Scalable Computing for Breakthrough Performance

SGI® ICE 8400

KEY FEATURES

Purpose built for data-intensive computing

Integrated visualization, GP-GPUs and broad storage infrastructure options

Efficient blade architecture reduces complexity, minimizes downtime and simplifies management

Factory integrated SGI design for rapid deployment and immediate productivity

Extreme Processing Efficiency

The SGI® ICE 8400 blade system was designed to minimize system overhead and communication bottlenecks that can rob efficiency and scalability, especially for data intensive workflows. ICE 8400 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 from 32 to tens of thousands of nodes to address the most challenging compute problems.

Optimized for industry leading performance or price/performance, SGI ICE 8400 delivers breakthrough value by addressing specific customer needs.

Superior system configuration flexibility is extended to storage and visualization choices. Storage options include high performance storage over InfiniBand, local storage via service nodes (compute resource peers) and local storage on the compute blade itself. GPU accelerators and graphics can be added and scaled independently of bladed compute nodes via services nodes that are fully integrated into the system topology.

System Efficiency, Maximum Uptime and Simplified Usage

SGI ICE 8400 raises the bar for TCO value in a platform designed to drive power and cooling efficiency and advanced reliability, easily addressing demanding data center requirements. ICE 8400 leverages field-proven SGI innovation in cable reduction and power and cooling efficiency. It virtually eliminates wasted space and energy loss and minimizes external cabling. ICE 8400 is based on a diskless blade design with rack-level redundant power and cooling for enhanced reliability and availability. The result is a system with unmatched efficiency, reliability, performance and overall value.

Fully Integrated Solution

SGI ICE 8400 delivers over 10.6 teraflops of compute power per rack for an immediate boost in processing performance and productivity. Elegantly integrating blades, switches, interconnects and storage, ICE 8400 is easy to manage. ICE 8400 ships with a comprehensive software stack, including the SGI Management Suite system management tool and SGI Performance Suite to enhance application efficiency and software development. ICE 8400 sets a new standard for simplicity and ease of use in scale-out computing.

Designed to Address the Growing Data Intensive Pain Point

SGI high performance server and storage solutions, along with industry-leading professional services and support, enable customers to efficiently overcome the challenges of complex data intensive workflows and accelerate results.

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SGI® ICE 8400

Configuration Specifications

www.sgi.com/ice8400

Compute Blades	IP-101	IP-103	IP-105
Processors	• Intel® Xeon® 5500 Series • Intel® Xeon® 5600 Series	• Intel® Xeon® 5500 Series • Intel® Xeon® 5600 Series	• Intel® Xeon® 5500 Series • Intel® Xeon® 5600 Series
Memory, IO and Storage	• 12 DDR3 DIMM slots per blade • 2, 4, 8, and 16GB 1333 MT/s ECC reg. DIMMs • One single-port ConnectX-2 IB HCA	• 12 DDR3 DIMM slots per blade • 2, 4, 8, and 16GB 1333 MT/s ECC reg. DIMMs • One dual-port ConnectX-2 IB HCA	• 12 DDR3 DIMM slots per blade • 2, 4, 8, and 16GB 1333 MT/s ECC reg. DIMMs • Two single-port ConnectX-2 IB HCA • One 2.5" SATA HDD or 1.8" SSD

Blade Enclosures	8400LX	8400EX
Interconnect	• One or two 40Gb/sec InfiniBand switch blades, one high performance plane • Standard hypercube, enhanced hypercube, all-to-all or fat tree topology • Redundant dedicated GigE administrative network, chassis management controller	• Two or four 40Gb/sec InfiniBand switch blades, two high performance planes • Standard hypercube, enhanced hypercube, all-to-all or fat tree topology • Redundant dedicated GigE administrative network, chassis management controller
Power and Cooling	• 5+1 redundant 1625W 12V DC output front-end power supplies. (6+1 redundant power supplies when 130W CPU sockets are configured) • 7+1 redundant 175mm blowers	
Storage		
InfiniteStorage InfiniBand Solutions	• High performance shared file systems • IP over InfiniBand • Native InfiniBand block level access	
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)	

System Management			
Hierarchical Management Framework Controllers	Tier 1: System Administration Controller • One per SGI® ICE 8400 system • Provisions out software to RLC • Pulls aggregated cluster management data from RLC	Tier 2: Rack Leader Controller (RLC) • One per four blade enclosures • Holds blade boot images • Runs fabric management software • Aggregates cluster management data for rack	Tier 3: Chassis Management Controller • One per blade enclosure • Controls master power to all compute nodes • Monitors power and blade enclosure environment
Service Node Options	• Login Service Node • Gateway Service Node • Batch Service Node	Service nodes can be optionally configured with: • GPUs: NVIDIA® Quadro® FX 1800/3800/4800/5800, NVIDIA® Quadro® 2000/4000/5000/6000/7000, and NVIDIA® Tesla™ C/S2050, C/S/M2070, M2090 • Hard Disk Drives (SAS and/or SATA) • I/O cards (various)	

System Software		
Operating Systems	• SUSE® Linux® Enterprise Server 11 • Red Hat® Enterprise Linux 6	
Cluster Solution Stack	• SGI Foundation Software 2: optimized drivers and system monitoring • SGI Performance Suite, optimized application performance package consisting of SGI Accelerate, SGI MPI, SGI REACT and SGI UPC	• SGI Management Suite: cluster management software • Altair® PBS Professional™: job scheduling and workload management
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, Rogue Wave Software TotalView Team, Allinea DDT, Intel® Inspector XE • Performance Analysis: Intel® VTune Amplifier XE, Intel® Trace Analyzer & Collector
Libraries	• SGI MPI • Intel® Math Kernel Library • Intel® Integrated Performance Primitives	• OpenMP included with Intel compilers • Intel® Parallel Building Blocks • Intel® MPI Library

Corporate Headquarters
46600 Landing Parkway
Fremont, CA 94538
tel 510.933.8300
fax 408.321.0293
www.sgi.com

Global Sales and Support
North America +1 800.800.7441
Latin America +55 11.5185.2860
Europe +44 118.927.8000
Asia Pacific +61 2.9448.1463