Software Product Description

PRODUCT NAME: Digital X.25 Client for OpenVMS Alpha Systems, Version 1.2 SPD 46.37.03

DESCRIPTION

Digital X.25 Client for OpenVMS Alpha Systems is a layered product that allows a suitably configured system running Phase IV DECnet for OpenVMS Alpha in a DECnet environment to make logical connections to Packet Switched Data Networks (PSDNs) via one or more X.25 connector node(s). Digital X.25 Client, with the connector node providing physical connections(s) to a PSDN, enables process-to-process and terminal communications between the Client system and the remote Data Terminal Equipment (DTE).

A list of supported connector nodes is included in this document. Consult the corresponding SPD for PSDNs and facilities supported by the connector node in question.

DECnet logical links are established by OpenVMS to connect the Digital X.25 Client node to the connector node. Digital X.25 Client uses these links to exchange X.25 or X.29 messages with the connector node.

Note: Performance of an X.29 connection is directly related to the speed of the DECnet circuit between the Client and connector node(s) and the number of intermediate routing nodes.

A single Digital X.25 Client host can connect to one or more connector nodes concurrently and access all PSDN(s) accessible from those connector nodes. One of these connector node/PSDN combinations must be established as the Client system's default gateway for outbound and inbound traffic. This requires correct configuration of both connector node(s) and the Digital X.25 Client host.

Digital X.25 Client for OpenVMS Alpha supports the following functions:

- Process-to-process (X.25) communication.
  Digital X.25 Client for OpenVMS Alpha allows user programs access to the X.25 network services via the standard OpenVMS QIO system service, to processes on other Digital and non-Digital systems.
- Process-to-terminal (X.29) communication.
  Through the programming interface, users of the OpenVMS Alpha system may make outgoing calls to other Digital or non-Digital systems or suitable network PADs accessible via a PSDN.
- Terminal-to-process (X.29) communication.
  Remote terminals connected to the PSDN may access the OpenVMS Alpha host running X.25 by means of an X.29 Switched Virtual Circuit (SVC) call.
- X.25 Mail.
  The X.25 Mail utility allows communication across a PSDN via electronic mail between two systems running the Mail-11 protocol over X.25. Systems that support Mail-11 over X.25 include WAN Support for Digital UNIX, X.25 for OpenVMS Alpha, X.25 Client for OpenVMS Alpha, and X.25 installations of DECnet/OSI for OpenVMS VAX.

Features

Process-to-Process Communication

The Digital X.25 Client for OpenVMS Alpha programming interface allows application programs to access X.25 packet level services via the standard OpenVMS QIO system service.

Functions include establishing and clearing network connections, transmitting and receiving data, transmitting and receiving interrupt messages, and resetting virtual circuits. The interface also provides for the segmentation and recombination of messages that are longer than the packet size selected for the circuit.

This interface enables an application program using the standard OpenVMS QIO system service to communicate with complementary X.25 software on other systems (Digital or non-Digital).

Terminal Communications

Digital X.25 Client for OpenVMS Alpha supports terminal communications according to ITU/TSS recommendations X.3, X.28, and X.29. Only those terminal parameters defined in the X.3 recommendation are explicitly supported. Network-specific enhancements or extensions to the X.3 parameters are available at both the X.29 and the host-based PAD user interface. Terminal processes that depend on these extensions may not function correctly when used on other PSDNs or when accessing one PSDN via another, for example, international access.

The X.29 interactive terminal interface allows remote asynchronous terminals (character-mode DTEs) connected to the network to communicate with the OpenVMS Alpha system in a manner similar to local terminals. The maximum number of terminals supported on an OpenVMS Alpha system (both local and X.29 remote) cannot exceed the number for which the system has been configured.

When using applications designed for interactive, local terminal operations, transmission delays or PAD parameter settings can cause inconsistencies between incoming X.29 traffic and the application's operation. It may be necessary to make modifications to the application user interface or alter PAD parameter settings.

The X.29 interface includes a programming capability for the support of specific X.29 signaling requirements, including modification of PAD parameters.

Virtual Circuits

Digital X.25 Client for OpenVMS Alpha supports both Switched Virtual Circuits (SVCs) and Permanent Virtual Circuits (PVCs) from the connector node, and supports up to 512 virtual circuits in total per system. One virtual circuit is used for each incoming or outgoing terminal connection, for each X.25 call.

Accounting

The Digital X.25 Client Accounting utility enables the system manager to obtain information on Client and network usage. The utility can extract the information collected and display directly on a terminal or write the data to a file. Information can be extracted for selected records, or a summary produced. The Digital X.25 Client Accounting utility is compatible with that of OpenVMS.

For incoming X.29 calls, no information can be retrieved relating to the process or account onto which a user is logged. This can be obtained through correlation of OpenVMS accounting records.

On a Digital X.25 Client for OpenVMS Alpha node, the Accounting utility records details of calls to and from the Client node only. Refer to the SPD of the relevant connector node for details of the accounting features available for it.

Security

An extensive security facility is provided. Control of remote access to the system (incoming security) and local access to the network (outgoing security) are supported. Incoming and outgoing security can be based on any combination of:

- Normal or reverse charging
- DTE number
- Network (PSDN)
- Process (or user) making the outgoing call
- Application handling the incoming call
- Rights identifiers held by process or user making an outgoing call

On a Digital X.25 Client node, the security utility performs checks for calls to and from the Client node only. Refer to the appropriate SPD for the connector node for details of the security features available therein.

Network Management

The Network Control Language (NCL) is provided for the management of Digital X.25 Client for OpenVMS Alpha and DECnet for OpenVMS Alpha. NCL provides network management facilities to:

- Specify destinations for incoming calls
- Define security parameters
- Modify network configuration
- Monitor connection statistics
- Perform network maintenance functions

The network manager can be notified of significant network events such as security violations or network failures through the event logging facility.

Problem solving is facilitated by the provision of the Network Trace facility (NETTRACE). NETTRACE allows the user to trace and analyze frames passing between the PSDN and the Digital X.25 Client for OpenVMS Alpha system.

Conformance to Standards

Digital X.25 Client for OpenVMS Alpha supports terminal communications according to ITU/TSS recommendations X.3, X.28, and X.29. Please refer to the appropriate SPD for the connector node for details of standards and protocol options supported.

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. Only customers experienced with Digital's X.25 products should attempt installation.

Customer Responsibilities

In some cases, the X.25 network supplier may impose restrictions, limitations, or requirements on the proposed Digital network configuration. The customer must ensure these are understood and adhered to for each network.

Before installation of the software, the customer should:

- Previously have installed all requisite software and hardware, including terminals.
- Obtain, install, and demonstrate as operational any modems and other equipment and facilities necessary to interface to Digital's communication equipment.
- Demonstrate equivalence of operation for modems other than Bell 208A, 208B, 209, 212A synchronous modems, or, in Europe, employ only PTT approved modems.
- Subscribe to the Open User Group and to at least two SVCs to complete the product's installation checkout (this test loops information from the Digital X.25 Client for OpenVMS Alpha system to the PSDN and back to the Client system). Systems in Closed User Groups only, or where the PSDN does not support calls to the originating DTE address, require specially negotiated arrangements for Digital installation of the product.
- Make available for a reasonable period of time, as mutually agreed by Digital and the customer, all hardware, communication facilities and terminals that are to be used during a Digital supervised installation.

HARDWARE REQUIREMENTS

Processors Supported

Alpha:
DEC 2000 Model 300/500
DEC 3000 Model 300/300L/300X/300LX,
DEC 3000 Model 400/400S,
DEC 3000 Model 500/500S/500X,
DEC 3000 Model 600/600S,
DEC 3000 Model 700,
DEC 3000 Model 800/800S,
DEC 3000 Model 900
DEC 4000 Model 600/700 series
DEC 7000 Model 600/700 series
DEC 10000 Model 600/700 series
AlphaServer 8200 5/300
AlphaServer 8400 5/300
Digital 2100 Server Model A500MP
Digital 2100 Server Model A600MP
AlphaServer 2100 4/{200/233/275}, 5/250
AlphaServer 2000 4/{200/233}
AlphaServer 1000 4/{200/233}
AlphaServer 400 4/166
AlphaStation 600 5/300
AlphaStation 400 4/233
AlphaStation 250 4/266
AlphaStation 200 4/{100/166/233}

System Memory Required

In addition to the memory requirements of OpenVMS Alpha and user applications, the minimum memory requirement of Digital X.25 Client for OpenVMS Alpha is 2 Mbytes for software and data structures. Memory is also needed for each active virtual circuit. For outgoing data, the user is limited solely by the direct I/O quota. For incoming data, the user is limited by the byte count of the process and the quota specified by the ncb item PSI$C_NCB_RCV_QUOTA. The maximum can be calculated as ((packet size + 532) * window size).

The amount of memory consumed has a direct relationship to the value of the DECnet NCP parameter PIPELINE QUOTA. The default value for PIPELINE QUOTA is 10 000. The following formula can be used to determine the amount of memory used by DECnet per X.25 Virtual Circuit.

PIPELINE QUOTA / BUFFER SIZE*DEVICE BUFFER SIZE.

Note that the division of the PIPELINE QUOTA by the NCP EXECUTOR parameter BUFFER SIZE is an integer division, as this determines the number of packets. Using the default NCP LINE parameter DEVICE BUFFER SIZE for the ETHERNET device and the default NCP EXECUTOR parameters above we obtain:

non-paged= 10 000 / 576 * 1 498 memory = 25 000

Allowing for Interrupt Packet Requests (IRPs) and Complex Buffers (CXBs) associated with these buffers, the DECnet buffer non-paged memory usage is approximately 28,000 bytes. Reducing the value of PIPELINE QUOTA from the default of 10,000 will reduce the memory required by Digital X.25 Client.

Communication Devices Required

Digital X.25 Client for OpenVMS Alpha Systems requires access to one of the following connector nodes on the same LAN:

- X25router 2000 or X25router 100 (SPD 28.86.xx)
- DECNIS 500 or DECNIS 600 Router/X.25 configuration (SPD 36.05.xx)
- DEC X25gateway 100/500 (SPD 32.97.xx)
- DECnet/OSI V6.2 (or later) for OpenVMS VAX configured for X.25 multi-host operation (SPD 25.03.xx)

For additional information on the configuration and performance of these devices consult their respective Software Product Descriptions and your local hardware service provider.

Disk Space Requirements (Block Cluster Size = 1)

Disk space required for installation:	13,200 Blocks (6.4 Mbytes)
Disk space required for use (permanent):	11,800 Blocks (5.8 Mbytes)

These sizes are approximate. The actual sizes will vary depending on the user's system environment, configuration, and software options.

SOFTWARE REQUIREMENTS

OpenVMS Alpha Operating System V7.0 (SPD 41.87.xx)
DECnet for OpenVMS Alpha, Version 7.0 (SPD 42.25.xx)

GROWTH CONSIDERATIONS

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

DISTRIBUTION MEDIA

Digital CD-ROM Software Library for OpenVMS Alpha Layered Products

SOFTWARE LICENSING

Customers who purchase the Digital X.25 Client product for an OpenVMS Alpha system may upgrade that processor to X.25 for OpenVMS Alpha systems (see SPD 47.37.xx) *at no additional cost.*. X.25 for OpenVMS Alpha can be installed and enabled using the same license management key (PAK) received for Digital X.25 Client for OpenVMS Alpha. Thus the software upgrade of an OpenVMS Alpha system from DECnet and Digital X.25 Client to DECnet/OSI and X.25 requires no new license purchases, presuming the original licenses are within warranty or covered by Digital service contract. This condition in no way supercedes or invalidates Digital's licensing terms and policies.

This software is furnished only under a license. For more information about Digital's licensing terms and policies, contact your local Digital office.

License Management Facility Support:

This layered product supports the OpenVMS Alpha License Management Facility.

License units for this product are allocated on an Unlimited System Use basis.

For more information on the License Management Facility, refer to the OpenVMS Alpha Operating System Software Product Description (SPD 41.87.xx) or the *License Management Facility (LMF)* manual of the OpenVMS Alpha Operating System documentation set.

ORDERING INFORMATION

Software Licenses: QL-0TWA*-**
Software Media/Documentation: QA-03XA*-**
Software Documentation (hardcopy): QA-0TWA*-GZ
Software Product Services: QT-0TWA*-**

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

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.

Use of the Digital X.25 Client for OpenVMS Alpha software in conjunction with a connector node for which Digital support has not been purchased and/or is not available invalidates any warranty or support offered in this SPD.

Use of the product software and a connector node with a PSDN which Digital has not tested invalidates any warranty or support offered in this SPD. This software warranty applies only to those PSDN(s) which are fully supported by the connector node software. Consult the valid connector nodes listed in this document, and refer to their SPDs for more information.