

SGI® UV

Revolutionary x86 Performance and Scalability

Key Features

Scales to 2,560 cores
in Single System Image

Up to 16TB Global Shared Memory

Open Platform Based
on Intel® Xeon® Processors
and Linux® or Windows® OS

Solving the World's Most Data Intensive Problems

SGI® UV scales to truly extraordinary levels — up to 2,560 cores (256 CPUs) with architectural support to 327,680 cores (32,768 sockets). One of its most attractive features is its support for up to 16TB of global shared memory in a single system image (SSI). This enables UV to remain highly efficient at scale for applications ranging from in-memory databases to a diverse set of data- and compute-intensive HPC applications. Supporting these powerful capabilities are the fifth-generation NUMalink® interconnect and integrated MPI Offload Engine (MOE) technology from SGI — so while UV offers world-leading capabilities to support shared memory applications, it also delivers features that optimize MPI communication for superior performance on cluster applications. 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 large, scale-out SGI ICE cluster or used as an independent, standalone system.

Scalable System Size

The SGI UV family consists of three models that enable users to optimally size their systems, achieving the correct balance of compute, memory and storage capability. SGI UV 10 is one of the most capable quad-socket rackmount servers available, with up to 32 processing cores (64 threads), 64 DIMM slots and rich I/O expansion capabilities. SGI UV 100 and SGI UV 1000 enable scaling a single system image to a maximum of 2,560 cores or 4,096 threads. This is possible because of their innovative NUMAflex®, blade-based architecture.

With UV configurations starting with as few as four sockets (16 cores), UV is well positioned to scale up as performance requirements grow, preserving the initial investment along the way.

A Truly Open Platform

One of the groundbreaking aspects of SGI UV is that the hardware platform derives from open standards. The system's x86 architecture leverages up to ten-core Intel® Xeon® processor 7500 series or E7 family. This allows for the use of unmodified SUSE® Linux® Enterprise Server, Red Hat® Enterprise Linux or Microsoft® Windows® Server 2008 R2 operating systems. But the impact only grows from there, as the x86 application ecosystem is unrivaled by any other. This makes UV as ideal for running custom codes as it is for running off-the-shelf ISV applications. SGI accelerates time to results by providing a complete HPC solution software stack, ensuring that customers can maximize the performance capability of the UV platform.

Flexible System Expansion and Storage Capabilities

Industry-standard PCI Express expansion slots open up countless possibilities for system configurations with seamless support for industry-standard networking, storage and graphics/GPU cards. It also means full support for the entire SGI InfiniteStorage line of EBOD, RAID, SAN, NAS and tape storage solutions — along with a rich set of InfiniteStorage software, including its clustered file system CXFS® and Data Migration Facility (DMF). Taking all of these advantages into account, it is clear why SGI UV is such a versatile solution for shared memory applications of any scale.



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SGI UV System Specifications

Model	UV 100	UV 1000
Enclosure Type	• 3U rackmount blade enclosure	• 18U rackmount blade enclosure
Max. Processors (Sockets)	• 96 Intel® Xeon® 4, 6, 8 or 10 core 7500 series or E7 family	• 256 Intel® Xeon® 4, 6, 8 or 10 core 7500 series or E7 family
Max. Cores/Threads	• 960/1,920	• 2,560/4,096
Max. Memory	• 12TB	• 16TB
Max. Teraflops	• 9.2	• 24.6
Interconnect & Topology	• NUMALink® 5, 2D torus	• NUMALink 5, Fat Tree
Max. Hard Disk Drives & Max. Capacity	• 126 2.5" (max. 126TB) SAS hot-swap drives or SSD per system or partition	
External Storage Options	• SGI InfiniteStorage RAID, EBOD, NAS, SAN and tape libraries ¹	
Standard Rack Options	• 20U or 40U rack	• 42U cabinet

Enclosure Specifications		
Max. Blades/Enclosure	• 2	• 16
Max. Enclosures/System	• 24 in 2 racks	• 8 in 4 cabinets
Max. Hard Disk Drives & Max. Capacity	• 6-8 2.5" (max 8TB) SAS (option for hotswap disc expansion) or SSD	• 30 2.5" (max. 30TB) SAS hotswap drives or SSD
Airflow	• Front-to-back, ideal for hot-aisle/cold-aisle environments	
Cooling Architecture	• N+1 redundant cooling fans. SGI water-chilled door option.	
Power Architecture	• Optional N+N redundant, hot-swap power supplies	• Redundant, hot-swap power supplies (N+1 for blades, 1+1 for fan modules)
Input Power	• Two 110-264VAC (50-60Hz) C13 outlets	• 200-240VAC (50-60Hz) 3-phase 60A IEC 60309 plug (two/rack)
Power Supplies/Enclosure	• Two 2200W	• Eight 2837W
Environmental (Non-Operating)	• Temperature: -40C to +60C (-40F to +140F), Humidity: 8% to 95%, non-condensing	
Environmental (Operating)	• Temperature: +5C to +35C (+41F to +95F), derating applies at altitude • Humidity: 5% to 90%, non-condensing, maximum gradient 10% per hour	
Dimensions (HxWxD)	• 5.25" (13.34cm) (3U) x 19" (48.26cm) x 24" (60.96cm)	• 31.5" (80.81cm) (18U) x 24" (60.96cm) x 29" (73.66cm)

Model	UV 10
Enclosure Type	• 4U rackmount server
Max. Processors	• Four Intel® Xeon® 4, 6, 8 or 10 core 7500 series or E7 family
Max. Cores/Threads	• 40/80
Max. Memory	• 1TB
Memory Slots & Type	• 64 x 1066 MHz DDR3 ECC reg.
Max. Hard Disk Drives & Max. Capacity	• Eight 2.5" (max. 4.8TB) SAS hot-swap drives • Five (max. 2.5TB) SATA drives
RAID Levels (Optional)	• JBOD, 0, 1, 5, 6
Expansion Slots	• One PCI-E 2.0 x16 (3/4 length), four PCI-E 2.0 x8 (3/4 length, hot-swap), one PCI-E 2.0 x4 (3/4 length), two PCI-E 2.0 x4 (1/2 length) and two PCI-E x4 (1/2 length)
Networking, Onboard	• Four GigE (dual Intel® 82576)
IPMI Remote Management	• IPMI 2.0 + Keyboard, Video and Mouse (KVM)
Power Supply	• Four 850W 3+1 or 2+2 redundant auto-switching 100-127 or 200-240 VAC (50-60 Hz)
Chassis Mount	• Standard 19" rack compatible rail mount
Dimensions (HxWxD)	• 6.8" (17.27 cm) (4U) x 16.7" (42.42 cm) x 27.7" (70.36 cm)

Blade Specifications	UV 100/1000
Max. Processors	• Two Intel® Xeon® 4, 6, 8, or 10 core 7500 series or E7 family
Max. Cores/Threads	• 20
Max. Memory	• 256GB
Memory Slots & Type	• 16 x 1066 MHz DDR3 ECC reg.

Software Support	Operating Systems, Storage Suite and Virtualization
UV 10	• SUSE® Linux® Enterprise Server 10, 11 SP1 • Red Hat® Enterprise Linux 5.6, 6 • Microsoft® Windows® Server 2008 R2
UV 100 UV 1000	• SUSE Linux Enterprise Server 11 SP1 • Red Hat Enterprise Linux 6 • Microsoft Windows Server 2008 R2
SGI Linux System Software	• SGI Foundation Software, SGI Performance Suite, SGI Management Suite
SGI InfiniteStorage Suite Software	• CXFS™, XFS®, Data Migration Facility (DMF), XVM®, and backup and restore solutions
Virtualization Software	• Microsoft Hyper-V™ Server • KVM (UV 100, UV 1000) • VMware® ESX Server (UV 10)

