to build binary kits.

Source License and Sources Listings Option

This option provides you with listings of the source programs for this software product. It gives you 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.

SOFTWARE OPTIONS CHART

The distribution Media Codes used in the Software Options Chart are described below. You specify the desired Media Code at the end of the Order Number, e.g., QC382-H4 = binaries on RC25 Disk Cartridge.

4 = RC25 Disk Cartridge
 H = RL02 Disk Cartridge
 J = RA60 Disk Cartridge

M = 9-track 1600 BPI Magtape (PE)
 V = RK07 Disk Cartridge

NOTE: The availability of these software product options and services may vary by country. Customers should contact their local DIGITAL office for information on availability.

OPTIONS	ORDER NUMBER VAX-11/725 VAX-11/730	ORDER NUMBER VAX-11/750	ORDER NUMBER VAX-11/780 VAX-11/782 * VAX-11/785
LICENSE OPTIONS: A LICENSE IS REQUIRED FOR EACH CPU.			
Single-Use License	QC382-UZ	QD382-UZ	QE382-UZ
VAXcluster License		QD382-QZ	QE382-QZ
MATERIALS AND SERVICE OPTIONS:			
Distribution and Documentation Option	QC382-H4 QC382-HH QC382-HM	QD382-HH QD382-HJ QD382-HM QD382-HV	QE382-HJ QE382-HM QE382-HV
Software Revision Right-To-Copy Option	QC382-HZ	QD382-HZ	QE382-HZ
Documentation Only Option	QL382-GZ	QL382-GZ	QL382-GZ
Installation Service Option	QC382-I4 QC382-IH QC382-IM	QD382-IH QD382-IJ QD382-IM QD382-IV	QE382-IJ QE382-IM QE382-IV
Software Product Service Agreements:			
DECsupport Service	QC382-94 QC382-9H QC382-9M	QD382-9H QD382-9J QD382-9M QD382-9V	QE382-9J QE382-9M QE382-9V
Basic Service	QC382-84 QC382-8H QC382-8M	QD382-8H QD382-8J QD382-8M QD382-8V	QE382-8J QE382-8M QE382-8V

OPTIONS	ORDER NUMBER VAX-11/725 VAX-11/730	ORDER NUMBER VAX-11/750	ORDER NUMBER VAX-11/780 VAX-11/782 * VAX-11/785
Self-Maintenance Service	QC382-34 QC382-3H QC382-3M	QD382-3H QD382-3J QD382-3M QD382-3V	QE382-3J QE382-3M QE382-3V
SOURCE CODE AND MATERIALS OPTIONS			
Source License and Sources Listings	QL382-FR	QL382-FR	QL382-FR

* For software licensing purposes, a VAX-11/782 is a multiprocessor that is considering a single CPU.