MATHEMATICA®
PERSONAL GRID EDITION

Personal supercomputing arrives.

With *Mathematica Personal Grid Edition* and new cost-effective quad-core computers, personal supercomputing is now a reality. *Mathematica Personal Grid Edition* eliminates the barriers to using parallelism as part of your daily workflow—with no administrative overhead and no contending for shared resources—and opens the door to new possibilities in high-performance computing. You can easily tackle larger problems and investigate parallel approaches at any stage of the problem-solving process—right at your desk and at your own convenience.

Take advantage of the world's largest algorithm collection—in one integrated system.

- Integrates thousands of algorithms for numeric and symbolic computation, discrete mathematics, statistics and data analysis, graphics, visualization, and general programming
- Automatic algorithm selection and arbitrary-precision control
- Sustained performance equal to specialized numeric libraries
- Industrial-strength string manipulation, universal database connectivity, web services support, cluster analysis capabilities, and high-speed binary data I/O

Run programs in parallel, increasing computation speed up to four times compared to a standard *Mathematica* computation.

- Combines the only high-level advanced symbolic programming language with a uniquely productive development environment for parallel applications
- Replaces thousands of lines of Fortran or other legacy code with single commands
- Optimized for all major high-performance 32-bit and 64-bit CPUs
- Machine independent—your code runs on all available platforms
- APIs for C, Java, .NET, Python, and other scripting languages

For more information, visit www.wolfram.com/personalgrid.

Application areas include:

Simulation ▪ Modeling ▪ Numeric and Algebraic Computations ▪ Visualization ▪ Large-Scale Data Analysis ▪ Cryptography

Fields of use include:

Aeronautics ▪ Astronomy ▪ Bioinformatics ▪ Chemistry ▪ Drug Research ▪ Engineering ▪ Finance ▪ Mathematics ▪ Physics ▪ Statistics

Users of Wolfram Research Parallel Technology include:

Aerospace Corp. ▪ Argonne National Laboratory ▪ Columbia University ▪ Dow Chemical ▪ Istituto Nazionale di Fisica Nucleare ▪ Kyoto University ▪ Los Alamos National Laboratory ▪ MIT ▪ NASA Langley ▪ Queen's University ▪ RAND Corporation ▪ Saint Jude Children's Research Hospital ▪ Seagate Technology ▪ Silicon Graphics ▪ Space Telescope Science Institute ▪ Thomson Multimedia ▪ University of California, Berkeley ▪ University of North Carolina ▪ University of Tokyo ▪ Yale University ▪ and many more

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Mathematica Personal Grid Edition Features

- Parallelization at the *Mathematica* language-level
- Machine independent—user code completely portable
- High-performance *MathLink*® communication protocol, optimized for all common configurations
- Efficient, adaptive load balancing
- User-programmable scheduling for problem-specific adaptation
- Automatic failure recovery and reassignment of stranded processes
- Support for tracing and debugging
- Speculative parallelization for nondeterministic problems
- Parallel applications can be simulated and tested on a PC

General *Mathematica* Features

- Over 1900 built-in functions, including the world's largest collection of advanced algorithms for numeric and symbolic computation, discrete mathematics, statistics, data analysis, graphics, visualization, and general programming
- Multi-paradigm symbolic programming language with support for procedural, functional, list-based, object-oriented, and symbolic programming constructs
- Automatic precision control and support for exact integers of arbitrary length, rationals, floating-point real and complex numbers, and arbitrary-precision real and complex numbers
- User-defined or automatic algorithm selection for optimal performance
- Fully programmable 2D and 3D visualization with over 50 built-in plot types
- High-speed numerical linear algebra with performance equal to specialized numeric libraries
- High-performance optimization and linear programming functions
- Wide-ranging support for sparse matrices
- Flexible import and export of over 70 data, image, and sparse matrix formats
- Highly optimized binary data I/O
- Industrial-strength string manipulation
- Built-in universal database connectivity
- Language bindings to C, Java, .NET, Python, and scripting languages
- All-platform support for 64-bit addressing
- Vector-based performance enhancements
- Support for multiprocessor and multicore machines on all major platforms
- *MathematicaMark*™ benchmark now covering grids and clusters
- Toolkit for creating graphical user interfaces

Operating Systems

- Windows (32- and 64-bit)
- Mac OS X (32- and 64-bit)
- Linux (32- and 64-bit)
- All common Unix systems (64-bit)

Examples of Hardware for *Mathematica Personal Grid Edition*

Workstations

- Alienware MJ-12 7550a
- Apple Power Mac G5 Quad
- Dell Precision 670 & 470
- HP xw9300
- IBM IntelliStation A Pro
- SGI Prism
- SGI Tezro

Servers

- Dell PowerEdge 2850 & 1850
- HP 9000 rp3440-4 & rp4410-4
- HP Integrity rx4640
- HP Proliant DL585 & 385
- HP Proliant DL580 & 380
- IBM eServer p5 570
- IBM eServer x366 & x346
- IBM eServer x326
- SGI Altix 350
- SGI Origin 350
- Sun Fire X4200 & X4100
- Sun Fire V490 & V480

For more information, visit www.wolfram.com/personalgrid.

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