

# GRAPHSTREAM

## P1C6A-TR4B Workstation/Server



P1C6A-TR4B is a convertible tower / 4RU-rackmount workstation/server system that can support a wide range of technical and visual computing applications.

- 8way SMP, via single Intel Core i7 64-bit CPU supporting two threads per core, up to 3.33 GHz
- Up to 38.4 GByte/sec peak main-memory bandwidth using DDR3-1600 modules
- Up to 24 GBytes main memory, using standard Commercial Off-The-Shelf (COTS) 4GB modules
- Up to four GPUs and eight dual-link DVI outputs via external GPU chassis, or up to four internal GPUs via dual-GPU cards
- NVIDIA SLI multi-GPU supported
- Integrated I/O and storage:
  - Dual PCI Express x16-Gen2 8+8 GByte/sec full-duplex expansion card slots support maximum GPU-card performance
  - PCI Express x4 1+1 GByte/sec slot for additional I/O expansion
  - Two integrated Gigabit Ethernet ports
  - Eight hot-swap SAS/SATA HDD bays
- Optimized for use in quieter environments: 27 dB core-platform noise level
- 865-watt power supply with redundant cooling and 80 Plus efficiency certification
- Enterprise-grade disk drives with 1.2 million hour MTBF at high duty cycle, 100% power-on hours
- Tool-free access design
- Full compatibility with Windows and Linux/GNU operating systems and applications assured via use of pure mainstream open-standard architecture, standard interfaces, and mainstream COTS components
- Built 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](http://www.supermicro.com))
- Supported by GraphStream as a single fully integrated system

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**System**

Weight	
Minimum config, 2pc HDD	66 lbs / 30.0 kg
Temperature	
Operating	+50 to +95 degF / +10 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%

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**Chassis**

Configurations	
Tower or 4RU rackmount, compliant with EIA RS-310D standard	
Dimensions	
Height	7.0" / 178mm / 4RU
Width	17.2" / 437mm
Depth	25.5" / 648mm
Tool-free access design	
Side/top cover with pushbutton latch	
Optional ball-bearing full-extension sliding rail mounting system	
Make/model	
Supermicro CSE-743TQ-865-SQ	
<a href="http://www.supermicro.com/products/chassis/4U/743/SC743TQ-865-SQ.cfm">www.supermicro.com/products/chassis/4U/743/SC743TQ-865-SQ.cfm</a>	
<a href="http://www.supermicro.com/manuals/chassis/tower/SC743.pdf">www.supermicro.com/manuals/chassis/tower/SC743.pdf</a>	

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**Power supply**

Configuration	
Single module with internal redundant cooling	
80 Plus efficiency certification	
Input	
100-240 VAC, 50-60 Hz, 12-6 A max	
Max total output power	
865W	
Max output current per rail	
+3.3V	30.0A
+5V	30.0A
+5Vsb	6.5A
+12V	70.0A single-rail
-12V	1.0A
Agency certifications for safety/EMC	
USA: UL listed, FCC	
Canada: CUL listed	
Germany: TUV certified	
Europe/CE Mark	
EN 60950 / IEC 60950 compliant	
CB Report ready	
Make/model	
Supermicro PWS-865-PQ	
<a href="http://www.supermicro.com/products/powersupply/80PLUS/80PLUS_PWS-865-PQ.pdf">www.supermicro.com/products/powersupply/80PLUS/80PLUS_PWS-865-PQ.pdf</a>	

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**Cooling**

2pc hot-swappable 80mm x 25mm mid-chassis cooling fan module	
4-wire PWM; max 2800 RPM; up to 32.9CFM per module	
Supermicro FAN-0104L4	
1pc 92mm x 25mm rear exhaust fan	
4-wire PWM; max 2400 RPM; up to 40.0CFM	
Supermicro FAN-0103L4	
1pc active copper heatpipe CPU cooler	
Cooling fan with 4-wire PWM; max 2050 RPM	
Supermicro SNK-P0035AP4	
<a href="http://www.supermicro.com/support/resources/Thermal/index.cfm">www.supermicro.com/support/resources/Thermal/index.cfm</a>	

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**Mainboard**

Make/model	
Supermicro C7X58	
<a href="http://www.supermicro.com/products/motherboard/Core2Duo/X58/C7X58.cfm">www.supermicro.com/products/motherboard/Core2Duo/X58/C7X58.cfm</a>	
<a href="http://www.supermicro.com/manuals/motherboard/X58/MNL-1063.pdf">www.supermicro.com/manuals/motherboard/X58/MNL-1063.pdf</a>	

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**CPU options**

Capacity	
1pc LGA1366 socket for Intel Core i7 CPU	
Example configuration	
1pc Intel Core i7 975 3.33GHz quad-core CPU	
<a href="http://www.intel.com/products/processor/corei7ee/specifications.htm">www.intel.com/products/processor/corei7ee/specifications.htm</a>	

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**Memory options**

Capacity	
6pc 240-pin DDR3 unbuffered DIMM up to 1600MHz	
Up to 24GB using 4GB modules	

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**I/O**

Mainboard I/O controllers	
1pc Intel X58 I/O Hub	
1pc Intel ICH10R I/O Hub	

<a href="http://www.intel.com/Products/Desktop/Chipsets/X58/X58-overview.htm">www.intel.com/Products/Desktop/Chipsets/X58/X58-overview.htm</a>
2pc Intel 82574L Gigabit Ethernet controller
<a href="http://ark.intel.com/product.aspx?id=32209">ark.intel.com/product.aspx?id=32209</a>
1pc Realtek ALC883 HD-Audio controller
<a href="http://www.realtek.com.tw/products/productsView.aspx?Langid=1&amp;PFid=28&amp;Level=5&amp;Conn=4&amp;ProdID=44">www.realtek.com.tw/products/productsView.aspx?Langid=1&amp;PFid=28&amp;Level=5&amp;Conn=4&amp;ProdID=44</a>
1pc Nuvoton 83627DHG Super I/O
<a href="http://www.nuvoton.com/NR/rdonlyres/7885623D-A487-4CF9-A47F30C5F73D6FE6/0/W83627DHG.pdf">www.nuvoton.com/NR/rdonlyres/7885623D-A487-4CF9-A47F30C5F73D6FE6/0/W83627DHG.pdf</a>

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**Internal ports**

2pc PCI Express full-height full-length expansion card slot
2pc PCI Express x16-Gen2 slot (16 lanes active per slot)
1pc PCI Express x8-Gen1 slot (4 lanes active)
1pc PCI 32bit 33MHz full-height full-length expansion slot
6pc SATA port, each supporting 3Gb/s, NCQ, RAID
1pc FDD port
2pc IEEE 1394 port
External ports (front panel)
2pc USB 2.0/1.1
External ports (rear panel)
2pc RJ45 Gigabit Ethernet
8pc USB 2.0/1.1
2pc PS/2 port for keyboard/mouse
1pc Mini-stereo analog audio microphone-in
1pc Mini-stereo analog audio line-in
4pc Mini-stereo analog audio out (7.1 FL/FR/BL/BR/SL/SR/CEN/LFE)
1pc Mini-stereo digital audio S/PDIF out
1pc optical digital audio S/PDIF out
2pc USB 2.0/1.1 (optional slot bracket)
1pc IEEE 1394 (optional slot bracket)

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**Network options**

Example optional expansion cards
PCI Express x8-Gen2 to dual-port 10+10 Gbps Ethernet NIC
Mellanox MNPH29B-XTC
<a href="http://www.mellanox.com/related-docs/prod_adapter_cards/PB_ConnectXEN_Cards.pdf">www.mellanox.com/related-docs/prod_adapter_cards/PB_ConnectXEN_Cards.pdf</a>
PCI Express x8-Gen2 to dual-port 32+32 Gbps InfiniBand-QDR HCA
Mellanox MHQH29-XTC
<a href="http://www.mellanox.com/related-docs/prod_adapter_cards/PB_ConnectX_VPI.pdf">www.mellanox.com/related-docs/prod_adapter_cards/PB_ConnectX_VPI.pdf</a>

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**GPU options**

Capacity	
Up to 4 GPU cards in external chassis (NVIDIA Quadro Plex)	
Up to 2 internal GPU cards	
NVIDIA SLI multi-GPU supported	
Example max configurations	
External 4-GPU: 2pc NVIDIA Quadro Plex 2200-D2	
<a href="http://www.nvidia.com/page/quadroplex.html">www.nvidia.com/page/quadroplex.html</a>	
Internal 2-GPU: 2pc NVIDIA Quadro FX 5800	
<a href="http://www.nvidia.com/object/product/quadro_fx_5800_us.html">www.nvidia.com/object/product/quadro_fx_5800_us.html</a>	

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**Storage options**

8pc hot-swappable SAS/SATA 3.5" HDD carrier	
1pc 3.5" 1.44MB FDD (optional)	
1pc ODD, 22X DVD/CD +/- read/write, SATA	
Example optional HDD controller with Battery Backup, RAID acceleration	
LSI SAS8888ELP / IBBU05	
<a href="http://www.lsi.com/storage_home/products_home/internal_raid/megaraid_sas/megaraid_sas_8888elp/index.html">www.lsi.com/storage_home/products_home/internal_raid/megaraid_sas/megaraid_sas_8888elp/index.html</a>	
Example max HDD configuration	
8pc Seagate ST31000340NS 1000GB 7200 RPM SATA	
<a href="http://www.seagate.com/docs/pdf/datasheet/disc/ds_barracuda_es_2.pdf">www.seagate.com/docs/pdf/datasheet/disc/ds_barracuda_es_2.pdf</a>	

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**Platform monitoring and management**

Supermicro SuperDoctor for Windows and Linux/GNU	
<a href="http://www.supermicro.com/products/accessories/software/SuperODoctorIII.cfm">www.supermicro.com/products/accessories/software/SuperODoctorIII.cfm</a>	
<a href="http://ftp.supermicro.com/utility/SuperO_Doctor_II/Linux/">ftp.supermicro.com/utility/SuperO_Doctor_II/Linux/</a>	
Monitored parameters	
CPU and chassis temperatures	
System voltages	
Cooling fan speeds	
Chassis intrusion (optional)	

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**Operating system compatibility**

Standards-based platform	
P1C6A-TR4B is a mainstream platform that is broadly compatible with operating system software that supports the industry-standard X86_64 64/32 bit architecture.	
Example configurations	
Microsoft Windows Server 2003 x64 Editions	
<a href="http://www.microsoft.com/windowsserver2003/64bit/x64/editions.msp">www.microsoft.com/windowsserver2003/64bit/x64/editions.msp</a>	
Red Hat Enterprise Linux v3, v4, v5	
<a href="http://www.redhat.com">www.redhat.com</a>	