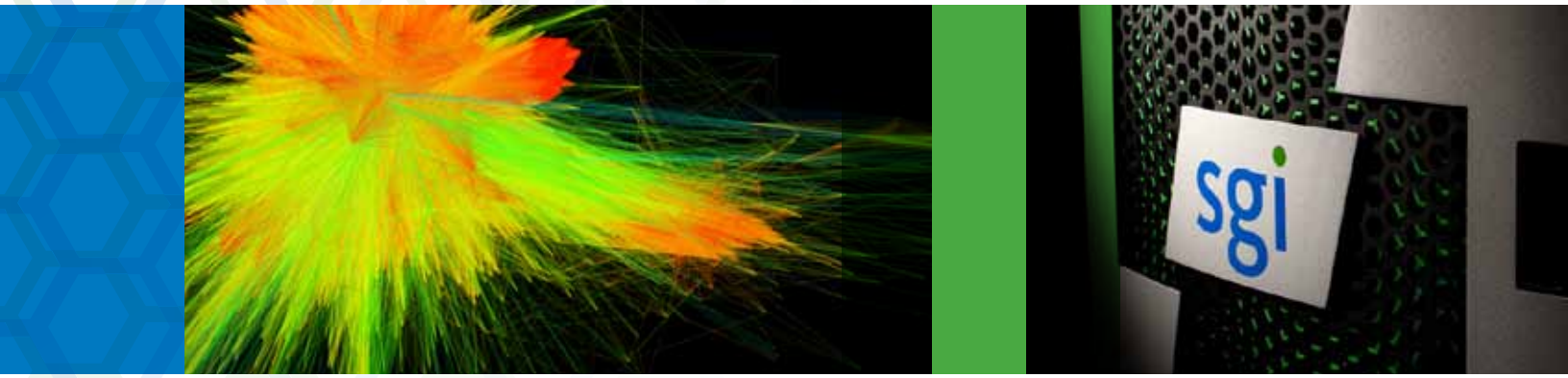
SGI UV: Big Brain for No-Limit Computing

UV 2000, UV 20 World-Leading x86 Performance and Scalability

Key Features

Scales to 4,096 threads
And Up to 64TB Coherent Shared Memory in a Single System

Industry Standard Platform Based on Intel® Xeon® Processors and Off-the-Shelf Linux® OS



Solving the Most Demanding Data Intensive Problems

SGI UV 2000 scales to truly extraordinary levels — up to 4,096 threads (256 CPU sockets) and up to 64TB of cache-coherent, global shared memory in a single system. This enables UV to remain highly efficient at scale for diverse set of data- and compute-intensive applications. Supporting these powerful capabilities are the sixth generation NUMAlink® interconnect with very high bandwidth/low latency topologies and integrated MPI Offload Engine (MOE) technology. So while UV offers world-leading capabilities to support shared memory applications, it also delivers features that optimize distributed applications, for superior performance across the complete dynamic range of high performance computing. The versatility and high performance of UV allows it to solve the world's toughest computational challenges, whether deployed as an "analysis supernode" in conjunction with a mixed computing environment or used as an independent, standalone system.

Scalable System Size, Configuration Flexibility

The SGI UV 2000 features a modular blade-based packaging design that enables users to optimally size their systems, achieving the correct balance of compute, memory, IO and storage capability. SGI UV 2000 enables scaling a single system starting as small as 8 threads up to a maximum of 4,096 threads. UV is well positioned to scale up as performance requirements grow, preserving the initial investment along the way.

Completing the SGI UV family is the UV 20, a 2U, 4-socket server offering maximum memory per core and full-bandwidth IO expansion capability.

A Truly Open Platform

While SGI UV2000 leads the industry in system scale, it is built upon industry standards. The system's x86 architecture leverages Intel® Xeon® processor E5-4600 product family. This allows for the use of unmodified SUSE® Linux® Enterprise Server or Red Hat® Enterprise Linux operating system. But the impact only grows from there, as the x86 application ecosystem is unrivaled by any other. This makes UV as ideal for running standard ISV, community or open source applications as it is for custom codes. SGI also assures fastest time to results by providing a complete development and run-time software solution, ensuring that users can take full advantage of the performance capability of the SGI UV platform.

Flexible System Expansion and Storage Capabilities

Industry-standard PCIe Gen3 expansion slots open up countless possibilities for fast data access or very-high bandwidth data movement with seamless support for industry-standard networking and storage. This means full support for the entire SGI InfiniteStorage line of RAID, NAS, SAN, Storage Servers, MAID and tape libraries – along with a rich set of InfiniteStorage software, including its clustered file system CXFS™, as well as XFS®, DMF™, XVM®, and backup and restore solutions.

SGI UV 2000 also supports scalable graphics and accelerator cards, including NVIDIA® Quadro®, Tesla® and Intel® Many Intergrated Core (MIC) coprocessor. Taking all of these advantages into account, it is clear why SGI UV is such a versatile solution for a wide range or usage.

UV 2000, UV 20 Configuration Specifications

sgi.com/uv

System Components

Processors	• Intel® Xeon® processor E5-4600 product family (2.0-2.9GHz)
Memory	• 4, 8, 16 or 32GB 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 48VAC) 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
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 Ehancement Options

Large, Multi-partition UV2000 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 co-processors:	• GPUs such as NVIDIA® Quadro®, NVIDIA Tesla® • Intel® MIC • Scales to 8+ accelerator devices within a system

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 analysis

SGI UV 20 4-way Server Specifications

CPU	• 4 Intel® Xeon® processor E5-4600 product family 4,6, or 8 core CPUs, 2.0-2.9 GHz
Memory	• Up to 48 DIMM slots • 4, 8, 16 or 32GB 1600 MT/s ECC DDR3 DIMMs
Storage	• Two 1.8" SSD plus up to 8 2.5" SAS, SATA HDD or SSD
IO Expansion	• 4 external PCIe X16 Gen 3 slots, 2 internal IO module • Dual 10GbE SPF+ or RJ45, single or dual FDR IB, quad GbE
High End PCI	• Up to 2 NVIDIA® Quadro®, Tesla® and Intel® Many Intergrated Core (MIC) coprocessor cards
Dimensions	• 2U, 17.24" (438mm) x 28" (712mm) x 3.43" (87.3mm)
Power	• 2 1600W N+N redundant power supplies
Cooling	• 11 40mm x 40mm x 56mm hot swap fans
Other	• Base system includes integrated SAS, management controllers

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® Team, Allinea DDT, Intel® Inspector XE • 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 • Parallels Virtuozzo

Global Sales and Support: sgi.com/global