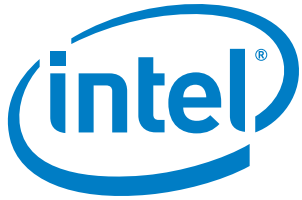


Intel® Visual Fortran Compiler Professional Edition 11.1 for Windows*

In-Depth

Contents

Intel® Visual Fortran Compiler Professional Edition 11.1 for Windows*

The features you need to create high-performance multithreaded apps for multicore systems. The product is offered in two forms:

Professional Edition includes:

- Intel® Visual Fortran Compiler for Windows for IA-32, Intel® 64, and IA-64 architectures
- Intel® Math Kernel Library
- Microsoft Visual Studio* Shell

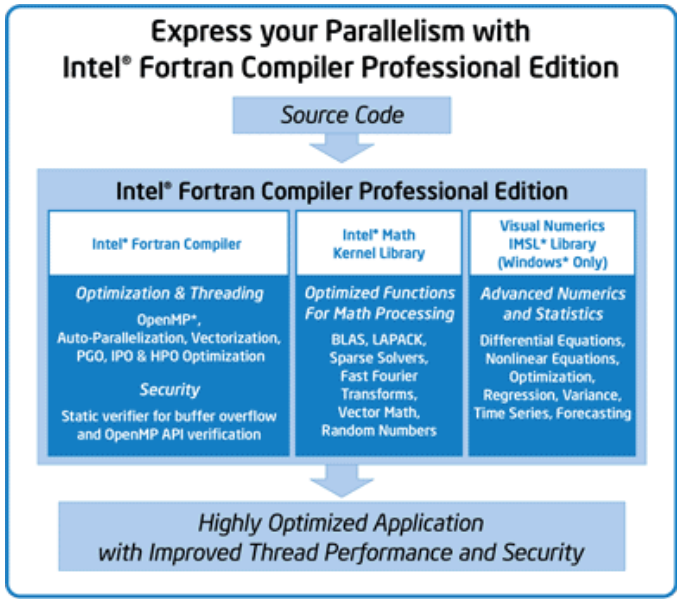
Professional Edition with IMSL* includes:

- Intel Visual Fortran Compiler for Windows for IA-32, Intel® 64, and IA-64 architectures
- Intel Math Kernel Library
- Microsoft Visual Studio Shell
- VNI's IMSL Fortran Library for Windows

Both offer a great savings over individual components.

Attention Fortran developers—Intel® Compiler Suite Professional Edition for Windows includes everything listed above plus the Intel® C++ Compiler, Intel® Threading Building Blocks, and Intel® Integrated Performance Primitives. A great package for developers who need Fortran and C++. Take advantage of a significant price savings over individual components. The suite does not include Microsoft Visual Studio* Shell.

Intel Visual Fortran Compiler Professional Edition—At A Glance



Features

- **Microsoft Visual Studio Shell** is included in commercial license purchases to provide a complete Fortran development environment for developers who do not use Visual Studio. (This is not included in evaluation or student versions. Also, some features of the full Visual Studio are not included. Please review the System Requirements, section1.2.2, note 2 for details). Already have Visual Studio 2005 or 2008? Intel Visual Fortran is compatible with it.
- **Multithreaded Application Support** including new in 11.0, OpenMP 3.0 (data- and now task-parallelism), and auto-parallelization for simple and efficient software threading.
- **Auto-vectorization** parallelizes code to utilize the Streaming SIMD Extensions (SSE) instruction set architectures (SSE, SSE2, SSE3, SSSE3, and SSE4) of our latest processors.
- **High-performance Parallel Optimizer (HPO)** restructures and optimizes loops to ensure that auto-vectorization, OpenMP, or auto-parallelization make best use of cache and memory accesses, SIMD instruction sets, and multiple cores. Compiles in a single pass, improving compile time and producing more reliable code.
- **Interprocedural Optimization (IPO)** dramatically improves performance of small- to mid-sized functions, especially in programs containing calls within loops. IPO analysis gives feedback on vulnerabilities and coding errors, such as uninitialized variables or OpenMP API issues, which cannot be detected as well by other compilers.
- **Profile-guided Optimization (PGO)** improves application performance by reducing instruction-cache thrashing, reorganizing code layout, shrinking code size, and reducing branch mispredictions.
- **Intel Math Kernel Library** includes optimized and scalable math routines for maximizing performance and seamlessly provides forward scaling from current to future many core platforms.
- **New integrated, simplified installation** gets you going with all capabilities quickly and easily. Simplified custom install makes it easy to identify just the components you want.
- **Ongoing Premier Support** now includes online community support forums to speed information flow, in addition to private, password-protected accounts. Technical support, interactive issues management, access to technical and application notes, product updates, and more with every commercial and academic license.

New in This Release

Feature	Benefit
Visual Studio* Support	Developers with Microsoft Visual Studio 2005* or 2008* can protect their investment by just plugging in Intel® Visual Fortran. For commercial licensees who don't use Visual Studio, the Professional Edition includes Microsoft Visual Studio Shell and, of course, offers command-line usage. The Microsoft Visual Studio Shell is not included in evaluation or student licenses. Please see the Release Notes for details.
VNI's IMSL* Fortran Library for Windows*	The gold standard for numerical computing, the IMSL Fortran Library for Windows provides over 1,000 mathematical and statistical algorithms covering numerical optimization, nonlinear equations, LAPACK, BLAS and more. (Please refer to the IMSL License Agreement)
Compiler and Debugger	
More Fortran 2003 Support	Additional support includes object-oriented features such as CLASS declaration, SELECT TYPE constant, inheritance association, and more. Other additions support deferred-length character entities, PUBLIC types with PRIVATE components (and vice versa), ENUMERATOR, IEEE Floating Point Exception Handling, ALLOCATE extensions, array constructor changes and more to bring your Fortran apps closer to the standard. These join C interoperability features introduced in the last release to make it easier to develop mixed-language applications.
OpenMP 3.0*	OpenMP raises the parallelism abstraction away from the API, simplifying threading and making code more portable. Previously limited to loop-based data-parallelism, the new 3.0 standard simplifies both data and task parallelism.
SSE2 enabled by default	Take advantage of new Intel Streaming SIMD Extensions—automatically—through the compiler. No messy low-level coding to get the most from Intel® processors. Resetable for other hosts/targets.
Parallel compilation	Supports your build by appropriately allocating files to available processors to take advantage of multicore processors and speed you through your edit/compile/debug cycle.
Optimization Reports	More detailed optimization diagnostics for users who want to use our advanced optimizations to help the compiler do a better job of tuning their applications. The new VTune™ Analyzer 9.1 can filter optimization reports to help guide optimization efforts.
Intel® COM Server Wizard	An update of the popular feature from Compaq* Visual Fortran that enables you to create Fortran applications that are usable from the Microsoft .NET* managed code environment.
Static Verifier	Find and analyze source file issues. Diagnostics include issues with OpenMP directives, boundary violations, memory corruptions, memory leak, buffer overflow, and uninitialized memory.

Feature	Benefit
Intel® Math Kernel Library (Intel® MKL)	
New "layered" architecture	The new architecture provides maximum support for different development environment configurations and processors in a single package.
New threading layer	Link to the version of this layer that matches your development environment and rest assured that Intel MKL will not have threading incompatibilities with the threading in your application.
Discrete Fourier Transform Interface	The DftiCopyDescriptor function has been added for convenience when using the FFTs. The size of statically linked executables calling DFTI has been reduced significantly and complex storage is now available for real-to-real transforms.
LAPACK enhancement	The capability to track and/or interrupt the progress of lengthy LAPACK computations has been added. A function called mkl_progress can be defined in a user application, which will be called regularly from a subset of the MKL LAPACK routines.
VML extensions	With performance in mind, all VML functions are now threaded. And a new "Enhance Performance" mode is offered for applications where math-function inaccuracies don't dominate parameter inaccuracies (e.g., Monte Carlo simulations and media applications).
Sparse BLAS extensions	Improvements include threaded level-3 sparse BLAS triangular solvers and support for all data types (single precision, complex and double complex).
Simplified installation	Streamlined, simplified complete installation for a seamless one-step installation of all components.
New Online Support Community	Our enhanced online community support forums and knowledge-base search capabilities help you find answers more quickly. This is in addition to private, password-protected accounts available with Premier Support. Go to the support section of the website for more information.
Processor Support	The addition of support for Intel® Atom™ processors continues to future-proof your investment with assurance of support for each successive generation of processors. That's a key advantage in a world where new hardware platforms come to market with awesome speed. For more details, see the Release Notes.

Technical Support

With the purchase of the product, you receive one year of technical support and product updates from Intel® Premier Support, our interactive and password-protected issue management and communication website. This premium support service allows you to submit questions, download product updates, and access technical notes, application notes, and other documentation. In addition, we have enhanced our user forums to provide a quick and easy first resource to help with most issues.

Compatibility

The Intel Fortran Compiler fully supports the Fortran 95 language standard, as well as the previous standards Fortran 90, Fortran 77, and Fortran IV. It also includes many features from the Fortran 2003 language standard, as well as numerous popular language extensions. For additional details about what's new in this release, please see the *Release Notes*.

System Requirements at a Glance

More specific information on installation requirements is available in the Release Notes but, at a glance, Intel Visual Fortran Compiler Professional Edition for Windows can be used on, and develop code for, Intel® processors since the Intel® Pentium® 4 processor.

Microsoft Visual Studio 2005* or 2008* is not required but recommended. For more detailed information on system requirements, go to www.intel.com/software/products/systemrequirements/

Optimization Notice

Intel® compilers, associated libraries and associated development tools may include or utilize 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 compilers, including some that are not specific to Intel micro-architecture, are reserved for Intel microprocessors. For a detailed description of Intel compiler options, including the instruction sets and specific microprocessors they implicate, please refer to the "Intel® Compiler User and Reference Guides" under "Compiler Options." Many library routines that are part of Intel® compiler products are more highly optimized for Intel microprocessors than for other microprocessors. While the compilers and libraries in Intel® compiler products 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.

Intel® compilers, associated libraries and associated development tools 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.

While Intel believes our compilers and libraries are excellent choices to assist in obtaining the best performance on Intel® and non-Intel microprocessors, Intel recommends that you evaluate other compilers and libraries to determine which best meet your requirements. We hope to win your business by striving to offer the best performance of any compiler or library; please let us know if you find we do not.

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