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

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

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.

SGI UV 300 scales up to 32 CPU sockets and 24TB 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 providing up to 3TB 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. A 5U chassis contains 4 sockets with up to 120 threads and integrated NUMAlink ASICs. By adding additional chassis (up to 8 per standard 19” rack) and using an All-to-All network topology, UV 300 can scale up to 32 sockets and 960 threads, all operating as a single system.

Flexible, Open, Energy Efficient

SGI UV 300 and UV 30EX are designed with optimum flexibility. Featuring Intel® Xeon® E7-8800 v2 processors with twenty-four DIMMs per socket, the system’s x86 architecture delivers a high memory to processor 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 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.
# UV 300, UV 30EX Configuration Specifications

## System Components

<table>
<thead>
<tr>
<th>Producers</th>
<th>• Intel® Xeon® processor E7-8800 product family 6, 10, 12 and 15 core CPUs, 2.8-3.4 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>• 8, 16 or 32GB up to 1333 MT/s ECC DDR3 DIMMs</td>
</tr>
<tr>
<td>Disk Drives</td>
<td>• 1.8&quot; SSD Boot drives (1 or 2), 2.5&quot; SATA, SAS HDD or SSD, DVD or DVD-RW</td>
</tr>
<tr>
<td>Interconnect</td>
<td>• NUMAlink® 7 (NL7; 7.47 GB/s bidirectional peak)</td>
</tr>
<tr>
<td>Environmental (Operating)</td>
<td>• 41-95°F (5-35°C) up to 1525m (5000 ft.) Max 10,000 ft. (3050 m)</td>
</tr>
<tr>
<td>Cooling</td>
<td>• Ambient air-cooled</td>
</tr>
<tr>
<td>Rack</td>
<td>• 78.75&quot; (200cm) x 36&quot; x 45.5&quot;</td>
</tr>
<tr>
<td>SGI Rack Dimensions (H x W x D)</td>
<td>• 200cm x 71cm x 115.6cm</td>
</tr>
<tr>
<td>Power</td>
<td>• Single phase 200/230VAC, 30/32 Amps, OR Three phase 208VAC, 60 Amps or 420VAC, 32 Amps</td>
</tr>
<tr>
<td>Cooling</td>
<td>• Open-looped airflow OR Optional water-cooled: water temp. 45-60°F (7.2-15.6°C)</td>
</tr>
<tr>
<td>3rd party rack</td>
<td>• Supported for UV:300 configurations up to 32 sockets</td>
</tr>
</tbody>
</table>

## Enclosure Specifications

| Dimensions (H x W x D)| • 8.64" (219) x 17.5" x 31.8"                                                  |
| Weight (maximum)     | • 136 lbs (62kg)                                                                 |
| Acoustical Noise (typical)| • 77dBA                                                                           |
| Heat Dissipation to Air| • 7.64 kBTU/hr (0.64 Tons), 5.22kW maximum                                      |
| Power                | • Four 12VDC 1600W, 190-264VAC input voltage (N+1), or (N+N)                     |
| Cooling              | • Eight hot-pluggable, 80mm, 12VDC air cooling fans                                |
| Air flow (Front to Rear)| • Max 660 CFM (1104 m³/hr)                                                        |
| Administrative Network| • One Rack Management Controller                                                  |
| CPU                  | • 4 Intel® Xeon® processor E7-8800 product family                                  |
| Memory               | • 24 DIMM Slots per Intel® Xeon® CPU                                              |

## IO expansion options

- 12 Slot option
  - Up to (8) x8, (4) x16 full height slots
- 8 Slot option plus disk riser
  - Four SATA or SAS 2.5" HDD or SSD slots
  - Up to (4) x8, (4) x16 full height slots

## Base I/O Features

- Two 1.8" SATA SSD slots, 6GB/s
- Four USB 2.0 ports
- One GigE Ethernet ports

## System Expansion

- 4 to 32 sockets
- Up to 2.4TB of coherent shared memory
- Hard partitions options maintain resilience while offering management flexibility

## Graphics and Coprocessors

- NVIDIA® Quadro® 5000, 6000 and NVIDIA® Tesla® K20x/K40, K80 GPU computing accelerator
- Intel® Xeon® Phi™ coprocessor
- Scales up to 32 accelerator devices within a “32 sockets/24TB at initial release

## UV 300 System Management

| Board Management Controller| • One per compute chassis
|                            | • PMI 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| • One per system
|                          | • PMI 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 30 EX 4-way Server

| CPU                  | • 4 Intel® Xeon® processor E7-8800 product family 6, 10, 12 and 15 core CPUs, 2.8-3.4 GHz |

## 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 DOT
|                                    | • Fortran: Intel® Fortran Compilers, GNU GCC
|                                    | • Performance Analysis: Intel® VTune Amplifier XE, Intel® Trace Analyzer & Collector

## Libraries

- SGI MPI
- OpenGL 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 Software Suite
|                  | • SGI Management Suite

## Virtualization Software

- 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 1-800-600-7441 or visit wwwsgi.com/contactus.

Global Sales and Support: sgi.com/global

©2013–2014 Silicon Graphics International Corp. All rights reserved. SGI, UV, ICE, NUMAlink, CXFS, XFS, DMF, XVM and the SGI logo are registered trademarks or trademarks of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries. Intel, Xeon and the Intel Xeon logo are registered trademarks of Intel Corporation. All other trademarks are properties of their respective holders. 15042013 4530 17112014