Revolutionary Mid-range Server Delivers New Levels of Performance, Efficiency and Flexibility with a Modular Blade Design

SGI® Altix® 450

SYSTEM HIGHLIGHTS

Scalable blade design for excellent performance density and 'plug and solve' flexibility

Delivers industry-leading power efficiency—best sustained flops per watt

Designed for future upgrade and expansion

Scalable system size for simplified programming, administration and sustained performance

Standards-based platform reduces cost while delivering uncompromised performance on Linux

Innovative Modular Blade Design for Excellent Performance Density and 'Plug and Solve' Flexibility

SGI® Altix® 450 servers are configured from 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 nine standardized blade choices, for perfect system right-sizing. The compact blade packaging of the Altix 450 rack also provides excellent performance density—up to half a teraflop per half rack—as well as industry-leading power efficiency.

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

SGI Altix 450 supports Dual-Core Intel® Itanium® Processors, 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 450 also features peer-connectivity for all components which enables high-speed access to SGI's large shared memory.

Scalable System Size for Simplifi ed Programming, Easy Administration and Sustained Performance

SGI Altix 450 incorporates the shared-memory NUMAflex™ architecture, which simplifies software development, workload management and system administration. It supports up to 38 sockets* (76 cores) under one instance of Linux and up to 864 GB 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 450 represents a versatile solution for shared or distributed memory applications.

Standards-based Platform Reduces Cost While Delivering Uncompromised Performance on Linux

SGI Altix 450 servers have been designed specifically for demanding users based on industry standard cpu's, memory and I/O. This infrastructure is supported by a complete 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 4 operating systems. SGI® ProPack™ software provides the tools and enabling software to optimize performance for Altix systems.

SGI® Altix® 450

Configuration Specifications

www.sgi.com/servers

Compute Blades: Density Configuration

Two processor sockets per blade
- Dual-Core Intel® Itanium® Series 9000 1.67GHz, 8, 18 or 24MB/667MHz FSB
- 8 DIMM slots per blade: 1GB, 2GB or 4GB DIMMs
- Up to 38 sockets per short rack
- Up to two 38 socket

Memory-only Blade

- Adds to shared memory without cost of cpu and associated software licenses
- 12 DIMM slots per

I/O Blades

Base I/O Blade
- Minimum of One Base I/O blade required for every SSI/partition
- Up to two hard drives - mix or match 300GB SAS or 500GB SATA2 hard drives
- 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 (100MHz if both slots populated), 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 Profi le, 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

SGI® RC100 RASC™ Blade

- Two high performance Xilinx Virtex 4 LX200 FGPA chips with 160K logic cells
- 10 QDR SRAM DIMMs per blade
- SUSE Linux Enterprise Server

Altix 450 Individual Rack Unit (IRU)

- IRU Chassis supports up to 5 blade slots including 1 double-width
- 2 Power Supplies, hot plug redundant
- 4 NUMA ports
- Product available as IRU-only (no rack) option
- 4 IRUs per short rack, 8 IRUs per tall rack

Interfaces for Networking and External Storage

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

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 SGI® ProPack™ on SUSE® Linux Enterprise 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
- 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

Software Development Tools (cont)

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

Altix 450 Individual Rack Unit (IRU)
- 5U (8.75"H x 17.5"W x 32.5"D)
- Maximum weight 115 lbs (53kg)

Standard Tall Rack
- Eight A450 IRU per rack
- 42U (79.5"H x 25.8"W x 43.5"D)
- Maximum weight: 1450 lbs (668kg)
- Lockable Front and Rear

Standard Short Rack
- Four A450 IRU per rack
- 20U (41.8"H x 25.8"W x 40.9"D)
- Maximum weight: 750 lbs (346kg)

Environmental (Non-Operating)

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

Humidity
- 8% to 95%, non-condensing

Other
Complies with the EU ROHS regulation

Environmental (Operating)

Temperature
- 5C to +35C (41F to 95F), 0-5000ft (0-1524m)MSL
- 5C to +30C (41F to 86F), 5000-10000fy (1524-3048m) MSL

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

Electrical and Power

Power supply
- Hot plug, redundant power

Voltage
- 200 to 240 VAC, 50/60 Hz, Single Phase
- Up to four 30 amp circuits per rack
- 110V available in IRU-only confi g.

Power requirements
- 21.02 kVA/20.60kW peak/max confi gured tall rack
- 10.5kVA/10.3KW peak/max confi gured short rack

Support and Services

SGI offers full support for Altix 450 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.

* RedHat Enterprise Linux Advanced Server 4 support is limited to 128 cpu cores and 1TB of memory. RedHat Enterprise Linux Advanced Server 5 support is limited to 128 sockets and 1TB GB of memory.

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