SGI UV 2000: Big Brain for No-Limit Computing

The Powerful In-memory Supercomputer for Compute-Intensive Workloads

Key Features

Scales up to 256 sockets and 64TB of coherent shared memory

SMP System utilizes industry-standard Intel® Xeon® v2 processors and Linux® O/S

Builds on 20 years of in-memory computing expertise

Solve the Most Demanding Compute-Intensive Problems

Part of the SGI UV server line for high performance in-memory computing, SGI UV 2000 is an advanced symmetric multiprocessing (SMP) system designed for compute-intensive, fast algorithm workloads such as CAE, genome assembly, and scientific simulations.

SGI UV 2000 scales to truly extraordinary levels—up to 256 CPU sockets and 64TB of cache-coherent shared memory in a single system. Enabling such powerful in-memory computing capability is 6th generation SGI NUMAlink® ASIC technology, providing extreme bandwidth, low latency network interconnects. Equipped with an integrated MPI Offload Engine, UV 2000 can also be leveraged for distributed applications and as a "super node" for clustered high performance computing (HPC) systems.

Single System Simplicity with Extreme Scalability

The SGI UV 2000 features a modular chassis design that enables users to grow their system without adding complexity. A 10U chassis contains up to 16 sockets coupled with an All-to-All NUMAlink network topology. By adding additional chassis (up to four per standard 19" rack) and using an Enhanced Hypercube topology, UV 2000 can scale up to 256 sockets and 4,096 threads, all operating as a single system. It's like running a giant workstation with lightning speed and maximum investment protection.

Flexible, Open, Energy Efficient

SGI UV 2000 is designed with optimum flexibility. Featuring Intel® Xeon® E5-4600 v2 processors with eight DIMMs per socket, the system's x86 architecture delivers a high processor to memory ratio. NVIDIA® Quadro® and NVIDIA® Tesla® GPU accelerators and Intel® Xeon® Phi™ coprocessors can also be added. A choice of unmodified SUSE® Linux® Enterprise Server or Red Hat® Enterprise Linux operating systems make the UV 2000 ideal for standard ISV and open source applications as well as custom codes. And SGI's innovative air or water cooling helps lower energy costs.

High Performance Storage with Fast Access

Industry-standard PCIe Gen3 expansion slots provide countless options for persistent storage with fast I/O, very-high bandwidth connectivity. For hardware, select from the entire SGI InfiniteStorage line of Storage Servers, RAID and tape libraries, as well as industry-standard 3rd party components. For storage software, leverage Intel® Enterprise Edition for Lustre, SGI CXFS™, or industry standard XFS® file systems, SGI XVM® volume management, SGI DMF™ tiered data management, and 3rd party backup solutions.

UV 2000 Configuration Specifications

sgi.com/uv

SGI UV 2000 System Components	
Processors	• Intel® Xeon® processor E5-4600 v2 product family 6, 10, 12, or 16 core CPU's, 2.4 -3.3 GHz
Memory	• 8, 16 or 32GB up to 1600 MT/s ECC DDR3 DIMMs
Disk Drives	• 2.5" SATA, SAS HDD or SSD
Interconnect	• NUMAlink® 6 (NL6; 6.7GB/s bidirectional)
Environmental	• 68-77F (20-25C), 40-55% relative humidity (non-condensing)
Power	• Single phase 30 amp or three phase (208, 400 or 480VAC) 60 amp
Cooling	• Ambient air-cooled • Optional water-cooled: water temp. 45-60F (7.2-15.6C)
Rack	
SGI Rack Dimensions (H x W x D)	• 79.5" (42U) x 31.3" x 46.2" • 201.9cm x 79.5cm x 117.3cm
Power	• Single-phase 180-264VAC or three-phase 180-504VAC, 47-63Hz
Cooling	• Open-looped airflow or optional water-cooled door
3rd party rack	• Supported for UV 2000 configurations up to one rack scale
Blade Enclosure	
Dimensions (H x W x D)	• 17.5" (10U) x 19" x 27" • 44.5cm x 48.36cm x 68.68cm
Power	• Three 12VDC 3037W, 200-240VAC or 277VAC input voltage (N+1)
Cooling	• Nine hot-pluggable, 119mm, 12VDC axial cooling fans
Administrative Network	• One Chassis Management Controller • Two backplane connections
Compute Blade	
Dimensions (H x W x D)	• 3.7" x 8.4" x 18.1" • 9.4cm x 2.1cm x 46.0cm
2 CPU **CPU + Accelerator**	• 2 Intel® Xeon® processor E5-4600 product family • 1 Intel® Xeon® processor E5-4600 product family and 1 accelerator card
Memory	• 8 DIMM Slots per Intel® Xeon® CPU
IO expansion options	All IO slots are X16 Gen 3 capable. Options per blade include: • Base IO (specs below) • Two 2.5" HDD or SSD slots • Two low-profile slots • One low-profile and one full-height, half-depth slot
Base I/O Features	• Two 1.8" SATA SSD slots • 3.0GB/s SAS controller with two X4 ports • Two USB 2.0 ports • Serial port • VGA port • Two Ethernet ports • Dedicated Board Management Controller

System Expansion and Enhancement Options	
Large, Multi-partition UV 2000 systems	• NUMAlink 6 support for up to 16,384 socket system • Support for Shared Memory up to 8 Petabytes • Hard partitions maintain resilience while offering management flexibility
Graphics and Coprocessors	• NVIDIA® Quadro® 5000/5200/6000 and NVIDIA® Tesla® K20x/K40 GPU computing accelerator • Intel® Xeon Phi™ coprocessor • Scales to 32 accelerator devices within a single system image
UV 2000 System Management	
Board Management Controller	• One per compute blade • Monitors blade function • Relays status or function data to management network
Chassis Management Controller	• One per blade enclosure • Controls master power to all compute blades • Monitors power and blade enclosure environment
System Management Node	• One per system • Monitors and controls power and environmentals • Manages hardware inventory and configuration, reports health status and failure analysiss
Storage	
SGI InfiniteStorage™ Solutions	• SGI RAID, NAS, SAN, Storage Servers, MAID and tape libraries
SGI InfiniteStorage Software	• CXFS™, XFS®, DMF™, XVM®, and backup and restore solutions
Software Development	
Programming Languages and Debuggers	• SGI Development Suite • C & C++: Intel® C++ Compiler, GNU GCC • Debuggers: Intel® Debugger included with Intel® compilers, GNU GDB, Rogue Wave Software® TotalView®, Allinea DDT • Fortran: Intel® Fortran Compilers, GNU GCC • Performance Analysis: Intel® VTune Amplifier XE, Intel® Trace Analyzer & Collector
Libraries	• SGI MPI • OpenMP included with Intel® compilers • Intel® Math Kernel Library • Intel® Parallel Building Blocks • Intel® Integrated Performance Primitives • Intel® MPI Library
System Software	
Operating Systems	• SUSE® Linux® Enterprise Server 11 • Red Hat® Enterprise Linux 6
SGI Linux System Software	• SGI Foundation Software • SGI Performance Suite • SGI Management Suite
Virtualization Software	• KVM

About SGI

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