PRODUCT NAME: *HP Ada* Version 3.5A for OpenVMS Alpha Systems   SPD 45.00.09

DESCRIPTION

This Software Product Description includes the following two products:

- HP Ada Version 3.5A for OpenVMS Alpha Systems

- HP Ada Professional Development Option Version 3.5 for OpenVMS Alpha Systems

Note: HP Ada was formerly known as Compaq/DEC Ada. References to DEC Ada in product components should be construed as references to HP Ada.

HP Ada for OpenVMS Alpha is HP's validated implementation of the full ANSI/MIL-STD-1815A-1983 Ada Language. As a result of meeting the ANSI standard, HP Ada also conforms to the Federal Information Processing Standard (FIPS-119). The HP Ada compiler runs on the OpenVMS Operating System and generates optimized, shareable, and position-independent code.

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

HP Ada Components and Special System-Related Features:

- Ada compiler fully conforming 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

- HP Ada supports passive tasking and pragma PASSIVE which can significantly improve the performance of rendezvous in programs. A task rendezvous (consisting of an entry call to a passive task) is accomplished with no context switching overhead. Instead, the accept body is executed in the context of the task making the entry call.

- Strongly-typed HP Ada bindings that provide interfaces for the following versions of X Windows Toolkit and *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

- HP Ada implements AI-00866, which permits an 8-bit character set based on ISO standard 8859/1 (commonly known as Latin-1).

- Support for the ISO Math Library packages GENERIC_PRIMITIVE_FUNCTIONS and GENERIC_ELEMENTARY_FUNCTIONS.

- Support for 64-bit integers and floating point numbers.

- Debugging capability provided through the OpenVMS Debugger. High-level, fully symbolic debugging including support for debugging tasking programs, packages and mixed HP Ada and non-Ada code.

- Integration with OpenVMS Alpha Operating System including:

  — Conformance to the OpenVMS 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 Run-Time Library

  — The ability to call OpenVMS 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. Ada provides the pre-defined package SYSTEM to define system-related constants and to represent system-dependent infor-mation.

- HP Ada provides representation clauses that allow the user to tailor the representation of data to suit a particular system. HP 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, po-sition, and size of record components

  — Address clauses that specify required addresses in storage for objects, imported subprograms, or single entries

- HP Ada provides a number of pragmas (compiler di-rectives) that allow various system-related parame-ters to be set and changed and that control mixed-language programming.

- Comprehensive diagnostic messages with refer-ences to the DEC Ada Language Reference Manual. This feature is directed at helping the new HP Ada user.

HP Ada Professional Development Option for Open-VMS Alpha Systems:

The HP Ada Professional Development Option is a separately-licensed option that is available with HP Ada on OpenVMS Alpha Systems. The HP 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 HP Ada program after some compilation units change. Smart recompilation enables the com-piler 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 compi-lations is reduced significantly.

- Multilevel Program Library Directory Structure-This feature provides a more efficient program library di-rectory structure to improve the performance of ac-cess to large program libraries.

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

HARDWARE REQUIREMENTS

Processors Supported:

An Alpha system that is capable of running OpenVMS Alpha Version 6.2 or higher

Disk Space Requirements (Block Cluster Size = 1):

Disk space required for installation:	160,000 blocks (72.1 Mbytes)
Disk space required for permanent use:	80,000 blocks (41.2 Mbytes)

The installation of HP Ada V3.5A on top of (but not sav-ing) V3.4 requires:

Disk space required for installation:	120,000 blocks (51.5 Mbytes)
Disk space required for permanent use:	15,000 blocks (7.7 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.

SOFTWARE REQUIREMENTS

HP Ada for OpenVMS Alpha Systems

- OpenVMS Alpha Operating System Version 6.2—Version 8.2 (SPD 25.01.xx)

HP Ada Professional Development Option for OpenVMS Alpha requires both:

- HP Ada for OpenVMS Alpha Systems Version 3.5A

- OpenVMS Alpha Operating System Version 6.2—Version 8.2 (SPD 25.01.xx)

OPTIONAL SOFTWARE

- DECset Release 12.3 for OpenVMS Alpha Systems, which includes:

  — DIGITAL Language-Sensitive Editor/Source Code Analyzer (LSE/SCA) Version 4.6 for OpenVMS Alpha Systems

  — DIGITAL Test Manager (DTM) Version 3.9 for OpenVMS Alpha Systems

  — DIGITAL Performance and Coverage Analyzer (PCA) Version 4.6 for OpenVMS Alpha Systems

  — DIGITAL Code Management System (CMS) Version 4.0 for OpenVMS Alpha Systems

  — DIGITAL Module Management System (MMS) Version 3.3 for OpenVMS Alpha Systems

For more information on DECset Release 12.3 for OpenVMS Alpha Systems, refer to the Software Product Description (SPD 42.29.xx).

GROWTH CONSIDERATIONS

The minimum hardware and 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 Ada. All user-developed source modules that comprise an application must be recompiled and rebuilt using only HP Ada software for that version update. Individual components of HP Ada software from the latest version update cannot be used in conjunction with components from a previous version.

DISTRIBUTION MEDIA

The products described in this SPD are distributed on the OpenVMS Alpha Software Layered Products Library Package (order number QA-03XAA-H8). Online documentation only is distributed on the OpenVMS Alpha Online Documentation Library (order number QA-4KM8A-G8), and *binaries only* are distributed on the OpenVMS Alpha Software Layered Products Library (order number QA-4KL8A-A8). These CD-ROMs contain the HP Ada and HP Ada Professional Development Option software binaries and online documentation in Bookreader™ and POSTSCRIPT® format. The HP Ada documentation is also available in hard copy, which can be ordered separately (order number QA-09PAA-GZ).

SOFTWARE WARRANTY

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

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

ORDERING INFORMATION

HP Ada for OpenVMS Alpha Systems

Software Licenses:

    Personal Use: QL-056AA-2B

    Concurrent Use: QL-056AA-3*

    Unlimited System Use: QL-09PA*-**

Software Media: QA-03XAA-H8

Software Documentation: QA-09PAA-GZ

Software Product Services: QT-09PA*-**

HP Ada Professional Development Option for OpenVMS Alpha Systems

Software Licenses:

    Personal Use: QL-0VQAA-2B

    Concurrent Use: QL-0VQAA-3B

    Unlimited System Use: QL-0VRA*-**

Software Documentation: QA-0VRAA-GZ

Software Product Services: QT-0VRA*-**

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

The HP Ada Professional Development Option for OpenVMS Alpha Systems binaries are provided with the HP Ada binaries. Purchase of a HP Ada Professional Development Option for OpenVMS Alpha Systems license (QL-0V*A*-**) enables use of this capability.

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

SOFTWARE LICENSING

This software is furnished only under a license. For more information about Compaq 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 Operating System for VAX and Alpha Software Product Description (SPD 25.01.xx) or the OpenVMS Alpha Operating System documentation.

SOFTWARE PRODUCT SERVICES

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

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

TRADEMARKS

© 2003 Hewlett-Packard Development Company, L.P.

Confidential computer software. Valid license from HP and/or its subsidiaries required for possession, use, or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial license.

Neither HP nor any of its subsidiaries shall be liable for technical or editorial errors or omissions contained herein. The information in this document is provided "as is" without warranty of any kind and is subject to change without notice. The warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.

All other product names mentioned herein may be trademarks of their respective companies.