



SGI[®] Altix[®] XE Servers and Clusters:

Innovation, Reliability, and Cost
Efficiencies for Cluster Computing



Balancing Power with Practicality— A Family of Advanced Clusters from SGI

A Breakthrough Cluster Platform from SGI

SGI Altix XE Servers and Clusters bring exceptional value to customers requiring affordable and efficient high-performance computing (HPC) solutions. By combining high performing, dense cluster node architectures with custom factory integration, SGI lowers total cost of ownership and introduces unprecedented cost efficiencies for clusters. Backed by SGI's industry-leading service and support, Altix XE systems provide the ultimate in configuration flexibility and reliability. It is now easier than ever to build, deploy and operate high performance clusters, while at the same time minimizing data center consumption of space, power and cooling resources.

More than 25 years of experience building commercially robust HPC platforms uniquely positions SGI to deliver breakthrough cluster and server solutions. The SGI Altix XE family combines power and practicality—SGI technology innovations push performance to new levels, while unmatched compute density and power efficiencies drive down costs within the data center.

Leading Performance/Density Architecture

The Intel® Dual-Core and Quad-Core Xeon® processor-based architecture, combined with innovative SGI systems design, result in an advanced cluster design that delivers unprecedented compute density. This breakthrough cluster architecture makes it possible to fit two eight-core servers into a single 1U chassis, delivering superior performance and energy efficiency while achieving significant cost savings overall.

SGI® Altix® XE

The SGI Altix XE family offers leading performance density and power utilization capabilities that lower the total cost of ownership significantly. Servers and clusters are available in smaller footprints than ever before, optimizing valuable data center real estate. Consolidation efforts can achieve more in less space with less hardware, raising user productivity while extracting greater value from applications.

Breakthrough Value

With a choice of packaging options to optimally match requirements, the SGI Altix XE product family offers outstanding price/performance and low total cost of ownership. With an innovative new board design, the Altix XE1300 cluster drives customer value to a new level, with ultra-dense packaging that minimizes space and power-related expense, and reduces the cost of interconnect cabling and cards. Fewer cards and cables in turn enhance overall cluster reliability, delivering breakthrough customer value.

Factory-Integrated Solutions for Easy Deployment

To further drive down operating costs, SGI fully integrates and tests each SGI Altix XE custom system in the factory, enabling fast, easy deployment and reducing the IT installation and support burden. Each SGI Altix XE server or cluster is delivered “ready-to-go” with a complete installed and configured cluster solution stack, including cluster management, workload management and application development software. Bundled software gives customers a true plug-and-play cluster environment, enabling quick and simple application deployment. The SGI global support team and service organization both stand behind the SGI Altix XE family. Along with the peace of mind that comes with a reliable platform solution, customers receive SGI’s renowned world-class support, ensuring optimal and cost-effective management of their compute resources.



MAXIMIZE THROUGHPUT AND I/O BANDWIDTH
WITH AN ALTIX XE CLUSTER OR ADD AN
ALTIX 450/4700 SERVER WITH SCALABILITY TO
128TB OF MEMORY FOR HANDLING THE LARGEST,
MOST COMPLEX COMPUTE PROBLEMS.

Versatility and Expandability— “Future-Proof” Computing

Addressing the Challenges of Today’s Dynamic HPC Environments

Flexible packaging delivers up-front cost benefits, enabling solutions that can be tailored to specific workflow requirements and protecting investments when needs change. Whether supporting international teams of researchers or reducing production times through simulated prototypes, SGI Altix XE servers and clusters provide:

- Fully customizable configurations, with a choice of form factors, price-performance ratios, and expansion options.
- Hardware cost optimizations, with ultra-dense clusters and server nodes (up to 16 processor cores and 64GB memory per 1U form factor).
- Enterprise-class robustness, for unprecedented reliability.
- Unmatched power, space and cooling efficiencies, for low total cost of ownership.
- Optimal solutions for diverse mixed workflows, in hybrid configurations with SGI® Altix® 450/4700 or SGI® Altix® ICE systems to address the broadest range of capability and capacity compute needs.



SGI ALTIX XE ALLOWS CUSTOMERS TO DEPLOY SYSTEMS
TO ACHIEVE MAXIMUM OVERALL PRODUCTIVITY WITHOUT
ADDING COMPLEXITY OR COST.



Altix XE Flexible Packaging to Meet Diverse Needs

SGI® Altix® XE250

The SGI® Altix® XE250 system is ideal as a stand-alone server for workgroup computing or as a head node for Altix XE clusters. The extended I/O expansion, storage and redundancy options make the Altix XE250 an ideal choice to drive Altix XE clusters, with maximum performance and reliability.



SGI® Altix® XE310 and SGI® Altix® XE320

With its innovative board design, the ultra-dense SGI Altix XE310 and SGI Altix XE320 systems pack up to four Dual or Quad-core Intel® Xeon® processors and 64GB of memory into a single 1U chassis. These powerhouse systems can serve as stand-alone servers, or as compute nodes for an SGI® Altix® XE1300 cluster. The Altix XE310 and Altix XE320 systems are specifically optimized for HPC, and lead the industry in performance density, reliability, and cost efficiency.



SGI Altix XE Integrated Clusters

The SGI® Altix® XE1200 and SGI® Altix® XE1300 are customizable, factory-integrated cluster solutions that offer a choice of interconnect options and a complete cluster solution stack, including industry-leading cluster, system and workload management and developer tools. Both cluster solutions include the Altix XE250 cluster head node, Altix XE compute nodes (Altix XE250 for the Altix XE1200 clusters; Altix XE310 and Altix XE320 for Altix XE1300 clusters) and a comprehensive cluster solution stack.



Fully Integrated, Manageable Systems— “Power Up & Go” Design

SGI eliminates the complexity of large-scale server and cluster deployment, making consolidation and operational efficiencies achievable by any organization. Each factory-integrated system includes an industry-leading software stack that simplifies cluster and workload management. Combined with a choice of internal and external storage options, SGI provides a single-vendor solution, ready to deploy out-of-the-box.

SGI is an active partner in the Intel® Cluster Ready program, and SGI Altix XE is a certified Intel Cluster Ready platform. The Intel Cluster Ready Program tests system configuration for clustered systems, and includes the software tool, Intel Cluster Checker, to validate that system and application software are installed correctly for all the nodes in the cluster. With Intel Cluster Ready certification, customers are assured that their Altix XE clusters conform to key cluster standardization criteria and that ISV applications certified as Intel Cluster Ready will run trouble-free on on SGI Altix XE clusters.

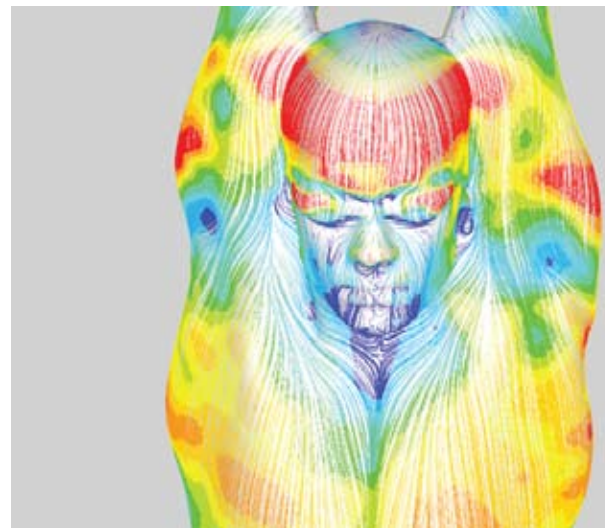
Comprehensive Solution Stack

Developed in response to the demand for cluster-computing solutions that are easy to build and manage but still offer industry-leading scalability and performance, SGI Altix XE clusters ship with a choice of SUSE® Linux Enterprise Server, Red Hat® Enterprise Linux® Server, or Microsoft® Windows® Compute Cluster 2003 (WCCS).

Altix XE Linux-based clusters are delivered with a complete cluster solution stack that includes:

- Platform™ Scali Manage—Industry-leading tool for comprehensive cluster management and monitoring.
- Intel® MPI Library Runtime Environment—The first bundled version of the Intel platform for optimizing deployments of Intel MPI-based applications, such as LS-DYNA, FLUENT, STAR-CD and PAM CRASH. Intel also provides a high-performance implementation of the MPI-2 standard customized for the SGI Altix XE platform. The Intel MPI Library is available as an option.
- Intel® Compiler Runtime Environment—The runtime environment allows any application compiled with the Intel C++ or FORTRAN compilers to run on the cluster without installation of additional software.

Image courtesy of Barry Bixler and Speedo Corp. CFD Rendering of friction and pressure drag in water.

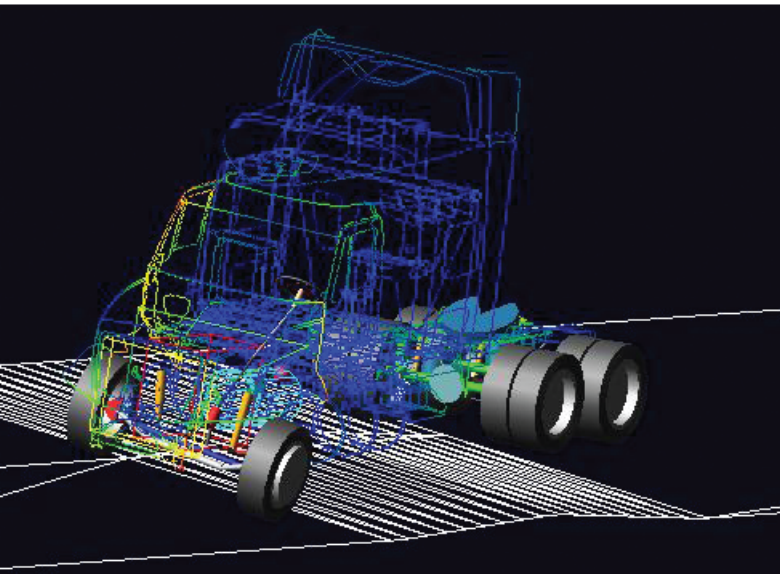


SGI® Altix® XE

Customers also have the option to include the Altair® PBS Professional™ workload manager and SGI® ProPack™ for the Linux® OS. SGI ProPack includes resource management tools and development libraries to maximize IT and developer productivity.

Altix XE WCCS-based clusters can be easily and quickly deployed using standard Windows deployment technologies, and include the Windows Server 2003 Compute Cluster Edition and the Microsoft Compute Cluster Pack—a combination of interfaces, utilities, and management infrastructure that makes up Windows Compute Cluster Server 2003. Windows Compute Cluster Server 2003 uses the existing corporate Active Directory infrastructure for security, account management, and overall operations management using tools such as Microsoft Operations Manager 2005 and Microsoft Systems Management Server 2003.

Image courtesy of International Truck and Engine Corp.



FACTORY-INTEGRATED ALTIX XE CLUSTERS

SIMPLIFY DEPLOYMENT, REDUCE

INSTALLATION COSTS, AND DELIVER

IMMEDIATE PRODUCTIVITY.

Integrated Storage

SGI servers and clusters let each workgroup choose the capacity and performance required today, while easily scaling to accommodate expansion or changed requirements in the future. Providing leading price/performance as well as the reliability required by today's applications, the SGI® InfiniteStorage product line allows customers to choose the appropriate class of distributed storage to suit their requirements. From traditional SAN to NAS and an industry leading high performance shared file system in CXFS, SGI delivers the flexibility to choose the right storage solution.

The SGI InfiniteStorage NEXIS NAS family of storage solutions offer the latest advances in scalability and ease-of-use for HPC applications. With scalable investment protection, reduced manageability costs, and high performance, NEXIS represents an ideal storage platform for SGI Altix XE cluster systems.

SGI—The Leader in High Performance Computing

SGI is known for Linux technology leadership, and as a provider of innovative HPC solutions to solve the world's most challenging compute problems. The company brings that leadership in core technology to its Altix XE cluster solutions. In addition to its deep technology experience, SGI boasts a world-class Professional Services team that specializes in building and deploying top performance cluster, capability and hybrid systems. This unique combination of advanced Altix XE technology and unmatched expertise enables SGI to deliver a cluster solution that is easy to build and deploy, with the power to meet customer needs for today — and the future. Through its dual advantages of leading-edge technology and a dedicated professional services team, SGI delivers a cluster-computing solution designed to meet HPC customer needs for flexibility, performance and reliability.



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