SGI® Altix® 1330 Cluster

SGI® Altix® Performance, Scalability and Flexibility in an Affordable, Fully Integrated Cluster Solution

System Highlights

- Industry leading SGI® Altix® performance and flexibility in a competitively priced Intel® Itanium® 2 cluster
- Factory integrated cluster that is easy to deploy and administer
- Leverages both large node capability and cluster capacity to efficiently handle a diverse, multi-job workload for shortened time to solution
- Based on open system standards and built with industry standard components for lowest risk and maximum investment protection

Industry Leading SGI® Altix® Performance and Flexibility in a Competitively Priced Intel® Itanium® 2 Cluster

Based on the SGI Altix 330 server, the Altix 1330 cluster provides customers with a cost-effective, scalable cluster solution. Using SGI NUMAflex™ architecture, SGI Altix 1330 nodes can scale from one to 16 Intel® Itanium® 2 Processors and up to 128GB of shared memory, all under one instance of the Linux® operating system. This large node size means that customers spend less on software licensing costs and interconnect fabric, with fewer nodes to connect, manage and provision. Customers can easily extend their Altix 1330 cluster with enhanced I/O capacity by adding PCI-X expansion modules, which enable them to address the requirements of I/O-intensive applications without having to buy additional processors or memory. SGI Altix clusters are unique in their ability to support multiple InfiniBand Host Channel Adapters (HCA) per compute node, with up to eight InfiniBand HCAs on each compute node for added bandwidth, performance, and flexibility in scale-out configurations.

Fully Integrated Cluster Solution That Is Easy to Deploy and Administer

The Altix 1330 cluster is a complete cluster solution that is easy to deploy and administer, with the flexibility to address changing business requirements by scaling up and/or out as needed. The Altix 1330 cluster solution includes highly scalable Altix 330 server nodes and Voltaire InfiniBand, Quadrics® or Gigabit Ethernet interconnect fabric. The Altix 1330 software solution stack includes the industry leading Scali Manage™ or open source Platform Rocks cluster management software, Platform LSF software to manage and accelerate batch workload processing for compute-and data-intensive applications, and VoltaireVision™ software for monitoring interconnect fabric status. The solution stack also includes SGI® InfiniteStorage hardware and software, for data access and management across heterogeneous data sources.

Leverages Both Large Node Capability and Cluster Capacity to Efficiently Handle a Diverse, Multi-job Workload for Shortened Time to Solution

The Altix 1330 cluster delivers large node capability plus cluster capacity, to efficiently handle a diverse workload and significantly enhance productivity. Each Altix 1330 compute node can scale to 16 processors and 128GB of memory and easily accommodates large jobs and model sizes, eliminating the need to decompose complex models or parallelize code in order to process large jobs. With native 64-bit addressing and increased available memory for optimized HPC applications, the Altix 1330 cluster significantly decreases execution time, resulting in shortened time-to-solution for complex problems. In addition, the Altix 1330 cluster's large I/O capability supports up to 13 PCI-X slots per node (with available I/O expansion module), more peripherals, and more devices for enhanced multi-job I/O throughput capacity.

Based on Open System Standards and Built with Industry Standard Components for Lowest Risk and Maximum Investment Protection

Based on Intel Itanium 2 Processors as well as industry standard memory modules and interconnects, the Altix 1330 cluster fits easily into mixed HPC environments. The Altix 1330 is a 100% Linux platform, and supports Novell® SUSE® LINUX Enterprise Server 9 and Red Hat® Enterprise Linux® Advanced Server, with the option of turbo-charging HPC applications with SGI ProPack™ software. Users can take advantage of the wealth of 64-bit Linux applications available in the commercial and open-source communities, along with a complete suite of SGI-supplied system, resource, and data management tools tuned for HPC applications.

SGI Altix 1330 Cluster

Altix 1330 Cluster Server Node - SGI Altix 330 Server

Processors

- Up to 16 Intel Itanium 2 CPUs per node
- CPU clock rates/cache size

Speed	L3 Cache
1.6GHz	6.0MB
1.5GHz	4.0MB
1.3GHz	3.0MB (2 CPU max. per node)

Memory

- Up to 128GB per node
- Memory sets

Kits	DIMMs
2GB	4 x 512MB
4GB	4 x 1GB
8GB	4 x 2GB

I/O Ports

- Up to eight full-size 64-bit/133 MHz 3.3V PCI-X slot per node in a 16 processor configuration and 13 PCI-X slots in a 14 processor configuration (when using a PA-brick I/O expansion model)
- 16 Gigabit Ethernet ports
- 16 USB 2.0 ports
- Eight external SAS/SATA2 ports
- Eight USB L1 system management ports

Internal Storage

Up to 4TB (SATA2) or 2.3TB (SAS) disk storage per node

- Up to 16 SATA2 250GB/7200 RPM hard drives
- Up to 16 SAS 146GB/15K RPM hard drives
- One DVD-ROM drive per node

InfiniBand Host Channel Adapters

Up to 8 Host Channel Adapters (HCAs) per node

Maximum # of HCAs (per node)	Minimum Node Size (P)	Maximum # of HCAs (Factory –Integrated Cluster)	Maximum # of Nodes (Hybrid Cluster
1	2	24	100
2	4	24	100
4	8	24	100
8	16	24	100

High Speed Interconnect

Gigabit Ethernet

- 24 port Gigabit Ethernet switches
- Base I/O Gigabit Ethernet ports
- PCI-X Dual port Gigabit Ethernet network interface cards

Voltaire InfiniBand™ 4x (HCA 400)

- 24 port, fully non-blocking, internally managed, 1U InfiniBand Switch with redundant power supply
- PCI-X InifiniBand 4x Host Channel Adapters
- InfiniBand 4x cables: 2m, 3m, 5m, 7m, 10m, 15m[1]
- Additional custom options (available with custom integration)[1]
  - 96 & 288 port modular chassis Switch Router
  - InfiniBand to Fiber Channel Router
  - InfiniBand to IP Router

Quadrics (available with custom integration)

- QM500 PCI-X Network adapter
- QS8A 8 port QsNetII switch
- QS5A 64 port QsNetII switch

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, Serial ATA)
- SGI® InfiniteStorage TP9700 (4GB Fibre Channel/ Serial ATA)

Data Servers

- SGI® InfiniteStorage NAS 330 (Gigabit Ethernet)
- 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)
- SGI® InfiniteStorage DLM Server (2GB Fibre Channel)

Tape and Libraries

StorageTek® SL500, L700e, SL8500, T9840C, T9940B; ADIC® Scalar® 24, Scalar® 100, Scalar® 1000, and Scalar® 10000; IBM 3590, LTO Gen2; HP® LTO gen2 and gen3; Quantum® SDLT, SDLT220/320; Sony® AIT-3, SAIT, DTF

Software

Operating System

- SUSE LINUX Enterprise Server 9
- SUSE LINUX Enterprise Server 9 with SGI ProPack 4
- Red Hat Enterprise Linux Advanced Server 4[2]

Software Solution Stack

Cluster Management Software

- Scali Manage
- Platform Rocks[1]

Job Scheduling/Workload Management

- Platform LSF

Interconnect Management

- VoltaireVision Management Software

Management Console

- SGI console™

Message Passing Interface (MPI)

- SGI Message Passing Toolkit (MPT)
- MVAPICH

Optional Host Storage Software

- XVM
- XVM Plex
- XVM Snapshot
- XFS®
- CXFS™
- DMF
- InfiniteStorage Resource Manager

Networking

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

Compilers

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

Tools

Libraries

- SGI Message Passing Toolkit (MPT)
- SGI Scientific Computing Software Library (SCSL)
- SGI Flexible File Input/Output (FFIO)
- Intel Math Kernel Library (Intel MKL)
- Intel Integrated Performance Primitives (Intel IPP)

Debuggers

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

Performance and Application Analysis Tools

- Intel VTune™ Performance Analyzer
- Intel Trace Analyzer and Intel Trace Collector
- SGI Performance Co-Pilot™
- SGI pfmon and profile.pl
- SGI Histx

Automated Parallelization Tools

- Parallel Software Products ParaWise

Open Source Development Tools

- Linuxapps, Freshmeat.

Packaging

Modules:

- 1U (1.7"H x 17.50"W x 31.75"D (w/ Bezel))
- Weight 31 lbs

Short rack:

- 17U (36.06"H x 25.38"W x 40.63"D)
- Maximum weight: 610 lbs
- 19-inch EIA standard

Tall rack:

- 39U (75.82"H x 23.62"W x 41.25"D)
- Maximum weight: 1547 lbs
- 19-inch EIA standard

Support and Services

SGI offers full support for the Altix 1330 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.

[1] Available with custom integration through SGI Professional Services

[2] Available with InfiniBand December 2005

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