



# Intel® Cluster Toolkit 3.2.1 for Windows\* and Linux\*

In-Depth

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## Intel® Cluster Toolkit 3.2.1 for Windows\* and Linux\*

Intel® Cluster Toolkit 3.2.1 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\*, or HPC Server 2008 OS. 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 3.2.1 version is also available. In addition to all of the Cluster Tools, the 3.2.1 version of the Compiler Edition also includes the Intel® C++ Compiler 11.1, Intel® Fortran Compiler 11.1, and Intel® Debugger 11.1 (the Intel Debugger is only available for Linux\* OS).

### Features

With support for Windows\* and Linux clusters, the Intel Cluster Toolkit 3.2.1 Software assures industrywide compatibility *and* fully tested interoperability of these best-in-class software tools:

- **Intel MPI Library 3.2 Update 1**—outstanding performance, flexibility, and ease of use
- **Intel Trace Analyzer and Collector 7.2 Update 1**—the leading MPI performance analysis product in the world
- **Intel Math Kernel Library 10.2**—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**—easy performance comparison of MPI functions and patterns

The latest releases of all the Cluster Tools 3.2.1 have increased performance and ease of use while improving interoperability, scalability, and the number of user options. In one install session, Intel Cluster Toolkit 3.2.1 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 (with the exception of Intel Math Kernel Library 10.2, which is 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 3.2 Update 1

- Improved performance for MPI applications
  - Intel MPI Library 3.2 Update 1 is faster than ever
  - Industry leading on low latency and high bandwidths (Linux and Windows)
  - *Windows only*: Direct inter-process memory copy for increased bandwidth
  - Improved automatic process pinning for more performance on Intel® Xeon® 5500 processor series
  - Advanced collective operations for balanced processor and network performance
  - Scalable *mpdboot* startup for faster cluster application launch
- Improved Usability
  - Latest Intel platform support (Intel Xeon 5500 processor series)
  - *Windows only*: Active Directory–based user authorization for seamless integration into the Windows environment
  - ILP64 support for legacy applications
- Extended interoperability
- Bundled with powerful C++ and Fortran Compiler v11.1 (Intel Cluster Tool Kit Compiler 3.2.1 Edition only)
- Linux Standard Base (LSB) compliant RPMs
- Application support in a wider range of Intel® Cluster Ready environments

#### Intel Trace Analyzer and Collector 7.2 Update 1

The Intel Trace Analyzer and Collector provides

- Linux Standard Base (LSB) compliant RPMs, support for Intel® Compiler Pro 11.1

## Intel® Math Kernel Library 10.2

Intel® Math Kernel Library (Intel® MKL) version 10.2 is a major revision and offers:

- Performance improvements in the BLAS (32bit and 64bit)
- Improvements in the direct sparse solver (DSS/PARDISO)
- Performance improvement on the Intel® Core™ i7 processor family
- An optimized Vector Math Library functions, and much more.
- A new capability to track the progress of a lengthy computation and/or interrupt the computation has been added via a callback function mechanism
- Additional functionality such as transposition functions, an implementation of of the boost uBLAS matrix-matrix multiplication, and many more functions have been added to 10.2

## Intel MPI Benchmarks 3.2

- Extended support for:
  - Windows HPC Server 2008
  - Microsoft\* Visual Studio 2008\*

See the MPI Benchmarks at: <http://software.intel.com/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>.

