Software Product Description

PRODUCT NAME: DECrouter 250, Version 1.1 **SPD 32.15.02**

DESCRIPTION

The DECrouter 250 software is a communications product that provides an asynchronous/synchronous routing service for the Local Area Network (LAN). This allows DECnet nodes running DDCMP to communicate with nodes on an Ethernet/802.3 LAN and allows DECnet DDCMP nodes on an Ethernet/802.3 LAN to communicate with nodes outside the LAN within a Wide Area Network (WAN).

Overview

The DECrouter 250 software provides access to and from Phase IV/IV+ DECnet nodes on a LAN and Phase III or Phase IV/IV+ DECnet nodes over asynchronous/synchronous lines. These nodes can be located either locally via dedicated wiring, or remotely via modem connections. Note that LAN refers to any Local Area Network that conforms to IEEE 802.3, or ISO 8802/3 standards.

The DECrouter 250 software runs on the DECrouter 250 (DSRVR) and the DEC WANserver 150 (DSRVJ) hardware units. These contain an Ethernet interface port (IEEE 802.3 compatible). The DECrouter 250 hardware has eight asynchronous/synchronous serial communications ports, and the DEC WANserver 150 has two asynchronous/synchronous serial communications ports.

The DECrouter 250 software performs adaptive routing utilizing all of the asynchronous/synchronous lines and the Ethernet/802.3 ports of the hardware. In the case where communications to an end node might pass through multiple routers, the DECrouter 250 software has the capability of choosing the least cost path or rerouting in case of a line failure.

The DECrouter 250 software supports intra-area (Level 1) and inter-area (Level 2) routing of messages between DECnet nodes. These nodes can be Phase III/IV/IV+ routing nodes or end nodes. Use of this software offloads routing-related communications from hosts that would otherwise serve as routing nodes on the Local Area Network-based DECnet LAN.

A major security feature of the DECrouter 250 software is support for modem dial-back. This feature allows network managers tighter control over access to their DECnet networks.

The DECrouter 250 software must be downline loaded onto the DECrouter 250 or DEC WANserver 150 hardware units over the Ethernet/802.3 port or the serial communications ports.

Routing and DECnet Phase IV Areas

The DECrouter 250 software implements Phase IV/IV+ DECnet DDCMP routing and network management. Phase IV/IV+ DECnet networks are hierarchical networks that can be segmented into up to 63 areas, each containing up to 1023 nodes.

Routers can be one of two types; Level 1 or Level 2. Level 1 Routers route directly toward nodes within their own area, and route toward a Level 2 Router when the destination node is in a different area. Level 2 Routers act as Level 1 Routers within their own area, but in addition, route to other areas.

The DECrouter 250 software supports both the intra-area routing (Level 1) and inter-area routing (Level 2) for Phase IV/IV+ nodes on a Local Area Network, or Phase III/IV/IV+ remote nodes connected to one of the asynchronous/synchronous serial communications ports.

Line Support

The DECrouter 250 software uses the DECrouter 250 or DEC WANserver 150 hardware serial communications ports to connect nodes running asynchronous or synchronous DDCMP DECnet, and the Ethernet/802.3 ports to connect to the Ethernet/802.3 LAN. The asynchronous/synchronous ports operate in full-duplex, point-to-point mode and support the ability to connect manually dialed or auto-answered modems. The asynchronous/synchronous ports have been designed to be compatible with modems conforming to Bell standards and CCITT recommendations. Note that multipoint lines or connections to DMC11s are not supported.

Refer to the System Support Addendum (SSA 32.15.02-x) for further information on supported modems.

The DECrouter 250 (DSRVR) hardware has two high speed serial ports and six low speed serial ports. The DEC WANserver 150 hardware has one high speed serial port and one low speed serial port. The low speed ports operate at up to 19.2 Kbps, and conform to CCITT V.28/V.24 (EIA-232-D). The high speed ports operate at speeds up to 64 Kbps and support CCITT V.36/V.11 (EIA-449/422), CCITT V.10 (EIA-449/423), CCITT V.35 Appendix A, as well as CCITT V.28/V.24 (EIA-232-D). In asynchronous mode all ports operate at 19.2 Kbps maximum.

The DECrouter 250 software with the DECrouter 250 hardware supports eight lines at speeds and configurations of 2x64 Kbps, or 1x64 Kbps and 4x9.6 Kbps, or 8x19.2 Kbps.

The DECrouter 250 software with the DEC WANserver 150 hardware unit supports two lines at speeds and configurations of 1x64 Kbps and 1x9.6 Kbps, or 2x19.2 Kbps.

Adapter cables provide the necessary interchange circuits for the high speed ports. Refer to the System Support Addendum (SSA 32.15.02-x) for further information on the required adapter cables.

Installation and Configuration

The DECrouter 250 software is installed and configured on a VMS, ULTRIX (VAX or RISC), or MS-DOS®/PC-DOS system (termed a load host).

The appropriate DECrouter system image is downline loaded from the load host into the memory of the DECrouter 250 or DEC WANserver 150 hardware units. This system image can be downline loaded over the serial communications ports, as well as the Ethernet/802.3 ports. It should be noted, however, that some load hosts will not support downline loading over serial communications ports.

To identify which devices on a load host will provide support for serial-line loading, refer to the corresponding DECnet Software Product Description for that host. (DECnet-VAX SPD 25.03.xx and DECnet-ULTRIX SPD 26.83.xx.)

Each DECrouter 250 and DEC WANserver 150 hardware unit will have a separate system image on a load host.

The DECrouter 250 software contains the configuration information that tailors the dedicated router system for proper operation in its intended environment.

The configuration information contained in the system image on the load host can be modified by the System/Network Manager using a utility provided on the installation kit. The changes made to the configuration information in the system image are retained until the configuration utility is used to modify those changes. The changes take effect the next time the system image is downline loaded to the DECrouter 250 or DEC WANserver 150 hardware.

Network and Configuration Management

The Network Management Utility (DECnet Network Control Program (NCP)) on Phase IV DECnet hosts can execute commands remotely with the DECrouter 250 software to perform three primary functions:

- Display statistical and error information for the router (for example, statistics on line usage or errors)
- Control the operation of the router (for example, starting and stopping lines, setting parameters, and loading software)
- Test the components of the network (for example, loop messages through all or part of a communications path to isolate a defective component)

The DECrouter 250 software also has a monitor that is available both locally and remotely. The remote monitor runs on VMS, ULTRIX (VAX or RISC), and MS-DOS/PC-DOS host systems to monitor the current state of the router. These displays are updated at pre-set intervals and present current router data and status information such as CPU and line utilizations, current adjacencies, and buffer use.

Path Splitting

If the costs are set appropriately, the DECrouter 250 software performs path splitting. Note that routing cost is an arbitrary network management parameter set by the network manager to control network traffic flow. If the cost between the router and the destination node is the same on multiple asynchronous/synchronous ports, up to a maximum of four circuits, then the DECrouter 250 software splits traffic across the ports. As a result, higher data transfer rates and higher reliability due to redundant paths are provided.

It should be noted that for this path splitting feature to work, the destination nodes must support out-of-order packet caching.

Performance

The DECrouter 250 software will support and saturate the following serial line speeds and configurations with minimum size DECnet packets:

- On DECrouter 250 hardware: 2x64 Kbps, or 1x64 Kbps and 4x9.6 Kbps, or 8x19.2 Kbps
- On DEC WANserver 150 hardware: 1x64 Kbps and 1x9.6 Kbps, or 2x19.2 Kbps.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, VAXserver, DECstation, DECsystem, or PC configuration as specified in the System Support Addendum (SSA 32.15.02-x).

DSRVR or DSRVJ as specified in the System Support Addendum (SSA 32.15.02-x).

SOFTWARE REQUIREMENTS

For each VMS system acting as a load host or dump receiver:

VMS Operating System running DECnet-VAX (either end-node or full function)

For each ULTRIX system acting as a load host or dump receiver:

ULTRIX Operating System running DECnet-ULTRIX

For each PC System acting as a load host or dump receiver:

MS-DOS Operating System or PC-DOS Operating System running DECnet-DOS.

Refer to the System Support Addendum (SSA 32.15.02-x) for availability and required versions of prerequisite/optional software.

ORDERING INFORMATION

For VMS Operating Systems:

Software Licenses: QL-YG6A9-**
Software Media: QA-YG6AA-**
Software Documentation: QA-YG6AA-GZ
Software Product Services: QT-YG6*-**

For ULTRIX Operating Systems on VAX:

Software Licenses: QL-YG6A9-**
Software Media: QA-YG6AB-**
Software Documentation: QA-YG6AB-GZ
Software Product Services: QT-YG6*-**

For ULTRIX Operating Systems on RISC:

Software Licenses: QL-YG6A9-**
Software Media: QA-YG6AD-**
Software Documentation: QA-YG6AD-GZ
Software Product Services: QT-YG6*-**

For MS-DOS Operating Systems or PC-DOS Operating Systems:

Software Licenses: QL-YG6A9-**
Software Media: QA-YG6AC-**
Software Documentation: QA-YG6AC-GZ
Software Product Services: QT-YG6*-**

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

SOFTWARE LICENSING

A separate license is needed for each DECrouter 250 (DSRVR) hardware and DEC WANserver 150 (DSRVJ) hardware units on which this software product will be used (except as otherwise specified by Digital).

The licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions provide in part that the software and any part thereof (but excluding those parts specific to the load hosts) may be used only on the single DECrouter 250 (DSRVR) hardware or DEC WANserver 150 hardware unit on which the software is operated, but may be copied, in whole or in part (with the proper inclusion of Digital's copyright notice and any proprietary notices on the software) between multiple load hosts on the same LAN.

This product does not provide support for the VMS or ULTRIX License Management Facility. A Product Authorization Key (PAK) is not required for installation or use of this version of the product.

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

A variety of service options are available. For more information, please contact your local Digital office.

SOFTWARE WARRANTY

The DECrouter 250 software is warranted for use only with supported Phase III/IV/IV+ DECnet products supplied by Digital.

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.

® Hayes is a registered trademark of Hayes Microcomputer Products, Inc.

® IBM is a registered trademark of International Business Machines Corporation.

® COMPAQ and Deskpro are registered trademarks of COMPAQ Computer Corporation.

® Olivetti is a registered trademark of Ing. C. Olivetti.

® Tandy is a registered trademark of Tandy Corporation.

® Toshiba is a registered trademark of Kabushiki Kaisha Toshiba.

® MS-DOS is a registered trademark of Microsoft Corporation.

™ SmartModem 2400 is a trademark of Hayes Microcomputer Products, Inc.

™ The DIGITAL Logo, CI, DEC, DECnet, DECrouter, DECstation, DECsystem, MicroVAX, MicroVMS, PATHWORKS, ThinWire, ULTRIX, VAX, VAXcluster, VAXft, VAXmate, VAXserver, VAXstation, and VMS are trademarks of Digital Equipment Corporation.