Software Product Description

PRODUCT NAME: POLYCENTER Network Management Services, Version 1.4 (Formerly DECmcc Management Services) **SPD 37.20.05**

INTRODUCTION

POLYCENTER Network Management Services is a group of related network and system management software products based on the Digital Enterprise Management Architecture (EMA) Director Model. They provide multivendor management access, monitoring, and control capabilities and are scaled to support any size network or system environment. Built on an open, extensible platform, POLYCENTER Network Management products enable users to fit the right management solutions to their specific requirements.

This Software Product Description (SPD) describes the management services provided by POLYCENTER Network Management products. For more information about a specific POLYCENTER Network Management product, refer to the appropriate SPD.

EMA Director Model and POLYCENTER Network Management Products

The EMA Director Model defines a modular, extensible management system. Consistent with the EMA Director Model, the POLYCENTER Framework consists of four major elements that comprise an extensible management system: Management Modules (MMs), an Executive, an Application Programming Interface (API), and a Management Information Repository (MIR).

- Management Modules—provide services to management users and other management modules. They can be added to an existing POLYCENTER Network Management system, thereby increasing the capabilities of that system. Consistent with the EMA Director Model, there are three types of POLYCENTER Network Management Modules: Access Modules, Function Modules, and Presentation Modules.
  - — Access Modules (AMs) provide protocol support for, and management information about, classes of managed objects. Some AMs implement management protocols specific to one managed object class. For example, the DECnet Phase IV AM implements the DECnet NICE management protocol. Others, such as the TCP/IP SNMP AM, implement management protocols used by a wide range of managed objects. In addition to providing access to management information, AMs enable users to directly manipulate managed objects through basic operations such as SET or SHOW (GET).
  - — Function Modules (FMs) provide services such as fault detection and notification, object registration, and statistics generation. These services can be accessed directly by users and/or used by other FMs. For example, assuming the appropriate FMs are installed on a POLYCENTER Network Management system, users can request statistics on DECnet nodes or TCP/IP hosts based on counters gathered through AMs. At the same time, statistics from one FM can be used by a second FM for generating alarms, and the alarms, in turn, can be used to notify users when certain thresholds are exceeded.
  - — Presentation Modules (PMs) provide a consistent user interface for the direct manipulation of managed objects (through AMs), as well as for access to services (provided by FMs). The POLYCENTER Network Management PM command syntax and generic user interface capabilities are the same regardless of the object being managed. Thus, users need only learn one set of commands for different types of managed objects, whether the operator is using the Motif®-based Iconic Map Interface or the FCL Command Line Interface.
- Executive—provides system services that enable Management Modules to be installed and used independently or in combination. These services include call dispatching, a data dictionary, and scheduling. Executive services enable users to extend a POLYCENTER Network Management system through the installation of new Management Modules.
- Applications Programming Interface (API)—defines how Management Modules invoke each other's services. The POLYCENTER Network Management API is open and documented to support Digital, third-party, or user-developed Management Modules. The *POLYCENTER Network Management/DECmcc System Reference Manual* (order numbers AA-PD5LC-

TE for Vol. 1; AA-PE55C-TE for Vol. 2) documents the POLYCENTER Network Management API and is available as part of the POLYCENTER Framework Developer's Toolkit. The *POLYCENTER Network Management/DECmcc System Reference Manual* specifies the interface technology available for the integration of Management Modules into the POLYCENTER Network Management software system. The document also presents the underlying POLYCENTER Network Management system execution model, and defines the system routines available to Management Modules.

- Management Information Repository (MIR)—provides a means to structure and store management information. The MIR stores definitions of classes of managed objects, information about the configuration (for example, a network name or address), historical information about managed object attributes (for example, status and counters), and information required by Management Modules.

For more information about the EMA Director Model and EMA in general, refer to the Enterprise Management Architecture General Description (order number AA-PD5JA-TE).

POLYCENTER Network Management Services

The products that make up POLYCENTER Network Management Services include complete, prepackaged management systems designed for specific network and system environments. They also include separately orderable Management Modules and option packages.

Users can select fully functional POLYCENTER Network Management products or they can start with a minimum package configuration and, using one or more option packages or Management Modules, build management systems for their specific management environments. Unless otherwise noted, all POLYCENTER Network Management Services products described below are available on the Digital OpenVMS/VAX and RISC/ULTRIX operating systems.

POLYCENTER Network Management Services consist of the following products:

- The POLYCENTER Framework is an entry-level management system for Digital ADVANTAGE-NETWORKS (TCP/IP, DECnet Phase IV, DECnet/OSI) environments as well as a framework for other POLYCENTER Network Management products.
- POLYCENTER Network Management Modules and option packages are individual Management Modules and groups of Management Modules that can be added to preconfigured management systems such as the POLYCENTER Framework.
- The POLYCENTER Network Manager 200 (formerly called the DECmcc Basic Management System, or BMS) is a complete, prepackaged management system consisting of generic POLYCENTER Network Management Modules and applications for ADVANTAGE-NETWORKS and open system environments.
- The POLYCENTER Network Manager 400 (formerly called the DECmcc Enterprise Management Station, EMS) is a complete, prepackaged management system consisting of POLYCENTER Network Management Modules in addition to device-specific Management Modules and other Digital network management products.

  Note: POLYCENTER Network Manager 400 is available on OpenVMS/VAX only.
- The POLYCENTER Framework Developer's Toolkit consists of software and documentation tools to assist third-party developers and users in designing and building Management Modules for POLYCENTER Network Management systems.

POLYCENTER Framework (formerly DECmcc Director) (SPD 32.46.xx)

The POLYCENTER Framework provides entry-level management capabilities for ADVANTAGE-NETWORKS environments that include any of the following types of managed objects: DECnet Phase IV and DECnet/OSI nodes (devices that support the Simple Network Management Protocol (SNMP)), and Ethernet /802.3 LAN devices.

Consistent with the EMA Director Model, the POLYCENTER Framework consists of an Executive, a MIR, an open API, and Management Modules that provide User Interface Services, Configuration Management Services, and Multivendor/Multiprotocol Access Services.

- User Interface Services support a consistent view and method of user interaction with the system, regardless of the types of objects being managed. These services are provided by the Motif/Iconic Map PM and Forms and Command Line (FCL) PM.
  - — The Motif/Iconic Map PM enables users to display a network environment graphically with icons representing managed objects. It includes a Map Toolkit that allows users to manipulate and customize maps, icons for network devices, lines, and managed object groups (domains). The Motif/Iconic Map PM allows users to scan in background maps and design their own icons. It provides pull-down and pop-up menus and application windows and enables users to select and display real-time or historical numeric attributes, such as counters, graphs, or histograms.

— The FCL PM supports both a command-line mode and a forms interface mode on any terminal or workstation compatible with Digital's VT220 terminals. Both modes use the same command syntax regardless of the objects being managed and the display devices used. The FCL PM allows users to perform vital management activities from remote locations over dial-up lines.

Note: The Forms Mode is available on OpenVMS/VAX only.

- Configuration Management Services enable users to register managed objects by class and as unique entities. They provide an object-oriented view of network devices and enable users to define unique or overlapping managed object groups called domains. These services are provided by the Registration FM and the Domain FM.

  — Users have the option of registering entities in a single repository on a POLYCENTER Network Management system or using Digital's Distributed Name Service (DECdns) to create a network- or enterprise-wide name repository that can be shared by multiple POLYCENTER Network management systems. The Registration FM defines and manages sets of common reference attributes for all managed objects.

  Note: Long-names support is not available in V1.4.

  — The Domain FM works with the Registration FM to define spheres of management interest called domains. These can consist of all managed objects within a particular location, all objects of a particular type, or any other user-defined group. Domains can contain other domains, and individual managed objects can be part of multiple domains. The Domain FM allows users to navigate throughout a managed environment, moving from a high-level overview to a detailed view of a specific device. The Domain FM also enables users to establish areas of specific responsibility and control among different management personnel.

- Multivendor/Multiprotocol Access Services provide the means by which directives or commands are passed from the POLYCENTER Network Management system to managed objects and for the objects to respond or send events. They provide managed object class data, and support standard and vendor-specific management protocols. In the POLYCENTER Framework, these services are provided by the TCP/IP SNMP AM, the DECnet Phase IV and DECnet/OSI AMs, the Ethernet Station AM, and the Circuit AM.

  — The DECnet Phase IV and DECnet/OSI AMs allow users to manage DECnet nodes, their circuits, lines, and objects. They enable users to collect DECnet data such as line error counters and perform operations such as modifying parameters on remote nodes. These DECnet Phase IV and DECnet/OSI AMs support data collection by polling and by receiving unsolicited DECnet events.

  — The TCP/IP Simple Network Management Protocol (SNMP) AM supports the management of devices that use SNMP MIB I and MIB II. SNMP support also enables users to enroll enterprise MIB extensions. Polling, SNMP Traps (unsolicited events), and ICMP Echo_Request/Echo_Response (Ping) are supported.

  — The Ethernet Station AM provides access to Ethernet/IEEE 802.3 LAN devices that support MOP REQID, MOP SYSID, MOP Counters, Ethernet V2 Loopback, IEEE802.3 XID, or IEEE802.3 Test.

  — The Circuit AM works as a client of the other AMs to provide management of circuits connecting endpoints compliant with Network Management Forum (NMF) definitions, including DECnet Phase IV and DECnet/OSI nodes, and TCP/IP hosts. It allows users to gather status data and store reference information about simple, point-to-point circuits or complex, multi-channel circuits.

  — The Script AM provides the ability to manage entities such as disks via OpenVMS DCL procedures or Ultrix shell scripts.

POLYCENTER Network Management Modules and Option Packages

POLYCENTER Network Management Services includes Management Modules and optional packages that can be purchased separately and added to a POLYCENTER Framework. In this way, users can add management capabilities and object access as needed. These products include:

- The POLYCENTER Network Topology Option (formerly called the DECmcc Configuration Package, SPD 39.71.xx), which provides the ability to automatically discover, register, and map managed objects by class. Supported classes: TCP/IP hosts, DECnet Phase IV nodes, and Digital FDDI devices and LAN Bridges. Users can define domains for each class, and set network boundaries. The software queries DECnet routers, IP gateways, and Bridge spanning trees for instance data such as network names and addresses. As devices are located and data gathered, the Topology Option automatically maps them in appropriate class domains and registers them.

  Note: This package requires that the appropriate Access Modules be installed to discover and register the following device types: DECnet Phase IV and

DECnet/OSI nodes, TCP/IP hosts, and Digital LAN Bridges and FDDI devices. The DECnet and TCP/IP SNMP AMs are included with the POLYCENTER Framework, POLYCENTER Network Manager 200 and POLYCENTER Network Manager 400. POLYCENTER Framework and POLYCENTER Network Manager 200 users must purchase the POLYCENTER Extended LAN Management (ELM) AM and FM package separately to perform autoconfiguration and autotopology functions for Digital LAN Bridge and FDDI devices. POLYCENTER Network Manager 400 includes all the modules required for these functions.

- The POLYCENTER Framework Notification Option (formerly called the DECmcc Notification Package, SPD 39.75.xx) consists of Management Modules that provide alarm and notification functions. It enables users to define states or conditions that must be monitored for fault management. Users can write alarm rules for any managed object or, with wildcarding, multiple objects in the same class, for which there is a corresponding Access Module. Alarm rules can be based on state changes, simple arithmetic expressions, or occurrences (unsolicited events). Once an alarm rule is triggered, a number of operator notification methods are available, including:

  — An Event/Alarm Log and a Notification Window that allow users to define event or alarm conditions they want to view and save. With the Notification Window, users can set up event filters, store and display event or alarm messages, and obtain additional detail as needed. Users can search for and display messages by specifying severity level, date and time, managed object, and keywords.

  — Map notification within the Motif/Iconic Map PM. This function allows users to set up notifications within the iconic map that change the color or an icon or icons. Users can assign specific colors to severity levels and select defaults that display either the most recent or the most severe alarms.

  — Trigger ULTRIX shell scripts or OpenVMS DCL command procedures. With such procedures, users can set up notification methods including terminal broadcast messages or electronic mail. In addition, fault isolation, testing, recovery, and other common operator functions can be automated using command procedures triggered by alarm rules.

- The POLYCENTER Framework Historian Option (formerly called the DECmcc Historical Data Package, SPD 39.73.xx) enables users to collect, time stamp, and store management data. This data is then available to users or to other POLYCENTER Network management services such as the Notification Option and the Network Statistics Option. The Historian Option also includes a data export function that enables users to write historical data or other attribute data to an external relational database for additional processing and report generation. The data export functions of the Historian Option require the use of INGRES® on RISC/ULTRIX systems or Rdb Runtime for OpenVMS/VAX systems.

- The POLYCENTER Network Statistics Option (formerly called the DECmcc Performance Statistics Package, SPD 39.74.xx) calculates statistics for selected entity classes such as TCP/IP hosts, DECnet Phase IV and DECnet/OSI nodes, and Digital LAN Bridges (requires corresponding AM). Information such as error counts, utilization percentages, and other statistical data can be collected, processed, and used to to track network and device utilization. Used with the POLYCENTER Notification Option, output from this package can be used to establish alarm thresholds. As numeric attributes, output from the Network Statistics Option can be displayed as graphs or histograms in the Motif/Iconic Map PM Graph Window, or exported to an external relational database (using the POLYCENTER Framework Historian Option) for additional processing and report generation. The Network Statistics Option also includes sample error and utilization reports for use with the Historian Option.

  Note: Setup and printing of the sample reports requires the use of CDD/Plus, DATATRIEVE, and DECgraph on OpenVMS/VAX systems, and INGRES Tools for ULTRIX.

- The POLYCENTER Network Fault Diagnostics Option (formerly called the DECmcc Fault Diagnostic Package, SPD 39.72.xx) consists of troubleshooting software designed to simplify the process of isolating and resolving some of the most frequently occurring TCP/IP network problems. It includes automated diagnostic routines and operator assistance functions that list probable causes to common TCP/IP network problems. The package contains ten diagnostic routines, a path trace utility, a load check utility, and an ICMP Ping utility.

- The POLYCENTER Extended LAN Manager Packages (formerly called the DECmcc Extended LAN Manager Package, SPD 31.33.xx) provides management of Digital LAN Bridges, DECbridges, and FDDI DECconcentrators. This package also enables POLYCENTER Framework users to customize alarm rules and generate performance statistics for the devices it supports. It provides users with automatic device registration and FDDI ring map and LAN Bridge spanning tree autotopology functions for devices supporting IEEE 802.1D spanning tree and Digital spanning tree algorithms.

- The POLYCENTER Terminal Server Access Module (formerly called the DECmcc Terminal Server Access Module, SPD 43.99.xx) is an OpenVMS/VAX-only layered product that provides remote management access to Digital terminal servers within the POLYCENTER Network Management environment. The POLYCENTER Terminal Server AM allows POLYCENTER Network Manager users to remotely configure and monitor Digital terminal servers anywhere in the extended Local Area Network from a POLYCENTER Network Management system.

POLYCENTER Network Manager 200 (formerly called the DECmcc Basic Management System, SPD 32.48.xx)

The POLYCENTER Network Manager 200 is a complete, preconfigured management system consisting of generic POLYCENTER Network Management Modules in addition to device-specific Management Modules and applications for ADVANTAGE-NETWORKS and open system environments. It is built on the POLYCENTER Framework and includes all the capabilities and Management Modules that comprise the Framework and the Management Modules and services described in the following POLYCENTER Network Management option packages:

- POLYCENTER Network Topology Option
- POLYCENTER Network Statistics Option
- POLYCENTER Framework Notification Option
- POLYCENTER Framework Historian Option

POLYCENTER Network Manager 400 (formerly called DECmcc Enterprise Management Station, SPD 31.88.xx)

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.

The POLYCENTER Network Manager 400 consists of the following Digital network management products on OpenVMS/VAX only:

- POLYCENTER Network Manager 200
- POLYCENTER Network Fault Diagnostics Option
- POLYCENTER Extended LAN Manager Package
- POLYCENTER Terminal Server Access Module
- LAN Traffic Monitor (LTM)
- NMCC/VAX ETHERnim
- Terminal Server Manager (TSM)

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-VAX, DECnet-ULTRIX, Ethernet, and TCP/IP networks.

POLYCENTER Framework Developer's Toolkit (formerly called the DECmcc Developer's Toolkit, SPD 32.49.xx)

The POLYCENTER Framework Developer's Toolkit is for the development of POLYCENTER Network Management Access and Function Modules. It consists of software and documentation and is intended for use by experienced network managers and system software developers. The software simplifies the design and implementation of Management Modules through a runtime Executive, various service programs, and source code for sample Access and Function Modules.

POLYCENTER/DECmcc System Reference Manual

The *POLYCENTER/DECmcc System Reference Manual* (SRM) specifies the interface technology available for the integration of Management Modules into the POLYCENTER Network Management software system. The document also presents the underlying POLYCENTER Network Management system execution model, and defines the system routines available to management modules. The POLYCENTER/DECmcc SRM is available on Bookreader with the release of POLYCENTER Management Services V1.4.

POLYCENTER Network Management Product/Module Matrix

The matrices in Appendix A illustrate the relationship between the POLYCENTER Network Management Family of products and the Management Modules and services that comprise them.

SOFTWARE PRODUCT DESCRIPTIONS

For more information about a specific POLYCENTER Network Management Family product, please refer to the appropriate Software Product Description:

- POLYCENTER Framework: SPD 32.46.xx
- POLYCENTER Framework Notification Option: SPD 39.75.xx
- POLYCENTER Framework Historian Option: SPD 39.73.xx
- POLYCENTER Framework Developer's Toolkit: SPD 32.49.xx

- POLYCENTER Network Topology Option: SPD 39.71.xx
- POLYCENTER Network Statistics Option: SPD 39.74.xx
- POLYCENTER Network Fault Diagnostics Option: SPD 39.72.xx
- POLYCENTER Network Manager 200: SPD 32.48.xx
- POLYCENTER Network Manager 400*: SPD 31.88.xx
- POLYCENTER ELM Package: SPD 31.33.xx
- POLYCENTER Terminal Server Access Module*: SPD 43.99.xx

* Available on OpenVMS/VAX only.

SOFTWARE PRODUCT SERVICES

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

Other 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 local Digital Sales Office.

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

Appendix A: POLYCENTER Network Management Product/Module Matrix

The following matrices illustrate the relationship between the POLYCENTER Network Management Services products and the Management Modules and services that comprise them.

	DIR	BMS	EMS*	EXTENDED LAN MGR	TERM SRV AM*
Exec/MIR/API	X	X	X		
FCL PM	X	X	X		
ICONIC MAP PM	X	X	X		
Registration FM	X	X	X		
Domain FM	X	X	X		
DECnet IV AM	X	X	X		
DECnet/OSI AM	X	X	X		
TCP/IP SNMP AM	X	X	X		
ENET Station AM	X	X	X		
Circuit AM	X	X	X		
Script AM	X	X	X		
DECnet Autoconfig FM		X	X		
TCP/IP Autoconfig FM		X	X		
Bridge Autoconfig FM			X	X	
FDDI Autoconfig FM***			X	X	
Alarms FM**		X	X		
Notification PM		X	X		
Notification FM		X	X		
Data Collect AM		X	X		
Historian FM		X	X		
Exporter FM		X	X		
DECnet/Br PA FM		X	X		
TCP/IP PA FM		X	X		
PA Sample Reports		X	X		
TCP/IP FDA FM			X		
LAN Autotopology PM***			X	X	
Bridge AM			X	X	
Concentrator AM			X	X	
FDDI AM			X	X	
FDDI FM				X	
Spanning Tree Map FM***			X	X	
Term Serv AM*			X		X
LAN Traffic Mon*			X		
ETHERnim*			X		
TSM*			X		

*Available on OpenVMS/VAX only.
** Unsupported on both OpenVMS/VAX and Ultrix/RISC.
*** Unsupported on Ultrix/RISC only.

	CONFIG PKG	NOTIF PKG	HIST PKG	STAT PKG	FAULT PKG	DEV TOOLKIT
Exec/MIR/API						
FCL PM						
ICONIC MAP PM						
Registration FM						
Domain FM						
DECnet IV AM						
DECnet/OSI AM						
TCP/IP SNMP AM						
ENET Station AM						
Circuit AM						
Script AM						
DECnet Autoconfig FM	X					
TCP/IP Autoconfig FM	X					
Bridge Autoconfig FM						
FDDI Autoconfig FM***						
Alarms FM**		X				
Notification PM		X				
Notification FM		X				
Data Collect AM		X				
Historian FM			X			
Exporter FM			X			
DECnet/Br PA FM				X		
TCP/IP PA FM				X		
LAN Autotopology PM***						
PA Sample Reports				X		
TCP/IP DA FM					X	
Bridge AM						
Concentrator AM						
FDDI AM						
FDDI FM						
Spanning Tree Map FM***						
Term Serv AM*						
LAN Traffic Mon*						
ETHERnim*						
Dev. Toolkit						X
TSM*						

*Available on OpenVMS/VAX only.
** Unsupported on both OpenVMS/VAX and Ultrix/RISC.
*** Unsupported on Ultrix/RISC only.