Software Product Description

DESCRIPTION

POLYCENTER Network Manager 400 is a network management software product designed to provide network managers with a complete set of applications to manage wide area heterogeneous networks.

The POLYCENTER Network Manager 400 consolidates Digital Equipment Corporation's network management applications within a Motif® environment and provides the capability of running all applications on a single system. It consists of products that are compliant with Digital's Enterprise Management Architecture (EMA) as well as products that are not EMA-compliant. As such, POLYCENTER Network Manager 400 is a transition vehicle to an EMA-compliant product set within a single software product.

The POLYCENTER Network Manager 400 consists of the following Digital network management products:

- POLYCENTER Network Manager 200 (formerly called DECmcc Basic Management System (BMS)

- POLYCENTER Network Fault Diagnostics Option

- POLYCENTER Extended LAN Management (ELM) Option

- POLYCENTER Terminal Server Access Module (TSAM) Option

- LAN Traffic Monitor (LTM) OpenVMS Point Product

- NMCC/VAX ETHERnim Point Product

- Terminal Server Manager (TSM) Point Product

In addition to containing the products listed above, POLYCENTER Network Manager 400 supports the ability to install and run other OpenVMS layered products within a Motif environment. POLYCENTER Network Manager 400 also provides access to non-Digital management products that are based on X11 standards. These products can be installed on the same or separate processors as POLYCENTER Network Manager 400 for the purpose of consolidating interfaces on a single workstation display.

Also included with the POLYCENTER Network Manager 400 components is the Network Troubleshooting Guide. Available through the Motif Bookreader application, the Network Troubleshooting Guide provides POLYCENTER Network Manager 400 users with a systematic, on-line approach to solving some of the most common problems that occur on DECnet/OSI for OpenVMS VAX, DECnet/OSI for ULTRIX, Ethernet, and TCP/IP networks.

POLYCENTER Network Manager 200

(Formerly called DECmcc Basic Management System, BMS)

The POLYCENTER Network Manager 200 is a complete, prepackaged POLYCENTER Product Family management system for multivendor, multi-protocol networks. It provides access to, and management functions for, Digital Equipment Corporation's ADVANTAGE-NETWORKS (DECnet Phase IV, DECnet/OSI, and TCP/IP) and open network environments. The POLYCENTER Network Manager 200 is a modular software product that can be extended through the addition of other POLYCENTER products, third party, or user-developed software modules.

Available on the OpenVMS and ULTRIX Operating Systems, the POLYCENTER Network Manager 200 provides both generic and device-specific management functions including:

- Motif® Graphical User Interface (GUI) and Command Line User Interfaces that provide consistent views and interactions with the management system regardless of the objects managed or the protocols used to manage them.

- Configuration Management functions that include automated discovery and device registration, topology mapping, and user-defined management domains.

- Notification and Alarm functions that enable users to define alarm rules and set up notification and automated procedures to locate existing and potential network problems or events. Enhanced Alarm copy

---

d i g i t a l ™
            January 1995
            AE-PAW9G-TE

and modify capabilities are present in this release of the product.

- Historical Data Recording and Data Export functions that allow users to define, collect, timestamp, and re-use historical network data and export POLYCENTER management information to an external relational data base.

- Device-specific Performance Statistics functions for DECnet Phase IV and DECnet/OSI nodes; Digital LAN Bridges; and TCP/IP hosts.

Consistent with the EMA Director Model, of which it is an implementation, the POLYCENTER Framework consists of four major elements that comprise an extensible management system: Management Modules; an Executive; an open Applications Program Interface (API); and a Management Information Repository (MIR).

- Management Modules provide services to users and to one another. There are three types of Management Modules:

  — Function Modules (FMs) provide services such as object registration, statistics generation, fault detection, and notification to users and to one another.

  — Access Modules (AMs) provide remote protocol support for, and management information about, different classes of managed objects.

  — Presentation Modules (PMs) provide a consistent user interface for the direct manipulation of managed objects (through AMs) and user access to management operations (through FMs).

- The Executive provides system services that enable Management Modules to be installed and used independently or in combination.

- The Applications Programming Interface (API) defines how Management Modules invoke each other's services. The POLYCENTER Framework API is open and documented to support Digital, third party, or user-developed modules.

- The Management Information Repository (MIR) provides a means to structure and store management information.

POLYCENTER Network Manager 200 Function Modules

The POLYCENTER Network Manager 200 includes generic and device-specific FMs that provide a variety of management services to end users and, in combination, to one another. These services include configuration management functions, fault management functions including alarm and notification services, historical data recording and data export functions, and performance statistics functions.

Generic FM services provide support for devices accessible through the POLYCENTER Network Manager 200 AMs, other Digital-developed AMs, or AMs developed and supported by third parties and users.

Configuration Management Functions

POLYCENTER Network Manager 200 Configuration Management functions include both manual and automatic registration of managed objects, and support for user-defined domains (groups of managed objects). These functions are provided by the following POLYCENTER Network Manager 200 FMs and services:

The Registration FM is a generic FM that enables users to enter and manage data identifying each managed object in a network environment. Such information includes object instance data such as network names and addresses, and reference information such as device location, software revision levels, and contact names.

With the Registration FM, users have the option of selecting a local system-level repository, or setting up a network-wide, globally-available naming service using Digital's Distributed Name Service (DECdns). With DECdns, users and applications can assign names to resources (such as nodes, bridges, files, domain names, etc.) and then use those resources without having to keep track of physical location or network address. The DECdns option also enables multiple POLYCENTER Managers to share the same view of managed objects.

The Domain FM is a generic FM that enables users to assign managed objects into groups called domains. Domains are subsets of the managed object configuration that provide user-defined groups that can be based on equipment type (all DECnet nodes, all TCP/IP hosts, all LAN Bridges, etc.), geography (all objects within a LAN, building, campus, or subnet), personnel levels, or any other user-defined object group. Domains can contain or refer to other domains and can be hierarchical or overlapping. Individual managed objects can be contained within multiple domains.

Autoconfiguration services automatically locate, register, and map managed objects by class. Supported classes include DECnet Phase IV nodes, TCP/IP hosts,

and Digital FDDI devices and LAN Bridges. Note that DECnet OSI support is included with DNS Autotopology mechanism. Users can define domains for each class, and set network boundaries. The autoconfiguration functions can request network instance data from DECnet routers, IP gateways, and Bridge spanning trees. As devices are located and management information gathered, the functions automatically map them in the appropriate user-defined domains and register management data in the MIR.

Note: This function requires that the appropriate POLYCENTER Access Modules be installed on the POLYCENTER Network Manager 200 system to register objects. The DECnet Phase IV, DECnet/OSI, and TCP/IP SNMP AMs are included in POLYCENTER Network Manager 200. The POLYCENTER ELM Access Module must be purchased separately to support LAN Bridge and FDDI autoconfiguration topology mapping. Refer to the POLYCENTER ELM SPD (31.33.xx) for more information about the POLYCENTER ELM products.

IP Reachability Poller sends notification to POLYCENTER Network Manager 200 Notification Services when a specific IP node changes state (ie. becomes reachable or unreachable). It provides POLYCENTER Network Manager 200 an efficient manner to determine if IP nodes are reachable or not.

Alarm and Notification Services

POLYCENTER Network Manager 200 alarm and notification services are provided by a combination of Management Modules. These modules enable users to create alarm rules that can detect existing or potential network problems, and notification mechanisms for informing users when such problems occur or network events happen.

The Alarms FM provides facilities for users to write rule-based expressions (alarm rules) that use polled data or unsolicited event messages to trigger alarms. Alarm rules can be written for any managed object or entity class for which there is corresponding Access Module protocol support (DECnet Phase IV NICE, SNMP, etc.). Alarm rules can be based on state changes, simple arithmetic expressions, or occurrences (unsolicited event messages received through the appropriate Access Module). Alarm rules can be written for individual managed objects or wildcarding can be used to apply rules to all objects in a domain for a given object class.

In addition to the standard POLYCENTER Network Manager 200 notification functions described below, the Alarms FM allows for the execution of user-written command procedures. Such command procedures can be used to generate terminal broadcast or electronic mail messages, or automated procedures that a network manager or operator might implement when a particular alarm condition occurs.

In combination with the Network Statistics (also known as the Performance Analysis FM) described below, the alarm functions can be used to create threshold alarms based on performance statistics for DECnet Nodes, TCP/IP hosts, RMON probes, or Digital LAN Bridges. In this way, alarm rules allow users to detect potential problems before they become major network faults.

The Notification FM and PM enable users to define the mechanisms used to alert operators when a particular network or system event has occurred. The functions recognize two types of events: configuration events, which are reported by a managed object or POLYCENTER Management Module; and alarm events, which are generated by the Alarms FM whenever a rule fires or encounters an error (i.e., an exception to the rule).

When an event occurs, the Motif/Iconic Map PM displays a color change on the appropriate object icon and a message in the Notification window. Users can define the severity levels and select colors appropriate to the problem level. POLYCENTER Notification also enables users to customize event collection and storage in the following ways:

- Logging: logging can be used to store received events to disk. Log files are automatically created and purged based on user-definable arguments.

- Filter: users can filter received events based on the following criteria: managed object, domain, severity level, message text, or event/alarm type.

- Target: Notifications (icon color changes) can be redirected from the object that generates the event to the object that is the subject of the event.

- Search: users can search received notifications based on the following criteria: any field, severity level, notification identifier, name or address, text description, time stamp, or domain name.

- View: users can display a Real-time Graph of the number of notifications being displayed, collected and filtered; histogram of all notifications grouped by severity level; and the maximum notification buffer size.

- Change default start-up: users can assign customized colors to the six notification severity levels.

The Event Collector AM (also known as the Data Collector AM) enables users to collect events from objects not directly managed by POLYCENTER Network Manager. Users can create customized icons for any object not directly managed by POLYCENTER Network Manager and include it in the Iconic Map.

The Event Collector AM provides a programming interface and a command script interface. The programming interface allows users to include code in any application program to send events to POLYCENTER Framework for display in the Iconic Map or Notification window. The command script interface enables users to use OpenVMS DCL command procedures or ULTRIX shell scripts to send events to the POLYCENTER Framework for display in the Iconic Map or Notification window. The transport mechanisms over which events can be collected have been expanded in this version to include both UDP/IP and DECnet.

Historical Data Collection and Data Export

Historical Data Collection and Data Export functions are provided by the Historian and Exporter FMs. These generic FMs enable users to collect, time stamp, and store network data for use by other POLYCENTER FMs, such as the Performance Analyzer FM, and export data to external relational databases for addition processing and report writing.

- The Historian FM enables users to define the type of data to be collected, the managed objects or management applications from which the data is to be collected, and the collection interval.

- The Exporter FM, when used with a separate, external relational data base and report writing tools, can be used to create customized network usage reports. The historical data recording and data export functions can also be used in combination with other POLYCENTER FMs to gather statistics, status, and configuration data.

Note: Use of the Export FM requires that Rdb Runtime for OpenVMS systems or ULTRIX/SQL for RISC/ULTRIX systems be installed on the target system – the system to which the data is to be exported.

Network Statistics Functions

Network Statistics FM enables users to access real-time or historical performance statistics and reports on DECnet, Digital LAN Bridge, and TCP/IP objects (including RMON probes). Sample error, traffic, and statistics reports are also provided.

The Performance Analyzer FM provides data normalization and statistical functions for DECnet nodes, TCP/IP hosts, RMON probes and Digital LAN Bridges.

Note: LAN Bridge statistics require that the POLYCENTER ELM AM and FM option be installed on POLYCENTER Network Manager 200. Counters for DECnet node and TCP/IP hosts are gathered by the DECnet AMs and TCP/IP SNMP AM respectively, which are included with POLYCENTER Network Manager 200.

Assuming that the appropriate Access Modules are installed, the Performance Analyzer FM supports the following objects/devices:

- DECnet Phase IV lines (DDCMP, Ethernet, X.25), circuits (DDCMP, Ethernet, X.25), and nodes (local and remote)

- DECnet/OSI end systems, datalinks (DDCMP, CS-MACD, and HDLC), intermediate systems (routing systems), routing ports, and routing circuits

- Bridge lines (LAN100, LAN150, LAN200, DECbridge 500, and DECbridge 600)

- TCP/IP Simple Network Management Protocol (SNMP), Exterior Gateway Protocol (EGP), Internet Control Message Protocol (ICMP), INTERFACE (the network interface such as Ethernet), Internet Protocol (IP), Transmission Control Protocol (TCP), User Datagram Protocol (UDP), EGP Neighbor table, SNMP child entity, and RMON.

The Performance Analyzer FM supports the following classes of network statistics:

- Throughput - the amount of data that is sent between two points in a specified unit of time.

- Averages - such as Average Outbound Block Size and Average Outbound Message Size

- Overhead - the amount of control overhead present for circuits and lines

- Percents - percent of total traffic or resource availability

- Rates - the counts over a specified period of time

- Utilization - ratio of real or rated throughput to the actual throughput expressed as a percentage, such as Outbound Utilization and Single Destination Utilization

- Counts - the normalized value of counters

These statistics, like all other numeric attributes collected or generated by POLYCENTER network management software, can be displayed as graphs or histograms in the Graphic Window that is part of the Motif GUI Iconic Map interface included with the POLYCENTER Framework, POLYCENTER Network Manager 200, and POLYCENTER Network Manager 400 products.

Sample Reports are included with POLYCENTER Network Manager 200 and are based on counters and statistics generated by the Performance Analyzer FM.

Note: Data used for creating the sample reports must be exported to an external relational database using the Exporter FM. In addition, generating and setting up the sample reports requires the following software products:

- For OpenVMS: CDD Repository, DATATRIEVE, and DECgraph

- For ULTRIX: INGRES™ Tools for SQL including: INGRES Base Tools (with Report-Writer™) and INGRES/Visual-Graphics-Editor (VIGRAPH™).

- The sample reports include: traffic, error, traffic summary, error summary and bandwidth utilization for DECnet Phase IV, DECnet/OSI and TCP/IP SNMP.

POLYCENTER Network Manager 200 Access Modules

POLYCENTER Network Manager 200 AMs provide access to network and system objects in Digital's ADVANTAGE-NETWORKS and other mixed, multivendor network environments that use the following management protocols: DECnet NICE, DECnet/OSI CMIP, SNMP, and IEEE 802.2/Ethernet/MOP.

- The DECnet Phase IV AM enables users to manage DECnet Phase IV objects such as nodes, circuits, lines, and adjacencies. With the DECnet Phase IV AM, users can modify DECnet parameters, set characteristics, collect DECnet events, and poll for management data such as counters or status.

- The DECnet/OSI CMIP AM provides access to DECnet devices that use DIGITAL's implementation of the standard Common Management Information Protocol (CMIP). This version of CMIP, implemented on DECnet/OSI devices, provides management operations and data gathering functions for DECnet/OSI networks including the ability to sink DECnet events to the POLYCENTER Framework.

- The TCP/IP SNMP AM includes support for the following Internet Advisory Board (IAB) Simple Network Management Protocol (SNMP) RFCs: 1155, 1156, 1157, 1212, and 1213. This includes full MIB II support in addition to support for on-site enrollment of vendor-specific Enterprise MIBs including:

  — A MIB translation utility that automatically checks the syntax of the ASN.1 Concise MIB definition (providing error messages to help identify syntax problems) and translates the data for loading the information into the POLYCENTER Framework's Management Information Repository (MIR). The translation utility automatically generates on-line HELP.

  — An event-logging sink for collecting SNMP generic traps (unsolicited TCP/IP event messages) including: coldStart, warmStart, linkDown, linkUp, egpNeighborLoss, authentificationFailure, and enterpriseSpecific. Vendor Specific Traps are also supported with this release of the product.

  — Ability to perform GET and SET operations on devices supported by SNMP agents.

  — ICMP ECHO_REQUEST (ping) support for verifying the reachability of an SNMP managed object at the IP level.

  Note: DEC TCP/IP Services for OpenVMS (UCX) is required for using the TCP/IP SNMP AM on OpenVMS systems.

- The IEEE 802.3/Ethernet Station AM enables users to manage at the network interface level any 802.3/Ethernet LAN device that supports MOP REQID, MOP SYSID, MOP Counters, Ethernet V2 Loopback, IEEE 802.2 XID, or IEEE 802.2 Test.

- Circuit AM works as a client of management protocol modules to provide management of circuits connecting endpoints compliant with the Network Management Forum (NMF) definitions. Compliant endpoints include DECnet Phase IV and DECnet/OSI nodes, and TCP/IP hosts. Tying together circuit, line, link, and other end-point data, this AM can gather status data and store reference information about simple, point-to-point circuits or complex multi-channel circuits.

- The Script AM is a generic access module that executes a script (or command procedure) and propagates the output data back into POLYCENTER Network Manager 200 as individual attributes. Once integrated, these attributes can take advantage of the alarming, notification, and recording facilities of POLYCENTER Network Manager 200.

- The Script AM offers the following advantages:

  — Allows integration of data into POLYCENTER Network Manager 200 quickly and easily. No C code is required to write a script.

  — Allows management of devices which provide only a command line interface.

  — Allows integration of any data into POLYCENTER Network Manager 200 as attributes whether from a Structured Query Language (SQL) command, a system command or running a script on a remote system.

  — Allows integration of data from an executable for which source code is not available.

POLYCENTER Network Manager 200 Presentation Modules

The POLYCENTER Network Manager 200 includes two Presentation Modules. The Motif Graphical User Interface (GUI) provides an iconic map interface with pulldown and pop-up command and monitor windows that consistently present all managed objects and operations. Consistent access is also provided by the Forms and Command Line PM. The LAN Autotopology PM is provided as an option.

The capabilities specific to the Motif GUI presentation style include:

- Map windows that display the contents of a managed environment (for example, a domain) using icons to represent managed objects and their subordinate or child objects. Users can select icons representing managed objects and initiate management operations from a map window. Several map windows can be displayed at one time, each displaying different views of domains of a managed environment.

- A Navigation box and ViewPort window that enable users to view an entire network configuration map at one time. With the ViewPort feature, users can navigate to, and select a particular portion of, the total network environment to display in detail in the Map window.

- Management windows that enable users to select, perform, and view the results of management operations. Like map windows, several different management windows can be displayed simultaneously.

- Graph windows that enable users to select and display real-time or historical numeric attributes, such as counters, graphs or histograms.

- A Toolbox window and other customization features that provide users with the ability to create, modify, or delete map icons, connecting lines, text, or other items in a map window. Users can create map icons, add geographic maps or other backdrops, and add customized icons to the Toolbox for retrieval and re-use.

- The POLYCENTER Dictionary Browser lets you examine the management objects and their definitions stored in the POLYCENTER Network Manager 200 dictionary. It provides an easy-to-use graphical alternative to SHOW and DUMP commands available in the Dictionary Administrator Program. Using the Browser, the user can graphically view the types of entities that are configured for a POLYCENTER Network Manager 200.

Forms and Command Line PM provides character cell access to POLYCENTER Network Manager function and access capabilities. The interface supports two modes, Command Line Mode and Forms Mode.

Note: The Forms Mode is not available on ULTRIX.

The Command Line mode enables users to create names or mnemonics and use special symbols to reduce data entry and eliminate input errors. It supports command line recall and editing, abbreviation, online help, symbol substitution, use of control key sequences, line continuation, and the typeahead function.

Command Line mode also supports the use of scripts to automate frequently used POLYCENTER Network Manager command sequences. Users can set up initialization files through the Command Line mode for establishing defaults and executing startup directives. In addition, users can log any command to an output file for storage and review.

The Forms mode provides the basic features of the Command Line mode in addition to a scroll feature that enables users to save up to 500 lines of output from management directives, scroll through the saved output, and create new directives based on previous input. The Forms mode also allows printing and logging of entries made to the output region.

Both the Forms mode and the Command Line mode, as well as the Iconic Map interface, provide online, context-sensitive help.

POLYCENTER Network Manager 200 Extensibility

POLYCENTER Network Manager 200 is an extensible management platform to which other POLYCENTER software modules, option packages, third party, or user-developed Management Modules can be added. For a list of Digital Management Modules that can be added to the POLYCENTER Network Manager 200, refer to the *OPTIONAL SOFTWARE*.

Third parties and users can develop software modules for POLYCENTER Network Management Family of Products to provide access to and management functions for any manageable object. Software and documentation for the development of integrated POLYCENTER modules are available as part of the POLYCENTER Framework Developer's Toolkit. For more information about the Developer's Toolkit, refer to SPD 32.49.xx.

POLYCENTER Network Manager 200 includes several utilities that enable on-site enrollment of Management Modules. Documentation required for third party module enrollment must be supplied by the module developer.

POLYCENTER Network Fault Diagnostics Option

The POLYCENTER Network Fault Diagnostics Option is a troubleshooting tool designed to simplify the process of isolating and resolving some of the most frequently occurring TCP/IP network problems quickly, minimizing down-time and maximizing network efficiency. It uses common UNIX® Utilities and Bourne Shell scripts to retrieve information about a TCP/IP network.

The POLYCENTER Network Fault Diagnostics Option comprises ten diagnostic routines, a load check utility, a ping trace utility, and a ping utility. The diagnostic routines are:

- Diagnose host_unknown

- Diagnose host_unreachable

- Diagnose inetdaemon

- Diagnose network_unreachable

- Diagnose nfs_problem

- Diagnose rcp_denied

- Diagnose rlogin_denied

- Diagnose rsh_denied

- Diagnose telnet_timeout

- Diagnose telnet_refused

These routines are designed to assist users in isolating network faults such as component failures, improperly set parameters, and improper file protections. When a diagnostic routine is executed, the Fault Diagnostic software determines the tests to execute. After the tests are executed, it produces a report containing test results and recommended actions an operator should take to repair or troubleshoot the problem.

The POLYCENTER Network Fault Diagnostics Option can diagnose problems between the station on which POLYCENTER Network Manager 200 resides and a remote host, or between two hosts that are remote from the POLYCENTER Network Manager 200 station with the POLYCENTER Network Manager 200 station residing on a third host which is not involved in the reported problem.

POLYCENTER Extended LAN Manager (ELM) Packages

POLYCENTER Extended LAN (Local Area Network) Manager Packages are OpenVMS layered products that enable POLYCENTER Network Management Family of product users to configure, manage, monitor, and control LAN Bridge, DECbridge, and DECconcentrator 500 devices in the "Extended LAN" and FDDI network environment. The term LAN Bridge is used to refer to Digital Equipment Corporation's LAN Bridge 100, LAN Bridge 150, LAN Bridge 200, METROWAVE Bridge, and the Chipcom® Ethermodem™ Broadband Bridge. The term DECbridge is used to refer to Digital Equipment Corporation's DECbridge 500 and 600 Series products.

The LAN Bridge and DECbridge products are the primary building blocks of the "Extended LAN" architecture. An Extended LAN is a collection of LANs that are interconnected and logically appear as one large Local Area Network. The DECconcentrator family of products is the primary building block of the FDDI network environment. Together these environments are physically and logically attached and extended via the DECbridge family of products. The DECbridge product line is the family of products that allows Ethernet and FDDI networks to communicate transparently.

The LAN Bridge and DECbridge products operate at the data link level, and FDDI DECconcentrators operate at the data link and physical link levels. Both product sets are transparent to upper-level protocols.

This release of POLYCENTER Extended LAN Manager offers software which supersedes the DECelms product functionality for the POLYCENTER Network Manager 200 environment. The POLYCENTER Extended LAN Manager AM and FM modules together provide additional functionality than the DECelms product.

The general characteristics of DECmcc Extended LAN Manager AM include:

- Remote management capabilities for FDDI and Ethernet devices on the same extended LAN

- Ability to observe, monitor, and control the interconnected FDDI and Ethernet networks

- Ability to display and modify devices and lines on the LAN Bridge and DECbridge family of products

- Ability to display and monitor physical ports on the DECbridge 500/600 Series and DECconcentrator 500

- Ability to display and modify spanning tree characteristics on the LAN Bridge and DECbridge family of products

- Ability to display and modify protocol database characteristics on LAN Bridge 200 and the DECbridge family of products

- Ability to display and modify forwarding database characteristics on the LAN Bridge and DECbridge family of products

- Ability to enable and disable lines on LAN Bridge and DECbridge products

- Ability to enable and disable physical ports on the DECconcentrator 500

- Ability to customize site specific alarms for the devices stored in the MIR (management information repository) for faults, errors, and changed information

- Displaying data-link counters, status, and characteristics on LAN bridges, DECbridges and DECconcentrators

- Remotely, but on the same extended LAN, invoke a device's self-test capabilities

- Simultaneous management access by multiple users

- On-line Help facility

- Similar display formats for all manageable devices

- Password protection for settable parameters (LAN Bridge 150, 200; DECbridge 500/600 Series, and DECconcentrator 500)

- Load and modify source address and protocol filtering tables (LAN Bridge 200 and DECbridge 500 and 600 Series)

- Display Ethernet/802.3 network statistics (LAN Bridges and DECbridges)

- Display Ethernet/802.3 network utilization statistics (LAN Bridge 200 and DECbridge 500 and 600 Series)

- Ability to display FDDI stations that adhere to the ANSI X3T9.5 Station Management (SMT) standard

The general characteristics of POLYCENTER Extended LAN Manager FM include:

- FDDI ring map autotopology. For this function to work, there must be an RBMS device on the FDDI Ring. The RBMS devices include: DECbridge 500 series, DECbridge 600 series, or a DECconcentrator 500.

- Bridge Spanning tree autotopology supporting IEEE 802.1d spanning tree and Digital's LAN Bridge 100 spanning tree protocols on the LAN Bridge and DECbridge family of products

- Provides autoregistration for LAN Bridges, DECbridges, DECconcentrators, and other FDDI devices that adhere to the ANSI X3T9.5 FDDI Station Management (SMT) standard

Terminal Server Access Module Option

The POLYCENTER Terminal Server Access Module (TSAM) is an OpenVMS layered product that provides remote management access to Digital terminal servers within the POLYCENTER Network Manager 200/400 environment. The POLYCENTER Terminal Server AM allows POLYCENTER Network Manager 200/400 users to remotely configure and monitor Digital terminal servers anywhere in the extended Local Area Network (LAN) from a system running POLYCENTER Network Manager 200/400.

POLYCENTER Terminal Server AM V1.4 is the release of software that provides migration of the Terminal Server Manager (TSM) capabilities to the POLYCENTER Network Manager 200/400 environment.

The general characteristics of POLYCENTER Terminal Server AM include:

- Remote management capabilities for Digital Terminal Servers

- Allows for observation, monitoring, and controlling of Digital Terminal Servers on Local Area Networks

- Ability to display and modify devices, links, physical ports, operational and permanent, LAT/Telnet database characteristics

- Customize site specific alarms for the devices stored in the MIR (Management Information Repository) for faults, errors, and changed information

- Simultaneous management access by multiple users

- On-line Help facility

- Similar display formats for all manageable terminal servers

Management Information Repository (MIR)

POLYCENTER Terminal Server AM (TSAM; also called DECmcc TSAM) provides a Management Information Repository (MIR) that contains the name, Ethernet address, terminal server type, and other fields for each server to be managed. Through the TSAM MIR, the user needs to refer only to the name of the server in order to gain access.

DECnet Database Modification

POLYCENTER Terminal Server AM can automatically update the DECnet management directory. Users do not need to separately use a DECnet AM to update DECnet information. The Terminal Server AM will access the DECnet database itself to do the appropriate modifications.

Fault Management

Troubleshooting within the terminal server network is enhanced by TSAM providing the central ability to read traffic status and counters in addition to error status and counters. With the "PASTHRU" utility, the user can also connect directly to the server, allowing isolation of problems between POLYCENTER Terminal Server AM and the server.

LAN Traffic Monitor (LTM) OpenVMS Point Product

LAN Traffic Monitor (LTM) OpenVMS is the software portion of a fully distributed monitor that can support the capture and presentation of traffic data from an extended Ethernet. A LAN Bridge 100 or LAN Bridge 150, downline loaded with monitoring software, is attached to the Ethernet cable and transmits information to an OpenVMS layered application software program located on any VAX in the extended LAN. Multiple users, from different nodes on the extended Ethernet, may access the traffic data. LAN Traffic Monitor also works with Chipcom's Broad-band Bridges called Ethermodem III Bridges.

LAN Bridge hardware can run either as a LAN Traffic Monitor or as a LAN Bridge, i.e., the primary building block of the Extended LAN architecture. An Extended LAN is a collection of LANs that are inter-connected and logically appear as one large Local Area Network.

Note that when a bridge is used as a monitoring device or listener, it does not function as a bridge. Users can remotely switch a bridge between monitoring and standard bridge modes using Digital's POLYCENTER ELM AM software.

With the LAN Bridge designed to work at full Ethernet speed, the LAN Traffic Monitor can provide real-time data on Ethernet LAN through-put and utilization, allowing a customer to actively monitor their Ethernet usage. The ability to collect data on any protocol type (i.e., LAT, 802.3, DECnet, TCP/IP, etc.) on the Ethernet is also provided.

LAN Traffic Monitor contains both the LTM Listener software (which counts and classifies Ethernet traffic using a LAN Bridge as a monitoring device) and the LTM User Interface (which collects and displays data received from the LTM Listener).

The LTM Listener periodically reports traffic statistics to the LTM User Interface located on a VAX host. The LTM User Interface receives unsolicited Ethernet datagrams generated by the LTM Listener, and through the menu structure, the user can also ask the LTM Listener for additional data not found in the unsolicited messages. A single LTM host can be used in conjunction with multiple LTM listeners.

The LTM User Interface performs the necessary data reduction and presents the statistics in logical groupings. Summary displays, which are presented in tabular format, include Network Traffic, Top Ten Talkers, and Throughput and Utilization. LTM also displays Lists of Nodes, Multicast Addresses, Protocols Used by Nodes, Node Traffic by Protocol Type, Multicast Traffic by Protocol Type, and Protocol Type Traffic.

In addition, LAN utilization based on the most recent traffic data received from the LTM Listener may be displayed graphically in intervals of one, four, eight, twelve, twenty-four, or forty-eight hours.

NMCC/VAX ETHERnim Point Product

NMCC/VAX ETHERnim is a network management application that provides the network manager with a tool to gather information about Ethernet nodes, verify reachability of nodes, provide a graphical display of local area network topology and monitor Ethernet traffic.

NMCC/VAX ETHERnim consists of two categories of software: one must be installed on an OpenVMS system set up as the Host, and the other can be optionally installed on Target systems running OpenVMS. In this context, the Host is defined as the node where the NMCC/VAX ETHERnim application runs, while the Target systems are those DECnet nodes on the Ethernet segments which are being tested at the User (task)

level. The optional software installed on the Target system is referred to as the Remote Files.

The Host software requires Phase IV DECnet software on an OpenVMS system. When this software has been installed, the network manager has the ability to:

- Build a permanent database containing basic information about each node directly connected to the Ethernet local area network through user commands and automatic procedures.

- Manually construct and maintain a topological view of the network, including transparent network devices (e.g., DEMPR, DELNI, DEREP).

- Test the Ethernet network to help isolate and identify problems.

- Test the communications path to each node up to the DNA application layer by performing a loopback test to a specified user account. This feature is available only for OpenVMS Target systems.

- Monitor the network to determine which nodes are the top talkers and which nodes are the top listeners; sort/display traffic by protocol type or multicast address; focus on traffic to/from a specified node.

- Perform information access to properly configured DECnet nodes on the Ethernet to determine the remote nodes's system type, hardware configuration, and software configuration.

Note: Under high Ethernet utilization (above 20%, with a combination of high LAN load and a low power VAX system), the ETHERnim Monitor function may cause performance problems on the host running ETHERnim. This may affect time-sensitive network applications which are connected to the host running ETHERnim.

Terminal Server Manager (TSM) Point Product

Terminal Server Manager (TSM) OpenVMS software allows suitably privileged users on a VAX host to control and observe terminal servers anywhere in the extended local area network. TSM provides centralization and increased flexibility in configuring, monitoring, and controlling Digital Equipment Corporation's family of terminal servers.

TSM's enhancements provide management support for Digital's newest addition of Terminal Servers - DECserver 700, DECserver 90L+, DECserver 90TL, as well as upgraded support for DECserver 90L. It also includes an automated database conversion from TSM V2.1-2. The new TRIGGER SERVER command enables a reboot to an unattended or remote terminal server.

TSM Features

Telnet Functionality

TSM supports a new set of server commands to provide management of the Telnet characteristics of a terminal server.

Management Directory

TSM provides a directory that contains the name, Ethernet address, terminal server type, and other fields for each server to be managed. Through the TSM directory, the user needs to refer only to the name of the server to gain access.

Server Selection

TSM provides a USE command to allow selection of the server or servers to be managed, or the directory to be referenced. TSM allows the user to manage, from one server, all of the servers in the directory at a time. The user can choose to manage a partition of servers, all servers of a specified type, or all servers matching a wildcarded server or partition specification.

Volatile Characteristics

TSM manages the volatile characteristics for all terminal server types.

Terminal Server Trigger

Capability via TSM that will cause the server to load with whatever server software is specified in NVRAM.

Database Manipulation

TSM can access and manipulate the database associated with each server within its jurisdiction, including their characteristics and parameters.

DECnet Database Modification

TSM automatically updates the DECnet database for servers to match the DECnet related information in the management directory. It is not necessary for users to employ a separate DSVCONFIG or TSVNCP configuration program.

3270 Option Software

TSM provides support for the 3270 Option Software for the CXM04 line card. This line card provides the capability to connect the 3270 class of terminals to systems on Ethernet.

Keyboard Mapping

This functionality enables the terminal server manager to customize 3270 keyboard tables supplied with the 3270 Option Software by changing the way individual 3270 keyboard keys are mapped to Digital's VT220 keys.

DCL Commands

TSM commands may be issued as DCL commands; the syntax follows DCL conventions.

Command Files

Command files may be maintained outside TSM (e.g., by use of an OpenVMS VAX editor). This command file support allows values of characteristics to be stored on the host, effectively creating a copy of the permanent database that may be used to configure new servers. Server maintenance is also enhanced by allowing the terminal server to be easily box swapped and parameters reset. Up to eight parameters may be passed to TSM command files. Additionally, command files may operate on a single server, on a logical group (a partition) of servers, or on all servers.

Fault Management

Troubleshooting within the terminal server network is enhanced by TSM providing the ability, centrally, to read traffic status and counters in addition to error status and counters. With the "PASTHRU" command, the user can also connect directly to the server without using TSM, allowing isolation of problems between TSM and the server.

A simple connectivity test to a specific server or all servers listed in the directory is provided with an informational message displayed for each server not responding. TSM allows the user to check periodically for non-functioning terminal servers. This function might be performed from within a batch job, to run without user involvement, but informing the appropriate personnel if a server connectivity problem is detected.

Via the TEST DELAY command, users can measure timing delays associated with data transmission to and from servers.

The TEST CONNECTION command tests the ability to submit a print job to a server port.

Terminal Server Manager supports the following models of communications software:

- Ethernet Terminal Server for OpenVMS

- DECserver 90L (ROM-resident terminal server software)

- DECserver 90L+ (ROM-resident terminal server software)

- DECserver 90M for OpenVMS

- DECserver 90TL for OpenVMS

- DECserver 100 for OpenVMS

- DECserver 200 for OpenVMS

- DECserver 250 for OpenVMS

- DECserver 300 for OpenVMS

- DECserver 500 for OpenVMS

- DECserver 700 for OpenVMS

- DECserver 900 for OpenVMS

- MUXserver 90 Remote Terminal Server for Open-VMS

- MUXserver 100 Remote Terminal Server for Open-VMS

- MUXserver 300 Remote Terminal Server for Open-VMS

- MUXserver 320 Remote Terminal Server for Open-VMS

- MUXserver 380 Remote Terminal Server for Open-VMS

Network Troubleshooting Guide

The Network Troubleshooting Guide provides an on-line, systematic approach to solving any network problem. Available through the Motif Bookreader application, its text can be displayed in a window within a POLYCENTER Network Manager 400 environment. The Network Troubleshooting Guide gives specific step-by-step instructions for solving some of the most common network problems that occur on DECnet/OSI for OpenVMS VAX, DECnet/OSI for ULTRIX, Ethernet, and TCP/IP networks.

The Network Troubleshooting Guide incorporates information from various sources into a single manual, minimizing the documentation required for solving network problems.

The Network Troubleshooting Guide covers:

- Background information on DECnet and TCP/IP networks

- How to use a standard troubleshooting methodology to solve any network problem

- How to use network tools such as Network Control Program (NCP), NMCC/VAX ETHERnim, and LAN Traffic Monitor (LTM)

- How to use ULTRIX utilities such as netstat, ping, and uerf

- How to use log files and counters to gather information for problem solving

- How to trace a network path to isolate the source of a problem

- How and when to perform loopback tests

- In explicit step-by-step instructions, how to solve nearly 30 of the most common network problems, including:

  — Network partner exited (DECnet networks)

  — Permission denied (TCP/IP networks)

  — LAT Print Queue Problems (Ethernet networks)

HARDWARE REQUIREMENTS

LANbridge 100/150 for LTM Listener is required.

Processors Supported

OpenVMS-based Processors:

VAX:	VAXft Model 410,
	VAXft Model 610,
	VAXft Model 612
	VAX 4000 Model 300,
	VAX 4000 Model 400,
	VAX 4000 Model 500,
	VAX 4000 Model 600
	VAX 4000 Model 700
	VAX 6000 Model 400 Series,
	VAX 6000 Model 500 Series,
	VAX 6000 Model 600 Series
	VAX 7000 Model 600 Series
	VAX 8200, VAX 8250, VAX 8600,
	VAX 8650, VAX 8700, VAX 8800,
	VAX 8810, VAX 8820, VAX 8830,
	VAX 8840
	VAX 9000 Model 110,
	VAX 9000 Model 210,
	VAX 9000 Model 300 Series,
	VAX 9000 Model 400 Series
MicroVAX:	MicroVAX 3300, MicroVAX 3400,
	MicroVAX 3500, MicroVAX 3600,
	MicroVAX 3800, MicroVAX 3900
VAXstation:	VAXstation 3200, VAXstation 3500,
	VAXstation 3520, VAXstation 3540
	VAXstation 4000 Model 60,
	VAXstation 4000 Model 90,
	VAXstation 4000 Model 90A

VAXserver:	VAXserver 3400, VAXserver 3500,
	VAXserver 3600, VAXserver 3602,
	VAXserver 3800, VAXserver 3900
	VAXserver 4000 Model 300,
	VAXserver 4000 Model 500
	VAXserver 4000 Model 600
	VAXserver 4000 Model 700
	VAXserver 6000 Model 410,
	VAXserver 6000 Model 420,
	VAXserver 6000 Model 510,
	VAXserver 6000 Model 520,
	VAXserver 6000 Model 610,
	VAXserver 6000 Model 620,
	VAXserver 6000 Model 630

Processors Not Supported

MicroVAX I, MicroVAX II, MicroVAX 2000

MicroVAX 3100 Model 10/10E,
MicroVAX 3100 Model 20/20E
MicroVAX 3100 Model 30
MicroVAX 3100 Model 40
MicroVAX 3100 Model 80
MicroVAX 3100 Model 90

VAXstation I, VAXstation II, VAXstation 2000

VAXstation 3100 Model 30,
VAXstation 3100 Model 38,
VAXstation 3100 Model 40,
VAXstation 3100 Model 48,
VAXstation 3100 Model 76

VAX-11/725, VAX-11/730, VAX-11/750, VAX-11/780, VAX-11/782, VAX-11/785

VAX 4000 Model 60, VAX 4000 Model 90,
VAX 4000 Model 100, VAX 4000 Model 200,
VAX 4000 VLC

VAX 6000 Model 200 Series,
VAX 6000 Model 300 Series

VAX 8300, VAX 8350, VAX 8500, VAX 8530, VAX 8550,

VAX 10000 Model 600 Series,

VAXstation 8000

VAXft Model 110, VAXft Model 310

VAXserver 6000 Model 210,
VAXserver 6000 Model 220,
VAXserver 6000 310,
VAXserver 6000 Model 320

VAXserver 3100, VAXserver 3300, VAXserver 4000 Model 200

MINIMUM RECOMMENDED CONFIGURATION *

Processor Capacity:	6 SPECmark
Memory Required:	64 MB
Disk:	RZ56 (655 Mbytes)

Other Hardware Required:

A Motif® supported color monitor is required; otherwise, a VT24x, VT330, or a VT340 terminal is required for systems with no Motif interface.

To run the LTM Listener, one of the following is required:

- LAN Bridge 100 with ROM ECO Revision E or later

- LAN Bridge 150

- Chipcom Ethermodem,™ III Bridge (option numbers 8318BS (18Mhz) or 8312BS (12 Mgz))

- Specific network environments may require larger configurations.

Disk Space Requirements (Block Cluster Size = 1):

For OpenVMS:

Disk space required for installation:	210,000 blocks

These counts refer to the disk space required on the system disk. These sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

OPTIONAL HARDWARE

In large network configurations where performance of the network management system is critical, it is recommended that additional memory and additional disk space be utilized.

Additional LAN Bridge units can be configured with LTM Listener software after LAN Traffic Monitor OpenVMS has been installed. By creating a separate OpenVMS process (or subprocess), a single user account on the VAX host may simultaneously be collecting data from multiple LTM Listener units. The LTM Listener can be started in either private mode (sending to a single destination Ethernet address) or shared mode (multicasting its traffic reports).

Also, while multiple hosts may simultaneously view a single LTM Listener unit (thereby requiring additional licenses of the software be purchased for each additional processor), multiple accounts on a single host may NOT simultaneously view a single LTM Listener unit.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VAXcluster* configuration without restrictions. The *HARDWARE REQUIREMENTS* section details any special hardware required by this product.

* V5.x VAXcluster configurations are fully described in the VAXcluster Software Product Description (29.78.xx) and include CI, Ethernet, and Mixed Interconnect configurations.

IMPORTANT INTEROPERABILITY INFORMATION

Interoperability problems may occur when more than one product containing DECthreads is installed on a system. This occurs because some products overwrite the system version of DECthreads. If a product with a different version of DECthreads is installed after POLYCENTER Framework, problems may occur.

POLYCENTER Framework V1.4 is linked with DECthreads V1.0-422. Later versions of DECthreads have a backwards compatible API. Consequently, no problem should result from having a more recent version of DECthreads on the system.

Only SSB versions of DECthreads are supported.

SOFTWARE REQUIREMENTS

For Systems Using Terminals (no DECwindows Motif® interface):

- OpenVMS VAX Operating System V5.5-2 to V6.1

For Workstations Running DECwindows Motif:

- OpenVMS VAX Operating System V5.5-2 to V6.1

- DECwindows Motif V1.1 for OpenVMS V5.5-2
  DECwindows Motif V1.2 for OpenVMS V6.1

Layered Products:

- VAX Rdb/OpenVMS Runtime V4.1, 4.2 must be installed on the target system to which data is exported using the Export FM

- CDD Repository V4.2, VAX DATATRIEVE V6.0, and DECgraph V1.5 are required to access and print the sample Performance Analyzer FM reports

This product may run in either of the following ways:

- Stand-Alone Execution - Running the X11 display server and the client application on the same machine.

- Remote Execution - Running the X11 display server and the client application on different machines.

OpenVMS Motif is part of the OpenVMS VAX Operating System but must be installed separately. Installation of OpenVMS Motif gives users the option to install any or all of the following three components:

- OpenVMS Motif Compute Server (Base kit; includes runtime support)
- OpenVMS Motif Device Support
- OpenVMS Motif Programming Support

For remote execution, the following Motif components must be installed on the same machine:

Server Machine:

- OpenVMS Motif Compute Server
- OpenVMS Motif Device Support

Client Machine:

- OpenVMS Motif Compute Server
- OpenVMS Motif Device Support

OpenVMS Tailoring

For OpenVMS systems, the following OpenVMS classes are required for full functionality of this layered product:

- OpenVMS Required Saveset
- Network Support
- Programming Support
- Utilities

For more information about OpenVMS classes and tailoring, refer to the OpenVMS Operating System Software Product Description (SPD 25.01.xx)

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 OpenVMS License Management Facility (LMF).

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 VAX Operating System Software Product Description (SPD 25.01.xx) or the OpenVMS VAX Operating System documentation.

For more information about Digital's licensing terms and policies, contact your local Digital office.

OPTIONAL SOFTWARE

- DECnet/OSI for OpenVMS VAX V5.5 - V6.1: if the Digital Distributed Name Service for VAX (VAXdns) is used, or DECnet Phase IV or DECnet/OSI nodes are to be managed
- A Digital Distributed Name Service (DECdns) Server must be installed somewhere on the network to implement a global naming repository in place of the POLYCENTER Framework local system naming repository
- DEC TCP/IP Services for OpenVMS (UCX) V2.x - V3.1 to support SNMP access

GROWTH CONSIDERATIONS

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

DISTRIBUTION MEDIA

This product is available as part of the OpenVMS VAX and ULTRIX Layered Product Consolidated Distributions on CD-ROM.

This product is also available on TK50 Streaming Tape

The software documentation for this product is available as part of the OpenVMS VAX Online Documentation Library on CD-ROM.

ORDERING INFORMATION

Software Licenses: QL-YFVA9-AA
Software Media: QA-YFVAA-H5
Software Documentation: QA-YFVAA-GZ
Software Product Services: QT-YFVA*-**

* 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 contact your local Digital sales office for the most up-to-date information.

INSTALLATION

Digital recommends that all customers purchase Digital's installation and consulting services. These services provide for the planning, implementation (product setup and startup) and customer orientation on the product by an experienced Digital Software Specialist. Customers should consult their local Digital offices to obtain information on installation and start-up services available in their locations.

SOFTWARE PRODUCT SERVICES

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

Network Management Services are also available. These include, but are not restricted to, the following:

- Network Management Operations Services
- Network Management Planning and Design Services
- Network Management Implementation Services
- Network Management Training

For local availability, please contact your Digital Sales 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.

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

® Chipcom is a registered trademark of the Chipcom Corporation.

® Motif is a registered trademark of Open Software Foundation, Inc.

® UNIX is a registered trademark of UNIX System Laboratories.

™ Ethermodem is a trademark of the Chipcom Corporation.

™ The DIGITAL Logo, ADVANTAGE-NETWORKS, DD-CMP, DECbridge, DECgraph, DECmcc, DECnet, DECserver, POLYCENTER, DELNI, DEMPR, Digital, LAT, METROWAVE, MicroVAX, MUXserver, OpenVMS, Rdb/VMS, RZ, TK, VAX, VAXcluster, VAX ETHERnim, VAXserver, VAXstation, VMS, VT, VT220, VT330, and VT340 are trademarks of Digital Equipment Corporation.