SGI® Altix® ICE Integrated Blade Platform

A New Era in High Performance Computing for Breakthrough Performance and Power with Unsurpassed Value

System Highlights

- Purpose-built for High Performance Computing (HPC)
- Efficient blade architecture reduces complexity, minimizes downtime, and simplifies management
- Integrated storage infrastructure, based on SGI® InfiniteStorage high performance storage product line
- Factory integrated, with SGI "Power Up & Go" design for easy deployment & immediate productivity

Designed with Performance in Mind

SGI® Altix ICE was built with High Performance Computing in mind. The SGI Altix ICE integrated blade architecture was designed from the ground up to minimize system overhead, and drive the best possible performance density for optimal use of valuable data center resources. SGI Altix ICE combines the powerful Dual- and Quad-core Intel® Xeon® Processor architecture with a unique board design that yields maximum performance density, delivering up the 512 processor cores in a single rack, and easily scaling to thousands of nodes to address the most challenging compute problems. And, with flexibility to optimize for sheer performance or price/performance, SGI Altix ICE delivers break-through value by precisely addressing customer needs - today and tomorrow.

Across the Board Efficiency with Maximum Uptime and Simplified Usage

SGI Altix ICE raises the bar for HPC value in a platform designed to drive power/cooling efficiency and advanced reliability, easily addressing the demanding requirements of today's data center. The SGI Altix ICE platform leverages SGI field-proven power and cooling technology innovations, first developed for the SGI® Altix® line of supercomputers. SGI has leveraged this and other Altix technology innovations in SGI Altix ICE, virtually eliminating cables in SGI Altix ICE blade enclosures, designing in system component redundancy for enhanced reliability. The SGI Altix ICE diskless blade architecture further enhances reliability and eliminates a critical point of system failure, while reducing power/cooling requirements and overall system cost. The result? A system with unmatched reliability, efficiency, performance, and overall value.

"Power Up & Go" with SGI Altix ICE

The SGI Altix ICE "Power Up & Go" design delivers 6 TFlops of compute power per rack for an immediate boost in processing power and productivity. An elegant design that integrates blades, switches, storage, and interconnect, makes it easy to build and manage SGI Altix ICE systems. SGI follows the same design principle of "simple and clean" on the software side, delivering SGI Altix ICE as a fully integrated system that ships with the SGI® Tempo systems management tool, supplemented by the SGI® ProPack™ library, with features to further enhance application performance and software development. SGI Altix ICE sets a new standard for simplicity and ease of use in the world of scale-out computing.

Designed with Customer Success in Mind

With a 25+ year track record as an HPC industry leader, SGI backs SGI Altix ICE with a complete range of high-performance server and storage solutions along with industry-leading professional services and support to enable customers to overcome the challenges of complex data-intensive workflows and accelerate breakthrough discoveries, innovation, and information transformation.

SGI® Altix® ICE Integrated Blade Platform

Compute Blades	Price/Performance Option	Performance Option
Processors	• Dual-Core Intel® Xeon® 5100 Series / 4MB L2 cache • Quad-Core Intel® Xeon® 5300 Series / 8MB L2 cache and Intel® Xeon® 5400 series / 12MB L2 cache	• Dual-Core Intel® Xeon® 5200 Series / 6MB L2 cache • Quad-Core Intel® Xeon® 5400 Series / 12MB L2 cache
Memory	• 8 fully buffered memory DIMM slots per blade (up to 32GB per blade) • 1GB, 2GB, and 4GB 667MHz DIMMs	• 8 fully buffered memory DIMM slots per blade (up to 32GB per blade) • 1GB, 2GB, and 4GB 800MHz DIMMs

Blade Enclosures	ICE 8200	ICE 8200LX	ICE 8200EX
Interconnect	• Two 20GB/sec IB switch blades, two planes • Hypercube topology • 16 Price/Performance blades	• Two 20GB/sec IB switch blades, one high performing plane • Hypercube or CBB Fat Tree topology • 16 Performance blades	• Four 20GB/sec IB switch blades, two high performing planes • Hypercube or CBB Fat Tree topology • 16 Performance blades
	• Dedicated Gigabit Ethernet administrative network, chassis management controller		
Power and Cooling	• 7+1 redundant 1625W 12V • DC output front-end power supplies / 7+1 redundant 175mm Blowers		

Storage	Network Attached Storage Solutions (NAS)
High-performance NFS/RDMA	• SGI® InfiniteStorage NEXIS 9000 • SGI® InfiniteStorage NEXIS 2000

Racks		
42U (30”W x 40”D) Tall Rack	• Each rack supports up to 4 blade enclosures, each with 16 2-socket blades, accomodates up to 128 sockets and 512 cores per rack	• Standard 19” racks also supported, each with up to 2 blade enclosures and 10U of extra space for storage • Cooling: Air (standard) or water (optional)

Hierarchical Management Framework (HMF)	System Administration Controller [Tier 1]	Rack Leader Controller (RLC) [Tier 2]	Chassis Management Controller (CMC) [Tier 3]
Controllers	• One per SGI Altix ICE system • Provisions out software to RLC • Pulls aggregated cluster management data from RLC	• Minimum one per rack node and via IB to two blade enclosures • Holds blade boot images • Runs fabric management software • Aggregates cluster management data for rack	• One per blade enclosures • Controls master power to all compute nodes • Monitors power and blade enclosure environment
Service nodes	• Login Service Node (Minimum one per system) • Gateway Service Node • Batch Service Node		

System Software		
Operating Systems	• SUSE® Linux Enterprise Server 10 • Red Hat® Enterprise Linux® 5 (planned 3Q08)	
Cluster Solution Stack	• Performance Optimization: SGI ProPack™ for Linux® 5 • System Management Software: Platform™ Manager (formerly known as Scali Manage)	• Job Scheduling/ Workload Management: Altair® PBS Professional™ • Fabric Manager: SGI InfiniBand Fabric Manager with OpenSM • InfiniBand Host Stack: SGI OFED 1.3

Software Development	Development Tools
Programming Languages and Debuggers • C & C++: Intel C++ Compiler, GNU GCC • Fortran: Intel Fortran Compilers (Fortran 95), GNU GCC (Fortran77) • Debuggers: Intel Debugger included with Intel compilers, GNU GDB • TotalView Debugger and MemoryScape Memory Debugger • Intel® Thread Checker	• Intel® VTune Performance Analyzer • Intel® Trace Analyzer & Collector • Interactive Supercomputing Star-P®

Libraries	
• Intel® Math Kernel Library • Intel® Integrated Performance Primitives • Intel® Threading Building Blocks • Intel® MPI Library	• Scali MPI Connect • OpenMP included with Intel compilers • SGI Message Passing Toolkit

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