

Grid Computing and Sun's™ x86 Systems

Sun x86 AMD Opteron™ Processor Compute Grids Bring Flexibility to Compute-Intensive Environments in Competitive Markets




Company

Advanced Micro Devices (AMD)

- The AMD Opteron™ processor powers Sun Compute Grid solutions—Delivering high-performance solutions for today's most demanding technical applications.

Key Business Needs

- Enhanced productivity—Better utilization among edge-computing resources delivers better productivity to their users.
- Optimal price/performance of IT infrastructure—Reduced IT budgets require maximum performance for the least expenditure to meet business needs.
- Competitive edge—Higher-performance compute grids mean faster access to critical business information for an edge over the competition.
- Flexibility in systems implementation—Heterogeneous operating system (OS) environments, flexibility for 32-bit and 64-bit application deployments, and scalability so that more nodes can be added to deliver more compute power.
- Faster response to computing needs—shortened deployment time with compute grid.

Business Results

- Reduced cost and complexity
- Extreme system and application performance and utilization
- Scalability by starting with a small grid and growing later
- Ability to reduce time to market for new products and services

To learn more, visit sun.com/grid

Today's business environment demands that companies maximize their computing performance to keep productivity high and costs low.

Grid Computing Makes the Most of Your Resources

Organizations that perform compute-intensive work as part of their core business operations are facing challenges to improve time to market and sustain innovation. Growing workload demands are compromising their ability to deploy sufficient IT resources, stretching the limits of their computational assets and budgets. Complex IT environments require hardware platforms that can run multiple operating systems. New 64-bit applications offer the promise of increased efficiency, while flexibility is required to run existing 32-bit applications.

To remain competitive in their respective markets, organizations must decrease the deployment time and operational costs of their IT infrastructure. For professionals involved in Financial Services, Manufacturing, Life Sciences, and Educational Research, the focus should be on getting their jobs done, getting to market faster, and initiating breakthrough discoveries that may save lives—not on how their technology needs will be met.

Financial

For financial institutions trying to compete in a complex, highly regulated, global marketplace, timely and effective risk, credit, actuarial, and portfolio analyses are essential.

Manufacturing and Design

Companies using compute-intensive applications in the Electronic, Automotive, and Aerospace industries must be fast and agile to decrease time to market, improve product quality, and gain a competitive advantage.

Life Sciences

Scientists in the Life Science market are grappling with massive amounts of data in genomics and proteomics simulations, needing computing resources to help them speed products to market.

Research

For research institutions, the processes for synthesizing and testing data are time-consuming and resource-intensive—a problem aggravated by increasing volumes of data. In addition, most research relies on collaboration and sharing data among researchers who are often spread across countries or continents.

Increasingly, success and innovation are directly linked to customers' ability to maximize their computing infrastructure. For many organizations, system inefficiencies result in numerous idle computing cycles, and jobs stall waiting to be processed. To further complicate matters, 64-bit applications can only run on specific platforms, while 32-bit applications run on the rest. What's needed is a solution that can improve the performance and efficiency of existing infrastructure, drive up utilization, and deliver a great return on investment.

Customized, Cost-Effective Grid Solutions

Grid Computing is rapidly being adopted by organizations that recognize it as the most effective way to harness idle or underused compute resources. For both compute-intensive and commercial enterprise applications, Grid Computing enables organizations to take advantage of latent compute resources to operate jobs or applications that otherwise would sit waiting to run, or be considered impossible to process.

Grid Computing allows users to map workloads to resources using a layered architecture that pools federated assets and provides a single point of access to the grid. A combination of powerful, highly available hardware and advanced software offerings helps deliver the power of network computing to cost-effective grid solutions that can help solve the toughest problems.

No two grids are alike. Flexibility is the critical factor as each grid is modeled to meet an organization's specific needs—ranging from single systems to supercomputer-class clusters utilizing thousands of processors. With Grid Computing, organizations are able to manage complex systems simply—increasing capabilities, services, and productivity while reducing cost of ownership.

Sun's Grid Computing Solutions give companies the technology necessary to consolidate resources safely, incrementally, and without disruption. In addition, Sun's proven track record of improving customer development cycles for new products and services reduces the time to project completion. With thousands of grids deployed worldwide, Sun is among the most trusted names in Grid Solutions.

Sun and AMD Combine for Industry-Leading Performance

Sun x86 systems featuring the AMD Opteron processor offer the ideal Grid Computing solution to match any organization's requirements. The low-cost, high-performance AMD Opteron processor systems deliver a variety of options to meet specific IT needs and an open architecture that helps customers leverage existing IT investments. The solution offers choice at every level, with platform support for Solaris™ or Linux. With Sun you can rely on the performance of the AMD Opteron processor while adding nodes to expand your compute grid when you need to.

Sun's x86 AMD Opteron processor systems deliver simultaneous 32-bit and 64-bit application processing, with exceptional performance at both levels for further investment protection. Sun's Solution for Grid Computing enables you to maximize performance with your initial grid, and expand the grid as your business grows. And, as with all Sun solutions, no matter what your business requirements, Sun Client Services will help you develop an end-to-end system that meets your unique needs and aligns your IT investment with your business objectives.

Compute Grid Components

Sun x86 systems provide an integrated solution stack that combines high-performing, scalable hardware platforms and a comprehensive set of enterprise-class software systems and services. The integrated stack is based entirely on open interfaces, enabling centralized management of heterogeneous, distributed systems and devices.

The components of Sun's compute grid systems can include:

- Sun Fire™ V20z or Sun Fire V40z servers with AMD Opteron processors running 32-bit and 64-bit applications,
- Sun Java™ Workstation W1100z and W2100z
- Sun Fire V20z Computer Grid Rack System
- Other SMP nodes—Large compute nodes are sometimes required in a grid in order to execute tasks that require very large amounts of memory
- A variety of fast interconnects
- High performance storage subsystem
- N1™ Grid Engine software
- Solaris or Linux operating environment
- Sun Client Services, for building customized Grid Computing systems based on customer specifications.

"This agreement will vault INEEL into a position among the world's top high-performance computing sites, and offers the ability to complete two trillion floating-point operations in a one-second heartbeat. Sun's Grid Computing cluster will provide our professionals the computing resources they need for next-generation nuclear reactor design."

—Jill Magwood, Director of Nuclear Energy, Department of Energy

Get started today. Learn more about Sun's x86 systems featuring the AMD Opteron processor by visiting sun.com/grid, or talk to your local Sun representative about scheduling a half-day session to learn more.

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