SGI® Altix® XE Servers and Clusters

Delivering Top Performance and Value for the Simplest to the Most Complex Workflows

System Highlights

- Dual-Core Intel® Xeon® Processors with 4MB L2 cache and 1333 MHz front size busses improve productivity through faster information access and higher processing performance
- Superior TCO with breakthrough energy efficiency (65 Watts/socket) and performance density
- Fully buffered, high performance 667 MHz memory DIMMs maximize throughput
- Up to five PCI-X and PCI Express slots provide the capability to increase I/O bandwidth for performance and productivity
- Value-priced, custom-configured, fully factory integrated clusters reduce time to deployment
- Standard 3-year NBD warranty provides a single point-of-contact to simplify access to services

Top Performance on Demanding Applications and Workflows

The SGI Altix XE servers deliver superior performance in an ultra-dense low-power package, ideally suited for configuring clusters with optimal price-performance and low total cost of ownership. In combination with the SGI Altix family of servers, the SGI Altix XE product line is part of the industry's best end-to-end offering for demanding workflow requirements. Based on Dual-Core Intel Xeon Processors, SGI Altix XE servers and clusters join Intel's high-performance processor architecture with SGI's expertise in compute- and data-intensive applications. All Altix systems support SGI® ProPack™5 for Linux® operating system, giving you all the tools you need to develop and manage high-performance computing environments.

Flexible Packaging Fits Variable Workflows

The SGI Altix XE product line is available in a choice of two packages: the SGI Altix XE210 server, an ultra-dense 1U package, and the SGI Altix XE240 server, an I/O-rich 2U package. Both support one or two dual-core processors, up to 32 GB memory, and a rich set of tightly integrated I/O and storage options. Users can easily adjust configurations to meet changing workflow requirements.

Custom-configured, Factory Integrated Clusters Provide Maximum Flexibility and Ease of Deployment

SGI Altix XE1200 clusters can be custom-configured to suit individual workflows, and are fully integrated at the factory prior to shipment. For applications with particularly demanding performance requirements, an SGI Altix 450 or 4700 server can be configured as a cluster head node, bringing industry-leading performance and resource scalability to the workflow. Clusters can be interconnected via Gigabit Ethernet or InfiniBand and support a variety of software tools including Scali Manage™, Altair PBS® Professional™, and Intel MPI and tools.

Enhanced System Software for High-performance Environments

The SGI Altix XE runs industry-standard Linux operating systems, with a choice of Novell® SUSE® Linux Enterprise Server or Red Hat® Enterprise Linux® AS or WS. In addition, the SGI Altix XE server supports SGI ProPack 5 for Linux extensions, a robust set of tools specifically designed for demanding compute- and data-intensive applications. SGI ProPack software includes resource management tools and enhanced development libraries like FFIO, which allows programmers to control specifics of I/O transfers to maximize performance. Data management tools such as CXFS™ assist users in the intelligent management of rapidly exploding volumes of data and I/O. In addition, Altix XE servers support a broad selection of development tools and applications from Intel, other third parties, and the open source Linux community.

Cost-effective and Easy to Deploy

The SGI Altix XE product family offers outstanding price-performance and low total cost of ownership. The high-density packaging supports a small footprint and reduced space and power-related costs. Clusters are factory-integrated and tested for immediate deployment and hardware and system software components are backed by SGI's award-winning customer support organization. Finally, SGI Professional Services organization brings years of industry and technical expertise to help customers develop and deploy the optimal solution for their workflow, budget, and timeline.

SGI® Altix® XE Servers and Clusters

Base System

Processors

Support for up to two Dual-Core Intel® Xeon® Processors, 5100 Series (1333MHz Front Side Bus)

- CPU clock rates/cache size

Speed	L2 Cache
3.00GHz	4.0MB
2.66GHz	4.0MB
2.33GHz	4.0MB

Memory

- Support for up to 32 GB DDR2 667 MHz FBDIMM memory
- Eight DIMM slots supporting stacked DDR2 667 MHz

FBDIMM Memory

Size	DIMMs
2GB	2 x 1GB DIMM
4GB	2 x 2GB DIMM
8GB	2 x 4GB DIMM

Integrated I/O

- 16MB ATI (ES1000) graphics
- 1 x RJ45 Serial B port on rear
- 3 x USB 2.0 port; 1 front, 2 rear
- PS/2 Keyboard & Mouse ports
- 2 x RJ45 10/100/1G Ethernet (Intel® 82563EB)

PCI Slots

1U Chassis

- 1 x PCIe x8 (low profile)
- 1 x PCI-X 133MHz (full height)

2U Chassis

- 2 x PCIe x4 (low profile)
- 3 x PCI-X 133MHz (full height)

Internal Storage

1U Chassis

Three SATA drive bays

- 3.5” SATA drive
  - 250GB, 7200 rpm
  - 500GB, 7200 rpm
- 1 x DVD-ROM drive

2U Chassis

Five SATA/SAS drive bays

- 3.5” SATA drive
  - 250GB, 7200 rpm
  - 500GB, 7200 rpm
- 3.5” SAS drive
  - 73GB, 15000 rpm
  - 146GB, 15000 rpm
- 1 x DVD-ROM drive

Cluster Interconnects

- Gigabit Ethernet and/or InfiniBand 4X
- PCI-X and PCI-Express InfiniBand HCAs

Dimensions and Weights

Modules

- 1U (1.703”H x 16.93”W x 27.25”D), 31lbs. max
- 2U (3.44”H x 16.93”W x 27.75”D), 65lbs. max

Environmental (Operating)

Temperature

- +10˚C to +35˚C, altitude 5000 MSL
- +10˚C to +30˚C, altitude 10000 MSL

Environmental (Non-operating)

Temperature

- -40˚C to +70˚C

Humidity

- 90% non-condensing @ 35˚C (@28C for 2U)

Altitude

- 40,000 MSL

Electrical and Power Supply

1U Chassis

- One 600W power supply

2U Chassis

- One 750W power supply with an optional redundant 750W power supply.

Voltage

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

Power Requirements (max)

- Short rack: 11.25 kW
- Tall rack: 18.00 kW

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

Interfaces for External Storage

- 4Gbit Fibre Channel, single and dual port HBAs
- Ultra320 SCSI, dual port HBA
- Gigabit Ethernet, dual-port adapters
- 10Gigabit Ethernet adapter

External Storage

- SGI® InfiniteStorage 120
- SGI InfiniteStorage 350
- SGI InfiniteStorage 4000
- SGI InfiniteStorage 4500
- SGI InfiniteStorage 6700
- SGI InfiniteStorage RM660
- SGI InfiniteStorage 10000
- SGI InfiniteStorage 370
- SGI InfiniteStorage 4050
- SGI InfiniteStorage 4550
- StorageTek® tape libraries
- IBM 3590, LTO-2, LTO-3
- HP® LTO-2, LTO-3
- Quantum® SDLT, SDLT220/320, SDLT600
- Sony® AIT-3, SAIT, DTF

Software

System Software

- Novell SUSE™ Linux Enterprise Server 9
- Novell SUSE™ Linux Enterprise Server 10
- Red Hat® Enterprise Linux® 4
- SGI ProPack™5 for Linux®

Software Solution Stack

Cluster Management Software

- Scali Manage

Job Scheduling/ Workload Management

- Altair® PBS Professional™

Interconnect Management

- Voltaire GridStack

Intel® System Management Software

Filesystems

- XFS™ 64-bit journaled filesystem
- CXFS™ shared filesystem for SANs
- Network File System
- Samba®

Networking

- TCP/IP, NFS V2/V3, DHCP, NIS/ONC+

Development Tools

- Programming Languages
  - C & C++: Intel C++ compiler Compiler, GNU GCC
  - Fortran: Intel Fortran compiler Compiler (Fortran95), GNU GCC supports (Fortran 77)
  - Ada: GNU GNAT, AdaCore GNAT Pro
  - Java: Java2 1.4.2, BEA® JRockit®. Java2 5 available via BEA JRockit.
- Debuggers
  - Intel Debugger (idb) included w/ Intel compilers
  - GNU gdb, Intel (idb) included w/ Intel compilers
  - Etnus TotalView® debugger with built-in memory debugger and more
  - Allinea DDT for parallel application debugging
- Libraries
  - Math Libraries: Intel Math Kernel Library, Intel Math Kernel Library Cluster Edition
  - Multimedia Libraries: Intel Integrated Performance Primitives
- Parallel Programming
  - MPI: Intel MPI, Voltaire MPI in Voltaire IBHost and Voltaire GridStack
  - OpenMP: OpenMP included w/Intel compilers
  - Cluster OpenMP: Cluster OpenMP included w/ Intel compilers
  - Intel Trace Analyzer and Collector for analyzing and optimizing parallel programs
- Performance Analysis
  - OpenISpeedShop™ performance analysis tools for HPC applications
  - Intel VTune™ Performance Analyzer for optimizing IA64 application performance

Support and Services

SGI provides 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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