



Intel® Cluster Toolkit Compiler Edition 4.0 for Windows* and Linux*

In-Depth

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Intel® Cluster Toolkit Compiler Edition 4.0 for Windows* and Linux*

Intel® Cluster Toolkit Compiler Edition 4.0 for Windows* and Linux* provides an extensive software package containing Intel® C++ and Intel® Fortran Compilers for all Intel® architectures, PLUS all the Intel® Cluster Tools that help you develop, analyze, and optimize performance of parallel applications on Linux or Windows*. By combining all the compilers and tools into one license package, Intel can provide single installation, interoperability, and support for the best-in-class tools at an incredibly low package price.

Features

Bundling Compilers and Cluster Tools for Intel® IA-32, and Intel® 64 architectures, the Intel Cluster Toolkit Compiler Edition 4.0 provides Windows or Linux versions of the Intel Compilers for C++ and Fortran in addition to the Intel Cluster Tools for a software package unrivaled by any other offerings.

The Intel Cluster Toolkit Compiler Edition 4.0 license provides access and support for the following programs on either Windows or Linux:

- Intel® C++ Compiler 11.1 Update 6
- Intel® Fortran Compiler 11.1 Update 6
- Intel® MPI Library 4.0
- Intel® Trace Analyzer and Collector 8.0
- Intel® Math Kernel Library 10.2 Update 5
- Intel® MPI Benchmarks 3.2.1
- Intel® Debugger 11.1 Update 6 (except with Intel® MPI Library for Windows applications)

The latest releases of all the Cluster Tools have increased performance and ease-of use while improving interoperability, scalability, and the number of user options.

Intel Cluster Toolkit Compiler Edition 4.0 integrates your compiler of choice with the Cluster Tools, provides easy installation, and comes with extensive documentation. With a valid product serial number for the Intel Cluster Toolkit Compiler Edition, you can register and/or log on to the Intel® Software Development Products Registration Center at <https://registrationcenter.intel.com/> and download the package and updates for one year from the date of purchase. Extended support agreements are also available. See the left-side toolbar for additional support resources including community forums, compatibility, and solutions.

New in This Release

All the software tools included with Intel Cluster Toolkit Compiler Edition have undergone a major revision to give you the best parallel performance analysis tools for cluster software development.

The following list contains just a few of the many new features included in this latest version.

Intel MPI Library 4.0

- Improved performance for MPI applications
 - Optimized shared memory path for multicore platforms allows higher communication throughput and lower latencies
 - Native InfiniBand interface (OFED verbs) support for lower latencies
 - Multi-rail capability for higher bandwidth and increased inter-process communication
 - Tag Matching Interface (TMI) support for better performance on Qlogic* PSM and Myricom* MX interconnects
- Improved usability
 - Updated MPI tuner to optimize Intel MPI library options for faster applications
 - MPI 2.1 standard conformance for compatibility
 - › Dynamic process management support
 - Backward compatibility with Intel MPI 3.x based applications to support existing binaries
 - Extended feature: process fault notification to enable more robust cluster applications
 - Extended feature: scalable process startup to shorten the startup phase
 - Connectionless DAPL UD support for an improved scalability

Intel Trace Analyzer and Collector 8.0

The Intel® Trace Analyzer and Collector helps you:

- Identify optimization opportunities through:
 - Application Imbalance diagram for simplified MPI application analysis
 - Ideal Interconnect Simulator (IIS) to understand application balance
 - Custom Plug-in Framework (CPF) to simulate application behavior over different interconnects

Intel® Math Kernel Library 10.2 Update 5

Intel Math Kernel Library (Intel MKL) version 10.2 Update 5 is a minor update and offers:

- Intel® Xeon® 5500/5600/7500 optimizations, .NET/C# support, AVX support, Improved FFTs, Solvers, LINPACK
 - Optimized for new Intel® Xeon® 5500/5600/7500 processors
 - Introducing AVX support for advanced vectorization in upcoming processors
 - Support for LAPACK 3.2
 - Introduce single precision real and complex support in PARDISO (Parallel Direct and Iterative Solvers)
 - Fully integrated FFTW3 interfaces and Fortran mod files, that support standardization for FFTs.
 - More threading in BLAS levels 1 and 2
 - Outstanding performance on Intel platforms, and extremely competitive performance on AMD platforms, compared to other vendor-optimized, proprietary, and open source math libraries
 - Additional performance optimizations for several key math routines
 - LINPACK, BLAS, LAPACK, FFTs, PARDISO, and VML
 - Introducing .NET/C# support examples for calling MKL functions

Intel MPI Benchmarks 3.2.1

- Fix of the memory corruption issue for the -msglen option
- Fix for the accumulate benchmark related to using the CHECK conditional compilation macro
- Fix for integer overflow in dynamic calculations on the number of iterations
- Recipes for building IA-32 executables within Microsoft* Visual Studio* 2005 and 2008 project folders associated with the Intel® MPI Benchmarks

See the latest MPI benchmarks at: <http://www.intel.com/software/imb>

New Compiler 11.1 Update 6 Features

Performance leadership

- Most comprehensive multicore and standards support
 - More parallelism-development features, more AVX, AES and SSE support
 - OpenMP* and Auto-parallelization
 - More Fortran 2003 features
 - Built-in optimization features including high level optimization, automatic vectorizer, interprocedural optimization (IPO), profile guided optimization (PGO) and takes advantage of the latest processor capabilities (e.g., SSE4)
 - Improved integration of Intel performance libraries: Intel® Math Kernel Library
- Ongoing commitment to embrace platform innovation
 - NEW Support for new Intel® Xeon® 5500/5600/7500 and Intel® Core™ i3/i5/i7 processors
 - Continued support for earlier processors
 - Compilers and libraries support Intel and AMD processors in a single binary
 - 32-bit and 64-bit support

Additional information on the new features of each of the Intel Compilers can be found at the following link: <http://software.intel.com/en-us/intel-compilers/>

Technical Support

With the purchase of Intel® Software Development Products, you will receive one year of technical support and product updates from Intel® Premier Support, our interactive 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. For more information, visit the Intel® Software Development Products Registration Center at <https://registrationcenter.intel.com/RegCenter/Register.aspx>.

