

SGI UV 300, UV 30EX: Big Brains for No-Limit Computing

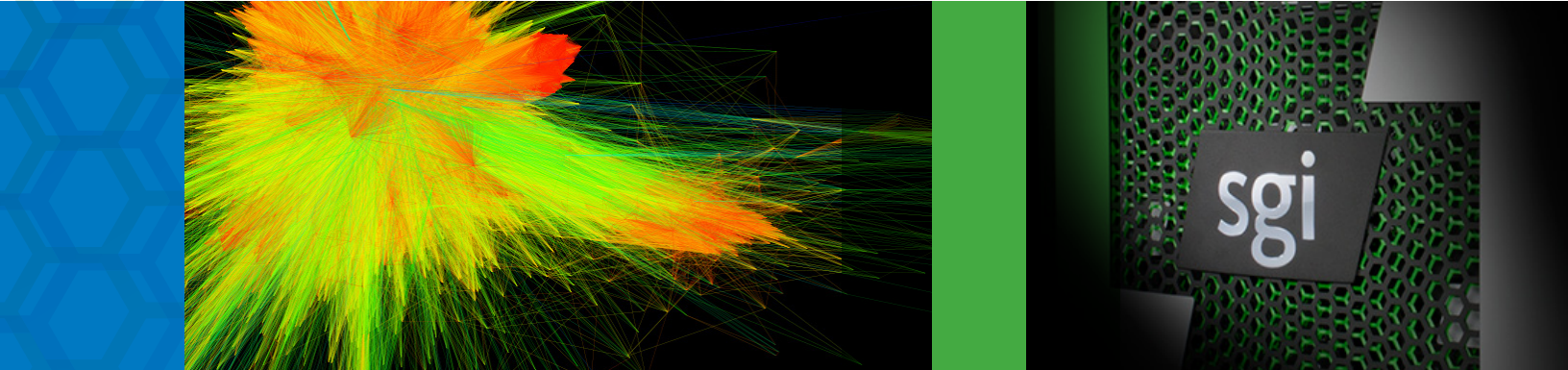
The Most Powerful In-memory Supercomputers
for Data-Intensive Workloads

Key Features

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

Extreme bandwidth, low
latency SMP system utilizes
Intel® Xeon® v3 or v2 processors
and Linux® O/S

Builds upon 21 years of
in-memory computing expertise



Solve the Most Demanding Data-Intensive Problems

Part of the SGI UV server line for high performance in-memory computing, SGI UV 300 and SGI UV 30EX are advanced symmetric multiprocessing (SMP) systems designed for data-intensive, I/O heavy workloads such as data analytics, visualization, and real-time streaming.

Now available with the latest Intel® Xeon® processors, optional 64GB DIMMS, and over twice the capacity, SGI UV 300 scales up to 64 CPU sockets and 64TB of cache-coherent shared memory in a single system. Enabling such powerful in-memory computing capability is 7th generation SGI NUMALink® ASIC technology, providing extreme bandwidth, ultra-low latency network interconnects. Equipped with an integrated MPI Offload Engine, UV 300 can also be leveraged for distributed applications and as a “super node” for clustered high performance computing (HPC) systems.

Designed for smaller data-intensive environments, SGI UV 30EX is a 5U, 4-socket server now providing up to 6TB of in-memory computing power. It too is equipped with an MPI Offload engine and can be upgraded to the scalable UV 300 if future needs change.

Single System Simplicity with Extreme Scalability

SGI UV 300 features a modular chassis design that enables users to grow their system without adding complexity. It's like running a giant workstation with lightning speed and maximum investment protection.

A 5U chassis contains 4 sockets with up to 144 threads and integrated SGI NUMALink ASICs. By adding additional chassis (up to 8 per 19” rack) using an All-to-All network topology, UV 300 can scale up to 32 sockets and 48TB of shared memory with ultra-low latency.

Using a Multi-dimensional All-to-All network topology, up to 8 more chassis can be added (totaling two racks) to scale UV 300 to 64 sockets, 2,304 threads, and 64TB - all operating as a single system!

Flexible, Open, Energy Efficient

SGI UV 300 delivers unparalleled Intel performance with optimum flexibility. Providing a high memory to processor ratio, the system's x86 architecture now features Intel® Xeon® E7-8800 v3 processors delivering a higher core count, greater QPI bandwidth, twice the floating point calculations, and DDR4 memory with up to 40% greater memory bandwidth, vs. previous generation processors. To protect and scale existing UV 300 investments (up to 32 sockets and 24TB), chassis utilizing Intel® Xeon® E7-8800 v2 processors are also available.

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 300 and 30EX ideal for standard ISV and open source applications as well 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.



32-socket SGI UV 300

UV 300, UV 30EX Specifications for Systems Using Intel® Xeon® v3 processors

sgi.com/uv

System Components	
Processors	<ul style="list-style-type: none"> Intel® Xeon® processor E7-8800v3 product family 4,10, 16 and 18 core CPUs, 2.3 - 3.2GHz
Memory	<ul style="list-style-type: none"> 8, 16, 32, 64GB up to 2133MT/s ECC DDR4 DIMMs
Disk Drives	<ul style="list-style-type: none"> 1.8" SSD Boot drives (1 or 2) 2.5" SATA, SAS HDD or SSD DVD or DVD-RW
Interconnect	<ul style="list-style-type: none"> NUMalink® 7 (NL7; 7.47GB/s bidirectional peak)
Environmental (Operating)	<ul style="list-style-type: none"> 41-95F (5-35C) up to 1525m (5000 ft.) Max 10,000 ft. (3050 m)
Cooling	<ul style="list-style-type: none"> Ambient air-cooled
Rack	
SGI Rack Dimensions (H x W x D)	<ul style="list-style-type: none"> 78.75" (42U) x 28" x 45.5" 200cm x 71cm x 115.6cm
Power	<ul style="list-style-type: none"> Single-phase 200/230VAC, 30/32 Amps, OR Three phase 208VAC, 60 Amps or 400VAC, 32 Amps
Cooling	<ul style="list-style-type: none"> Open-looped airflow OR Optional water-cooled: water temp. 45-60F (7.2-15.6C)
3rd party rack	<ul style="list-style-type: none"> Supported for UV300 configurations up to 32 sockets
Enclosure Specifications	
Dimensions (H x W x D)	<ul style="list-style-type: none"> 8.64" (5U) x 17.5" x 31.8" 22cm x 44.5.cm x 80.8cm
Weight (maximum)	<ul style="list-style-type: none"> 136 lbs (62kg)
Acoustical Noise (typical)	<ul style="list-style-type: none"> 77dBA
Heat Dissipation to Air	<ul style="list-style-type: none"> 7.64 kBTU/hr (0.64 Tons) , 5.22KW maximum
Power	<ul style="list-style-type: none"> Four 12VDC 1600W, 180-264VAC input voltage (N+1), or (N+N)
Cooling	<ul style="list-style-type: none"> Eight hot-pluggable, 80mm, 12VDC axial cooling fans
Air flow (Front to Rear)	<ul style="list-style-type: none"> Max 650 CFM (1104 m3/hr) Typical 475 CFM (807 m3/hr)
Administrative Network	<ul style="list-style-type: none"> One Rack Management Controller
CPU	<ul style="list-style-type: none"> 4 Intel® Xeon® processor E7-8800 product family
Memory	<ul style="list-style-type: none"> 24 DIMM Slots per Intel® Xeon® CPU
IO expansion options	12 Slot option <ul style="list-style-type: none"> Up to (8) x8, (4) x16 full height slots 8 Slot option plus disk riser <ul style="list-style-type: none"> Four SATA or SAS 2.5" HDD or SSD slots up to (4) x8, (4) x16 full height slots
Base I/O Features	<ul style="list-style-type: none"> Two 1.8" SATA SSD slots, 6GB/s Four USB 2.0 ports One Gb Ethernet port
System Expansion	<ul style="list-style-type: none"> 4 to 64 sockets Up to 64TB of coherent shared memory Hard partitions options maintain resilience while offering management flexibility
Graphics and Coprocessors	<ul style="list-style-type: none"> NVIDIA® Quadro® 5200, 6000 and NVIDIA® Tesla® K20x/K40, K80 GPU computing accelerator Intel® Xeon® Phi™ coprocessor Scales up to 32 accelerator devices within a single system image or partition

UV 300 System Management	
Board Management Controller	<ul style="list-style-type: none"> One per compute chassis IPMI v1.5/v2.0 interface, inc SNMP trap support via PEF Controls chassis power and reset sequencing Monitors chassis power, temperature and fans Fan speed controlled dynamically based on temperature variations Serial Port and VGA via KVM redirection
Rack Management Controller	<ul style="list-style-type: none"> One per system IPMI v1.5/v2.0 interface, inc SNMP trap support via PEF Aggregates management network connections to chassis Controls system power and reset sequencing Self-monitors environment, reports health status
SGI UV 30EX 4-way Server	
Processors	<ul style="list-style-type: none"> 4 Intel® Xeon® processor E7-8800v3 product family 4, 10, 16 and 18 core CPUs, 2.3 - 3.2GHz
Memory	<ul style="list-style-type: none"> Up to 96 DIMM slots 8, 16, 32, 64GB up to 2133MT/s ECC DDR4 DIMMs
Storage	<ul style="list-style-type: none"> Two 1.8" SSD plus up to 4 x 2.5" SAS, SATA HDD or SSD
IO Expansion	<ul style="list-style-type: none"> Up to 8 PCIe Gen 3 slots, (4) x8; (4)x16
High End PCI	<ul style="list-style-type: none"> Up to 4 NVIDIA® Quadro® or NVIDIA® Tesla® computing accelerators and Intel® Xeon® Phi™ coprocessors
Dimensions	<ul style="list-style-type: none"> 8.64" (5U) x 17.5" x 31.8" 22cm x 44.5.cm x 80.8cm
Power	<ul style="list-style-type: none"> Four 12VDC 1600W, 180-264VAC input voltage (N+1), or (N+N)
Cooling	<ul style="list-style-type: none"> Eight hot-pluggable, 80mm, 12VDC axial cooling fans
Other	<ul style="list-style-type: none"> Base system includes integrated SAS, management controllers
Storage	
SGI InfiniteStorage™ Solutions	<ul style="list-style-type: none"> SGI RAID, NAS, SAN, Storage Servers, MAID and tape libraries
SGI InfiniteStorage Software	<ul style="list-style-type: none"> CXFS™, XFS®, DMF™, XVM®, and backup and restore solutions
Software Development	
Programming Languages and Debuggers	<ul style="list-style-type: none"> 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 Fortran: Intel® Fortran Compilers, GNU GCC Performance Analysis: Intel® VTune Amplifier XE, Intel® Trace Analyzer & Collector
Libraries	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> SUSE® Linux® Enterprise Server 11 and 12 Red Hat® Enterprise Linux 6 and 7
SGI Software	<ul style="list-style-type: none"> SGI Performance Suite SGI Management Suite
Virtualization Software	<ul style="list-style-type: none"> KVM

UV 300, UV 30EX Specifications for Systems Using Intel® Xeon® v2 processors

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System Components	
Processors	<ul style="list-style-type: none"> Intel® Xeon® processor E7-8800 v2 product family 6, 10, 12 and 15 core CPUs, 2.8-3.4 GHz
Memory	<ul style="list-style-type: none"> 8, 16 or 32GB up to 1333 MT/s ECC DDR3 DIMMs
Disk Drives	<ul style="list-style-type: none"> 1.8" SSD Boot drives (1 or 2) 2.5" SATA, SAS HDD or SSD DVD or DVD-RW
Interconnect	<ul style="list-style-type: none"> NUMalink® 7 (NL7; 7.47GB/s bidirectional peak)
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Cooling	<ul style="list-style-type: none"> Open-looped airflow OR Optional water-cooled: water temp. 45-60F (7.2-15.6C)
3rd party rack	<ul style="list-style-type: none"> Supported for UV300 configurations up to 32 sockets
Enclosure Specifications	
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Base I/O Features	<ul style="list-style-type: none"> Two 1.8" SATA SSD slots, 6GB/s Four USB 2.0 ports One Gb Ethernet port
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Storage	
SGI InfiniteStorage™ Solutions	<ul style="list-style-type: none"> SGI RAID, NAS, SAN, Storage Servers, MAID and tape libraries
SGI InfiniteStorage Software	<ul style="list-style-type: none"> CXFS™, XFS®, DMF™, XVM®, and backup and restore solutions
Software Development	
Programming Languages and Debuggers	<ul style="list-style-type: none"> 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 Fortran: Intel® Fortran Compilers, GNU GCC Performance Analysis: Intel® VTune Amplifier XE, Intel® Trace Analyzer & Collector
Libraries	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> SUSE® Linux® Enterprise Server 11 and 12 Red Hat® Enterprise Linux 6 and 7
SGI Software	<ul style="list-style-type: none"> SGI Performance Suite SGI Management Suite
Virtualization Software	<ul style="list-style-type: none"> KVM

About SGI

SGI, the trusted leader in high performance computing (HPC), is focused on helping customers solve their most demanding business and technology challenges by delivering technical computing, Big Data analytics, cloud computing, and petascale storage solutions that accelerate time to discovery, innovation, and profitability.

For more information please contact an SGI sales representative at 1-800-800-7441 or visit www.sgi.com.

Global Sales and Support: sgi.com

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