SGI® Altix® 4700 Servers and Supercomputers

Revolutionary Platform Delivers New Levels of Performance and Flexibility with a Functional Blade Design

System Highlights

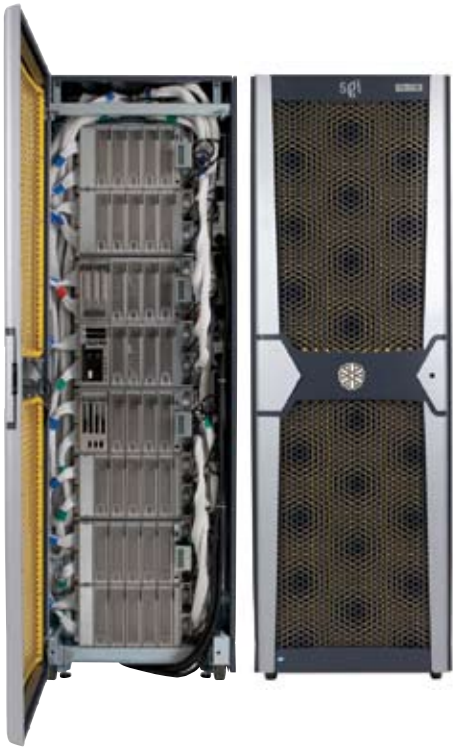
- Unique modular blade design for superior performance density and 'plug and solve' flexibility
- Designed for future upgrade, expansion and integration of next-generation technologies
- Scalable system size for simplified programming, administration and sustained performance
- Standards-based platform reduces cost while delivering uncompromised performance on Linux®

Modular Blade Design for Superior Performance Density and 'Plug and Solve' Flexibility

SGI® Altix® 4700 platform is comprised of modular blades - interchangeable compute, memory, I/O and special purpose blades for 'plug and solve' configuration flexibility. The innovative blade-to-NUMAlink™ architecture enables users to mix and match a variety of standardized blade choices, for perfect system right-sizing. The compact blade packaging of the Altix 4700 rack also provides excellent performance density, delivering one teraflop per tall rack. SGI Altix 4700 is offered with two alternate compute blades; one optimized for maximum performance with top memory bandwidth and another optimized for cost-effective compute density.

Designed for Future Upgrade, Expansion and Integration of Next-Generation Technologies

SGI Altix 4700 supports dual-core Intel® Itanium® 2 Series 9000 cpus and offers easy upgrade or expansion of memory, I/O or other capabilities. This flexible growth path makes it possible for customers to adjust system configurations to meet current and changing requirements easily and cost-effectively; minimum risk for maximum productivity. Altix 4700 also integrates SGI's Peer I/O technology which enables high-speed access to SGI's large shared memory for all system components. Through peer I/O, SGI Altix 4700 is the first SGI platform designed to support new computing paradigms, such as reconfigurable computing, that will take over where Moore's Law leaves off.



Scalable System Size for Simplified Programming, Easy Administration and Sustained Performance

SGI Altix 4700 platform incorporates the shared-memory NUMAflex™ architecture, which simplifies software development, workload management and system administration. It supports up to 512* sockets or 1024 cores under one instance of Linux and as much as 128TB of globally addressable memory. Supporting these powerful capabilities is the NUMAlink interconnect, which leads the industry in bandwidth and latency for superior performance on cluster applications. The SGI Altix 4700 server represents a versatile solution for shared or distributed memory applications of any scale.

Standards-Based Platform Reduces Cost While Delivering Uncompromised Performance on Linux® Operating System

Like its predecessors, the SGI Altix 4700 platform has been designed specifically for technical users based on industry standard CPUs, memory and I/O. This infrastructure is supported by a complete HPC solution stack running on industry standard Linux® operating systems with the choice of Novell® SUSE® LINUX Enterprise Server or Red Hat® Enterprise Linux® Advanced Server operating systems. SGI® ProPack™ software provides the tools and enabling applications to optimize performance for Altix systems.

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Compute Blades

Bandwidth Configuration

One processor socket per blade

- Up to 39* Intel Itanium® 2 Processor sockets per rack
- Dual Core Intel Itanium 2 Series 9000 1.6GHz, 8,18 or 24MB, 533MHz FSB
- Single Core Madison 9M Itanium 2 cpu's available
- 12 DIMM slots per blade
- 512MB, 1GB, 2GB or 4GB DIMMs

Density Configuration

Two processor sockets per blade

- Up to 78* Intel Itanium 2 Processor sockets per rack
- Dual Core Intel Itanium 2 series 9000: 1.4GHz/ 12MB, 1.6GHz, 8, 18 or 24MB/533MHz FSB
- Same features and memory options as above

Memory-only Blade

- Adds to shared memory without cost of cpu and associated software licenses
- Same memory options as compute blades

I/O Blades

Base I/O Blade

- Minimum of One Base I/O blade required for every Linux instance/partition
- Up to two hard drives - 300GB SAS
- Two low profile PCI-X slots
- Supports 2D graphics card (details below)
- Supports HW RAID 0,1
- One 4X SAS port, one DVD R/W, two Gigabit Ethernet, and four USB connectors
- Double blade width - for use in blade slot 1 only

PCI-X Expansion Blade - 3 slot

- Three full 64-bit/133 MHz 3.3V PCI-X slot, hot plug capable
- Double blade width, for use in blade slots 1 only

PCI-X Expansion Blade - 2 slot

- Two full 64-bit/133 MHz 3.3V PCI-X slot hot-plug capable
- Single blade width

PCI-Express I/O Blade - 2 slot

- Two full PCI-Express slots
- Supports 2 standard height PCIe cards at 16X speeds.
- Supports 3D graphics card options (details below)
- Single blade width

PCI-X + PCI-Express I/O Blade - 4 slot

- Two 64-bit/133 MHz 3.3V PCI-X slots
- Two full 16x PCI-Express Slots
- Double blade width - for use in blade slot 1 only

Graphics Cards

- 2D Card: ATI™ FireMV 2200 PCI Low Profile, Max analog resolution 2048 x 1536, 64MB memory
- 3D Card: ATI FireGL V7350 PCI-E, Max digital resolution 3840 x 2400, 1GB memory
- SUSE Linux Enterprise Server only

SGI® RASC™ Blade

- Two high performance Xilinx Virtex 4 LX200 FPGA chips with 160K logic cells
- 10 QDR SRAM DIMMs per blade
- Two SGI® NUMAlink ports
- SUSE Linux Enterprise Server only

External Storage Options

JBOD

- SGI® InfiniteStorage 120

RAID

- SGI® InfiniteStorage 4000, 4500, 6700, 10000

NAS and SAN Solutions

- SGI® InfiniteStorage 2000, 3000

Tape and Libraries - Many Options Available

Software

Operating System

- SUSE Linux Enterprise Server
- Red Hat Enterprise Linux Advanced Server

Optional Host Storage Software

- XVM, XVM Ple, XVM Snapshot, XFS®, CXFS™, DMF, InfiniteStorage Resource Manager

Networking

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

Software Development Tools

Compilers

- Intel C++ and Fortran Compilers for Linux
- GNU Compiler for C and Fortran 77

Libraries

- SGI Message Passing Toolkit (MPT)
- Intel MPI and Math Kernel Libraries
- SGI Flexible File Input/Output (FFIO)
- Intel Integrated Performance Primitives (Intel IPP)

Debuggers

- Intel Debugger
- Etnus® TotalView®
- GNU GDB
- Allinea Software Distributed Debugging Tool (DDT)

Analysis Tools

- Intel VTune™ Performance Analyzer
- Intel Trace Analyzer and Intel Trace Collector
- SGI Performance Co-Pilot™

Parallelization Tools

- MPI: SGI MPT, Intel MPI Library
- OpenMP: OpenMP included w/Intel compilers
- Parallel Software Products ParaWise

Open Source Development Tools

- Linuxapps, Freshmeat

FPGA Software Development Tool

- SGI's FPGA-aware gdb
- HLL tools: Mitrionics MitrionC, Celoxica Handel-C and DK Design Suite

Threading Tools

- Intel Thread Checker
- Intel Threading Building Blocks

Dimensions and Weight

Individual Rack Unit (IRU)

- Supports up to 10 blade slots
- 10U (17.38"H x 17.5"W x 32.5"D)
- Maximum weight: 263 Lbs (119kg)

Standard Rack

- Four IRU per rack
- 42U (79.5"H x 25.8"W x 45.0"D)
- Maximum weight: 1450 lbs (668kg)
- Lockable front and rear

Environmental (Non-Operating)

Temperature

- -40C to +60C (-40F to +140F)

Humidity

- 8% to 95%, non-condensing

Other

- Complies with the EU ROHS regulation for elimination of toxic substances

Environmental (Operating)

Temperature

- 5C to +35C(41F to 95F),0-5000ft (0-1524m) MSL
  5C to +30C(41F to 86F),5000-10,000ft (1524-3048m) MSL

Humidity

- 5% to 90%, non-condensing
- Maximum humidity gradient 10% per hour

Electrical and Power

- Hot plug, redundant power
- 200 to 240 VAC, 50/60 Hz, single phase
- Up to four 30 amp circuits per rack
- 21.02 kVA/20.60 kW peak per fully configured rack
- 20.60 kW/70.29 kBTU peak per fully configured rack

Support and Services

SGI offers full support for Altix 4700 hardware and system software. SGI also offers services to implement and integrate Linux applications in your environment. For more information, please contact your SGI representative.

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* RedHat Enterprise Linux Advanced Server 4 support is limited to 64 cpu cores and 256 GB of memory.
RedHat Enterprise Linux Advanced Server 5 support is limited to 64 sockets and 256 GB of memory

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