Software Product Description

PRODUCT NAME: VMS/ULTRIX Connection, Version 1.2 **SPD 25.A4.02**

DESCRIPTION

The VMS/ULTRIX Connection™ is a VMS layered software product that promotes resource sharing between VMS servers and UNIX® clients.

The VMS/ULTRIX Connection supports networking, file access, remote terminal access, and application development between VMS servers and UNIX clients. The VMS/ULTRIX Connection includes two major components:

- An ARPANET communication system
- A Network File System (NFS™ server)

The product also includes a system management interface for setting up and monitoring the communication and NFS environments.

ARPANET Communication System

The VMS/ULTRIX Connection supports industry standard networking on VMS through a set of ARPANET protocols. The supported protocols are based on the 4.3 Berkeley Software Distribution (BSD) and include:

- Transmission Control Protocol (TCP)
- Internet Protocol (IP)
- Internet Control Message Protocol (ICMP)
- Address Resolution Protocol (ARP)
- User Datagram Protocol (UDP)
- File Transfer Protocol (FTP)
- Telnet Protocol

C Language applications may be written using the Berkeley Socket Programming interface when this product is used with VMS Operating System V5.2 or later.

The VMS/ULTRIX Connection also supports a QIO programming interface so users can write applications to access the lower-level protocols. Users can write networking applications in any VAX language using the standard VMS ASSIGN, DASSGN, and QIO system services.

The VMS/ULTRIX Connection supports bi-directional file transfer sessions between the VMS server and the UNIX client. The FTP session allows the client to view the file system structure on the remote server.

The VMS/ULTRIX Connection supports Telnet client and server applications. Telnet is the standard Internet Application Protocol for remote login. An RLOGIN server application is also provided.

Notes:

- Version 1.2 of the VMS/ULTRIX Connection does NOT support SMTP, or the ULTRIX "r" commands such as rcp and rsh.
- The VMS/ULTRIX Connection supports static routing on the VMS server. Full routing capabilities for a wide area requires an ULTRIX host.

Network File System

The VMS/ULTRIX Connection supports NFS, Version 2.0 protocol specifications. NFS is an application layer protocol that provides clients with transparent access to remote file services. Version 1.2 of the VMS/ULTRIX Connection provides an NFS server on VMS for UNIX clients. Version 1.2 does not support VMS clients.

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The NFS server promotes data sharing among clients by providing a central data storage facility for VMS and UNIX files. The NFS server provides two types of file access for UNIX clients:

- Client access to VMS files
- Client access to ULTRIX-compatible files

Client Access to VMS Files

UNIX clients can access VMS files stored in an RMS StreamLF format on the server. StreamLF files are analogous to the "byte" stream files common on UNIX systems. Clients can access other types of RMS files, such as ISAM files. However, the ISAM structure and file contents will be passed to the UNIX client in sequential bytes. A programmer would have to be aware of the specific ISAM structure to make use of the file contents on the UNIX client.

Client access to the VMS file system is subject to standard VMS file conventions. These conventions include 8 levels of directory nesting, and filenames with the following syntax:

File Name	File Type	File Version Number
39 Characters	.39 Characters	.INTEGER

Permitted characters are A-Z, a-z, 0-9, underscore (__), hyphen (-), and dollar sign ($). All alphabetic characters are interpreted as uppercase characters. Filename and type cannot begin with an underscores, hyphen, or dollar sign. Version numbers must be decimal numbers in the range 1 to 32767. You can refer to a version number in a relative manner by specifying a zero or a negative number. Specifying zero locates the most recent version of the file, and specifying -1 locates the next most recent version.

Client Access to ULTRIX-Compatible Files

The ULTRIX-compatible file system on VMS provides clients with the same file system functionality as an ULTRIX server. To the remote client, the VMS NFS server looks like a large ULTRIX file cabinet. The ULTRIX files are accessed according to the rules of the ULTRIX File System (UFS). UFS supports 4.3BSD Fast File System semantics, which are a superset of the SVID (System V Interface Definition) Issue 2, Volume 1, file system semantics. The UFS rules permit up to 255 levels of directory nesting and filenames of 255 characters. Files within these ULTRIX file systems may also be accessed by applications executing on the VAX system.

Note: Version 1.2 of the VMS/ULTRIX Connection does not support programmer access to the NFS Remote Procedure Call (RPC) and External Data Representation (XDR) mechanism.

System Management

The VMS/ULTRIX Connection provides DCL commands to control and monitor the communication and NFS subsystems. Commands are provided to define hosts, startup/shutdown/monitor network interfaces, and control how/what workstation clients access files on the VMS system.

HARDWARE REQUIREMENTS

VAX, MicroVAX or VAXstation configuration as specified in the System Support Addendum (SSA 25.A4.01-x).

SOFTWARE REQUIREMENTS *

Installing the VMS/ULTRIX Connection requires at a minimum:

VMS Operating System

* Refer to the System Support Addendum (SSA 25.A4.01-x) for availability and required versions of prerequisite/optional software.

Client access to the VMS/ULTRIX Connection requires:

A UNIX operating system which supports the protocols specified by NFS V2.0 and the following Defense Data Network (DDN) Request for Comments:

PROTOCOLS	RFC
IP	791
ICMP	792
TCP	793
ARP	826
FTP	959
TELNET	854

UNIX systems that meet these requirements include ULTRIX-32 at a minimum of V3.1, ULTRIX Worksystem Software at a minimum of V2.1, and the systems listed in Appendix A.

ORDERING INFORMATION

Software Licenses: QL-VHRA*-**
Software Media: QA-VHRA*-H*
Software Documentation: QA-VHRAA-GZ
Software Product Services: QT-VHRA*-**

* 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 on Digital's licensing 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.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum.

APPENDIX A

The VMS/ULTRIX Connection has been tested with the following clients and found compatible. Digital supports connectivity with these clients, but can not support the non-Digital operating systems listed below:

Digital Processors:

VAX, MicroVAX and DECsystems running ULTRIX-32 at a minimum of V3.1.

VAXstations and DECstations running ULTRIX Worksystem Software at a minimum of V2.1.

Sun® Microsystems Processors:

Sun-3/260 running SunOS V4.0

Sun-3/180 running SunOS V4.0

Sun-4/260 running SunOS V4.0

Sun-2/120 running SunOS V3.5

Sun-3/110 running SunOS V3.5

Apollo® Processors:

Series DN3000 running Aegis Operating System V9.5

Hewlett-Packard® Processors:

HP 9000 running HP-UX Operating System V6.0