Software Product Description

PRODUCT NAME: Vitalink® TransLAN® 320 Software, Version 20.3.11 **SPD 31.85.06**

DESCRIPTION

The TransLAN 320 Software product is produced by Vitalink Communications Corporation. This software product is distributed and warranted under Digital Equipment Corporation's Standard Terms and Conditions.

TransLAN 320 software runs on Vitalink TransLAN hardware to provide bridge functions which interconnect remote IEEE 802.3 or Ethernet Version 2 local area networks (LANs) over synchronous communications lines. A single Ethernet port and two synchronous ports are supported by the TransLAN 320 software product.

The TransLAN 320 bridge forwards Ethernet frames across synchronous communication line(s) to remote TransLAN 320, TransLAN 350, or TransLAN III bridges. The TransLAN 320 is recommended for bridging relatively small Ethernet installations requiring one or two 56 Kbps synchronous communication lines to other sites.

The TransLAN bridge is a data link level bridge which filters and forwards IEEE 802.3 or Ethernet Version 2 compatible frames received on its Ethernet and synchronous port(s). TransLAN is a learning bridge which monitors the source addresses of frames received on its Ethernet port and synchronous ports. Based on this information, the bridge learns which stations are located remote to each of its synchronous ports and which stations are local to its Ethernet port.

This learning feature allows the bridge to filter traffic and forward frames for a known single destination address only to the Ethernet or synchronous port through which the destination is located. Multicast frames and frames with unknown destination addresses are forwarded through all ports except the port on which the frame was received. The learning feature also allows the bridge to discard frames received through the Ethernet port which are destined for known addresses on the local Ethernet. This filtering of local traffic provides for efficient use of the synchronous links by remote traffic.

The TransLAN 320 bridge software also provides selective forwarding features described in this Software Product Description. The software product also includes an inherent network management capability. In addition, a TransLAN 320 can be controlled by a Control Station using SNMP (Simple Network Management Protocol). SNMP allows users to access and control TransLAN systems with most network management systems using this protocol.

Communications

The TransLAN 320 software product supports three types of communications ports on the TransLAN 320 bridge: one Ethernet port, two synchronous communication ports, and two network management access ports. The Ethernet port conforms to IEEE 802.3 interface standard and is compatible with the Ethernet Version 2 interface standard.

The TransLAN 320 software product supports the use of two synchronous communication ports. A multipurpose interface supports two types of synchronous interface: V.35-type, and RS449/422. The selection of interface mode is accomplished by attaching the proper interface adapter cable.

The V.35-type interface of the TransLAN bridge is compatible with the CCITT V.35 Recommendation for physical interface, is compliant with the CCITT V.11 Recommendation for clock and data signals, and is compliant with the CCITT V.28 Recommendation for modem control signals. The RS449/422 interface of the TransLAN bridge is compliant with EIA RS449 and RS422 standards, and is compliant with the CCITT V.36 Recommendation.

The TransLAN 320 software supports two network management communication ports on the TransLAN bridge. The Console and Auxiliary Ports are compliant with EIA RS232C standard and support partial modem control. These ports cannot be used concurrently. The Console port is used for local terminal access, or the Auxiliary port is used for remote terminal access to the TransLAN bridge for software configuration and network management. The Console and Auxiliary ports support line speeds between 110 bps and 19.2 kbps.

Network Groups

The TransLAN 320 software product supports interfaces to two synchronous lines from a single TransLAN 320 bridge. These lines may be used to connect the local bridge to remote bridges in distant locations or the two lines may be operated in parallel between one pair of bridges. Parallel lines between two bridges form a network group. For the purposes of the Spanning Tree Protocol both lines in the network group are considered as one.

The parallel lines in a network group may be used to increase bandwidth and provide redundant communication links between two Ethernet sites. Traffic is split between the parallel lines by the automatic assignment of frames from each unique source address to a specific line within the network group. Each line is assigned the traffic from the number of sources proportional to its relative line speed in the network group. When one link within a network group fails, traffic is redistributed among the remaining operational lines.

Spanning Tree Protocol

TransLAN 320 software supports both the Digital-developed LAN Bridge Spanning Tree Protocol and the IEEE 802.1 Spanning Tree Protocol. This allows the TransLAN to automatically detect and adjust to changes in bridged LAN configurations using either the IEEE 802.1 Spanning Tree Implementation or Digital's Spanning Tree Algorithm.

These protocols allow the maintenance of a loop-free extended Ethernet network formed from Vitalink TransLAN III, TransLAN 320, and TransLAN 350 bridges, and from Digital LAN Bridge 100, LAN Bridge 150, LAN Bridge 200, and Digital METROWAVE Bridge products. Through the Spanning Tree Protocol, the TransLAN III bridge communicates with these other bridges in the Extended Ethernet network to define a hierarchical loop-free network of active communications links between bridges, which emanates from a root bridge automatically selected through the protocol.

Communication links which are not included in the active, loop-free hierarchy are automatically placed into a backup state. When an active link in the network fails, the Spanning Tree Protocol automatically recalculates a hierarchical structure, and activates appropriate backup links to restore connectivity where possible in the network. The time required to complete this network reconfiguration is dependent upon network size and traffic loading. However, most reconfigurations will be completed within 25 to 100 seconds from the detection of a link failure.

Interdomain Bridges

The standard Spanning Tree Protocol results in a bridged network with one "root bridge" and one spanning tree topology. Utilizing interdomain bridging, a network can be segmented into smaller groups of bridges, called "domains." Each domain contains its own roots topology. The domains are connected by TransLAN remote bridges which are configured to function as interdomain bridges via the spanning tree variables screen in the REC utility. STP messages are not sent beyond the domains on which they originate. This can help to improve the stability of a larger network because any failure (either data link or bridge) in one of the domains will not affect the topology of other bridged domains. Bridged domain segmentation can be used to allow both IEEE 802.1 STP and Digital's STP to co-exist on the same network. Each domain can operate its own version of STP.

Filtering and Traffic Control Features

The TransLAN 320 software product provides several user-selectable features to control the forwarding of frames through TransLAN bridges. These features include:

- Traffic Analysis and Control Extensions (TACE) — Provides for the counting, forwarding, or discarding of frames based upon customer-specified criteria of source address, Ethernet Version 2 type field (specifies protocol type, such as DECnet, LAT, TCP-IP, etc.), or frame format type (Ethernet V2 or IEEE 802.3). Frames can also be directed to specific synchronous ports based on this criteria. When used in conjunction with the Class of Service feature, the TACE feature provides for the assignment of different transmit priorities based on the above criteria.

- Multicast Filtering — Provides for the discarding or forwarding of Ethernet V2 multicast frames by type, or for the discarding or forwarding of specific multicast addresses.

- Packet Type Filtering — Provides for the assignment of specific Ethernet V2 protocol types to specific synchronous links. This feature is most typically used to segregate traffic of different protocols among parallel lines in one network group. For example, the feature could be used to reserve one line in a network group for LAT traffic only.

- Multicast Storm Damping — Maximizes the stability and performance of a wide area network. This feature allows the network manager to specify a maximum level of multicast traffic to be forwarded from the LAN to the WAN. This feature is disabled with default settings.

- Single Destination Damping — Allows every user fair access to the wide area network. This feature prevents a pair of high-traffic devices from dominating the wide area link. The TransLAN monitors the traffic going across the link, and discards some of a dominant pair's traffic until their traffic is below an allowable threshold. This feature is disabled with default settings.

Network Management

The TransLAN 320 software product includes network management features which provide for the monitoring of TransLAN traffic, performance, and error conditions, and for the configuration and modification of TransLAN software operating parameters. The TransLAN 320 software product includes loopback features which may be invoked to test synchronous links by generating loopback messages through any synchronous port for loopback by the distant bridge.

The following types of error statistics concerning the synchronous links are stored by the TransLAN bridge and are available through the network management features:

- Abort errors
- CRC error
- CTS errors
- DCD errors
- Receiver overrun errors
- Transmitter underrun errors

The following types of Ethernet error statistics are available:

- Controller reset errors
- Late collision errors
- Carrier loss errors
- CRC errors
- Missed packet errors
- Framing errors
- Receive buffer errors
- Transmit buffer errors

SNMP (Simple Network Management Protocol)

This software version (20.3.x) supports a subset of the industry-standard SNMP, MIB II Network Management protocol, and a private Vitalink MIB extension. TransLAN 320 supports the system group and interface group of MIB II for Ethernet networks. The Vitalink MIB is included in Appendix B of the *TransLAN/TransRING Reference Manual*, S/W Version 6.11, 10.5, and 20.3. The Vitalink MIB can be loaded into most SNMP management stations to enable the management of Vitalink-specific Ethernet bridge features.

Performance and Network Configuration

Performance measurements of TransLAN bridge throughput are dependent on many network and traffic factors, including frame sizes, utilization rates on local Ethernet segments, source-destination address distributions, the number of synchronous lines per bridge, and the number of TransLAN software features invoked. The TransLAN 320 software product provides performance up to the following level when transmitting minimum size (64 bytes) Ethernet frames, over a single synchronous line with full-duplex traffic, and with a local Ethernet utilization of 40 percent or less:

- Filtering Rate = 14,880 frames/sec
- Forwarding Rate = 224 frames/sec

Configuration Guidelines

Digital warrants and supports the TransLAN 320 software product within Extended Ethernet configuration guidelines which are intended to assure adequate performance of the extended network. Digital will warrant and support the TransLAN 320 bridge product only within the following configuration limitations:

- The minimum synchronous line speed between TransLAN bridges is 56 kbps.
- No satellite links may be used between TransLAN bridges for LAT traffic.
- A maximum of seven local or remote bridges may be configured in series between any two communicating end stations. Each TransLAN bridge or LAN Bridge 100, 150, or 200 in the spanning tree path between stations counts as one bridge toward the maximum configuration limit of seven bridges. Each METROWAVE Bridge in the spanning tree path counts as two bridges.
- When using 56 kbps or 64 kbps lines between TransLAN bridges for remote LAT access, a maximum of two synchronous communication lines may be included in the spanning tree path between the DECserver and remote host.

- When using TransLAN bridges for remote LAT access, 1 to 2 kbps of synchronous line bandwidth must be planned for each remote terminal operating simultaneously over the bridge link. For example, if a 56 kbps link between TransLAN bridges is dedicated to LAT traffic, then a maximum of 28 terminals may simultaneously connect to remote hosts over the bridge link. If the link is being shared with other protocol traffic, such as DECnet, then fewer terminals can be supported.
- Local area VAXclusters may not be operated across TransLAN bridges.
- TransLAN support of Personal Computing Systems Architecture (PCSA)/PATHWORKS is restricted to those protocols supported by PATHWORKS across wide area networks and extended LANs. The primary limitation of PATHWORKS/PCSA networks in a WAN configuration is for disk services. The Network Device Utility (NDU) must be used to access virtual disks over a WAN rather than the LAST and LAD communication protocols. Refer to the appropriate PATHWORKS Software Product Descriptions for additional information.
- In bridge networks containing TransLAN bridges and Digital LAN Bridge 100, 150, or 200 or METROWAVE Bridge products, the LAN Bridge 100, 150, or 200 or METROWAVE Bridge must be configured as the spanning tree root.
- The minimum software version of all TransLAN 350 bridges in the network is 10.4.1. All TransLAN 350 bridges must be using the same software version.
- The minimum software version of all TransPATH® 350 bridges/router in the network is 11.4.1. All TransPATH 350s must be using the same software version.
- The minimum software version of all TransLAN 320 bridges in the network is 20.2.1. All TransLAN 320 bridges must be using the same software version.
- The minimum software version of all TransLAN III bridges in the network is 6.10.1. All TransLAN III bridges must be using the same software version.

In addition to the configuration requirements described above, Digital recommends that the following configuration guidelines are also followed to assure reliable Extended LAN performance:

- When using 56 kbps or 64 kbps line(s) between TransLAN 320, TransLAN III, and 350 bridges for remote LAT access, Digital recommends that the line(s) be dedicated solely to LAT traffic through the TACE or protocol Type Deflection feature of the bridges. Other parallel line(s) between the bridges should be added to carry non-LAT traffic.
- Digital recommends that local load hosts are used to downline load DECserver and MicroServer software.

INSTALLATION

Digital recommends that TransLAN 320 hardware and software installation services be purchased with this product. These services provide for installation of the hardware and software by an experienced Digital Specialist.

Customer Responsibilities

Before installation of the software, the customer must:

- Install and demonstrate as operational the necessary synchronous communication line(s).
- Obtain, install, and demonstrate as operational any modems and other equipment and facilities necessary to interface to Digital's communication equipment.
- 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 installation. An asynchronous terminal and RS232C cable must be provided by the customer for use by the Digital specialist as a console connected to the TransLAN Console port.

HARDWARE REQUIREMENTS

A TransLAN hardware unit is required to run the TransLAN 320 Software Product:

DETLB-RA TransLAN 320, 120V/240V

Interface mode is selected by connection of the proper cable:

DETLX-JA CABLE, UIC to V.35, DTE
DETLX-JB CABLE, UIC to V.35, DCE
DETLX-JC CABLE, UIC to RS449/422, DTE
DETLX-JD CABLE, UIC to RS449/422, DCE
DETLX-JE CABLE, UIC to V.35 (E) DTE
DETLX-JF CABLE, UIC to V.35 (E) DCE
DETLX-JG CABLE, UIC to X24/X21, V11

These cables are used to connect directly from the UIC connector to the Digital modem device operating within the line speed constraints specified in this SPD.

Since the TransLAN 320 bridge is installed as part of a local Ethernet network, a valid Ethernet configuration is a prerequisite. A transceiver and transceiver cable are required to connect the TransLAN bridge to the local Ethernet segment. An H4000 or H4005 or DESTA transceiver, or a DELNI are required as the transceiver.

Other Hardware Requirements

As part of Digital's set of software product services, remote diagnostic support of the TransLAN bridge may be available from a Digital Support Center. To receive this remote diagnostic service, a Bell 212A compatible modem is required to be connected to the Console or Auxiliary port of the TransLAN bridge. A DF242 modem and BC22M modem cable are recommended. The customer must maintain a dial-in communications line to the modem.

SOFTWARE REQUIREMENTS

None

ORDERING INFORMATION

DETLB-RA	TransLAN 320 bridge package, includes DETLB-RA hardware unit and QB-YGMA9-VW Software License, media, and documentation.

Software Product Services: QT-YGMA*-**

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

The software product is distributed on a single, 3.5-inch, double-sided, double-density, microfloppy disk. During installation, the microfloppy is loaded directly into the floppy disk drive in the DETLB bridge hardware unit.

SOFTWARE LICENSING

A separate license is required for each DETLB TransLAN 320 bridge hardware unit. The software may be copied, in its entirety, only for use on the original hardware unit. The software configuration file may be copied to other TransLAN units during the installation or re-configuration of the other units.

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.

SOFTWARE PRODUCT SERVICES

Under Digital's Vendor Application Services (VAS), all Vitalink Communications software products selected for coverage by Digital are serviced and supported in the same way as Digital products. This extension of Digital's expertise bolsters Digital's commitment to providing customers with a single source of support.

Standard Software Product Services are available that include System Support Service (SSS) and Media and Documentation Distribution Service (MDDS). The components of these services include the following:

- Telephone assistance (24 x 7)
- Critical on-site software support
- Right-to-use new version
- Software media and documentation updates

System Support Service (SSS): QT-YGMA9-A9

System Node Service (SNS): QT-YGMA9-N9

Media and Documentation Distribution Service (MDDS): QT-YGMAA-EW

The above information is valid at time of release. Please contact your local Digital office for the most up-to-date information.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product. 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 360 days later. All warranty related support for this software will end 180 days after release of the subsequent version.

Warranty is provided in the country of purchase in accordance with the provisions of Digital's Standard Terms and Conditions of Sale. Digital will provide the following services if the customer encounters a problem caused when using licensed software under normal conditions as defined by the SPD:

a. If Digital also determines the problem to be a defect in the Software Product, Digital will provide remedial service on site if necessary (1) to apply a temporary correction or make a reasonable attempt to develop an emergency bypass if the software is inoperable, and (2) assist the customer in preparing a Software Performance Report (SPR).

b. If customer diagnosis indicates the problem is caused by a defect in the Software Product, the customer may submit an SPR to Digital.

Digital will respond to a problem reported in an SPR that is caused by a defect in the current, unaltered release of the Software Product. The response will provide temporary corrections, useful emergency bypasses, and/or notice of the availability of corrected code.

Telephone support may be available from the Digital Telephone Support Center. Please contact your local Digital office for information on the provision of telephone support as part of the warranty.

DIGITAL DOES NOT WARRANT THAT THE SOFTWARE LICENSED TO THE CUSTOMER SHALL BE ERROR FREE, THAT THE SOFTWARE SHALL OPERATE WITH ANY HARDWARE AND SOFTWARE OTHER THAN AS SPECIFIED IN THIS SPD, THAT THE SOFTWARE SHALL SATISFY CUSTOMER'S OWN SPECIFIC REQUIREMENTS, OR THAT COPIES OF THE SOFTWARE OTHER THAN THOSE PROVIDED OR AUTHORIZED BY DIGITAL SHALL CONFORM TO THE SPD.

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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.