

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 designed 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 to the 512 processor cores in a single rack, and easily scaling to thousands of nodes to address the most challenging compute problems.

Across the Board Efficiency with Maximum Uptime and Simplified Usage

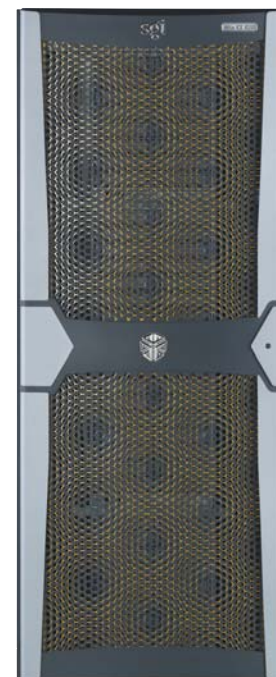
SGI Altix ICE raises the bar for HPC value in a platform designed to drive power/cooling efficiency and advanced reliability, easily addressing the demanding requirements of today’s data center. The SGI Altix ICE platform leverages SGI field-proven power and cooling technology innovations, first developed for the SGI® Altix® line of supercomputers. SGI has leveraged this and other Altix technology innovations in SGI Altix ICE, virtually eliminating cables in the SGI Altix ICE Individual Rack Unit (IRU), 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, and best overall value that delivers the benefits of scale-out clusters, but without the compromise.

“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® Conductor software solution stack and the SGI® Tempo systems management tool. SGI® Conductor includes workload management, systems management, and developer tools, 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 20+ 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

Blades

Processors

- One or two Intel Intel® Xeon® Processors
- Dual-core: Intel Xeon 5100 Series with 4MB L2 cache
 - Quad-core: Intel Xeon 5300 Series with 8MB L2 cache

Memory

- 8 fully buffered memory DIMM slots per blade
- 1GB, 2GB, and 4GB DIMMs
- Supports up to 32GB per blade

Integrated I/O

- 2 4x DDR InfiniBand ports
- 2 x 10/100/1G Ethernet ports

Individual Rack Units

Dimensions

- 10U 24" EIA form factor
- 17.5"H x 22.5"W x 32"D
- Up to 16 blades per IRU

Power supplies

- 7+1 redundant 1625W 12V DC output front-end power supplies

Fans

- 7+1 redundant 175mm Blowers

Backplane/ Interconnect

- 2 4x DDR IB switch blades (one per plane)
- Dedicated Gigabit Ethernet administrative network
- Chassis Management Controller

Racks

- 42U (30"W x 40"D)
- Each rack supports up to 4 IRUs, each with 16 1- or 2-socket blades, for up to 128 sockets and 512 cores per rack
- Standard 19" racks also supported, each with up to 2 IRUs and 10U of extra space for storage, service nodes, etc. (min. 36" deep)
- Optional chilled water-cooled doors available for large configurations

Environmental (Operating)

Temperature

- 41°F to 95°F (5°C to +35°C) at 0 – 5000 ft (0 – 1524m) • 41°F to 86°F (5°C to +30°C) at 5000 – 10000 ft (1524 – 3048m) Altitude
- 0 to 10000 ft. (0-3047m)

Humidity

- 10-90% non-condensing

Environmental (Non-operating)

Temperature

- -40°F to 140°F (-40°C to +60°C)

Humidity

- 8-95% non-condensing

Electrical and Power

Power supplies

In each IRU:

- 8 hot-swappable front-end power supplies with n+1 redundancy
- 1625W 12V DC output

Voltage

- 200-240 VAC (North America/ Japan);
- 230 VAC (International)

Restriction of Hazardous Substances (RoHS) Compliance

A system is in place to restrict the use of banned substances in accordance with the European Directive 2002/95/EC. Compliance is based on declaration that materials banned in the RoHS Directive are (1) below all applicable substance threshold limits or (2) an approved/pending RoHS exemption applies

- Quantity limit of 0.1% by mass (1000 PPM) for:
 - Lead
 - Mercury
 - Hexavalent Chromium
 - Polybrominated Biphenyls Diphenyl Ethers (PBDE)
- Quantity limit of 0.01% by mass (100 PPM) for:
 - Cadmium

Hierarchical Management Framework

System Administration

Controller [Tier 1]

- Provisions out software to RLC
- Pulls aggregated cluster management data from RLC
- One per SGI Altix ICE system

Rack Leader Controller (RLC)

[Tier 2]

- Minimum one per rack node and via IB to two IRUs
- Holds blade boot images
- Runs fabric management software
- Aggregates cluster management data for rack

Chassis Management Controller (CMC) [Tier 3]

- One per IRU
- Controls master power to all compute nodes
- Collects data from blades and holds it until requested by RLC

Baseboard Management Controller (BMC) [Tier 4]

- One per compute node
- IPMI compliant

Login Service Node

- Minimum one per system
- Provides access point for users
- Additional service and support nodes available for large configurations.

Storage

Network Attached Storage Solutions

- SGI® InfiniteStorage CUBE
- Capacity: 8 – 56TB
- Connectivity: 2 4x SDR IB Ports
- System Software: NAS Manager 3.2

System Software

Operating System

- SUSE® Linux Enterprise Server 10

SGI Conductor Software Solution Stack

- Performance Optimization: SGI ProPack™ for Linux® 5 Service Pack 2
- System Management Software: SGI Tempo System Manager (includes C3 and Ganglia) or Scali Manage
- Job Scheduling/ Workload Management: Altair® PBS Professional™
- Fabric Manager: SGI Infiniband Fabric Manager based on OFED 1.2
- Subnet Manager: SGI Subnet Manager based on OpenSM 3.0.3

Development Tools

- Programming Languages and Debuggers
 - C & C++: Intel C++ Compiler, GNU GCC
 - Fortran: Intel Fortran Compilers (Fortran 95), GNU GCC (Fortran 77)
 - Debuggers: Intel Debugger included with Intel compilers, GNU GDB
- Libraries
 - Intel Math Kernel Library Cluster Edition
 - Intel Integrated Performance Primitives
 - Intel Threading Building Blocks
 - Intel MPI Library
 - Scali MPI Connect
 - MVAPICH 0.9.9
 - OpenMP included with Intel compilers

Factory Integration

Solution comes standard with full factory integration

Warranty

3-year on-site warranty, including installation

Support and Services

SGI provides full support for hardware and systems software. SGI also offers services to implement and integrate Linux applications in your environment. For more information, please see www.sgi.com/support.



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