



Intel® Cluster Toolkit 4.0 for Windows* and Linux*

In-Depth

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Intel® Cluster Toolkit 4.0 for Windows* and Linux*

Intel® Cluster Toolkit 4.0 provides exceptional value by bundling Intel® Trace Analyzer and Collector, Intel® Math Kernel Library (MKL), Intel® MPI Library, and Intel® MPI Benchmarks into a single installation package at a low software price point. This software toolkit is targeted for message passing computing on clusters running either Linux* OS or Windows*. Easy to install and easy to use, this Intel® software package helps you develop, analyze, and optimize performance of parallel applications for clusters using Intel® IA-32, Intel® Itanium®, and Intel® 64 architectures.

An Intel® Cluster Toolkit Compiler Edition 4.0 version is also available. In addition to all of the Cluster Tools, the 4.0 version of the Compiler Edition also includes the Intel® C++ Compiler 11.1 Update 6, Intel® Fortran Compiler 11.1 Update 6, and Intel® Debugger 11.1 Update 6 (the Intel Debugger is only available for Linux* OS).

Features

With support for Windows* and Linux clusters, the Intel Cluster Toolkit 4.0 Software assures industrywide compatibility *and* fully tested interoperability of these best-in-class software tools:

- **Intel MPI Library 4.0**—outstanding performance, flexibility, and ease of use
- **Intel Trace Analyzer and Collector 8.0**—the leading MPI performance analysis product in the world
- **Intel Math Kernel Library 10.2 Update 5**—the flagship of high-performance math libraries. Extensively threaded, highly optimized, core math functions, including BLAS, LAPACK, ScalAPACK, Sparse Solvers, Fast Fourier Transforms, Vector Math, and more
- **Intel MPI Benchmarks 3.2.1**—easy performance comparison of MPI functions and patterns

The latest releases of all the Cluster Tools 4.0 have increased performance and ease of use while improving interoperability, scalability, and the number of user options. In one install session, Intel Cluster Toolkit 4.0 saves time by providing a single interface for installation of multiple packages on both the head node and compute nodes. Help is available in the extensive documentation, online help, manuals, and white papers.

With a valid product serial number for the Intel Cluster Toolkit, 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. Support extensions can also be purchased. 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 have undergone a minor 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

Intel MPI Library 4.0 is faster than ever

- 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 MPI Benchmarks at: <http://www.intel.com/software/imb>

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 at <https://premier.intel.com>, our interactive issue management and communication Web site. This premium support service allows you to submit questions, download product updates, and access technical and application notes, and other documentation. For more information, visit the Intel® Registration Center at: <http://www.intel.com/software/products/registrationcenter>.

