Option Number		Option Title	Date	Page #
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QTY	PICK	LOCATION	PART NUMBER	PART DESCRIPTION
1	*FS*		36-28231-07	THERMAL BARCODE LABEL
2	*FS*		99-07809-01	CRONEL
				Notes: Can also use 99-06229-05
1	_____	(UR)	AQ-FQ07H-BN	VAX C V3.2 BIN TK50
1	_____	(DP)	AV-PF4FA-TK	SUP REPLACEMENT LETTER
1	_____		EN-01044-07	SFTWR PERFORMANCE REPORT FORM
1	***** NS	(UR)	QA-015AA-WZ3.2	VAX C V3.2 UPD DOC
1	*FS*		36-28231-07	THERMAL BARCODE LABEL
1	*FS*		99-06229-04	CARTON
1	*FS*		99-07691-03	AUTO BAG
1	_____	(UR)	AA-JP84D-TE	VAX C RUN TIME REF MANUAL
1	_____	(UR)	AE-LT60D-TE	VAX C V3.2 SSA 25.38.17-A
1	_____	(UR)	AE-M878S-TE	VAX C V3.2 SPD 25.38.17
1	_____	(DP)	AE-NA50A-TK	SOFTWARE WARRANTY ADDENDUM
1	_____	(UR)	AV-N671N-TE	VAX C V3.2 READ FIRST
1	_____		EN-02512-05	CHANGE OF ADDRESS CARD

EXPORT CONTENTS SUMMARY:

```
  6 PACKAGING           1 TK50 CARTRIDGE      5 SPD / LETTER
  2 FORMS               1 SOFTWARE MANUALS
```

October, 1990

digital™

Dear Service Customer,

Enclosed is a software product update/maintenance release supplied as part of your software maintenance agreement.

As part of its planned License Management Tools program, Digital has initiated replacement of all Service Update PAKs (SUPs) for licensed software product with License Product Authorization Keys (PAKs).

Nothing is necessary for you to do until contacted concerning the SUP-TO-PAK Conversion Program. Contacting customers will be done during the October through January time period.

If by some chance you have not been contacted by that time, or have questions concerning the program in your area please call 800-332-4636.

You may already have a License PAK for the product in this maintenance update, if so, please ensure that it is registered and loaded within the License Management Facility (LMF). Any other Service Update PAKs (SUPs) or Temporary Service PAKs (TSPs) for the product should be disabled/cancelled.

When disabling/cancelling SUPs or TSPs, if you find that you need to purchase additional "license rating" to execute the software on a desired processor or system configuration CALL DECdirect FOR TOLL FREE TELEPHONE ORDERING information at (800) 344-4825.

Thank you for your continued business and support.

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Read Before Installing or Using VAX C Version 3.2
AV–N671N–TE

Whether you are a new or a continuing VAX C customer, please take time to read the following information about your product.

Installation and Release Notes Information

When installing VAX C Version 3.2, follow the VAX C Version 3.1 Installation Guide, with the following exceptions:

- VAX C Version 3.2 requires VMS Version 5.2 or higher, not VMS Version 5.0 as stated in the installation guide.

- The VAX C Version 3.2 installation procedure has an additional query that was not issued during the VAX C Version 3.1 installation procedure and is not mentioned in the installation guide. The query deals with the installation of the optional VAX C RTL object libraries for NAS support. For most customers, these libraries are not required. They are required only if you intend to develop NAS-compliant VAX C applications. See the release notes for more information.

- Since VMS Version 5.2 contains support for multiprocess debugging, the multiprocess debugger is no longer included with the VAX C kit. Hence, the section of the installation guide that discusses installation of the multiprocess debugger does not apply to installing VAX C Version 3.2.

Before you install VAX C Version 3.2, you must register the product using the Product Authorization Key (PAK) provided in the kit. See the *VMS License Management Utility Manual* for registration instructions.

Previous versions of VAX C do not need to be installed before this version.

The release notes for VAX C Version 3.2 contain important installation-related instructions and a summary of technical changes, new features, differences, known problems, corrected errors, performance enhancements, documentation errors, restrictions, and incompatibilities.

You can read the release notes before installing VAX C by invoking VMSINSTAL and following the instructions that start the installation procedure. To find the location of the online release notes following the installation of VAX C, type the following:

```
$ HELP CC RELEASE_NOTES
```

Contents of This Kit

- **Indented Bill Report (BIL) and Bill of Materials (BOM)**

  Please read the BIL and BOM enclosed in this kit and check to see that all items listed are actually in your kit. If your kit is damaged or any items are missing, call your Digital representative.

- **Media**

  If you ordered media, you will find the media and the *VAX C Installation Guide* in this kit. Consult the *VAX C Installation Guide* for information about installing VAX C on your system.

- **Documentation**

  Depending on your order, this kit may include copies of the following VAX C documentation:

  > *Guide to VAX C*
  > *VAX C Run-Time Library Reference Manual*

  Note that the *VAX C Installation Guide* is included with the media.

- **Product Authorization Key (PAK)**

  The PAK contains information necessary to register VAX C before you install it.

- **Software Product Description (SPD)**

  The SPD provides an overview of the VAX C kit and its features.

- **System Support Addendum (SSA)**

  The SSA describes the technical environment in which the product is supported.

- **Software Performance Report (SPR)**

  Use this form to report any problems with VAX C, provided you have purchased warranty services.

Restrictions

Please note the following restrictions concerning the use of the /ANALYSIS_DATA and /DESIGN qualifiers with VAX C Version 3.2:

- To load the analysis data files created by the /ANALYSIS_DATA qualifier into a VAX Source Code Analyzer (SCA) library, you must use SCA Version 2.0.

- To use the the /DESIGN qualifier, you must have VAX Language-Sensitive Editor (LSE) Version 3.0 installed on your system.

SCA Version 2.0 and LSE Version 3.0 are available individually or in VAXset Version 9.0.

A Final Note

Digital prides itself on responding to customer needs. In order to continue serving you, we need your comments. Each manual contains preaddressed, postage-paid Reader's Comments forms at the back. If you find errors in a manual or want to make comments about it, please fill out one of these forms and send it to us.

Software Product Description

DESCRIPTION

VAX C is an extended implementation of the C programming language originally developed at Bell™ Laboratories. The VAX C compiler runs under the VMS Operating System and generates optimized and position-independent code.

As a native-mode VAX language, VAX C is integrated into the VAX common language environment. All VAX system services are thus available to programs written in VAX C. VAX C supports VAX Record Management Services (RMS), including sequential, relative, and indexed file organizations and associated access methods, in addition to the stream file-access conventional among most C implementations. VAX C programs can invoke, as functions, modules written in other VAX languages.

VAX C provides assistance in decomposing loops. Decomposed loops run in parallel in multiple processes, reducing the total elapsed time required to run the program. This capability is most useful on multiple processor machines, such as the VAX 8800.

VAX C supports the lint-like features of the Source Code Analyzer component of VAX Language-Sensitive Editor/Source Code Analyzer (SPD 26.59.xx). The combination of using function prototypes and the Source Code Analyzer component allows the programmer to check for consistent function usage throughout a program environment. VAX C also generates complete debug and traceback records for use with the VAX Symbolic Debugger. The Debugger allows the C programmer to set breakpoints, examine and modify the contents of user variables, and selectively halt or continue program execution.

Features

- Compiler-assisted decomposition of for loops to run in parallel in multiple processes

- Function prototypes for declaring and checking function argument count and types

- Structured programming control flow constructs:
  - if...else construct for simple selection
  - switch statement for multi-choice selection with an arbitrary number of case statements
  - while, do, and for statements for iterative execution

- Flow modification statements:
  - break
  - continue
  - goto

- Data types for numeric, nonnumeric, and systems programming:
  - Byte, word, and longword signed and unsigned integers
  - Integer constants in decimal, octal, and hexadecimal radices
  - Void data type
  - Single-character variables and constants
  - Single, double-precision and G_Floating point numbers
  - Pointer variables containing the addresses of other variables
  - Data aggregates including arrays, structures, and unions, referencing allowed

- Storage allocation using:
  - Auto, static, register, and extern storage allocation classes for variables
  - Keywords (globalref, globaldef, and globalvalue) for sharing data among program modules
  - Keywords (readonly, noshare, and psect name specification) for control of data attributes and data placement
  - Keywords (const and volatile) for specifying attributes for storage in which objects are placed
  - Keyword (_align) for specifying the alignment boundaries of data objects

- Large set of concise arithmetic, relational, and logical operators

- Preprocessor control statements for:

  — File inclusion

  — Identifier substitution

  — Conditional compilation

  — Pragmas to control compiler options

  — Pragmas to support compiler-assisted decomposition

- Separate compilation capabilities

- Compiler generated listing file including optional:

  — In-line machine code

  — Expanded preprocessor substitution listing

  — Storage allocation map

  — Cross referencing of variables

  — Compilation statistics

  — Loop decomposition report

- Access to VAX machine instructions from C source code

- Integration into the VAX Common Languages Environment:

  — Generation of complete debug and traceback records for VAX Symbolic Debugger support

  — Facility for interfacing with the VAX calling standard

  — Access to the VAX Common Run-Time Library for general purpose routines and support of multi-language environments

  — Access to the data management facilities of VAX Record Management Services (RMS) via direct calls to the Common Run-Time Library

  — Access to data structures declared using the VAX CDD/Plus

  — Interface to VAX DEC/Shell as an alternate command line interpreter under which the VAX C compiler and user programs may be run

  — Support for VAX Language-Sensitive Editor/Source Code Analyzer to provide error diagnostics to the Language-Sensitive Editor component, cross reference information for the Source Code Analyzer component, and support for low-level program design, including the processing of pseudocode and the extraction of design information from comments

- Extensive global and local optimizations of generated code for increased performance and reduced size under VMS

- Interface to the curses screen manipulation package

Compatibility with Other C Implementations

VAX C represents a more current definition and implementation of the language than is described in the initial guiding document for C, *The C Programming Language*[1]. However, some incompatibilities among implementations do exist. In general, many programs written in C for other compilers can be successfully recompiled under VAX C.

The C language has been closely associated with the UNIX® Operating System, which itself is largely written in C. Over 150 UNIX-specific routines have been included in the run-time library available with the VAX C compiler. Routines selected for inclusion in this library are primarily those for which a reasonable emulation is possible under VMS. Inherent architectural differences between UNIX and VMS necessarily preclude the likelihood of every C program written for a UNIX environment compiling and executing unaltered. Programs exploiting highly machine-dependent or UNIX-specific features will require some conversion effort.

Run-Time Package for C Applications

The VAX C Run-Time Package is distributed with the VMS Operating System. The VAX C Run-Time Package provides shareable routines to perform input/output, character and string handling, mathematical computations, memory allocations, and emulation of selected UNIX features. Also supported are the 4.3BSD socket routines for interprocess communication across a network.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, or VAXserver configuration as specified in the System Support Addendum (SSA 25.38.17-x)

SOFTWARE REQUIREMENTS

For Systems Using Terminals (No DECwindows Interface):

VMS Operating System

For Workstations Running VWS:

VMS Operating System
VMS Workstation Software

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[1] Brian Kernighan and Dennis M. Ritchie, Prentice-Hall, 1978.

For Workstations Running DECwindows:

VMS Operating System (and necessary components of VMS DECwindows)

VAX C supports a DECwindows compiler interface for compile qualifier selection on workstations. This interface is accessible from FileView.

Refer to the System Support Addendum (SSA 25.38.17-x) for availability and required versions of prerequisite software and for information regarding components of VMS DECwindows.

ORDERING INFORMATION

Software Licenses: QL-015A*-**
Software Media: QA-015A*-**
Software Documentation: QA-015AA-GZ
Software Product Services: QT-015A*-**

* 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 Equipment Corporation'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 this product 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.

For more information about Digital's licensing terms and policies, contact your local Digital office.

SOFTWARE PRODUCT SERVICES

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

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Software Warranty Addendum

DIGITAL WARRANTED SOFTWARE PRODUCTS **SPD 01.10.00**

The software product is warranted to conform to the Software Product Description (SPD). This means that DIGITAL will remedy any nonconformance when it is reported to DIGITAL by the customer during the warranty period.

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

Warranty is provided in the country of purchase. DIGITAL will provide a service location which will accept reporting (in a format prescribed by DIGITAL) of a nonconformance problem caused when using the licensed software under normal conditions as defined by the SPD. DIGITAL will remedy a nonconformance problem in the current unaltered release of the licensed software by issuing correction information such as: correction documentation, corrected code, or notice of availability of corrected code; or a restriction or a bypass. The customer will be responsible for the preparation and submission of the problem report to the service location.

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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.

This Software Warranty Addendum is effective for licensed software products ordered in the United States after October 1988 and supersedes all prior versions.

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System Support Addendum

PRODUCT NAME: VAX C, Version 3.2

HARDWARE REQUIREMENTS

Processors Supported:

VAX: VAXft 3000 Model 310

VAX 4000 Model 300

VAX 6000 Model 200 Series,
VAX 6000 Model 300 Series,
VAX 6000 Model 400 Series,
VAX 6000 Model 500 Series

VAX 8200, VAX 8250, VAX 8300, VAX 8350,
VAX 8500, VAX 8530, VAX 8550, VAX 8600,
VAX 8650, VAX 8700, VAX 8800, VAX 8810,
VAX 8820, VAX 8830, VAX 8840

VAX 9000-210, VAX 9000-410

VAX-11/730, VAX-11/750, VAX-11/780, VAX-11/785

MicroVAX: MicroVAX II, MicroVAX 2000,
MicroVAX 3100, MicroVAX 3300,
MicroVAX 3400, MicroVAX 3500,
MicroVAX 3600, MicroVAX 3800,
MicroVAX 3900

VAXstation: VAXstation II, VAXstation 2000,
VAXstation 3100 Series, VAXstation 3200,
VAXstation 3500, VAXstation 3520,
VAXstation 3540

VAXserver: VAXserver 3100, VAXserver 3300,
VAXserver 3400, VAXserver 3500,
VAXserver 3600, VAXserver 3602,
VAXserver 3800, VAXserver 3900

VAXserver 4000 Model 300

VAXserver 6000-210, VAXserver 6000-310,
VAXserver 6000-410, VAXserver 6000-420,
VAXserver 6000-510, VAXserver 6000-520

Processors Not Supported:

VAX-11/725, VAX-11/782, MicroVAX I, VAXstation I,
VAXstation 8000

Processor Restrictions:

A TK50 Tape Drive is required for standalone MicroVAX
2000 and VAXstation 2000 systems.

Disk Space Requirements (Block Cluster Size = 1):

Disk space required during installation:	12,500 blocks (6.4 Mbytes)
Disk space required for use (permanent):	9,200 blocks (4.7 Mbytes)

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.

Memory Requirements for DECwindows Support:

The minimum supported memory for this application
running in a standalone DECwindows environment with
both the client and server executing on that same sys-
tem is 8 MB.

OPTIONAL HARDWARE

Only D_, F_, and G_Floating point data types can be
used in programs written in VAX C. VAX C does not
support the H_Floating point data type. Floating point-
intensive applications should be run on configurations
with the appropriate hardware support for the floating
point data types being used. Consult the base operat-
ing system Software Product Description (SPD) for the
appropriate floating point accelerator or other floating
point hardware appropriate for your configuration.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VAXcluster* configuration without restrictions. The *HARDWARE REQUIREMENTS* sections of this product's Software Product Description and System Support Addendum detail any special hardware required by this product.

* V5.x VAXcluster configurations are fully described in the VAXcluster Software Product Description (29.78.xx) and include CI, Ethernet, and Mixed Interconnect configurations.

SOFTWARE REQUIREMENTS

For Systems Using Terminals (No DECwindows Interface):

VMS Operating System V5.2–V5.4

For Workstations Running VWS:

VMS Operating System V5.2–V5.4
VMS Workstation Software V4.1–V4.3

For Workstations Running DECwindows:

VMS Operating System V5.2–V5.4 (and necessary components of VMS DECwindows)

VAX C supports a DECwindows compiler interface for compile qualifier selection on workstations. This interface is accessible from FileView.

This product may run in either of the following ways:

- Stand-alone execution—running the X11™ display server and the client application on the same machine.

- Remote execution—running the X11 display server and the client application on different machines.

VMS DECwindows is part of the VMS Operating System but must be installed separately. Installation of VMS DECwindows gives you the option to install any or all of the following three components:

- VMS DECwindows Compute Server (Base kit; provides runtime support)

- VMS DECwindows Device Support

- VMS DECwindows Programming Support

For stand-alone execution, the following DECwindows components must be installed on the machine:

- VMS DECwindows Compute Server (runtime support)

- VMS DECwindows Device Support

- VMS DECwindows Programming Support

For remote execution, the following DECwindows components must be installed on the machine:

Server Machine

- VMS DECwindows Compute Server (runtime support)

- VMS DECwindows Device Support

Client Machine

- VMS DECwindows Programming Support

- VMS DECwindows Compute Server (runtime support)

VMS Tailoring

For VMS V5.x systems, the following VMS classes are required for full functionality of this layered product:

- VMS Required Saveset

- Programming Support

- Utilities

For more information on VMS classes and tailoring, refer to the VMS Operating System (SPD 25.01.xx).

OPTIONAL SOFTWARE

Certain versions of these products depend on a specific version of the operating system. Please see the System Software Addendum of the product in question to determine which version you need.

VAX Language-Sensitive Editor/Source Code Analyzer V3.1
VAX CDD/Plus V4.2A
VAX DEC/Shell V2.2
VMS/ULTRIX Connection V1.2

Please note the following restriction concerning the use of the /ANALYSIS_DATA and /DESIGN qualifiers with VAX C, Version 3.2:

- To load the analysis data files created by the /ANALYSIS_DATA qualifier into a Source Code Analyzer component library, you must use VAX Source Code Analyzer V2.0 at a minimum.

- To use the /DESIGN qualifier, you must have VAX Language-Sensitive Editor V3.0 at a minimum installed on your system.

GROWTH CONSIDERATIONS

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

DISTRIBUTION MEDIA

Tape: 9-track 1600 BPI Magtape (PE), TK50 Streaming Tape

This product is also available as part of the VMS Consolidated Software Distribution on CDROM.

The software documentation for this product is also available as part of the VMS Online Documentation Library on CDROM.

ORDERING INFORMATION

Software Licenses: QL-015A*-**
Software Media: QA-015A*-**
Software Documentation: QA-015AA-GZ
Software Product Services: QT-015A*-**

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