Software Product Description

PRODUCT NAME: VAX ACMS, Version 3.2 (Application Control and Management System) **SPD 25.50.10**

DESCRIPTION

VAX ACMS is a transaction processing (TP) monitor designed for the VMS Operating System. VAX ACMS works with other Digital Equipment Corporation commercial application software products to provide users with a complete and customizable development and run-time environment for transaction processing applications such as order tracking, accounting and billing, shop floor control, and insurance claims processing.

VAX ACMS software helps users through the entire application development life cycle, including the installation, planning, design, development, testing, implementation, management, and maintenance of complex TP applications. VAX ACMS provides a special-purpose application definition language for structured definition of TP application functions and run-time characteristics.

VAX ACMS makes efficient use of the VMS Operating System and associated hardware resources, making VAX ACMS particularly suited to mission-critical applications that require high throughput and performance.

VAX ACMS provides integration with the following Digital layered products:

- DECforms or VAX TDMS for forms management
- VAX CDD/Plus for the creation, analysis, and administration of metadata
- VAX Rdb/VMS, VAX DBMS, and VMS RMS for data management
- DECtrace for VMS for performance event data collection
- DECtp Desktop for ACMS for multi-vendor client access to ACMS applications
- All VAX languages and tools for application development

Because VAX ACMS is designed to allow for modular implementation as well as development, users can separate and distribute front-end processing (data input/output operations such as forms processing) from back-end processing (data calculations and database storage). In addition, VAX ACMS allows users the use of non-standard terminal or I/O devices (such as bar-code readers and ATMs).

Features

- Application Development Environment
- Run-time System
- Application Management and Control
- Front-End/Back-End Processing
- Presentation Services
- Database Management
- Data Dictionary
- Queuing
- Security
- VAXcluster Environment/Availability
- ACMS Run-time Option
- ACMS Remote Access Option
- Documentation Set

Application Development Environment

VAX ACMS uses a high-level, English-like definition language that replaces system service calls for most TP application functions. Using the VAX ACMS Application Definition Utility, a programmer can:

- Structure all application work into three basic steps:
  - — Exchange steps for terminal I/O processing
  - — Processing steps for database access and general computation
  - — Block steps for performing work common to several processing and exchange steps
- Control task execution and flow using conditional statements such as IF THEN ... ELSE, WHILE DO, SELECT FIRST, and CONTROL FIELD syntax in conjunction with Boolean expressions
- Define and implement subroutine transactions using the CALL TASK syntax
- Create menus and hierarchies of menus

- Define resources used to execute transactions, such as servers, workspaces and audit trails
- Start and end database RECOVERY units

VAX ACMS also includes the ACMS Task Debugger to debug VAX ACMS definitions and servers.

Run-time System

VAX ACMS includes a complete run-time system for implementing application definitions. The VAX ACMS Run-time System is made up of eight specialized processes (four manage the processing of a transaction, and four monitor and control the run-time system).

The following VAX ACMS processes manage the work within ACMS transactions:

- Command Process (CP) - Manages logins and interaction between terminals and VAX ACMS. CPs can be multi-threaded (one CP process can handle menuing and forms I/O for many VAX ACMS terminals simultaneously). The CP passes input data to the Application Execution Controller (EXC) for processing by a server.
- Application Execution Controller (EXC) - Controls task execution for all the tasks in an application. Each application has its own EXC process, which starts up and controls the server processes needed to handle processing work for tasks.
- Server Process (SP) - Carries out the high-level programming language routines or DCL routines that handle a task's processing work and database or file I/O. Programmers link their routines to the VAX ACMS-supplied main program to create customized servers for database access, computation and other functions.
- Queued Task Initiator (QTI) - Removes task elements from a task queue and initiates their execution in a specified application. Queued tasks are tasks placed in a queue for later execution. Queued tasks cannot collect input data, but otherwise are the same as any other VAX ACMS task.

The VAX ACMS processes that monitor and control the run-time system are:

- VAX ACMS Application Central Controller (ACC) - Acts as the central control point for VAX ACMS run-time systems. The ACC starts and controls the Terminal Subsystem Controller, the QTI, the EXC, and the audit trail log. The ACC process must be started and running on each computer system where VAX ACMS applications are used.
- Audit Trail Log (ATL) - Writes information about a running VAX ACMS system to the audit trail log file. The ATL keeps a record of when the VAX ACMS system starts and stops, when users log in, and when applications and tasks start and stop.
- Terminal Subsystem Controller (TSC) - Creates and controls the number of active Command Processes (CPs) and assigns terminals to CPs. The TSC starts and stops CPs as needed, and controls which terminals can access VAX ACMS.
- Software Event Logger (SWL) - Records all ACMS internal software errors and event messages that occur during the execution of VAX ACMS application programs.

Communications among these run-time processes can occur on a single computer system or between more than one computer in a VAXcluster system or DECnet network. For example, a Command Process (CP) on one computer system can initiate a task within an application on another computer system.

Application Management and Control

Once an application is developed, the user moves that application into a production (real-use) environment. VAX ACMS provides support for VAX ACMS applications used in a production environment.

VAX ACMS includes seven utilities for defining, monitoring and modifying application management characteristics:

- VAX ACMSGEN - Modifies and displays VAX ACMS system parameters.
- Application Authorization Utility (AAU) - Authorizes applications to be installed.
- User Definition Utility (UDU) - Authorizes users to log in to VAX ACMS and assigns login displays, including default menus, to VAX ACMS users.
- Device Definition Utility (DDU) - Authorizes VAX ACMS terminals and, optionally, defines captive terminals to log in directly to VAX ACMS.
- Queue Manager (QUEMGR) - Creates and manages VAX ACMS task queues and queued task elements.
- Software Event Log Utility Program (SWLUP) - Creates reports of selected events recorded by the Software Event Logger.
- Audit Trail Report Utility (ATR) - Returns records of application and user activity.

In addition to the utilities, VAX ACMS also provides users with the following additional support for application management and control:

- VAX ACMS Operator Commands - Perform standard operator functions such as starting and stopping the VAX ACMS system, the TSC (Terminal Subsystem Controller) process, the QTI process and ACMS applications
- Command Procedures - Evaluate and modify the values of VMS and VAX ACMS system parameters, and VAX ACMS run-time process quotas

Front-End/Back-End Processing (Client/Server Processing)

In VAX ACMS, terminal, menu, and other I/O functions are separated from database or file processing and computational functions. The terminal and menu functions are handled on the front-end of the transaction processing system, while task flow control, data processing, and computations are performed on the back-end of the system.

The separation of functions in VAX ACMS (called the client/server model) can be implemented on a single node or on multiple nodes in a DECnet network. Because the VAX ACMS client/server model always provides separate front and back ends, users can at any time off-load the front-end to another computer system without reprogramming the application code.

The VAX ACMS Systems Interface (SI) lets users write front-end programs, or agents, to support specialized devices such as bar-code readers and automatic teller machines.

VAX ACMS includes support for failover in a distributed environment. If one VAX processor is not available to process a transaction, VAX ACMS can automatically route the transaction to another application running on an available processor.

Presentation Services

Users select and run VAX ACMS tasks from menus. To create menus, VAX ACMS supports DECforms as its primary presentation service. In addition, VAX ACMS provides support for VAX TDMS and other presentation service products.

VAX ACMS also provides support for other presentation service products through the VAX ACMS Request Interface and Systems Interface. The Request Interface lets users use presentation services other than DECforms or TDMS for I/O functions limited to one user per process. The Systems Interface lets users use presentation services for single-user or multiple-user I/O functions.

Database Management

VAX ACMS includes support in its definition language for starting and ending database transactions/recovery units through a database management system. Data products supported include VAX Rdb/VMS (including SQL), RMS, and VAX DBMS.

Using the DECdtm component of the VMS Operating System, VAX ACMS lets users coordinate operations on multiple recoverable resources (such as databases and files) within a single atomic transaction. Users can perform operations on multiple databases through a single transaction, and ensure atomicity (that is, if the transaction fails, any changes made to databases, files, or VAX ACMS queues are rolled back to their previous state before the transaction started). Support for DECdtm is introduced in VAX ACMS V3.2.

VAX ACMS applications can also access other data management products or file management systems that support the VMS calling standard.

Data Dictionary

VAX ACMS supports the VAX CDD/Plus data dictionary. VAX ACMS stores application definitions in VAX CDD/Plus directories and uses VAX CDD/Plus record definitions for its workspaces.

Queuing

Some VAX ACMS applications require that the data be collected and stored in a temporary storage area (queue) for the application to process at another time. The VAX ACMS queuing facility lets users create and manage VAX ACMS task queues. ACMS queue services are used to place/remove tasks on/off ACMS task queues.

Security

VAX ACMS ensures that the user's data remains secure by giving the user control over which users have access to VAX ACMS. Using VMS and VAX ACMS authorization facilities users can:

- Authorize users to use VAX ACMS
- Control terminals connecting to VAX ACMS
- Limit the applications a user can run

VAX ACMS includes transaction security in the form of access control lists (ACLs) in the definition language. Whenever a user selects a transaction, that user's VMS identifier is checked against the ACL defined for that transaction to determine if that user is allowed to execute that transaction.

VAXcluster Environment/Availability

In a VAXcluster environment, VAX ACMS applications support highly available configurations that help avoid single points of system failure.

VAX ACMS includes support for failover in a VAXcluster environment. If one VAXcluster processor is not available to process a transaction, VAX ACMS can automatically route the transaction to another application running on an available processor that shares the same data.

VAX ACMS can improve the performance of a database management system in a VAXcluster environment by allowing the use of the client/server model to run database servers on a single processor.

VAX ACMS Run-time Option

The VAX ACMS Run-time Option is a subset of VAX ACMS, which lets users run existing VAX ACMS applications or programs and change application attributes (for example, menu definitions). The purpose of the Run-time Option is to support the execution of applications developed on a host machine using the development version of this product, and to run on production machines.

VAX ACMS Remote Access Option

The VAX ACMS Remote Access Option is a subset of the Run-time Option and provides the ability to place users and the terminal I/O associated with them on a separate VAX system, offloaded from the application VAX or VAXcluster.

Documentation

VAX ACMS includes a complete and comprehensive documentation set. Introductory manuals explain VAX ACMS concepts and components to new users. Advanced guides describe, in task-oriented style, how to design, build and manage VAX ACMS applications. Complete reference information is also provided.

Included with VAX ACMS documentation is a transaction processing case study that describes each step in the design, development, implementation and testing of a sample reservations processing application.

The VAX ACMS documentation (QA-079AA-GZ) set consists of the following manuals:

VAX ACMS Getting Started

Step-by-step tutorial for developing a simple VAX ACMS application using VAX DECforms, VAX CDD/Plus, and an RMS file.

VAX ACMS Installation Guide

Description of installation requirements, step-by-step installation instructions, and post installation tasks.

VAX ACMS Release Notes

Specific information related to the most current version of VAX ACMS and material added too late for publication in other VAX ACMS documents.

VAX ACMS Concepts and Design Guidelines

Detailed description of VAX ACMS concepts and guidelines for designing a VAX ACMS application.

VAX ACMS Writing Applications

Description of how to write task, task group, application, and menu definitions using the Application Definition Utility (ADU).

VAX ACMS Writing Server Procedures

Description of how to write, debug, and run procedures for VAX ACMS applications, including procedures that access VAX Rdb/VMS, VAX DBMS, and RMS resource managers.

VAX ACMS Systems Interface Programming

Description of how to use Systems Interface (SI) Services to submit tasks to a VAX ACMS system from outside VAX ACMS.

VAX ACMS ADU Reference Manual

Reference information regarding commands, phrases, and clauses of the Application Definition Utility (ADU).

VAX ACMS Managing Applications

Description of how to authorize, install, run, and manage VAX ACMS applications, and how to control the VAX ACMS system and its components.

VAX ACMS AVERTZ Demo Guide

Overview of the AVERTZ application, which is an online, running sample that ships with the VAX ACMS kit.

VAX ACMS Quick Reference Guide

Complete list of VAX ACMS syntax with brief descriptions.

VAX ACMS Master Index

Comprehensive listing of all index entries in the documentation set.

A TP System Case Study

Detailed look at a sample AVERTZ application with an emphasis on how users can use a suite of Digital products to develop a complete TP system. This manual shows how to design and develop a database and application for a fictional car rental company.

VAX ACMS also includes two sample applications: AVERTZ which is based on the transaction processing requirements of a fictional car rental firm; and a Personnel Application from the *VAX ACMS Getting Started* tutorial.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXserver or VAXstation configuration as specified in the System Support Addendum (SSA 25.50.10-x).

SOFTWARE REQUIREMENTS*

For VAX ACMS

- VMS Operating System
- VAX CDD/Plus

For VAX ACMS Run-time Option

- VMS Operating System

For VAX ACMS Remote Access Option

- VMS Operating System
- DECnet–VAX

* Refer to the System Support Addendum (SSA 25.50.10-x) for availability and required versions of prerequisite/optional software.

ORDERING INFORMATION

Software Licenses:
Development System: QL-079A*-**
Run-time: QL-076A*-**
Remote Access: QL-Y30A*-**

Software Media:
Development System: QA-079A*-**
Run-time: QA-076A*-**
Remote Access: QA-Y30A*-**

Software Documentation:
Development System: QA-079AA-GZ
Run-time: QA-076AA-GZ
Remote Access: QA-Y30AA-GZ

Software Product Services:
Development System: QT-079A*-**
Run-time: QT-076A*-**
Remote Access: QT-Y30A*-**

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

SOFTWARE LICENSING

VAX ACMS licenses also include the right to use the Desktop Server for VMS component of DECtp Desktop for ACMS. DECtp Desktop for ACMS has separate documentation, media kits and service products. Refer to the DECtp Desktop for ACMS Software Product Description (SPD 34.81.xx) for further information.

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LICENSE MANAGEMENT FACILITY SUPPORT

This layered product supports the VMS License Management Facility.

License units for this product are allocated on a CPU-capacity basis.

For more information on the License Management Facility, refer to the VMS Operating System Software Product Description (SPD 25.01.xx) or the *License Management Facility* manual of the VMS Operating System documentation set.

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

SOFTWARE PRODUCT SERVICES

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