

# Software Product Description

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PRODUCT NAME: **DECnet-VAX, Version 1**

SPD 25.3.1

## DESCRIPTION:

DECnet-VAX allows a suitably configured VAX/VMS system to participate as a Phase II DECnet node in point-to-point computer networks. DECnet-VAX is a Phase II network product and is warranted for use only with Phase II DECnet products supplied by DIGITAL.

DECnet-VAX offers task-to-task communications, network file transfer, and network resource sharing capabilities using the DIGITAL Network Architecture (DNA) protocols. DECnet-VAX communicates with adjacent nodes over synchronous communication lines.

VAX/VMS programs written in VAX-11 MACRO and VAX-11 FORTRAN-IV-PLUS can use DECnet-VAX capabilities, but programs executing in PDP-11 compatibility mode cannot use DECnet-VAX. The network functions available to a DECnet-VAX user depend, in part, on the configuration of the rest of the network. Each DECnet product offers its own functions and its own set of features to the user. Networks consisting entirely of DECnet-VAX nodes have all the functions described in this SPD. Networks that mix DECnet-VAX nodes with other DECnet products may limit the functions available to the DECnet-VAX user because some DECnet-VAX features may not be supported by all DECnet products.

The Phase II products and functions available to users on mixed networks can be determined by comparison of the SPDs for the appropriate products. The DECnet Phase II Products SPD (10.78) contains a description of DECnet functions and identifies the common functions available with mixed networks.

### *Task-to-Task Communication*

Using DECnet-VAX, a VAX/VMS program written in VAX-11 MACRO or FORTRAN-IV-PLUS (either by transparent operation using RMS or non-transparent operation using the Queue I/O Request system service) can exchange messages with other user programs using Phase II DECnet DNA protocols. The two user programs can be on the same or adjacent DECnet nodes. (Adjacent nodes control opposite ends of a point-to-point communication line.) If one program is on an adjacent node, that node can be using any Phase II DECnet product that supports synchronous communication lines.

The DECnet messages sent and received by the two user programs can be in any data format.

### *Network File Management*

Using the VAX/VMS COPY command, a user can transfer sequential files between Phase II DECnet nodes. Files can be transferred in both directions between a locally supported VAX/VMS device and a device on an adjacent DECnet node that supports the Data Access Protocol.

DECnet-VAX supports sequential file transfer for RMS supported devices. In addition, other types of files may be transferred where formats between the Phase II DECnet nodes are compatible. Between two VAX/VMS systems, for instance, sequential or relative files with fixed length, variable length, or variable length with-fixed-control-field records can be transferred.

Additional facilities allow system command files to be submitted to a remote node, where the list of commands must be in the format expected by the node responsible for their execution. Also, DECnet-VAX allows VAX/VMS command files to be received from other systems and executed.

DECnet-VAX does not support network file spooling. A user can request only one file transfer at a time, and only single files can be transferred with each command. Wild card specifications are not permitted nor are directory listing commands supported.

### *Network Resource Access*

*File Access* — File access is supported to and from remote DECnet systems transparent to VAX-11 MACRO and FORTRAN IV-PLUS programs using RMS.

Read, write, open and close, and delete operations can be initiated by local FORTRAN and MACRO programs for files residing at remote DECnet systems. Other nodes supporting file access can exercise this capability for files located on the VAX/VMS node. Sequential and random-by-record-number accesses are supported for incoming and outgoing file access requests.

*Down-Line System Loading* — Initial memory images for DECnet-11S nodes in the network can be stored on VAX/VMS file system devices and loaded into adjacent nodes. Load requests can come from the local VAX/VMS operator or from the remote node. Initial memory images for DECnet-11S systems to be down-line loaded can be generated on a VAX/VMS system that includes an RSX-11M or RSX-11S license.

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*Network Control Program*

The Network Control Program (NCP) performs three primary functions: display statistics, control network components, and test network components.

Using the DECnet-VAX NCP utility, an operator can display the status of DECnet activity at the local node. The user can choose to display statistics related to the local node, other DECnet-VAX nodes, and communication lines, including information on traffic and errors.

Using the DECnet-VAX NCP utility, the local operator can also perform many network control functions such as reconfiguring the local node's network parameters, starting and stopping lines, activating the local node, and down-line loading DECnet-11S systems.

NCP allows the user to perform a series of tests that aid in isolating problems. NCP can be used to send and receive test messages over individual lines either between nodes or through other controlled loopback arrangements. The messages can then be compared.

*Communications*

DECnet-VAX uses DMC11 communication controllers to interface with other network nodes. The DMC11 is a DMA UNIBUS peripheral that implements line control and error recovery procedures in microcode. The DMC11 uses DIGITAL Data Communications Message Protocol (DDCMP) to provide full- or half-duplex communication over point-to-point synchronous lines.

*DECnet-VAX Operation*

DECnet-VAX is implemented as an Ancillary Control Process (ACP) under VAX/VMS with DIGITAL-supplied executive-level components and user-level programs.

The normal VAX/VMS protection has been incorporated in the operation of DECnet-VAX. For example, all incoming connects including file access and file transfer requests are protected by the normal VAX/VMS login and file protection mechanisms. Outgoing connects including file access and file transfer requests may include user password information which is implicitly specified via NCP, or explicitly specified by the user.

*DECnet-VAX Configuration and Performance*

Cost, performance, and function selection must be considered when deciding where nodes should be located and how they should be interconnected with communication lines. Dial-up telephone circuits are often best for networks with low message traffic. Other applications require higher-speed communication lines. DECnet-VAX supports both types of network traffic over point-to-point communication lines, but each application must be analyzed separately by the user and/or a DIGITAL Software Specialist.

Each DECnet-VAX node must be analyzed individually to determine its performance in a given network application. Network throughput and responsiveness depend on many factors, including:

- network topology
- CPU power and system loading

- communication line characteristics
- swapping overhead and scheduling priorities
- size and distribution of network messages

The maximum number of DMC11 lines that can be connected to a single DECnet-VAX node can be determined from the Communications Devices Section of the VAX/VMS SPD. The aggregate line speeds supported are burst rates, achievable during buffered data transfers. Sustained rates to transfer user data will be less than the line speed of the device(s) used because of network protocol overhead and other factors listed above. At higher speeds, message processing time will limit total throughput.

**MINIMUM HARDWARE REQUIRED:**

Any valid VAX/VMS system configuration with one of the following communications devices supporting one line:

- DMC11-AR, -DA synchronous EIA interface
- DMC11-AL, -MD high speed local synchronous interface
- DMC11-AL, -MA high speed local synchronous interface

**OPTIONAL HARDWARE:**

None

**PREREQUISITE SOFTWARE:**

VAX/VMS operating system, Version 1.0

**OPTIONAL SOFTWARE:**

None

**TRAINING CREDITS:**

None

**SUPPORT CATEGORY:**

A — Software Support will be provided as stated in the Software Support Categories Addendum to this SPD.

Installation under Category A support will convert the VAX/VMS system into a node with connection potential to a DECnet Phase II network. This installation does not include a demonstration of network connection.

The Customer may purchase DECnet-VAX licenses with options that do not include support services. The category of support applicable to such software is Category C. While a DECnet-VAX product option that does not include support services is connected to a DECnet network, the category of support applicable to all DECnet products in that network is Category C.

**CUSTOMER RESPONSIBILITIES:**

Before installation of the Software, the Customer must:

1. Install or have installed all hardware, including terminals, to be used on the system.
2. Make available to DIGITAL personnel all hardware, including terminals, to be used during installation for a reasonable period of time each day, as mutually agreed upon by DIGITAL and the Customer, until installation is complete.

Delays caused by any failure to meet these responsibilities will be charged at the then prevailing rate for time and materials.

#### PREREQUISITE SUPPORT:

A Network Profile and DECnet Customer Support Plan covering all intended network nodes and their support must be prepared jointly by the customer and DIGITAL.

#### UPDATE POLICY:

Software Updates, if any, released by DIGITAL during the one (1) year period following installation, will be provided to the customer for a media charge (includes no installation). After the first year, updates, if any, will be made available according to then prevailing DIGITAL policies.

#### ORDERING INFORMATION:

All binary licensed software, including any subsequent updates, 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 the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU. All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources Agreement between Purchaser and DIGITAL.

Standard options with no support services are only available after the purchase of one supported license. When a software license is ordered without support services, the category of support applicable to such software is Category C.

A single-use license only option is a license to copy the software previously obtained under license, and use such software in accordance with DIGITAL's Standard Terms and Conditions of Sale. The category of support applicable to such copied software is Category C.

Source and/or listing options are only available after the purchase of at least one binary license and after a source license agreement is in effect.

The following key (M, R, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QED01-AY = binaries on floppy disk.

M = 1600 bpi 9-track Magnetic Tape

R = Microfiche

Y = RX01 Floppy Diskette

Z = No hardware dependency

#### Standard Options

QED01 -A— Single-use license, binaries, documentation, support services (media: Y)

QED01 -C— Single-use license, binaries, documentation, no support services (media: Y)

QED01 -D— Single-use license only, no binaries, no documentation, no support services (media: Z)

#### Source/Listing Options

QED01 -F— Microfiche listing's only (media: R)

QED01 -M— All sources plus listings on microfiche (media: M)

#### Miscellaneous Options:

QED01 -G— Pre-delivery kit (media: Z)

#### ADDITIONAL SERVICES:

QS680 -S— DECnet Level I Services (media: Z)

Level II services are also available. Consult the DECnet Phase II Products SPD (10.78) for a description of Level I and Level II services.

ADDENDUM  
SOFTWARE SUPPORT CATEGORIES

Each software product (hereinafter 'SOFTWARE') with a designated Support Category A or B in the applicable Software Product Description (SPD) existing at the time of order will be the current release at the time of delivery and will conform to the SPD. DIGITAL's sole obligation shall be to correct defects (nonconformance of the SOFTWARE to the SPD) as described below. Any SOFTWARE with a designated Support Category C will be furnished on an 'as is' basis.

For SOFTWARE with a designated Support Category A or B, DIGITAL will provide the services set forth below without additional charge.

**CATEGORY A.**

1. Upon notification by customer to the nearest DIGITAL office that the computer system, including all required prerequisite hardware and software, is ready for the installation of the SOFTWARE, DIGITAL will install such SOFTWARE in any location within the contiguous forty-eight (48) United States, the District of Columbia, or a country in which DIGITAL or a subsidiary of DIGITAL has a software service facility. The notification must be received by DIGITAL and the system must be ready for installation within thirty (30) days after the delivery of the SOFTWARE to customer or DIGITAL will have no obligation to install. Installation will consist of: (1) verification that all components of the SOFTWARE have been received by customer, (2) loading the SOFTWARE, and (3) executing a DIGITAL sample procedure.
2. During the ninety (90) day period after installation, if the customer encounters a problem with the current unaltered release of the SOFTWARE which DIGITAL determines to be a defect in the SOFTWARE, DIGITAL will provide the following remedial service (on site where necessary): (1) if the SOFTWARE is inoperable, apply a temporary correction (TC) or make a reasonable attempt to develop an emergency by-pass, and (2) assist the customer to prepare a Software Performance Report (SPR) and submit it to DIGITAL.
3. During the one (1) year period following installation, if the customer encounters a problem with the SOFTWARE which his diagnosis indicates is caused by a SOFTWARE defect, the customer may submit an SPR to DIGITAL. DIGITAL will respond to problems reported in SPRs which are caused by defects in the current unaltered release of the SOFTWARE via the Maintenance Periodical for the SOFTWARE, which reports SPRs received, code corrections, temporary corrections, generally useful emergency by-passes and/or notice of the availability of corrected code. Software Updates, if any, released by DIGITAL during the one (1) year period, will be provided to the customer on DIGITAL's standard distribution media as specified in the applicable SPD. The customer will be charged only for the media on which such updates are provided, unless otherwise stated in the applicable SPD, at DIGITAL's then current media prices.

**CATEGORY B**

During the one (1) year period following delivery, the services provided to the customer will be the same as set forth in 3 above.

**CATEGORY C**

SOFTWARE is provided on an 'as is' basis. Any software services, if available, will be provided at the then current charges.

DIGITAL shall have the right to make additional charges for any additional effort required to provide services resulting from customer use of other than current unaltered release of the SOFTWARE operated in accordance with the SPD.