The High-Performance System to run RPro™ and ParallelR™ for Computational Statistics

SGI® Altix® 450 Mid-Range Server

Top Performance, Flexibility and Investment Protection

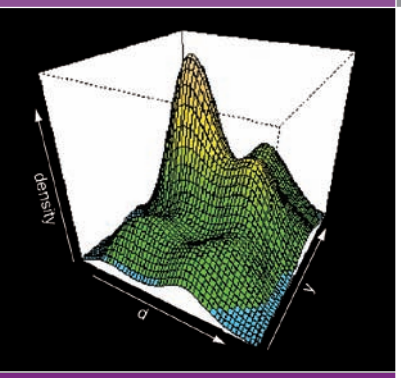
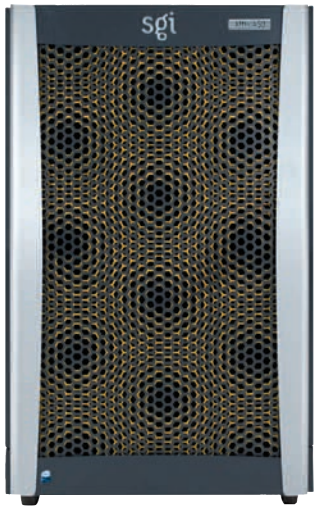


Image courtesy of the R Graph Gallery.



The SGI® Altix® 450 mid-range server is the ideal high-performance system to run your most demanding computational applications. With industry leading performance on critical applications including RPro™ and ParallelR™ from REvolution Computing, this compact yet powerful computer uses an innovative modular blade design that allows you to pack up to half a teraflop in a short rack, and NUMAlink™ interconnect technology which leads the industry in bandwidth and latency.

Drive your results faster with your own 16-core SGI Altix 450 server based on dual-core Intel® Itanium® 2 processors (1.6GHz/8M), 500GB SATA2 HDD, and 32GB of global shared memory

- The powerful combination of Intel Itanium 2 processors and the Linux® OS (Novell® SUSE® LINUX Enterprise Server or Red Hat® Enterprise Linux®)
- Turbo-charged application performance with SGI® ProPack™ for Novell SUSE Linux Enterprise Server
- 1 Year of SGI warranty support
- "Plug and Solve" configuration flexibility with interchangeable compute, memory, I/O and special purpose blades for perfect system right-sizing
- A system that can keep up with your needs: support for up to 38 sockets (76 cores) under one instance of Linux and up to 864GB of global shared memory
- *Special Offer: Receive up to US$2000 List Price credit per socket of Altix 450 purchased with trade-in of qualifying systems
- RPro and ParallelR software available separately from REvolution Computing: www.revolution-computing.com

SGI® Altix® 450 Servers

COMPUTE BLADES: DENSITY CONFIGURATION

Two processor sockets per blade

- Dual Core Intel Itanium 2 Processor 9000 Series
  - 1.6GHz/18MB, 1.6GHz/8MB, 1.4GHz/12MB cache
  - Upgradeable to code-name Montvale
- 12 DIMMs slots per blade
- 512MB, 1GB, 2GB, or 4GB DIMMs
- Up to 38 sockets per short rack*
- Up to two 38 cpu socket single system image machines (76 sockets total) per tall rack

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

COMPUTE BLADES: BANDWIDTH CONFIGURATION

One processor socket per blade

- Dual Core Intel Itanium 2 Processor 9000 Series
  - 1.6GHz/24MB cache, 1.6GHz/18MB cache
- 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 blade

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 slots 1 only

PCI-X Expansion Blade – 3 slot

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

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-port and dual-port optical HBAs
- Ultra320 SCSI, dual-port HBA
- Gig-e dual-port adapters
- 10Gigabit Ethernet, optical adapter

SOFTWARE

Operating System

- SUSE Linux Enterprise Server
- SGI® ProPack™ on 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, Libraries, Debuggers, Analysis Tools, Parallelization Tools, Open Source Development Tools, FPGA Software Development Tools, Threading Tools
- For more details, see the SGI® Altix® 450 Datasheet

SUPPORT AND SERVICES

SGI offers full support for Altix 450 hardware and system software. SGI offers services to implement and integrate Linux applications in your environment. SGI also offers SGI ESP (Embedded Support Partner), a set of tools and facilities that provides an effective, reliable, proactive, and automated environment for achieving levels of high availability. For more information, please contact your SGI representative.

REvolution Computing High Performance Statistical Solutions

AND NOW RPRO™

REvolution Computing augments the open source version of R with additional features to yield RPro, an enterprise-class commercially supported statistical analysis system suitable for deployment in professional, commercial, and regulated environments.

Basic features

- Wide variety of statistical (linear and nonlinear modeling, classical statistical tests, time-series analysis, classification, clustering) and graphical techniques.

- Award-winning S language
- Advanced development tools
- Excellent development and documentation tools
- Huge library of user-contributed add-on packages
- Large pool of users and developers

Performance

- Optimized binaries of R and supported packages
- Performance-tuned math libraries
- Support for multiple-CPU and multiple-core systems

ParallelR™

ParallelR allows many calculations and/or data to be automatically distributed across multiple processors, permitting dramatic speed-up in time to completion of large computational tasks, or alternatively, permits calculations to be dramatically increased in size, length, or complexity. This enables effective analysis of large datasets (including those in bioinformatics, genetics, genomics, and other scientific fields) and utilization of advanced methods (including MCMC, resampling methods, and exact methods) that are otherwise impractical or very time consuming. As such, it enables high-value research that has been previously out of reach.

Basic features: simple model, simple API, robust

- Key concept “Global Shared Namespace” is easy to understand
- Single central server is easy to install and administer
- High level interface allows a two line change to parallelize many existing codes
- Only five key commands make it easy to construct advanced systems
- Default ‘blocking queue’ behavior makes proper synchronization natural without additional constructs
- Anonymous workers prevents errors due to “bookkeeping” problems
- Fault-resilient execution ensures computation does not fail even if individual workers fail
- Automatically supports a variable and dynamic number of workers

Performance

- Parallel/distributed computing libraries

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