Software Product Description

PRODUCT NAME: VAX FORTRAN High-Performance Option, Version 1.2 **SPD 32.67.02**

DESCRIPTION

The VAX FORTRAN High-Performance Option (HPO) is an optional enhancement to the VAX FORTRAN compiler. HPO enables the FORTRAN compiler to automatically generate vector-processor instructions and to automatically decompose programs to improve performance on multiple-processor systems.

HPO adds a new ASSERT statement that provides additional information to the compiler about the program. The ASSERT statement can be used in some programs to achieve a high degree of vectorization and/or automatic decomposition. The ASSERT statement can optionally generate code to verify the assertions at run-time, if desired. ASSERT statements can be specified in directive form for portability and will be ignored by other compilers since they will appear as comments.

HPO also adds the INIT_DEP_FWD directive to allow vector processing for many loops that would otherwise not qualify due to unknown data dependences. As this directive may change the meaning of the program, Digital Equipment Corporation does not warrant execution results conforming to the FORTRAN standard when this directive is used.

Additional Features

- Optimized vector code generation for solving dense systems of linear equations
- The /MATH_LIBRARY qualifier to support performance optimized vector math functions
- The /CHECK=ALIGNMENT qualifier to suppress vector alignment exceptions at run-time
- The NOVECTOR directive to allow the programmer to control the presence and level of vectorization in each nest of DO-loops

HPO includes the following enhancements to VAX FORTRAN:

- Thorough dependence analysis
- Automatic transformations for vectorizing difficult constructs
- Multi-level vectorization and decomposition
- Compile-time performance analysis to choose the best vectorization and/or decomposition method
- Integration of vector and scalar optimizations
- Generation of diagnostics for vectorization inhibitors
  - — Though some vector inhibition diagnostics will display in the listing and on the termainal, the VAX Language-Sensitive Editor component of the VAX Language-Sensitive Editor/Source Code Analyzer is required to display all the vector inhibition diagnostics generated by the compiler.
- Loop summary listing for viewing optimization results

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, or VAXserver configuration as specified in the System Support Addendum (SSA 32.67.02-x).

SOFTWARE REQUIREMENTS

For Systems Using Terminals (No DECwindows Interface):

VMS Operating System
VAX FORTRAN

For Workstations Running VWS:

VMS Operating System
VMS Workstation Software
VAX FORTRAN

For Workstations Running DECwindows:

VMS Operating System (and necessary components of VMS DECwindows)
VAX FORTRAN

Refer to the System Support Addendum (SSA 32.67.02-x) for availability and required versions of prerequisite/optional software and for information regarding components of VMS DECwindows.

ORDERING INFORMATION

Software Licenses: QL-YHBA*-**
Software Media: QA-YHBA*-**
Software Documentation: QA-YHBAA-GZ
Software Product Services: QT-YHBA*-**

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