SGI® Altix® 350 Server

A scalable mid-range server based on the 64-bit Linux® operating system

System Highlights

- Offers Best-in-class price and performance
- Flexible growth path with modular "expand-on-demand" architecture for processor, memory, and I/O scaling
- Provides supercomputing capabilities of Altix® 3000, scaled for the mid-range
- Enables powerful solutions for technical database and traditional cluster applications
- Open standards-based platform fits easily into mixed HPC environments

A Linux alternative to the proprietary SMP mid-range

Best-in-class price/performance

With Altix 350, SGI delivers production-ready, scalable 64-bit Linux to mid-range customers and developers. For technical users seeking supercomputing-class performance in a cost-effective, scalable platform, Altix 350 offers leading price/performance and "expand on demand" flexibility in an industry-standard architecture. This 64-bit powerhouse delivers more real-world performance than any other mid-range system, and provides breakthrough capabilities for technical database and traditional cluster applications. Unlike its proprietary competitors, Altix 350 is an industry-standard solution based on Intel processors and a robust, scalable Linux operating environment.

Expand on demand—the industry's most flexible growth path

The Altix 350 server's modular architecture supports the configuration of processors, memory, and I/O independently. Altix 350 scales up to 32 processors and 384GB of memory, while traditional cluster node vendors provide this level of scalability using two, three or even four different boxes. The Altix 350 server's flexible "expand on demand" capability allows users to deploy optimal performance for their budgets, and to cost-effectively adjust their configurations as requirements shift.

Supercomputing architecture for the mid-range

The Altix 350 server incorporates the same high-performance shared-memory NUMAflex™ architecure implemented in the award-winning Altix 3000 series, scaled for cost-effective mid-range technical computing. Its large shared-memory node size efficiently handles complex problems without wasted communication overhead, and its world-leading 6.4GB/second interconnect helps maximize throughput. Altix 350 runs certified SUSE® Linux® Enterprise Server 9 or 10 with SGI ProPack™ 4 or 5, respectively. Altix 350 also runs certified Red Hat® Enterprise Linux® v.4, a standard Linux environment fully optimized for superior data handling, system administration, and resource management. Certification with Red Hat® Linux v.5 is planned.

Enables powerful solutions

The Altix 350 server offers a unique combination of leading price/performance, configuration flexibility, and superior I/O capabilities, making it ideal for demanding technical applications. With its high bandwidth and large shared-memory capabilities, Altix 350 provides outstanding performance on popular database codes. Configured as a uniquely scalable cluster node, the Altix 350 server's high-throughput architecture helps scientists and engineers increase productivity and reduce time-to-solution. When clustered using commercial interconnects, its larger node size drives higher throughput along with significantly lower infrastructure and administration costs.

Standards-based computing

Based on Intel® Itanium® 2 processors and a choice of standard Linux distributions, Altix 350 fits easily into mixed High Performance Computing (HPC) environments. Users can take advantage of the wealth of 64-bit Linux applications available in the commercial and open-source communities. In addition, the system includes a complete suite of system, resource, and data management tools designed to optimize HPC applications. SGI is unique in providing direct support for the Altix 350 server's hardware and system software; and SGI's Professional Services organization is available to assist in analyzing workflows and implementing optimal solutions.

SGI® Altix® 350 Server

Base System

Processors

Up to 32 Intel Itanium 2 CPUs

- Base Compute Module: 1, 2 processors
- Expansion Modules: 0, 1, 2 processors
- CPU clock rates/cache size

Speed	L3 Cache
1.6 GHz	9.0MB
1.6 GHz	6.0MB
1.5 GHz	4.0MB

Memory

Up to 384GB

- Base Compute Module: 2-24GB
- Expansion Modules: 0-24GB

Memory sets

Size	DIMMs
2GB	4 x 512MB DIMM
4GB	4 x 1GB DIMM
8GB	4 x 2GB DIMM

PCI I/O

Up to 32 PCI/PCI-X slots

- 2 PCI buses, full-size 64-bit/133 MHz 3.3V PCI/PCI-X slots (Base & CMPX only)
- Base Compute Module: 4 slots (3 available)
- Expansion Module: (CMPX only) 4 slots

Internal Storage

Up to 4.7TB (SCSI) or 5.1TB (SATA) disk storage

- Base Compute Module
  - 2 x 160MB/sec Ultra160 SCSI channels (one internal, one external) with IO/9 card
  - 2 x 3.5" fixed media hot-pluggable drive bays
  - 1 or 2 SCSI or SATA hard drives 36GB (15K RPM) or 146GB (10K RPM) SCSI and 80GB (7200 RPM) or 160GB (7200 RPM) SATA
  - 1 DVD-ROM drive
- Expansion: add 1-15 additional Base Compute Modules

Cluster Interconnects

- Gigabit Ethernet, Voltaire (InfiniBand™), Quadrics

Module Definition

The system can be expanded by adding the following modules, up to a total of 8 modules, including the initial Base Compute Module.

Base Compute Module

- 2U module with 1 or 2 processors, 2-24GB memory, and base I/O & storage as described under Base System

CPU Expansion Module

- 2U module with 1 or 2 processors and 2-24GB memory

CMPX Expansion Module

- 2U module with 0-2 processors, 0-24GB memory, and 4 PCI-X slots

Router Module

- 2U router with 8 NUMAlink 4 ports

External Storage Options

HBA interfaces

- 2Gb Fibre Channel, 200MB/sec peak bandwidth, optical
- Ultra160 SCSI, 160MB/sec peak bandwidth
- Gigabit Ethernet copper and optical

JBOD

- SGI® InfiniteStorage TP900 (Ultra160 SCSI) (2Gb Fibre Channel)

RAID

- SGI® InfiniteStorage TP9300 (2Gb Fibre Channel)
- SGI® InfiniteStorage TP9300S (Serial ATA)
- SGI® InfiniteStorage TP9500 (2Gb Fibre Channel)
- SGI® InfiniteStorage TP9500S (Serial ATA)

Data servers

- SGI® InfiniteStorage NAS 2000 (Gigabit Ethernet)
- SGI® InfiniteStorage NAS 3000 (Gigabit Ethernet)
- SGI® InfiniteStorage SAN 2000 (2Gb Fibre Channel)
- SGI® InfiniteStorage SAN 3000 (2Gb Fibre Channel)

Tape and libraries

- StorageTek® L20, L40, L80, L180, L700e, L5500, 9310, T9840B, T9840B/C, T9940B; ADIC® Scalar® 24, Scalar® 100, Scalar® 1000, and Scalar® 10000; IBM® 3560, 3590, LTO Gen1/Gen2; Seagate® LTO gen1; HP® LTO gen2; Quantum® SDLT220/320; Sony® AIT-3, SAIT

Dimensions and Weights

Modules

- 2U (3.44"H x 17.06"W x 26"D)

Short rack

- 17U (36.06"H x 25.41"W x 41.83"D)
- Maximum weight: 610 lbs
- 19-inch EIA standard with lockable front and rear doors

Tall rack

- 39U (75.82"H x 23.62"W x 41.25"D)
- Maximum weight: 1547 lbs
- 19-inch EIA standard with lockable front and rear doors

Environmental (Operating)

Temperature

- +5C to +35C, altitude 5000 MSL
- +5C to +30C, altitude 10000 MSL

Environmental (Non-operating)

Temperature

- -40C to +60C

Humidity

- 10% to 95% noncondensing

Altitude

- 40,000 MSL

Electrical and Power

Power supply

- One standard 500W power supply per module. Each module can be outfitted with an optional redundant 500W power supply.

Voltage

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

Power requirements (max)

- Short rack: 3.36 kW
- Tall rack: 7.20 kW

Software

System software

- SUSE Linux Enterprise Server 9 with SGI ProPack™ 4; SUSE Linux Enterprise Server 10, with SGI ProPack™ 5 (includes XFS® 64-bit journaled filesystem, Performance Co-Pilot™, Data Migration Facility [DMF], Tape Management Facility [TMF])
- Red Hat Enterprise Linux v.4 or v.5*. SGI ProPack available with Red Hat Enterprise Linux v.5 only.

Filesystems

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

Networking

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

Available server software

- CXFS™ shared filesystem

Compilers

- Intel Itanium Processor Family compilers: C/C++, Fortran
- GNU compilers: C, Fortran 77

Tools

- Libraries: MPT, Array Services, CPU sets, SCSL, FFIO, and Intel® Math Kernel Library
- Debuggers: Etnus TotalView®, Intel® idb, GNU gdb (with Fortran extensions)
- Performance analysis: Intel® Vtune®, Intel® Pallas Vampir and Vampirtrace, SGI® Histx
- System analysis: pfmon and Performance Co-Pilot

Support and Services

SGI provides full support for Altix 350 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*.

*Red Hat Enterprise Linux v.4 is certified for SGI systems at 32 CPU cores and 128GB memory
Red Hat Enterprise Linux v.5 planned certification for SGI systems at 32 CPU cores and 128GB memory

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