COMPAQ

Software Product Description

PRODUCT NAME: Compaq Ada Version 3.5A for OpenVMS VAX Systems **SPD 26.60.19**

DESCRIPTION

This Software Product Description includes the following two products:

- Compaq Ada for OpenVMS VAX Systems
- Compaq Ada Professional Development Option for OpenVMS VAX Systems

Compaq Ada for OpenVMS VAX is the Compaq Computer Corporation implementation of the full ANSI/MIL-STD-1815A-1983 Ada Language. As a result of meeting the ANSI standard, Compaq Ada also conforms to the Federal Information Processing Standard (FIPS-119). The Compaq Ada compiler runs on the OpenVMS operating system and generates optimized, shareable, and position-independent code.

As a native mode OpenVMS language, Compaq Ada is integrated into the OpenVMS common language environment. All OpenVMS system services and utilities are available to programs written in Compaq Ada. Compaq Ada supports the OpenVMS Record Management Services (RMS) sequential, relative, and indexed file organizations and associated access methods. Compaq Ada programs can invoke modules written in other OpenVMS languages. Additionally, programs written in other languages can invoke Compaq Ada modules.

Ada is a powerful, general-purpose language that supports many modern programming practices. The language was designed as the result of a competition sponsored by the United States Department of Defense. The purpose of the competition was to define a language suitable for programming-embedded computer systems. Among the requirements for the language are features that reduce software costs by increasing maintainability, evolvability, reliability, and portability.

Ada provides a modular structure for programs by allowing separate compilation of program units, as well as providing strong typing, tasking, exception handling, and other standard language features that must be supported across implementations. Ada provides a number of features from general systems to real-time applications.

Ada Language Features

- Strong Typing — An object (variable) of a given type may take on only those values that are appropriate to that type, and only certain predefined operations may be performed on data of that type. Because type checking is done at compile time, strong typing ensures that any errors associated with incorrect data types are detected at compile time.
- Data Abstraction — Also known as information hiding, data abstraction hides implementation details while providing users with mechanisms for using the implementation. Abstraction allows users to focus on important characteristics while ignoring underlying details. Ada provides various levels of abstraction through features such as private data types and packages.
- Concurrent Processing — For many applications, it is important that a program be conceived of as a number of parallel, rather than serial activities. Most high-order languages provide little or no support for handling such parallel or concurrent activities. They rely on facilities of the host operating system. Ada uses tasks to allow parallel activities to be programmed directly within the language.
- Separate Compilation — Ada's separate compilation feature allows a programmer to divide a large program into compilation units that may be compiled at

different times. When a unit is compiled, the Ada program library manager records information about that unit and other related units. This feature is unlike separate compilation features in other languages where little information about separately compiled modules is maintained.

- Generic Definitions — A generic unit is a template from which specific instances can be made at compile time. In many cases, the logic of an algorithm or a set of operations is independent of the specific type of the values being manipulated. However, in a strongly typed language such as Ada, all types must be defined at compile time. Generic definitions let the user define a general algorithm or set of related operations and then create a specific instance of that algorithm or set of operations for each type to which the algorithm or operations must apply.
- Exception Handling — In many operations, especially embedded computer systems, it is critical that a system be able to recover quickly and efficiently from error conditions. Ada provides the ability to raise and handle exceptions. It includes predefined exceptions and also permits the user to define exceptions. When an exception occurs in an Ada program, normal processing is abandoned and control passes to the exception handler.

Compaq Ada Components and Special System-Related Features:

- Ada compiler that fully conforms to ANSI/MIL-STD-1815A-1983. For details see the *DEC Ada Language Reference Manual*.
- Ada program library manager that provides support for programming teams through:
  - — Program libraries that can be shared by many programmers
  - — A powerful search list model for program libraries. This permits the following:
    - * The relationships among program libraries can be changed easily.
    - * Individual programmers can establish different views of program library relationships.
  - — Automatic recompilation of obsolete compilation units
  - — The ability to share compiled Ada code either by reference or copy
- Strongly typed Compaq Ada bindings that provide interfaces for the following versions of X Window Systems™ and Motif® routines:
  - — X Window System Version 11R4 and Motif Version 1.1.3
  - — X Window System Version 11R5 and Motif Version 1.2
- Implementation of AI-00866, which permits an 8-bit character set based on ISO standard 8859/1 (commonly known as Latin-1).
- Availability of a portability command that causes a portability summary report to be included with the compilation listing file. The report indicates the use of potentially nonportable features and constructs.
- Support for the ISO Math Library packages GENERIC_PRIMITIVE_FUNCTIONS and GENERIC_ELEMENTARY_FUNCTIONS.
- Debugging capability provided through the OpenVMS Debugger. High-level, fully symbolic debugging including support for debugging tasking programs, packages and mixed Compaq Ada and non-Ada code.
- Integration with OpenVMS VAX operating system including:
  - — Conformance to the OpenVMS VAX Calling Standard, which allows Ada code to call and be called by code written in other languages, as well as to call OpenVMS system services and the OpenVMS VAX Run-Time Library
  - — The ability to call Open Record Management Services (RMS) routines directly
  - — Full access to relative and indexed file capabilities
  - — The ability to handle exceptions from non-Ada code and generate exceptions to be handled by non-Ada code
  - — The ability to handle OpenVMS asynchronous system traps (ASTs)
  - — The ability to link with shared images and use shared global sections
  - — The ability to share data with non-Ada code through global variables and psects (common blocks)
- System-dependent facilities — Different systems vary in such characteristics as the size of storage units, memory size, and the smallest and largest integer values supported. Compaq Ada provides the predefined package SYSTEM to define system-related constants and to represent system-dependent information.
- Compaq Ada provides representation clauses that allow the user to tailor the representation of data to suit a particular system. Compaq Ada provides:
  - — Length clauses that specify the amount of storage associated with a type

  - — Enumeration representation clauses that specify the internal codes for the literals of enumeration types
  - — Record representation clauses that specify the layout of a record type, such as the order, position, and size of record components
  - — Address clauses that specify required addresses in storage for objects, imported subprograms, or single entries
- Compaq Ada provides a number of pragmas (compiler directives) that allow various system-related parameters to be set and changed and control mixed-language programming.
- Comprehensive diagnostic messages with references to the *DEC Ada Language Reference Manual*. This feature is directed at helping the new Compaq Ada user.

Compaq Ada Professional Development Option for OpenVMS VAX Systems

The Compaq Ada Professional Development Option is a separately licensed option that is available with Compaq Ada on OpenVMS VAX Systems. The Compaq Ada Professional Development Option includes the following capabilities:

- Smart Recompilation — This feature can significantly reduce the number of recompilations that are needed to rebuild a Compaq Ada program after some compilation units change. Smart recompilation enables the compiler to propagate changes quickly through a system, eliminating up to 100% of the usual recompilations.
- Program Library File-Block Caching — This feature uses an in-memory cache of file blocks to minimize the actual amount of disk input-output that must be performed. As a result, the elapsed time for compilations is significantly reduced.
- Multilevel Program Library Directory Structure — This feature provides a more efficient program library directory structure to improve the performance of access to large program libraries.

The Compaq Ada Professional Development Option is designed so that it is compatible with libraries that are created without the Compaq Ada Professional Development Option and libraries created with a previous version of Compaq Ada. Once a program library is created, Compaq Ada programmers do not need to change any of their development procedures to benefit from the Compaq Ada Professional Development Option.

HARDWARE REQUIREMENTS

Processors Supported

Any VAX system that is capable of running OpenVMS VAX Version 5.5-2 and Version 6.2 or higher.

Processors Not Supported:

MicroVAX I

VAXstation I

VAXstation 8000

VAX–11/725, VAX–11/730

VAX–11/750, VAX–11/751

VAX–11/780, VAX–11/782, VAX–11/785

Processor Restrictions:

A TK50 Tape Drive is required for standalone MicroVAX 2000 and VAXstation 2000 systems.

Disk Space Requirements (Block Cluster Size = 1):

Disk space required to install Version 3.5A if Compaq Ada Version 3.4 was not previously installed:

Disk space required for installation:	115,000 blocks (54.1 Mbytes)
Disk space required for use (permanent):	80,000 blocks (39.2 Mbytes)

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

Compilation performance is highly dependent on the amount of physical memory present. At least 2 Mbytes of physical memory is recommended for each concurrent Ada compilation. A minimum working set of 1.25 Mbytes is recommended.

Memory Requirements for DECwindows Support:

The minimum supported memory for this application running in a standalone DECwindows environment with both the client and server executing on that same system is 8 Mbytes.

SOFTWARE REQUIREMENTS

Compaq Ada for OpenVMS VAX Systems

- OpenVMS VAX Operating System Version 5.5-2—7.2 (SPD 25.01.xx)

Compaq Ada Professional Development Option for OpenVMS VAX

- Compaq Ada Version 3.5A for OpenVMS VAX Systems and
- OpenVMS VAX Operating System Version 5.2-2—7.2 (SPD 25.01.xx)

SOFTWARE LICENSING

This software is furnished only under the licensing provisions of Compaq Computer Corporation's Standard Terms and Conditions. For more information about Compaq's licensing terms and policies, contact your local Compaq office.

License Management Facility Support:

This layered product supports the OpenVMS License Management Facility.

License units for this product are allocated on an Unlimited System Use plus Personal Use and Concurrent Use basis.

Each Personal Use license allows one identified individual to use the layered product. Each Concurrent Use license allows any one individual at a time to use the layered product.

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

OpenVMS Tailoring:

The following OpenVMS classes are required for use of full features of this layered product:

- OpenVMS Required Saveset
- Utilities
- Programming Support

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

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 product's Software Product Description details any special hardware required by this product.

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

OPTIONAL SOFTWARE

- DECset Version 12.3 for OpenVMS VAX Systems, which includes:
  - — DIGITAL Language-Sensitive Editor/Source Code Analyzer (LSE/SCA) Version 4.6 for OpenVMS VAX Systems
  - — DIGITAL Test Manager Version 3.9 for OpenVMS VAX Systems
  - — DIGITAL Performance and Coverage Analyzer (PCA) Version 4.6 for OpenVMS VAX Systems
  - — DIGITAL Code Management System (CMS) Version 4.0 for OpenVMS VAX Systems
  - — DIGITAL Module Management System (MMS) Version 3.3 for OpenVMS VAX Systems

For more information on DECset for OpenVMS VAX Systems, refer to the Software Product Description (SPD 27.07.xx).

- DIGITAL GKS for OpenVMS VAX Systems

For more information on Digital GKS for OpenVMS VAX Systems, refer to the Software Product Description (SPD 26.20.xx).

GROWTH CONSIDERATIONS

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

Note: A version update represents a complete distribution media replacement for the previous release of Compaq Ada. All user-developed source modules that comprise an application must be recompiled and rebuilt using only Compaq Ada software for that version update. Individual components of Compaq Ada software from the latest version update cannot be used in conjunction with components from a previous version.

DISTRIBUTION MEDIA

Nine-track Magtape, TK50 Streaming Tape

The software binaries and documentation are also available on various CD–ROM distributions:

- *OpenVMS VAX Software Layered Products Library*— This offering includes the OpenVMS VAX Layered Product software binaries. (QA–5FW8A–A8)
- *OpenVMS VAX Online Documentation Library*—This offering includes the documentation for the OpenVMS VAX Layered Products. (QA–VYR8A–G8)
- *OpenVMS VAX Software Layered Products Library Package*— This offering contains both the software binaries and documentation for the OpenVMS VAX Layered Products. (QA–5G88A–H8)

YEAR 2000 WARRANTY

This product is Year 2000 ready.

Year 2000 Ready is defined: "Year 2000 Ready" products are defined by Compaq as products capable of accurately processing, providing, and/or receiving date data from, into and between the twentieth and the twenty-first centuries, and the years 1999 and 2000, inlcuding leap year calculations, when used in accordance with the associated product documentation and provided that all hardware, firmware and software used in combination with such products properly exchange accurate date data with the products.

For additional information visit the DIGITAL Brand area on Compaq's Year 2000 Ready web site located at http://www.compaq.com/year2000/waranties3.html.

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.

ORDERING INFORMATION

Compaq Ada for OpenVMS VAX Systems

Software Licenses:
Personal Use: QL–056AA–2B
Concurrent Use: QL–056AA–3*
Unlimited System Use: QL–056A*–**
Software Media: QA–056A*–**
Software Documentation: QA–056AA-GZ
Software Product Services: QT–056A*–**

Compaq Ada Professional Development Option for OpenVMS VAX Systems

Software Licenses:
Personal Use: QL–0VQAA–2B
Concurrent Use: QL–0VQAA–3*
Unlimited System Use: QL–0VQA*–**
Read Before Installation Letter: QA–0VQAA–GZ
Software Product Services: QT–0VQA*–**

Note: The Software Documentation kit (order number QA–0VQAA–GZ) contains only the *Read Before Installation* letter and *must be ordered* (at no cost) with all licenses for Compaq Ada Professional Development Option for OpenVMS VAX Systems.

The Compaq Ada Professional Development Option for OpenVMS VAX Systems binaries are provided with the Compaq Ada binaries (QA–056A*–**). Purchase of a Compaq Ada Professional Development Option for OpenVMS VAX Systems License (QL–0VQA*–**) enables use of this capability.

* 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.

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

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