COMPAQ

Software Product Description

PRODUCT NAME: ***Compaq ACMS for OpenVMS*, Version 4.4A (Application Control and Management System)** **SPD 25.50.20**

DESCRIPTION

Compaq ACMS for OpenVMS (ACMS) is a transaction processing (TP) monitor designed for the Compaq OpenVMS operating systems. ACMS works with other Compaq Computer 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, banking, shop floor control, and insurance claims processing.

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. ACMS provides a special-purpose application definition language for the structured definition of TP application functions and run-time characteristics.

ACMS makes efficient use of the OpenVMS operating systems and associated hardware resources, making ACMS particularly suited to mission-critical applications that require high throughput and performance.

ACMS integrates with the following Compaq and third-party layered products:

- Compaq TP Desktop Connector, formerly called ACMS Desktop, for multivendor client access to ACMS applications
- Compaq TP Web Connector for Web browser-based access to ACMS applications
- Compaq DECforms or Compaq TDMS for forms management (Note: Usage of TDMS requires an OpenVMS VAX system.)
- All OpenVMS languages that conform to the OpenVMS Calling Standard
- Oracle CDD for the creation, analysis, and administration of metadata
- Oracle Rdb, Oracle CODASYL DBMS, and OpenVMS RMS for data management
- Oracle Trace for performance event data collection

Because ACMS is designed to allow for modular implementation as well as development, the client/server model can be used to 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, ACMS allows users the use of nonstandard terminal or I/O devices, such as bar-code readers and automatic teller machines (ATMs).

Features

ACMS provides the following features:

- Application development environment
- Run-time system
- Application management and control
- Remote system management
- Client/server processing
- Presentation services
- Database management
- Resource utilization collection and reporting
- Task queuing
- Data dictionary

- Security
- OpenVMS Cluster environment and availability

Application Development Environment

ACMS uses a high-level, English-like definition language that replaces system service calls for most TP application functions. Using the ACMS Application Definition Utility (ADU), 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.

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

Run-Time System

ACMS includes a complete run-time system for application deployment. The ACMS Run-Time System consists of eight specialized processes.

The following ACMS processes manage the work within ACMS transactions:

- Command Process (CP) — Manages logins and interaction between terminals and ACMS. CPs are multithreaded (one CP process can handle menus and forms I/O for many 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 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 terminal input data; otherwise they are the same as any other ACMS task.

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

- ACMS Central Controller (ACC) — Acts as the central control point for 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 ACMS applications are used.
- Audit Trail Logger (ATL) — Writes information about a running ACMS system to the audit trail log file. The ATL keeps a record of when the 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 ACMS.
- Software Event Logger (SWL) — Records all ACMS internal software errors and event messages that occur during the execution of ACMS application programs.

Communication among these run-time processes can occur on a single computer system, or between more than one computer in a OpenVMS Cluster 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. ACMS provides support for ACMS applications used in a production environment.

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

- ACMSGEN — Modifies and displays ACMS system parameters.

- Application Authorization Utility (AAU) — Authorizes applications to be installed.
- User Definition Utility (UDU) — Authorizes users to log in to ACMS and assigns login displays, including default menus, to ACMS users.
- Device Definition Utility (DDU) — Authorizes ACMS terminals and, optionally, defines captive terminals to log in directly to ACMS.
- Queue Manager (QUEMGR) — Creates and manages 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, ACMS also provides users with the following support for application management and control:

- ACMS operator commands — Performs standard operator functions such as starting and stopping the ACMS system, the TSC process, the QTI process, and ACMS applications.
- Command procedures — Evaluates and modifies the values of OpenVMS and ACMS system parameters and of ACMS run-time process quotas.

Remote System Management

The ACMS Remote Manager provides the capability to monitor and manage the ACMS application environment. ACMS system managers can access the Remote Manager using one of the supported interfaces over a TCP/IP network.

The Remote Manager must be running on the same node as the ACMS run-time system it is monitoring or accessing. Communication between the Remote Manager and the ACMS run-time system is transparent.

Three interfaces allow access to the Remote Manager:

- RPC Interface—Provides local or remote access to ACMS management information using the Open Network Computing Remote Procedure Call (ONC RPC) protocol. This interface can be used by user-written programs to implement customized ACMS management tools.
- Command Line Utility—Provides command line access to management information as well as control of the Remote Manager process. This utility uses the RPC Interface.
- Simple Network Management Protocol (SNMP) Interface—Provides network access to ACMS management information using the industry standard SNMP protocol. This protocol is supported by most system management consoles and tools.

ACMS system managers control the data being collected, including ACMS process monitoring, and the management interfaces themselves through either SNMP or RPC commands.

The Remote Manager enables ACMS system managers to do the following:

- Remotely manage the Remote Manager.
- Remotely manage data collection including configuring SNMP traps and viewing management information on line.
- Remotely modify ACMS run-time systems.
- Write programs that remotely access management information online using ONC RPC and SNMP.

Client/Server Processing

ACMS uses the client/server model to distribute and separate functions. This model can be implemented on a single node or on multiple nodes in a DECnet network.

The terminal and menu functions are handled on the client, or front end, of the transaction processing system, while task flow control, data processing, and computations are performed on the server, or back end, of the system.

Because the ACMS client/server model always provides separate front and back ends, users can at any time offload the front-end to another computer system without reprogramming the application code.

The 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.

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

Presentation Services

ACMS supports both terminal-driven and PC/workstation-driven TP applications with presentation services. Users have the option of running ACMS tasks from menus on VT terminals, or from a GUI interface on a PC/workstation desktop system.

ACMS supports DECforms as its primary presentation service for character-cell terminals in ACMS applications.

In addition, ACMS provides support for Compaq TDMS on OpenVMS VAX systems. ACMS applications that use TDMS must be distributed in order to use ACMS on OpenVMS Alpha. See the *Compaq ACMS for OpenVMS Writing Applications* manual for more information about these restrictions.

The TP Desktop Connector product provides an API that allows user-written program running on various PC or workstation desktop systems to initiate and respond to ACMS tasks. A wide range of Compaq and third-party desktop tools can be used for the development of client presentation services and applications.

ACMS also provides support for other presentation service products through the 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

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

Using the DECdtm component of the OpenVMS operating system, 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 ACMS queues are rolled back to their previous state before the transaction started). Please note that RMS Journaling for OpenVMS is required to support recoverable ACMS queue operations coordinated using DECdtm. RMS Journaling for OpenVMS is a separate layered product, distinct from RMS, and is supplied with OpenVMS.

ACMS applications can also access other data management products or file management systems that support the OpenVMS Calling Standard.

Resource Utilization Collection and Reporting

ACMS supports Oracle Trace to allow the collection and reporting of event-based data gathered from any combination of OpenVMS layered products and ACMS applications. For each predefined event in ACMS, Oracle Trace can collect information about resource utilization, such as CPU time, or ACMS data items, such as task name. Using the Oracle Trace cross-facility feature, you can relate ACMS events with events from multiple layered products.

Task Queuing

Some 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 ACMS queuing facility lets users create and manage ACMS task queues. ACMS queue services are used to place/remove tasks on/off ACMS task queues.

Data Dictionary

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

Security

ACMS ensures that the user's data remains secure by giving the system manager control over which users have access to ACMS. Using OpenVMS and ACMS authorization facilities, system managers can:

- Authorize users to use ACMS.
- Control terminals connecting to ACMS.
- Limit the applications a user can run.
- Prevent unauthorized access to the operating system while running ACMS tasks.

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 OpenVMS identifier is checked against the ACL defined for that transaction to determine whether that user is allowed to execute that transaction.

OpenVMS Cluster Environment/Availability

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

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

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

Documentation

ACMS includes a complete and comprehensive documentation set:

- An introductory manual explains ACMS concepts and components to new users.

- Advanced manuals describe, in a task-oriented style, how to design, build, and manage ACMS applications.
- Complete reference information is provided.

The ACMS Development System documentation set consists of the following manuals:

- *Getting Started*
  - — Provides an introduction to the basic elements of the ACMS transaction processing system.
  - — Provides a step-by-step tutorial for developing a simple ACMS application.
  - — Provides an overview of the AVERTZ sample application.
  - — Provides a glossary of ACMS terms.
- *Concepts and Design Guidelines*
  - — Describes how to design an ACMS application.
- *Writing Applications*
  - — Describes how to write task, task group, application, and menu definitions using the Application Definition Utility (ADU).
  - — Describes the input/output options and restrictions in a distributed environment.
  - — Describes how to write and migrate ACMS applications to OpenVMS Alpha systems.
- *Writing Server Procedures*
  - — Describes how to write programs for use with tasks and how to debug tasks and programs, including how to write procedures that access databases.
  - — Describes how ACMS works with the APPC/LU6.2 programming interface to communicate with IBM CICS applications.
- *Systems Interface Programming*
  - — Describes how to use Systems Interface (SI) Services to submit tasks to an ACMS system.
- *Managing Applications*
  - — Describes how to authorize, install, run, and manage ACMS applications, and how to control the ACMS system.
- *Remote Systems Management Guide*
  - — Describes the features of the Remote Manager for managing ACMS systems, how to use the features, and how to manage the Remote Manager.
- *ADU Reference Manual*
  - — Provides reference information about the ADU commands, phrases, and clauses.
- *ACMS Version 4.4 Installation Guide*
  - — Describes installation requirements, step-by-step installation instructions, and required post-installation tasks.
- *Quick Reference Guide*
  - — Provides a complete list of ACMS syntax with brief descriptions.
- *Release Notes*
  - — Provides late-breaking and other notable online information about the latest release of the software.
- Online Help
  - — Provides online help about ACMS and its utilities.

HARDWARE REQUIREMENTS

Hardware Configurations

ACMS is supported on all hardware configurations referenced in the *OpenVMS Operating System for Alpha and VAX, Version 7.3, Software Product Description* (SPD 25.01.xx).

Disk Space Requirements (Block Cluster Size = 1)

The approximate amount of space required on the system disk to support the ACMS for OpenVMS software is as follows. Actual sizes may vary depending on the system environment, configuration, and software options.

ACMS Kit	VAX	Alpha
Development Installation	43,000 blocks 21.5 Mbytes	70,000 blocks 35.0 Mbytes
Development Permanent	30,000 blocks 15.0 Mbytes	42,000 blocks 21.0 Mbytes
Run-Time Installation	28,000 blocks 14.0 Mbytes	38,000 blocks 19.0 Mbytes
Run-Time Permanent	25,000 blocks 12.5 Mbytes	33,000 blocks 16.5 Mbytes
Remote Installation	21,000 blocks 10.5 Mbytes	27,000 blocks 13.5 Mbytes
Remote Permanent	18,000 blocks 9.0 Mbytes	24,000 blocks 12.0 Mbytes

SOFTWARE REQUIREMENTS

Compaq ACMS for OpenVMS Version 4.4A software runs on the following versions of the OpenVMS operating system:

- OpenVMS Alpha Operating Systems Versions 7.2-2 and 7.3.
- OpenVMS VAX Operating Systems Versions 7.2, and 7.3.

However, only specific versions of networking software are supported for each version of the operating system. See the following sections for the supported versions.

O/S Version	Compaq TCP/IP Services for OpenVMS Version
Alpha V7.2-2	V5.1
VAX V7.2	V5.1
Alpha V7.3	V5.1
VAX V7.3	V5.1

The following versions of Oracle CDD/Repository is required that is supported on your version of the operating system as follows:

- OpenVMS Alpha requires V5.3, V6.1A, V7.0
- OpenVMS VAX requires V5.3 - V7.0

Note: When using ACMS with Compaq DECnet-Plus for OpenVMS (formerly called DECnet/OSI), the Transport Layer must be configured to use the Network Services Protocol (NSP). ACMS restricts node names to a maximum of six characters.

OPTIONAL SOFTWARE

Certain versions of these products depend on a specific version of the operating system. Please refer to the Software Product Description (SPD) or contact the vendor for the product in question to determine which version is required for correct operation.

Software	OpenVMS VAX	OpenVMS Alpha
Compaq DECforms	V3.0, V3.1, V3.2	V3.0, V3.1. V3.2
Compaq DECset (except PCA)	V11.2—12.4A	V12.4A
LSE (part of DECset)	V4.2—V4.3	V4.3
Compaq TDMS	V1.9A,V1.9B	–
Compaq TP Desktop Connector (formerly called ACMS Desktop)	V2.2, V2.3, V3.1A	V2.2, V2.3, V3.1A
Compaq TP Web Connector	V1.0 or later	V1.0 or later
Oracle CDD/Repository	V5.3-V7.0	V5.3, V6.1A, V7.0
Oracle CODASYL DBMS	V5.1—V7.0	V5.1—V7.0
Oracle Rdb	V5.1—V7.0	V5.1—V7.0
Oracle Trace	V2.2, V2.4	V2.2, V2.4
RMS Journaling for OpenVMS	V6.2, V7.1, V7.2	V6.2, V7.1, V7.2

Requirements for Web Enabled Remote Manager

The pre-requisite software for using the ACMS HMMO are:

- Compaq Management Agents for OpenVMS

  Note: Only the WEBM Server is required to be started. The included web agents are not required.
- OpenVMS Alpha V7.1-2 or higher (as required by Compaq Management Agents for OpenVMS)
- Web Browser - A browser or platform that supports Java Plug-ins, JavaScript & Cascading Style Sheets (CSS).

The following browser versions and platforms are supported:

- Windows - Netscape V4.76, Netscape V6, Internet Explorer V5.5 with Java Plugin V1.3.0
- Tru64 UNIX - Netscape V4.72 with Java Plugin V1.2.2

SOFTWARE LICENSING

This software is furnished only under a license. For more information about licensing terms and policies from Compaq, contact your local Compaq office.

LICENSE MANAGEMENT FACILITY (LMF)

This layered product supports the OpenVMS License Management Facility.

License units for the Development System are allocated on a Capacity Basis by hardware tier. License units for the Run-Time or Remote Systems are allocated on a Capacity Basis by hardware tier or a Concurrent Use basis.

For more information on the License Management Facility, refer to the OpenVMS Operating System for Alpha and VAX Software Product Description (SPD 25.01.xx) or the License Management Facility manual of the OpenVMS Operating System documentation set.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed OpenVMS Cluster configuration without restrictions. The Hardware Requirements section of this Software Product Description details any special hardware required by this product.

OpenVMS Cluster configurations are fully described in the *OpenVMS Cluster Software Software Product Description* (SPD 29.78.xx) and include CI, Ethernets and mixed-interconnect configurations.

DISTRIBUTION MEDIA

This product is distributed as part of the OpenVMS Software Product Libraries.

The software documentation is also available as part of the OpenVMS Online Documentation Libraries on CD-ROM.

ORDERING INFORMATION

Three kits are available for ACMS:

- ACMS Development System—The complete set of ACMS features that facilitate the development and deployment of ACMS applications on an OpenVMS system.
- ACMS Run-Time System—A subset of the ACMS Development System that allows the deployment and limited customization of ACMS applications on an OpenVMS system.
- ACMS Remote Access—A subset of the ACMS Run-Time System that provides the capability to place users and the associated terminal I/O on a separate OpenVMS system to offload the application system or OpenVMS Cluster.

For OpenVMS VAX	Part Number
Development License, Unlimited Use	QL-079A*-AA
Development Documentation	QA-079AA-GZ
Development Software Product Services	QT-079A*-**
Run-Time License, Unlimited Use	QL-076A*-AA
Run-Time License, Concurrent Use	QL-076AA-3B
Run-Time Documentation	QA-076AA-GZ
Run-Time Software Product Services	QT-076A*-**
Remote Access, Unlimited Use	QL-Y30A*-**
Remote Access, Concurrent Use	QL-Y30AA-3B
Remote Access Documentation	QA-Y30AA-GZ
Remote Access Software Product Services	QT-Y30A*-**

For OpenVMS Alpha	Part Number
Development License, Unlimited Use	QL-2PZA*-AA
Development Documentation	QA-076AA-GZ
Development Software Product Services	QT-2PZA*-**
Run-Time License, Unlimited Use	QL-2Q1A*-AA
Run-Time License, Concurrent Use	QL-076AA-3B
Run-Time Documentation	QA-076AA-GZ
Run-Time Software Product Services	QT-2Q1A*-**
Remote Access, Unlimited Use	QL-2Q0A*-**
Remote Access, Concurrent Use	QL-Y30AA-3B
Remote Access Documentation	QA-Y30AA-GZ
Remote Access Software Product Services	QT-2Q0A*-**

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

SOFTWARE PRODUCT SERVICES

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

GROWTH CONSIDERATIONS

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

SOFTWARE WARRANTY

This software is provided by Compaq with a 90-day conformance warranty in accordance with the Compaq warranty terms applicable to the license purchase.

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

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