

Product Brief

Intel® Math Kernel Library 8.1 for Windows*, Linux*, and Mac OS*

"By adopting the Intel MKL DGEMM libraries, our standard benchmarks timing improved between 43 percent and 71 percent..."

Matt Dunbar
Software Developer,
ABAQUS, Inc.

The Flagship for High-Performance Computing Math Software

Intel® Math Kernel Library (Intel® MKL) is a library of highly optimized, thread-safe math routines for science, engineering, and financial applications that require maximum performance.

The functional areas of the library include:

- Linear Algebra—BLAS and LAPACK
- Linear Algebra—ScaLAPACK (Cluster Edition only)
- Linear Algebra—Sparse Solvers
- Fast Fourier Transforms
- Vector Math Library
- Vector Random Number Generators

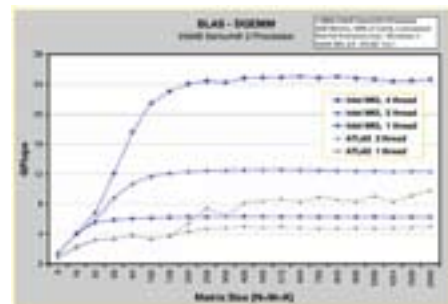
Features

Functions

BLAS and LAPACK. Intel MKL contains an implementation of BLAS and LAPACK that has been highly optimized for Intel® processors. This implementation can provide significant performance improvements over alternative implementations like ATLAS*.

ScaLAPACK. The Cluster Edition of Intel

MKL includes a highly optimized version of ScaLAPACK that is insensitive to block size and can deliver significant performance improvements over the commonly used NETLIB* implementation.

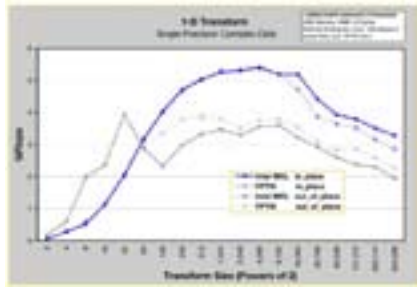


Sparse Solvers. The library includes both direct and iterative sparse solvers:

- Direct—PARDISO: A thread-safe, high-performance, memory-efficient software library for solving large sparse, symmetric, and asymmetric linear systems of equations.
- Indirect—Conjugate Gradient Solver: Can be used to solve a symmetric positive-definite system of linear algebraic equations.

Fast Fourier Transforms

Fast Fourier Transforms are highly optimized and can provide significant performance gains over alternative libraries for medium and large transform sizes.



Features:

- Outstanding multiprocessor scaling
- Modern easy-to-use interface
- Multi-dimension (1D up to 7D) and mixed radix support
- FFTW interface wrappers for current FFTW users

Vector Math Library

Intel MKL provides vector implementations of computationally intensive core mathematical functions.

These include:

- Trigonometric (e.g. Sin, Cos)
- Hyperbolic (e.g. Sinh, Tanh)
- Power (e.g. Sqrt, Cbrt)
- Error (Erf, Erfc)
- Exponential (Exp)
- Logarithmic (Ln, Log10)
- Other (Inv, Div)

Vector functions can provide substantial performance advantages over scalar implementations.

Vector Random Number Generators

The Vector Statistical Library (VSL) is a collection of random-number generators for a number of probability distributions. Applications that might significantly improve performance with VSL include simulations in physics, chemistry, and financial analysis.

Performance

Achieve outstanding performance with math libraries that are highly optimized for Intel® Itanium® 2, Intel® Xeon®, and Intel® Pentium® 4 processor-based systems—all in a single inexpensive package.

Compatibility

Intel MKL runs on a variety of workstations, servers, and personal computers running Linux*, Windows*, and Mac OS* operating systems. Please refer to www.intel.com/software/products/mkl/sysreq.htm for details on hardware and software requirements.

Support

Every purchase of Intel MKL includes one year of Intel® Premier Support and all product release updates during that time. Intel Premier Support gives you online access to technical notes, application notes, and documentation.

About Intel® Software Development Products

Intel® Software Development Products help you easily create the fastest software possible by offering a full suite of tools that include:

- Intel® Compilers
- Intel® VTune™ Performance Analyzers
- Intel® Performance Libraries
- Intel® Threading Tools
- Intel® Cluster Tools

Visit our Web site at www.intel.com/software/products for details about our entire line of products.

Download a trial version today.

www.intel.com/software/products/mkl

Performance results and views expressed are provided by the customer, and do not necessarily reflect the views of Intel. Performance depends upon the specific computer systems, components and/or measurement methods used; your results will vary. Visit www.intel.com/sites/corporate/tradmarx.htm for more information.

Intel, the Intel logo, Itanium, Pentium, Intel Centrino, Intel Xeon, Intel XScale, VTune, Celeron, Intel NetBurst, and MMX are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

*Other brands and names may be claimed as the property of others. Copyright © Intel Corporation, 2006. All rights reserved.

040406/DAM/ITF/2500 309468-001

