Scalable Computing for
Breakthrough
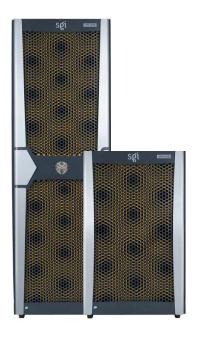Performance

SGI® Altix® ICE

Designed with Processing Efficiency in Mind

The SGI Altix ICE blade system was designed from the ground up to minimize system overhead and communication bottlenecks that can rob efficiency and scalability, especially for data intensive workflows. Altix ICE combines the powerful Intel® Xeon® processor 5600 series architecture with a unique board and interconnect design. It delivers up to 768 processor cores in a single rack, easily scaling to thousands of nodes to address the most challenging compute problems.

With the flexibility to optimize for sheer performance or price/performance, Altix ICE delivers breakthrough value by precisely addressing customer needs—today and tomorrow.

Across the Board Efficiency with Maximum Uptime and Simplified Usage

Altix ICE raises the bar for TCO value in a platform designed to drive power and cooling efficiency and advanced reliability, easily addressing the demanding requirements of today's data center. The system leverages SGI's field-proven innovation in cable reduction and power and cooling technology to virtually eliminate cables, wasted space and energy loss. This approach reduces power and cooling requirements and overall system cost. For enhanced reliability and availability, Altix ICE is based on a diskless blade design with rack-level redundant power and cooling. The result is a system with unmatched reliability, efficiency, performance and overall value.

"Power Up & Go" with Altix ICE

Altix ICE delivers 9.0 teraflops of compute power per rack for an immediate boost in processing performance and productivity. Elegantly integrating blades, switches, interconnects and storage, Altix ICE systems are easy to build and manage. Altix ICE ships with a comprehensive software stack, including the SGI® Tempo systems management tool and SGI® ProPack™ to enhance application efficiency and software development. Altix ICE sets a new standard for simplicity and ease of use in the world of scale-out computing.

Designed to Address the Growing Data Intensive Pain Point

With 25+ years of solving the worlds most data intensive computing and visualization problems, SGI imparts that DNA into the complete range of SGI high-performance server and storage solutions, along with industry-leading professional services and support. This enables customers to efficiently overcome the challenges of complex data intensive workflows and accelerate time to results.

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SGI Altix ICE

Configuration Specifications

Compute Blades	IP-83	IP-85	IP-95
Processors	• Intel® Xeon® 5200 Series • Intel® Xeon® 5400 Series	• Intel® Xeon® 5200 Series • Intel® Xeon® 5400 Series	• Intel® Xeon® 5500 Series • Intel® Xeon® 5600 Series
Memory/IO	• 8 fully buffered memory DIMM slots per blade • 1GB, 2GB, and 4GB 800MHz DIMMs • Low profile PCIE x16 networking slot	• 16 fully buffered memory DIMM slots per blade • 1GB, 2GB, and 4GB 800MHz DIMMs	• 12 DDR3 DIMM slots per blade • 2GB, 4GB, 8GB 1066MHz and 1333MHz DIMMs

Blade Enclosures	ICE 8200LX		ICE 8200EX	
Interconnect	• Two 20Gb/sec InfiniBand switch blades, one high performance plane • Standard hypercube, enhanced hypercube or fat tree topology • Dedicated Gigabit Ethernet administrative network, chassis management controller		• Four 20Gb/sec InfiniBand switch blades, two high performance planes • Standard hypercube, enhanced hypercube or fat tree topology • Dedicated Gigabit Ethernet administrative network, chassis management controller	
Power and Cooling	• 5+1 redundant 1625W 12V DC output front-end power supplies • 7+1 redundant 175mm blowers			

Storage	
High-performance IPoIB	InfiniteStorage servers and high-performance file serving solutions over InfiniBand

Racks			
42U (30"W x 40"D) Rack	• Each rack supports up to four blade enclosures, each with up to 16 dual-socket compute blades accommodating up to 128 sockets (768) cores per rack • Standard 19" racks also supported, each with up to two blade enclosures and 10U of extra space for storage • Cooling: Air (standard) or water (optional)		
Hierarchical Controller Management Framework (HMF)	Tier 1: System Administration Controller	Tier 2: Rack Leader Controller (RLC)	Tier 3: Chassis Management Controller (CMC)
Controllers	• One per 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 • Storage Service Node (may be used to satisfy login service node minimum requirement) • GPU (optional): NVIDIA® Quadro® FX 3800/4800/5800 and NVIDIA® Tesla™ C1060		

System Software		
Operating Systems	• SUSE® Linux Enterprise Server 10 • Red Hat® Enterprise Linux 5	
Cluster Solution Stack	• Optimized drivers and system monitoring: SGI Foundation Software • Optimized system and application performance: SGI ProPack™ 6 for Linux®	• Cluster management software: SGI® Tempo or Platform™ Manager • Job scheduling and workload management: Altair® PBS Professional™ • Fabric manager: SGI InfiniBand Fabric Manager with OpenSM • InfiniBand host stack: SGI OFED 1.4

Software Development		
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	• Platform MPI • OpenMP included with Intel compilers • SGI Message Passing Toolkit

intel Xeon inside
Powerful. Intelligent.

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