

GRAPHSTREAM

2X8A-GR2A GPU Computing Server



2X8A-GR2A is a 2RU-rackmount server unit that can support high-end GPU-computing applications more efficiently than other currently available alternatives.

2X8A-GR2A delivers over 2 TFLOPS aggregate peak single-precision floating-point throughput, for maximum clustering density of over 48 TFLOPS peak and 3 TBytes main memory capacity per rackmount enclosure.

2X8A-GR2A can provide superior platform support for some of the world's most advanced technical and visual computing applications in energy, finance, manufacturing, media, medicine, national security, and scientific research.

- 16 maximum-performance Intel Xeon CPU cores, organized as two independent 8way-SMP servers
- Up to 128 GBytes aggregate main memory, using standard Commercial Off-The-Shelf (COTS) FB-DIMM units
- Four NVIDIA Tesla GPUs, each with 1.5GBytes local memory
- I/O capacity far superior to competing offerings:
 - 16+16 GByte/sec aggregate peak PCIe throughput between CPUs and GPUs
 - 4+4 GByte/sec aggregate peak network throughput via dual InfiniBand 4X-DDR ports
- Superior energy efficiency, via single advanced-design power supply module shared between two servers
- Advanced standards-based remote monitoring and management: IPMI v2.0, providing remote power/reset control, serial console over LAN
- Full compatibility with Windows and Linux operating systems and applications assured via use of pure mainstream open-standard architecture, standard interfaces, and mainstream COTS components
- Final assembly and test done alongside "Tier-1" name-brand server products in ISO-certified manufacturing facilities, using premium-quality, cost-efficient COTS components made by leading high-volume server component manufacturers, including Supermicro (www.supermicro.com)
- Supported by GraphStream as a single fully integrated system

System

Weight	
Minimum config, 2pcs HDD	58.0 lbs / 26.4 kg
Temperature	
Operating	+41 to +95 degF / +5 to +35 degC
Non-operating	-40 to +158 degF / -40 to +70 degC
Humidity (non-condensing)	
Operating	8% to 90%
Non-operating	5% to 95%

Chassis

Configuration	2RU rackmount, compliant with EIA RS-310D standard
Dimensions	
Height	3.5" / 89mm / 2RU
Width	17.2" / 437 mm
Depth	31.0" / 787mm
Tool-free access design	
Top cover with pushbutton latches	
Integrated sliding rail mounting system	
Clear service access to all internal components	
Make/model	
1pc Supermicro SYS-6015TW-INF8	www.supermicro.com/products/system/1U/6015/SYS-6015TW-INF8.cfm
1pc NVIDIA Tesla S870	www.nvidia.com/docs/IO/43395/Compute_Tech_Brief_v1-0-0_final__Dec07.pdf

Power supply

Configuration	Easy-swap module shared between dual independent servers
Input	100-240 VAC full-range, 50-60 Hz, 14-6 A max
Max total output power	980W
Max output current, +12V	81A single-rail
Agency certifications for safety/EMC	
USA: UL listed	
Canada: CUL listed	
Germany: TUV certified	
Europe: CE Mark	
EN 60950 / IEC 60950 compliant	
Make/model	Supermicro PWS-981-1S/ PDB-PT808-S20

Cooling

6pcs mid-chassis cooling fan module	40x40x56mm counter-rotating, max 13300 RPM Supermicro model FAN-0085L
4pcs passive copper CPU cooler	Supermicro model SNK-P0017 www.supermicro.com/manuals/matrices/ThermalMatrix.pdf

Mainboards (2pcs)

Make/model	Supermicro MBD-X8DWT-INF8 www.supermicro.com/products/motherboard/Xeon1333/400/X7DWT-INF.cfm
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CPUs

Capacity	4pcs LGA771 socket for Intel Xeon™ CPU
Example CPU configuration	4pcs Intel Xeon X5472 3GHz 1600FSB quad-core CPU www.intel.com/xeon

Memory

Capacity	16pcs FB-DIMM (8pcs per server) Up to 128GB using 8GB modules
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I/O

Mainboard I/O controllers	
1pc Intel 5400 chipset	www.intel.com/products/chipsets/5400/index.htm
1pc Intel 82563EB dual-port Gigabit Ethernet controller	http://www.intel.com/design/network/products/lan/controllers/82563_64EB.htm
1pc AMD ES1000 graphics controller	

Internal ports	2pcs PCI Express x16 Gen2 8+8 GByte/sec link to GPUs 8pcs SATA port, each supporting 3Gbps
External ports (rear panel)	2pcs InfiniBand 4X-DDR 4pcs RJ45 Gigabit Ethernet 4pcs USB 2.0/1.1 2pcs DB9M serial fast UART 16550 2pcs HD15 VGA

GPUs

1pc NVIDIA Tesla S870	www.nvidia.com/object/tesla_gpu_server.html
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Storage

4pcs hot-swappable SAS/SATA 3.5" HDD carrier	
Example max HDD configuration	4pcs Seagate ST31000340NS 1000GB 7200 RPM SATA www.seagate.com/docs/pdf/datasheet/disc/ds_barracuda_es_2.pdf

Platform monitoring and management

1pc IPMIv2.0 Baseboard Management Controller (BMC)	Supermicro AOC-SMS0 service processor www.supermicro.com/products/accessories/addon/SIM.cfm
Advanced Lights-Out Management feature set	OS-independent implementation; supports Windows, Linux/GNU, other Reliable remote power on/off and hard-reset control Serial console over LAN (SOL) Remote monitoring of system health parameters Flexible event triggers; notification via email and/or SNMP Embedded Web server; full access without special client software Command Line Interface (CLI) can run on any remote Linux client
Monitored parameters	CPU and chassis temperatures System voltages Cooling fan speeds Chassis intrusion Power supply module failure

Operating system compatibility

Standards-based platform	2X8A-GR2A is a mainstream platform that is broadly compatible with operating system software that supports the industry-standard X86_64 64-bit/32-bit architecture.
Example configurations	Microsoft Windows Server 2003 x64 Editions www.microsoft.com/windowsserver2003/64bit/x64/editions.msp Red Hat Enterprise Linux v4, v5 www.redhat.com