Software Product Description

DESCRIPTION

DECnet/OSI for ULTRIX, Version 5.1A is an implementation of the Digital Network Architecture (DNA) for the ULTRIX Operating System and ULTRIX Worksystem Software (UWS) for VAX and RISC systems. This product supports Phase V, the integration of Phase IV DECnet with OSI plus added functionality (i.e., DECdns, DECdts, RFC1006, etc.) which:

- Enables Digital systems to participate in multivendor networks that adhere to the Open Systems Interconnection (OSI) specifications as defined by the International Standards Organization (ISO)

- Supports increased network sizes through the use of the ISO addressing capability

- Provides the ability to manage very small to very large multivendor networks through the use of a network management entity model that is modular and extensible.

DECnet/OSI for ULTRIX is available in two forms, End System and Extended Function. Extended Function provides all the features of the End System plus FTAM-FTP gateway, Virtual Terminal gateways (VT/Telnet, VT /CTERM, LAT/VT) and the DECdns Server. Refer to the Software Licensing section for more details.

DECnet/OSI and TCP/IP can also share the same system resources, such as LAN interfaces. In general, existing programs running over TCP/IP can be easily modified to run with DECnet/OSI. Taking DECnet programs and having them run over TCP/IP can be done, but only if they do not make use of operations that are specific to DECnet.

DECnet/OSI for ULTRIX software offers the following features: client-server communications, network virtual terminal, remote file transfer, mail, co-existence with the Internet protocols (TCP/IP-based), and network-wide resource sharing and management as defined by the DNA protocols.

DECnet/OSI for ULTRIX software can communicate with OSI conforming systems and other Digital DECnet products.

Depending on the system configuration, networks combining DECnet/OSI for ULTRIX systems with other OSI and DECnet products may limit the functions available if all products do not support equal features. Compare product descriptions to determine function availability.

DECnet/OSI for ULTRIX software supports the following features:

Data Link Layer

For CSMA/CD devices, DECnet/OSI for ULTRIX supports ISO 8802-2 Logical Link Control type 1 connectionless service over ISO 8802-3. DECnet/OSI for ULTRIX also supports Ethernet V2.0 packet formats on CSMA/CD devices. For FDDI devices, ISO 8802-2 Logical Link Control type 1 connectionless service over ISO 9314 is supported.

The Wide Area Network (WAN) connectivity is provided by DDCMP and HDLC (ISO 4335, OSI 7809). DECnet/OSI for ULTRIX supports full duplex point-to-point synchronous DDCMP lines as well as DMC compatibility mode for backwards compatibility with the DMC device. DDCMP support is limited to the DMV11 and DMR11 devices only. Note that point-to-point connection to Phase IV routers is only supported over DDCMP.

The DEC Wide Area Device Drivers (WANDD) for ULTRIX are required for HDLC support. DEC WANDD supports the following synchronous communications options: DSH32, DST32, DSH80 and SCC for busless systems.

All drivers provided with DEC WANDD for ULTRIX support standard UNIX® system call interfaces. In all cases, the data throughput over the synchronous lines is dependent on the user applications and system environment. For further information see DEC Wide Area Network Device Drivers for ULTRIX (SPD 32.33.xx).

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Network Layer

DECnet/OSI for ULTRIX software supports end system routing only.

The network layer supports ISO 8473, *Protocol for Providing Connectionless-mode Network Service* (CLNS). DECnet/OSI for ULTRIX supports the inactive subset (null Internet) specified in ISO 8473 as well as the OSI Ping function (ISO 8473/PDAMx). Null Internet is the operation of OSI transport directly over a local area network. The OSI Ping function enables a network entity to generate a message that, when received by its target destination, is echoed back to the sender.

Exchange of routing information between end systems and routers uses the ISO 9542 *End System to Intermediate System Routing Protocol* (ES-IS). This allows DECnet/OSI for ULTRIX systems to autoconfigure as end systems with DNA Phase V conformant routers. Addresses adhere to the ISO 8348 Addendum 2 Specification allowing the support of large network topologies.

As long as the system address stays within the addressing range of Phase IV systems (up to 1023 systems per area and up to 63 areas per network, and uses the same Initial Domain Part (IDP)), any router whether it supports extended addressing or not can be used.

The network layer additionally supports the capability of an end system to be multicircuited and multihomed. Multicircuit support allows multiple circuits to be active simultaneously. This increases network reliability and data throughput. Multihomed end system support allows a system to have up to three addresses.

The network layer also supports ISO 8878, *Use of X.25 to Provide the OSI Connection-mode Network Service* (CONS). The DEC X.25 Native Mode product allows a properly configured DECnet/OSI system to utilize CCITT X.25 compliant networks as OSI subnets for dynamically assigned routing circuits (note DLM circuits are not supported). OSI Transport classes 0, 2, and 4 can be configured to run over a CONS network provided by the X.25 Native Mode or X.25 Gateway Client products.

The X.25 Gateway Client product is required for X.25 logical connections to be made through a connector systems using the Gateway Access Protocol (GAP). A connector system may be a DECNIS 500/600, X25gateway 100/500, X25router 100/2000 or a VAX PSI system in Multihost mode.

The X.25 Native Mode and WANDD products can be used to provide LLC2 services. This provides connection oriented network services over a local area network (ISO 8881). This functionality is included as part of the DECnet/OSI license.

The X.25 Native Mode and WANDD products are required to support X.25 logical connections and DECnet/OSI routing circuits connections over the WAN.

For more information, see the DEC X.25 Products appendix.

Transport Layer

The transport layer supports multiple protocols. The first is the OSI Transport protocol as specified in the ISO 8073. Three OSI Transport Classes are supported: Class 0, 2, and 4 (also known as TP0, TP2, and TP4). Classes 0 and 2 work only on CONS, while Class 4 works with either CONS or the CLNS.

The second transport protocol supported is the Network Services Protocol (NSP). NSP offers communication between DECnet systems and provides backward compatibility with Phase IV DNA systems.

The third transport protocol supported is the Connectionless Transport Service (CLTS). CLTS provides a datagram transport service to user written applications, through the XTI programming interface.

OSI Applications Over TCP/IP

The XTI library has been extended to support OSI applications over TCP/IP (Internet RFC1006). Internet RFC1006 defines a specification for running OSI applications over TCP/IP. FTAM and Virtual Terminal have been enhanced in this release to operate over a TCP/IP network.

OSI Upper Layers

DECnet/OSI for ULTRIX supports session, presentation, and the application layer.

The application layer provides Association Control Service Elements (ACSE); ULTRIX File Transfer, Access and Management (FTAM); and ULTRIX Virtual Terminal (VT).

OSI applications can run over Transport Layer Classes 0, 2, or 4 over CONS, TP4 over CLNS. OSI applications can also run over TCP/IP networks using RFC1006.

Network Management

The DECnet/OSI for ULTRIX network management software allows:

- System or network managers to control and monitor the operation of a network

- Network operating parameters to be configured

- The manager to start up and shut down network components as needed

- The network to be monitored, providing information related to network traffic and performance

- Network problems to be detected, isolated, and re-turned to service once repaired

In addition, network management can provide information warning network managers of faulty or failing network components, both hardware and software.

NCL, Network Command Language, is provided as a utility to the network manager to perform the operations described above.

NCL can also be used to test specific components of the network. NCL enables transmission and reception of test messages either between systems or through controller loopback arrangements. The messages can then be compared for possible errors. NCL aids in isolating network problems.

DECnet/OSI for ULTRIX provides network event logging to a terminal device, disk file, or remote system. NCL can be used to enable and disable the event logging facility as well as to optionally filter specific events.

Additionally DECnet/OSI for ULTRIX supports installation, management, and downloading using the MOP protocol via the IEEE802.3/Ethernet on Digital servers, routers, portals and gateways. Refer to this product's SSA (34.97.02-x) for specific device support. The MOP (Maintenance Operations Protocol) is a management protocol used for low-level communication with a system which may not be fully operational or which is being tested.

DECdns - Digital Distributed Naming Service

DECnet/OSI for ULTRIX software uses one of two naming services, Local Naming Option or a network-wide naming service (DECdns).

Very small DECnet/OSI networks may choose the Local Naming Option. With this option, no DECdns servers are installed in the network. Instead, a local file containing system names and addresses is copied to each system in the network.

DECdns presents and maintains a consistent, network-wide set of names for network resources, called the namespace. These names can be constructed without including any location information in them, thus permitting users to reference these network resources independent of their physical location.

A single DECdns server system can provide a DECnet-wide name service. DECdns servers can be installed on additional systems in a network to provide availability and performance benefits. As a general rule, it is suggested that DECdns servers be placed on two systems in each local area network. This should provide adequate service and redundancy for most networks.

Following is a summary of features available only with the Digital Distributed Name Service (DECdns).

- DECdns provides a network-wide, name-to-attribute mapping service which allows selected Digital applications to create, read, modify, and delete names in the namespace.

- DECdns can store and manage a large number of names using a hierarchical structure.

- Overall availability and performance of the name service can be enhanced by installing DECdns servers on multiple systems. DECdns automatically maintains consistency of the namespace.

- DECdns provides access control to each name in the namespace. This set of access control rights consists of read, write, delete, test, and control.

- The DECdns management control program controls DECdns operation and displays statistical and error information.

- DECdns provides network event logging using the standard DECnet/OSI for ULTRIX event logging facility. The NCL (Network Command Language) utility can be used to enable and disable DECdns events.

DECdts - Digital Distributed Time Service

DECdts is a software-based service that provides precise, fault-tolerant clock synchronization for systems in LANs and WANs. DECdts also enables the coordination of other distributed computing applications. Distributed applications use the time service to determine event sequencing, duration, and scheduling.

The following is a summary of DECdts features for networks running distributed applications:

- DECdts provides an NCL management interface for controlling and monitoring the software.

- DECdts provides coordinated Universal Time (UTC) support. DECdts measures and supplies time using this internationally recognized time standard.

- DECdts supports a callable interface for applications to obtain UTC.

Terminal Access

DECnet/OSI for ULTRIX supports two protocols for terminal access: the OSI protocol, VT (Virtual Terminal), and the DNA protocol, CTERM.

Virtual Terminal allows you to connect to open systems and other open systems to connect to you. Virtual Terminal provides remote login capabilities between OSI systems and DECnet/OSI for ULTRIX systems.

CTERM is the DNA proprietary protocol which allows remote login between DECnet systems. CTERM supports users on DECnet and OSI conformant implementations.

For more information, see the Virtual Terminal appendix to this SPD.

Remote File Transfer

DECnet/OSI for ULTRIX supports two protocols for remote file transfers; the OSI protocol, FTAM, and the DNA protocol, DAP (Data Access Protocol).

FTAM software performs the communication for file operations between open systems, using the OSI protocols. These operation are:

• Copying files between open systems.

• Appending, deleting, or renaming files on open systems.

• Displaying information about files on open systems.

For more information, see the File Transfer, Access and Management appendix to this SPD.

DECnet/OSI for ULTRIX provides the "dcp" utility for network file transfers using the DAP protocol. The commands supported are dcp (copy), dls (list or directory), drm (remove), and dcat (concatenate and display). They operate on files on any DECnet/OSI for ULTRIX system and other DECnet or OSI conformant systems.

Network File Access

Remote file access from other Digital systems is supported; user programs on other DECnet or OSI conformant systems can perform directory operations, as well as sequentially read, write, create, delete, and print files on a DECnet/OSI for ULTRIX system.

Mail

The DECnet/OSI for ULTRIX software allows users to send and receive mail to and from users on other DECnet/OSI conformant systems. The DECnet mail utility extends the existing ULTRIX mail system to include support for DECnet. Both the DECnet mail utility and the current ULTRIX mail systems share the same user interface.

Client-Server Communications

Sometimes called task-to-task communication, client-server communication lets DECnet/OSI for ULTRIX applications communicate with remote DECnet and OSI conforming applications through a programming library interface. XTI, X/Open Transport Interface, has been extended to support ISO Transport Protocol Classes 0, 2, and 4; in addition to TCP/IP and UPD. This allows software developers and applications to utilize multiple network transport protocols through a single interface.

With the use of the OSI Application Developer's Toolkit, developers can write to the OSI upper layer APIs. XTI programming interface has been enhanced to support writing applications to run over Internet RFC1006 allowing OSI applications to run over TCP/IP.

For more information, see the OSI Application Developer's Toolkit (34.98.xx).

DECnet-Internet Gateway

A semi-transparent, bidirectional DECnet-Internet gateway is an integral part of the DECnet/OSI for ULTRIX software. This gateway, based on the TCP/IP in 4.3 BSD provides bidirectional network access between DECnet and Internet systems. It allows DECnet and Internet system users to communicate and cooperate through their respective file transfer, remote login, and mail capabilities. An Internet system user can use the FTP, Telnet, and SMTP protocols to communicate with a DECnet system user who uses the DAP, CTERM, MAIL-11 protocols and vice versa. In addition, the gateway does not require special software on systems that use its service, nor does it require accounts for remote users on the gateway system.

DECnet/OSI for ULTRIX Configuration and Performance

Configuring a DECnet/OSI for ULTRIX system to satisfy a user's application requirements involves making trade-offs of cost, performance, and functionality. The performance of a given DECnet/OSI for ULTRIX system depends not only on the expected network traffic and resultant processing, but also on the amount of concurrent local processing at that system. When configuring a DECnet/OSI for ULTRIX system, the following factors should be considered:

• CPU type

• Message size and frequency of transmission by all network applications

• "Local" applications

Standards Conformance

DECnet/OSI for ULTRIX has been designed and implemented to be conformant to the following standards:

• ISO

— 4335

— 7809

— 8073, 8327, 8348, 8473, 8571, 8650, 8802-2, 8802-3, 8823, 8878

— 9314, 9542, 9041

• EN

— EN/ENV 41 204

— EN/ENV 41 205

— EN/ENV 41 206

— EN/ENV 41 207

• RFC 1006, RFC 877

For UK GOSIP FTAM security, the OSI Application Developer's Toolkit is required. Refer to the *OPTIONAL SOFTWARE* and *ORDERING INFORMATION* sections of this SPD/SSA for more information.

Since certification and registration of this product must take place after the product ships, contact your local Digital office for the most recent conformance certificates.

INSTALLATION

Digital recommends that a customer's first purchase of this software product include Digital Installation Services. These services provide for installation of the software product by an experienced Digital Software Specialist.

HARDWARE REQUIREMENTS

Processor and/or hardware configuration as specified in the System Support Addendum (SSA 34.97.03-x).

SOFTWARE REQUIREMENTS

For VAX, MicroVAX, DECstation 3100s, DECsystems:

ULTRIX Operating System

For VAXstation and DECstation Systems:

ULTRIX Worksystem Software

Refer to this product's System Support Addendum (SSA 34.97.03-x) for availability and required versions of prerequisite/optional software.

ORDERING INFORMATION

End System and Extended Function use the same documentation and media kits for similar system types.

For VAX Systems:

Software Licenses (End System): QL-MTPA*-**
Software Licenses (Extended Function): QL-716A*-**
Software Media: QA-716AA-**
Software Documentation: QA-716AA-GZ
Software Product Services: QT-716A*-**

For RISC Systems:

Software Licenses (End System): QL-MTNA*-**
Software Licenses (Extended Function): QL-YT9A*-**
Software Media: QA-YT9AA-**
Software Documentation: QA-YT9AA-GZ
Software Product Services: QT-YT9A*-**

OPTIONAL COMPONENT SOFTWARE MEDIA

For VAX Systems:

DECnet/OSI for ULTRIX Supplementary Programming:
Software Documentation: QA-716AB-GZ

For RISC Systems:

X.25 Gateway Client:
Software Media: QA-YTAAA-**
Software Documentation: QA-YTAAA-GZ

X.25 Native:
Software Media: QA-YSYAA-**
Software Documentation: QA-YSYAA-GZ

DEC WAN Device Drivers for ULTRIX:
Software Media: QA-YMJAA-H*
Software Documentation: QA-YMJAA-GZ
Software Product Services: QT-YMJA*-**

DECnet/OSI for ULTRIX Supplementary Programming:
Software Documentation: QA-YT9AB-GZ

OPTIONAL SOFTWARE

For VAX Systems:

OSI Application Developer's Toolkit:
Software Media: QA-GZTAA-H*
Software Documentation: QA-GZTAA-GZ
Software Product Services: QT-GZTA*-**
Software License: QL-GZTA*-**

For RISC Systems:

X.25 Native:
Software License (WAN functionality): QL-YSYA*-**
Software Product Services: QT-YSYA*-**

OSI Application Developer's Toolkit:
Software Media: QA-GZSAA-H*
Software Documentation: QA-GZSAA-GZ
Software Product Services: QT-GZSA*-**
Software License: QL-GZSA*-**

*   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.

DECnet/OSI for ULTRIX End System license grants the right to use: DECnet/OSI for ULTRIX, X.25 Gateway Client, X.25 Native (LAN functionality only), and WANDD. To obtain a license for X.25 Native (WAN functionality) and/or OSI Application Developer's Toolkit reference the *OPTIONAL SOFTWARE* sections of this SPD/SSA.

DECnet/OSI for ULTRIX Extended Function license grants the right to use: DECnet/OSI for ULTRIX End System functionality, FTAM/FTP gateway, Virtual Terminal gateways (VT/TELNET, VT/CTERM, LAT/VT), and the DECdns server.

License Management Facility Support

This layered product supports the ULTRIX 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 ULTRIX Operating System Software Product Description (SPD 26.40.xx), the ULTRIX Worksystem Software Product Description (SPD 28.22.xx), or the *License Management Facility* manual of the ULTRIX 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.

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 of this SPD.

Appendix: DEC X.25 Products

Digital's X.25 products for ULTRIX allow an appropriately configured ULTRIX system to make logical connections via Packet Switched Data Networks (PSDNs) conforming to CCITT recommendation X.25 (1980, 1984, or 1988).

Two X.25 products may be used. DEC X.25 Native Mode for ULTRIX allows direct connection of a system to a PSDN using a synchronous data link, or to another X.25 system on the LAN using LLC2. DEC X.25 Gateway Client for ULTRIX provides access to a PSDN via a connector system. An X.25 connector system provides a single point of attachment to the PSDN for multiple DECnet systems on your Local Area Network.

A connector system may be:

- An X.25gateway 100/500 product (refer to the DEC X.25gateway 100/500 SPD 32.97.xx)

- An X25router 2000 product (refer to the X25router 2000 SPD 28.86.xx)

- VAX P.S.I. configured in multi-host mode (refer to the VAX Packetnet System Interface (P.S.I.) SPD 25.40.xx)

- OSI Support

  The X.25 products provide Connection Oriented Network Services (CONS) (ISO 8878) for use by the OSI Transport classes 0, 2, and 4.

  The Native Mode product may also be used to provide an X.25 subnetwork connection by the DNA routing (network) layer, which provides the Connectionless-mode Network Service (CLNS) (ISO 8473 Add. 1). This is only applicable when connecting to a PSDN via a synchronous connection. This operation is not supported for the Native Mode product when configured to run over LLC2 or for the Gateway Client product.

- TCP/IP over X.25

  An X.25 Switched Virtual Circuit (SVC) can be used as the data link protocol for IP traffic in accordance with RFC 877.

Virtual Circuits

The DEC X.25 products offer communication over Switched Virtual Circuits (SVCs) and support up to 512 virtual circuits in total per CPU. One virtual circuit is used for each incoming or outgoing X.25 call, and for each DECnet transport connection. No support for Permanent Virtual Circuits (PVCs) is provided.

Appendix: Virtual Terminal

Virtual Terminal software is a communications compo-
nent for terminal access between open systems.

Virtual Terminal may act as the initiator (for a local user)
or the responder (for the remote user).

Supported Standards

Virtual Terminal conforms to the OSI standard:

- ISO 9041 - Virtual Terminal Protocol - Basic Class

- ISO 8650 - ACSE protocol

- ISO 8823 - Presentation protocol

- ISO 8327 - Session protocol

Virtual Terminal Features

Virtual Terminal supports the following features:

- Class of Service

    — Basic class (character cell terminals)

- Mode of Operation

    — Asynchronous Mode (A-Mode)

- Profile Support

    — Default A-Mode

    — Telnet 1988 (A-mode)

    — Transparent (A-mode)

- Functional Units

    — Break

- Supported Gateways

    — Bi-Directional VT/Telnet

    — Bi-Directional VT/CTERM

    — LAT to VT

Tracing Utility

The Virtual Terminal tracing utility (ositrace) is a tool
for identifying problems in protocol exchanges between
your local system and any remote system. The trac-
ing utility captures protocol exchanges and transcribes
them into easily read text.

The Virtual Terminal tracing utility monitors data ex-
changes for individual associations. The tracing util-
ity can trace data originating from the following compo-
nents: VT, ACSE, Presentation, and Session.

Trace/Event Logging

Virtual Terminal provides the ability for the initiator and
responder utilities to log trace messages to a file.

Appendix: File Transfer, Access and Management (FTAM)

FTAM software provides communications for performing file operations between open systems. These operations are:

- Copying files between local and remote systems

- Appending, deleting, or renaming files on open systems

- Displaying information about files on open systems

An open system is a computer system that implements the standards for each of the seven layers of the Open Systems Interconnection (OSI) Reference Model for communications as defined by the International Organization for Standardization. An FTAM system is any open system containing an FTAM implementation that conforms to the FTAM standard and includes the implementations of the necessary underlying OSI services.

FTAM implements several standards that define the following components of these layers of the OSI Basic Reference Model: the File Transfer, Access and Management (FTAM) service element and the Association Control Service Element (ACSE) of the Application layer, the Presentation layer, and the Session layer.

Supported Standards

FTAM conforms to the OSI standard:

- ISO 8571 - File Transfer, Access and Management service and protocol

- ISO 8650 - ACSE protocol

- ISO 8823 - Presentation protocol

- ISO 8327 - Session protocol

The following table provides a comparison of the supported implementation profiles for different standards bodies and their relationship to each other.

International Standardized Profiles (ISP) ISO 10607	NIST	CEN/CENELEC and EWOS
Part 1: Specification of ACSE, Presentation and Session protocols for use by FTAM	—	—
Part 2: Definition of document types, constraint sets, and syntaxes	—	—
Part 3: AFT11 — Simple File Transfer Service (Unstructured)	T1 — Simple File Transfer	A/111 — ENV 41 204
Part 4: AFT12 (DISP*) — Positional File Transfer Service (Flat)	T2 — Positional File Transfer	A/112 — ENV 41 206
Part 5: AFT3 (DISP*) — File Management Service	M1 — Management	A/13 — ENV 41 205

* DISP indicates a draft ISP.

FTAM Component Software

The component software includes the user facilities (initiators), responders, management tools, and problem determination tools.

FTAM User Facilities

The FTAM user facilities are accessed by ULTRIX commands. These commands are ocat (concatenate and display), ocp (copy), ols (list or directory), omv (move or rename), and orm (remove). They operate on files stored on any FTAM system whose implementations are compatible with FTAM. These commands cannot be used for manipulating files on your local system.

Support for Any File Naming Convention

A file designation is system-specific information that identifies a file to its storage system. FTAM software lets users specify files using the naming conventions of the systems where the files reside. FTAM supports the standard UFS (ULTRIX File System) format for file specifications and a comparable style of file-specification format that accommodates non-UFS file designations.

Support for Several File Types

FTAM software can access and transfer files containing both binary and ASCII data. FTAM-1, FTAM-2, FTAM-3, and NBS-9 document types are supported.

FTAM-1 files are unstructured text files, FTAM-2 files are sequential text files, and FTAM-3 files are unstructured binary files. The FTAM-1, FTAM-2, and FTAM-3 document types support the following parameters.

Document Type	String Significance	Universal Class	Maximum String Length
FTAM-1	not significant	IA5String GeneralString	Presence and absence of parameter
	fixed	VisibleString GraphicString	Presence of parameter
	variable	VisibleString GraphicString	Presence and absence of parameter
FTAM-2	not significant	VisibleString GraphicString	Presence or absence of parameter
FTAM-3	not significant		Presence or absence of parameter
	fixed		Presence of parameter

NBS-9 files are NBS file directories.

Flexible and Transparent Access for Local Files

FTAM software treats local files the same way that UFS and DECnet–ULTRIX treat them.

File Transfers

The FTAM ocp command transfers files between compatible FTAM systems without modifying the source file. The facility can transfer files in either direction between the local system and a remote FTAM system. The ocp command can also transfer files between two remote FTAM systems for a local FTAM user.

This command also allows you to append one or more files to a single output file within or between FTAM systems.

FTAM-FTP Gateway

The FTAM-FTP Gateway lets you perform file operations between OSI and Internet Systems. Remote users of the gateway do not have to establish accounts on the gateway system to use its capabilities.

File Deletion

The FTAM orm command can delete one or more files on any combination of FTAM systems provided that the user has delete access to those files on the specific FTAM system.

Renaming Requests

The FTAM omv command allows you to rename files. The command works on files stored on remote FTAM systems (remote files). The command enables you to change the pathname or file name of an existing file. For remote files, you must specify whatever type of information the remote FTAM system requires for specifying files.

Directory Requests

The FTAM ols command displays the complete set of FTAM file attributes. Specific options allow users to vary the display of attributes that are meaningful in an ULTRIX environment: for example, date/time of last modification or file name.

FTAM Application Programming Interface (API)

The FTAM API provides access to FTAM protocol and services for application development purposes. Refer to OSI Application Developer's Toolkit (SPD 34.98.xx).

Management and Problem Determination Tools

FTAM software supplies a number of management tools, including an installation verification procedure (IVP), a tracing utility, event logging, and informational and error messages.

FTAM Installation Verification Procedure (IVP)

The FTAM IVP sets up outbound and inbound application associations. A connection is made to your local system (as a loopback test). The FTAM IVP checks that your installation is able to set up and release presentation and session connections. It tests the FTAM software by starting a responder and reading the attributes of a file with the ols command.

FTAM Tracing Utility

The FTAM tracing utility (ositrace) is a tool for identifying problems in protocol exchanges between your local system and any remote FTAM system. The tracing utility captures protocol exchanges and transcribes them into easily read text.

The FTAM tracing utility monitors data exchanges for individual associations. The tracing utility can trace data originating from the following components: FTAM (DATA, PROTOCOL, and STRUCTURING), ACSE, Presentation, and Session.

FTAM Event Logging

For event logging, the FTAM listener writes records in the syslog file (/usr/spool/mqueue/syslog) and the responder writes records to the wtmp file (/usr/adm/wtmp).

Requirements for Compatibility with FTAM

FTAM lets an open system perform a specific set of file transfer, access and management activities with any open system having a compatible FTAM implementation.

The Protocol Implementation Conformance Statement (PICS) provides more information about FTAM's implementation.

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System Support Addendum

**PRODUCT NAME: DECnet OSI for ULTRIX, Version 5.1a   SSA 34.97.03-A
                                for RISC and VAX**

HARDWARE REQUIREMENTS

Reference can be made to the configuration charts listed in the ULTRIX Operating system Software Product Description (SPD 26.40.xx) and the ULTRIX Worksystem Software Software Product Description (SPD 28.22.xx).

DECnet/OSI for ULTRIX supports the Ethernet and FDDI controllers listed in the Operating System Software Product Description (SPD 26.40.xx) and the ULTRIX Worksystem Software Software Product Description (SPD 28.22.xx). At least one controller is required on a DECnet/OSI system. Systems that include integral Ethernet Controllers do not require additional communication devices.

DECnet/OSI supports the synchronous devices supported. Please refer to the DEC Wide Area Network Device Drivers for ULTRIX Software Product Description (SPD 32.33.xx).

Processors Supported:

Table 1

Processors	DECstation 3100, DECstation 3100s	DECsystem 5100	DECsystem 5400	DECsystem 5500
Communication Devices			DELQA	DELQA
			DESQA	DESQA
Processors	DECstation 3100, DECstation 3100s	DECsystem 5100	DECsystem 5400	DECsystem 5500
Communication Devices			DELQA	DELQA
			DESQA	DESQA
Processors	DECsystem 5000, Models 25/33/50	DECsystem 5000, Models 133/150	DECsystem 5000, Models 200/240/260	DECsystem 5900, DECsystem 5900-260
Communication Devices	DEFZA	DEFZA	DEFZA	DEFZA
Processors	MicroVAX II, VAXserver 100	MicroVAX 2000, VAXserver 2000	MicroVAX 3100, VAXserver 3100	MicroVAX 3300/3400, VAXserver 3300/3400
Communication Devices	DEQNA	DESVA		DELQA
	DMV11			DESQA

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Table 1 (Cont.)

	DELQA			DMV11
Processors	MicroVAX 3500, VAXserver 3500	MicroVAX 3600, VAXserver 3602	MicroVAX 3800, VAXserver 3800	MicroVAX 3900, VAXserver 3900
Communication Devices	DELQA	DELQA	DELQA	DELQA
	DESQA	DESQA	DESQA	DESQA
Processors	VAX–11/750	VAX–11/780, VAX–11/785		
Communication Devices	DELUA	DELUA		
	DEUNA	DEUNA		
	DMR11	DMR11		
Processors	DECsystem 5810, DECsystem 5820, DECsystem 5830, DECsystem 5840	VAX 6000-210, VAX 6000-220, VAX 6000-230, VAX 6000-240, VAXserver 6000-210, VAXserver 6000-220	VAX 6000-310, VAX 6000-320, VAX 6000-330, VAX 6000-340, VAX 6000-350, VAX 6000-360, VAXserver 6000-310, VAXserver 6000-320	VAX 6000-410, VAX 6000-420, VAX 6000-430, VAX 6000-440, VAX 6000-450, VAX 6000-460, VAXserver 6000-410, VAXserver 6000-420
Communication Devices		DEMNA	DEMNA	DEMNA
	DEBNI	DEBNI	DEBNI	DEBNI
		DEBNA	DEBNA	DEBNA
Processors	VAX 6000-510, VAX 6000-520, VAX 6000-530, VAX 6000-540, VAX 6000-550, VAX 6000-550, VAX 6000-560, VAXserver 6000-510, VAXserver 6000-520	VAX 8200, VAX 8250	VAX 8300, VAX 8350	VAX 850018, VAX 853018
Communication Devices	DEBNI	DEBNI	DEBNI	DEBNI
	DEBNA	DEBNA	DEBNA	DEBNA
	DEMNA	DELUA	DELUA	DELUA
		DEUNA	DEUNA	DEUNA
		DMR11	DMR11	DMR11

Table 1 (Cont.)

Processors	VAX 8550	VAX 8600, VAX 8650	VAX 8700	VAX 8800, VAX 8810	VAX 8820, VAX 8830, VAX 8840
Communication Devices	DEBNI		DEBNI	DEBNI	DEBNI
	DEBNA		DEBNA	DEBNA	DEBNA
	DELUA	DELUA	DELUA	DELUA	
	DEUNA	DEUNA	DEUNA	DEUNA	
	DMR11	DMR11	DMR11	DMR11	

Processors	VAX 9000-1102, VAX 9000-210, VAX 9000-410 (single XMI)	VAX 9000-3102, VAX 9000-410, (2 XMIs)	VAX 9000-320 2, VAX 9000-420		
Communication Devices	DEMNA	DEMNA	DEMNA		
	DEBNA	DEBNA	DEBNA		
	DEBNI	DEBNI	DEBNI		

Processors	VAXstation 2000	VAXstation II	VAXstation II GPX	VAXstation 3200	VAXstation 3500
Communication Devices	DESVA	DEQNA	DEQNA		
		DMV11	DMV11		
		DELQA	DELQA	DELQA	DELQA

Processors	DECstation 2100	DECstation 3100	Personal DECsta-tion 5000, Models 25/50, Models 25/50 MX, Models 25/50 HX, Models 25/50 TX, Mod-els 25/50 PXG+, Models 25/50 PXG Turbo+		
Communication Devices			DEFZA		

Processors	DECstation 5000 Model 200, 200 MX, 200 CX, 200 HX, 200 TX, 200 PX, 200 PXG, 200 PXG+, 200 PXG Turbo, 200 PXG Turbo+	DECstation 5000 Models 240/260, 240/260 MX, 240 /260 HX, 240/260 TX, 240/260 PXG+, 240/260 PXG Turbo+			
Communication Devices	DEFZA	DEFZA			

Table 1 (Cont.)

Processors	VAXstation 3100	VAXstation 3520, VAXstation 3540

Disk Space Requirements for VAX:

Minimum Disk space required for installation/use:

2.2 Mbytes in root file system
21.2 Mbytes in /usr
23.4 Mbytes total

Disk Space Requirements for RISC:

Minimum Disk space required for installation/use:

5.2 Mbytes in root file system
43.7 Mbytes in /usr
48.9 Mbytes total

On a server, this disk space is also required for each diskless environment in which DECnet is installed. In addition, each diskless client using an environment which has DECnet will require another .02Mbytes on the server. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options selected.

SOFTWARE REQUIREMENTS

For VAX processors:

ULTRIX Operating System V4.3

or

ULTRIX Worksystem Software V4.3

For RISC processors:

ULTRIX Operating System V4.3 and V4.3A

or

ULTRIX Worksystem Software V4.3 and V4.3A

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

DISTRIBUTION MEDIA

TK50 Streaming Tape, 9-Track 1600 BPI Magtape

This product is also available as part of the ULTRIX consolidated distribution on CD–ROM.

ORDERING INFORMATION

End System and Extended Function use the same documentation and media kits for similar system types.

For VAX Systems:

Software Licenses (End System): QL-MTPA*-**
Software Licenses (Extended Function): QL-716A*-**
Software Media: QA-716AA-**
Software Documentation: QA-716AA-GZ
Software Product Services: QT-716A*-**

For RISC Systems:

Software Licenses (End System): QL-MTNA*-**
Software Licenses (Extended Function): QL-YT9A*-**
Software Media: QA-YT9AA-**
Software Documentation: QA-YT9AA-GZ
Software Product Services: QT-YT9A*-**

OPTIONAL COMPONENT SOFTWARE MEDIA

For VAX Systems:

DECnet/OSI for ULTRIX Supplementary Programming:
Software Documentation: QA-716AB-GZ

For RISC Systems:

X.25 Gateway Client V1.1B:
Software Media: QA-YTAAA-**
Software Documentation: QA-YTAAA-GZ

X.25 Native V1.1B:
Software Media: QA-YSYAA-**
Software Documentation: QA-YSYAA-GZ

DEC WAN Device Drivers for ULTRIX V2.1B:
Software Media: QA-YMJAA-H*
Software Documentation: QA-YMJAA-GZ
Software Product Services: QT-YMJA*-**

DECnet/OSI for ULTRIX Supplementary Programming:
Software Documentation: QA-YT9AB-GZ

OPTIONAL SOFTWARE

For VAX Systems:

OSI Application Developer's Toolkit V1.0:
Software Media: QA-GZTAA-H*
Software Documentation: QA-GZTAA-GZ
Software Product Services: QT-GZTA*-**
Software License: QL-GZTA*-**

For RISC Systems:

X.25 Native V1.1B:
Software License (WAN functionality): QL-YSYA*-**
Software Product Services: QT-YSYA*-**

OSI Application Developer's Toolkit V1.0:
Software Media: QA-GZSAA-H*
Software Documentation: QA-GZSAA-GZ
Software Product Services: QT-GZSA*-**
Software License: QL-GZSA*-**

* Denotes variant fields. For additional information on
available licenses, services, and media, refer to the
appropriate price book.

The above information is valid at time of release. Please
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information.

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