

TOOLKIT FOR MPI DEVELOPERS ON HIGH-PERFORMANCE CLUSTERS

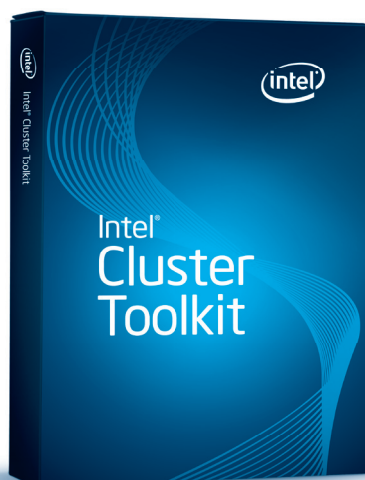
Intel® Cluster Toolkit 2011

For Linux* and Windows*

Product Brief

Intel® Cluster Toolkit 2011

For Linux* OS and Windows* OS



Increase performance and scalability of cluster computing

Intel® Cluster Toolkit 2011 provides a basic package of Intel cluster tools that help you develop, analyze, and improve performance for MPI applications on Linux* and Windows* OS based HPC clusters.

Features

Basic Tool Suite for MPI

- The Intel Cluster Toolkit license provides access and support for the following programs on either Windows or Linux:
- Intel® MPI Library 4.0 Update 1
- Intel® Trace Analyzer and Collector 8.0 Update 1
- Intel® Math Kernel Library 10.3 Update 3
- Intel® MPI Benchmarks 3.2.2

Easy Installation and Updates

With a valid product serial number for Intel Cluster Toolkit, you can register and/or login to the Intel® Software Development Products Registration Center (<https://registrationcenter.intel.com/>) and download the package and updates for one year from the date of purchase.

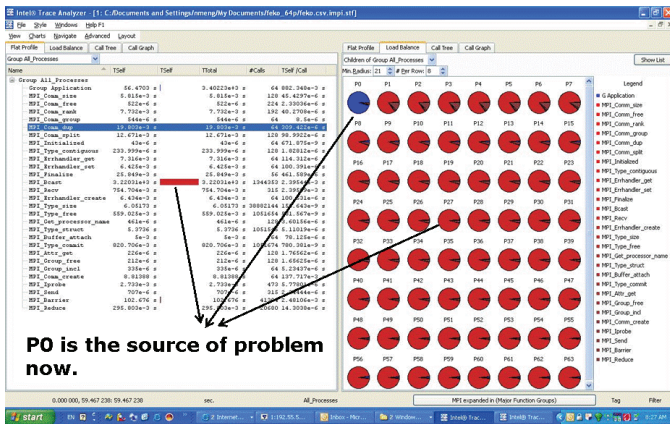
Featured Products

All the software tools included with Intel Cluster Toolkit have undergone a minor revision to give you high performance development tools and performance profiling tools for cluster software development with MPI. The following list contains just a few of the many new features included in this latest version:

Intel MPI Library 4.0 Update 1

Intel MPI Library 4.0 update 1 provides new levels of performance and flexibility for applications that execute on clusters of Intel® platforms. The library achieves these advantages by improved interconnect support, faster on-node messaging, and an application-tuning capability that adjusts to the cluster architecture and application structure. This library features multirail InfiniBand* (IB) support and enhancements to the native IB layer for lower communication latencies. In addition, the library maintains compatibility with previous Intel MPI 3.x versions,

while providing an enhanced library architecture that enables interconnect vendors and Intel® processors to better expose their future maximum performance and functionality.



Intel MPI Benchmarks 3.2.2

Intel MPI Benchmarks 3.2.2 provides:

- Support of large message buffers greater than 2 gigabytes for some MPI collective benchmarks (e.g., Allgather, Alltoall, Gather, and Scatter) so as to support large core counts
- New Intel® MPI Benchmark executable command-line options “-include/-exclude” to better control execution of the benchmarks list. Use these options to include or exclude benchmarks from the default execution list.
- New benchmarks PingPongSpecificSource and PingPingSpecificSource. The exact destination rank is used for these tests instead of MPI_ANY_SOURCE as in the PingPong and PingPing tests. These two tests are not executed by default. Use the “-include” option to enable execution of the new benchmarks.

Intel Trace Analyzer and Collector 8.0 Update 1

Intel Trace Analyzer and Collector 8.0 Update 1 is enhanced with new features that accelerate the analysis and tuning cycle of MPI-based cluster applications and enables programmers to analyze the effect of advanced interconnects on application performance. The Intel Trace Analyzer and Collector 8.0 Update 1 load imbalance diagram and the ideal interconnect simulator help MPI programmers identify further optimization opportunities.

Intel Math Kernel Library 10.3

Intel Math Kernel Library 10.3 (Intel® MKL 10.3) is a library of highly optimized, extensively threaded math routines for science, engineering, and financial applications that require maximum performance. Core math functions include BLAS, LAPACK, ScaLAPACK, Sparse Solvers, Fast Fourier Transforms, Vector Math, and more. Intel MKL version 10.3 is a revision and offers support for Intel® Advanced Vector Extensions (Intel® AVX), C extensions for LAPACK and PARDISO, Summary Statistics Library, and enhancements to several routines like DGEMM, FFTS, and RNGs.

Feature	Benefit
Support for both Linux* OS and Windows* OS platforms	Development capability with the same set of tools on both Windows* OS and Linux* OS platforms—enhanced performance, productivity, and programmability
Analysis tools for MPI developers—load imbalance diagram, ideal interconnect simulator	Enhanced developer productivity and efficiencies by simplifying and speeding the detection of errors and offering performance profiling of MPI messages
Updated performance libraries—Intel® MKL	Multicore performance for common math tasks, including a simple linking with this automatically parallel math library
Scalable Intel® MPI Library with multirail InfiniBand* (IB) support and application tuner	Scale to tens of thousands of cores with one of the most scalable and robust commercial MPI libraries in the industry. Ease of use with dynamic and configurable support across multiple cluster fabrics and multirail InfiniBand (IB) support.

Support

Every purchase of an Intel® Software Development Product includes one year of support services, which provide 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.

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Intel® Software Development Products

Intel Software Development Products help you develop high performance applications by offering a full suite of software tools:

- Intel® Cluster Studio 2011
- Intel® Parallel Studio XE 2011
- Intel® Composer XE 2011

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.

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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.

Notice revision #20101101

