

ADVANCED VISUAL FORTRAN
COMPILERS AND LIBRARIES

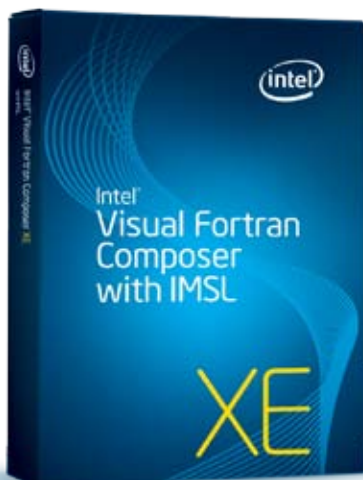


Intel® Visual Fortran Composer XE 2011 with IMSL*

For Windows*

Product Brief

Intel® Visual Fortran
Composer XE 2011 with IMSL*
For Windows*



Get High Performance with Intel® Visual Fortran Composer XE 2011 with IMSL* for Windows*

Intel® Visual Fortran Composer XE includes the latest generation of Intel Fortran compilers, Intel® Visual Fortran Compiler XE 12.0.

Intel® Visual Fortran Composer XE with IMSL* delivers advanced capabilities for development of application parallelism and winning performance for the full range of Intel® processor-based and compatible platforms. It includes the compiler's breadth of advanced optimization, multithreading, and processor support, as well as automatic processor dispatch, vectorization, and loop unrolling.

Intel Visual Fortran Composer XE with IMSL continues to feature full VAX FORTRAN* and Compaq Visual Fortran* functionality and now includes ISO Fortran 2008 features such as submodules and Co-Array Fortran. It also includes optimized math processing functions in the Intel® Math Kernel Library (Intel® MKL) and the Visual Numerics IMSL* Fortran Library, and integrates into Microsoft Visual Studio 2005*, 2008*, and 2010*.

Learn the New Names

Many tools in the Intel® Parallel Studio XE line are next-generation advancements of familiar industry-leading Intel® software development products. See below to learn more—and to help guide you during the upgrade process.

New Name	Old Name
Intel® Composer XE	Intel® Compiler Suite Professional Edition
Intel® C++ Composer XE	Intel® C++ Compiler Professional Edition
Intel® Visual Fortran Composer XE	Intel® Visual Fortran Compiler Professional Edition
Intel® Visual Fortran Composer XE with IMSL*	Intel® Visual Fortran Compiler Professional Edition with IMSL*
Intel® VTune™ Amplifier XE	Intel® VTune™ Performance Analyzer (including Intel® Thread Profiler)
Intel® Inspector XE	Intel® Thread Checker

Attention Fortran developers also using C++

Intel Composer XE for Windows includes everything above (except the Visual Numerics IMSL Fortran Library) plus the Intel® C++ Compiler, Intel® Threading Building Blocks, and Intel® Integrated Performance Primitives, making it a great package for developers who need both Fortran and C++. Take advantage of a significant price savings over purchasing individual components.

A Collection of Great Tools for Fortran Developers

Intel Visual Fortran Composer XE with IMSL

Create a solid foundation for building robust, high performance parallel code. It combines the Intel Visual Fortran compiler with the following:

Intel Math Kernel Library (Intel® MKL)

Boost application performance with a set of parallelized, highly optimized, thread-safe math functions for engineering, scientific, and financial applications requiring high performance on Intel® and compatible platforms.

IMSL Numerical Libraries for Fortran Applications

IMSL provides analytical building blocks that eliminate the need to write code from scratch. With over 1,000 algorithms, the IMSL Fortran Library is the most comprehensive math and statistics library available.

Intel® Debugger

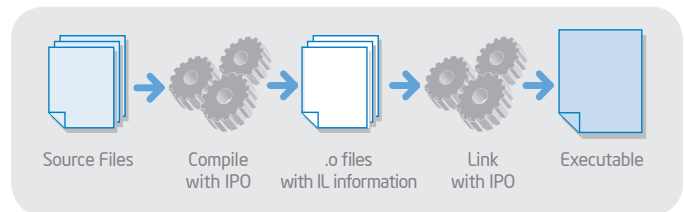
Improve the efficiency of the debugging process on code that has been optimized for Intel® Architecture by using the Intel® Debugger, which includes new threaded code debugging features.

Advanced Performance Features

Intel Visual Fortran Composer XE now includes support for co-array Fortran, providing support for single multi-cpu shared memory node. Cluster support is available in Intel(r) Cluster Studio 2011 package.. Other Fortran 2008 features include DO CONCURRENT, CONTIGUOUS, I/O enhancements, and new intrinsic functions, a set of which includes matrix multiply intrinsic that supports calls into Intel MKL. Fortran 2003 support has also been enhanced to provide complete type-bound procedures such as GENERIC and OPERATOR. Support for Fortran 2003 features such as object-orientation, type-bound procedures and operators, and C++ interoperability continue to make it easier to develop mixed-language applications. Intel Fortran interacts nicely with new C++ 0x and C99 features in the Intel® C++ Compiler. Other performance features include:

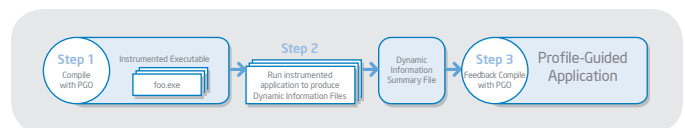
- **High Performance Parallel Optimizer (HPO)** offers an improved ability to analyze, optimize, and parallelize more loop nests. This revolutionary capability combines vectorization, parallelization, and loop transformations into a single pass that is faster, more effective, and more reliable than prior discrete phases.
- **Automatic Vectorizer** analyzes loops and determines when it is safe and effective to execute several iterations of the loop in parallel. Vectorization and auto-parallelization have been enhanced for broader applicability and improved application performance.

- **Interprocedural Optimization (IPO)** dramatically improves performance of small- or medium-sized functions that are used frequently, especially programs that contain calls within loops.



The interprocedural optimization process

- **Loop Profiler** is part of the compiler and can be used to generate low overhead loop and function profiling to show hotspots and where to introduce threads.
- **Profile-Guided Optimization (PGO)** improves application performance by reducing instruction-cache thrashing, reorganizing code layout, shrinking code size, and reducing branch mispredictions.



The profile-guided optimization process

- **OpenMP 3.0** is supported to help simplify pragma-based development of parallelism in your C/C++ applications.

More Features

Integration into Microsoft Visual Studio and the Microsoft Visual Studio 2008 Shell*

Intel Visual Fortran Composer XE integrates into Microsoft Visual Studio 2005*, 2008*, and 2010*. Also included with the product is the Visual Studio 2008 Shell* for those who do not have Microsoft Visual Studio.

Compatibility

Intel Visual Fortran Compiler is designed to work with Microsoft* development products. It provides expanded 32-bit and 64-bit multicore processor support, including enhanced Intel® Advanced Vector Extensions (Intel® AVX) support. Intel Visual Fortran Compiler supports the latest Fortran standards and continues to support established standards, such as Fortran 90, Fortran 77, and Fortran IV.

System Requirements

Please refer to www.intel.com/software/products/systemrequirements/ for details on hardware and software requirements.

Download a trial version of Intel Visual Fortran Composer XE with IMSL today.

www.intel.com/software/products/eval

Support

Every purchase of an Intel® Software Development Product includes one year of support services, which provides access to Intel® Premier Support and all product updates during that time. Intel Premier Support gives you online access to technical notes, application notes, and documentation. You can also take advantage of Intel Support Forums. The Fortran for Windows forum is located at <http://software.intel.com/en-us/forums/intel-visual-fortran-compiler-for-windows/>.

Join the community—contribute, learn or just browse!

More Information and Purchase Options

www.intel.com/software/products

Intel® Software Development Products

Intel Software Development Products help you create the fastest software possible by offering a full suite of tools:

- Intel® Parallel Studio XE 2011
- Intel® VTune™ Amplifier XE 2011 Performance Profiler
- Intel® Performance Libraries
- Intel® Inspector XE correctness analyzer
- Intel® Cluster Studio 2011—Tools for MPI development

Visit our website at www.intel.com/software/products for details about our entire line of products.

“We tried an early copy of the Intel® Visual Fortran Compiler for Windows*, and our application was built right out of the box. We noticed immediately that Intel improved compile time, and we really like the command and source compatibility with Compaq Visual Fortran*. The compiler also has strong Fortran 95 support. The new Intel Visual Fortran Compiler did all that I expected of it. It is an impressive accomplishment.”

*Dr. Stuart Campbell
ISIS Facility,
CCLRC Rutherford Appleton Laboratory*

Optimized for



Optimization Notice

Intel® Compiler includes compiler options that optimize for instruction sets that are available in both Intel® and non-Intel microprocessors (for example SIMD instruction sets), but do not optimize equally for non-Intel microprocessors. In addition, certain compiler options for Intel® Compiler are reserved for Intel microprocessors. For a detailed description of these compiler options, including the instruction sets they implicate, please refer to "Intel® Compiler User and Reference Guides > Compiler Options." Many library routines that are part of Intel® Compiler are more highly optimized for Intel microprocessors than for other microprocessors. While the compilers and libraries in Intel® Compiler offer optimizations for both Intel and Intel-compatible microprocessors, depending on the options you select, your code and other factors, you likely will get extra performance on Intel microprocessors.

While the paragraph above describes the basic optimization approach for Intel® Compiler, with respect to Intel's compilers and associated libraries as a whole, Intel® Compiler may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include Intel® Streaming SIMD Extensions 2 (Intel® SSE2), Intel® Streaming SIMD Extensions 3 (Intel® SSE3), and Supplemental Streaming SIMD Extensions 3 (Intel® SSSE3) instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimization on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors.

Intel recommends that you evaluate other compilers to determine which best meet your requirements.

