EXPONENTIALLY BETTER
NVIDIA® QUADRO® 5000

NVIDIA® Quadro® professional graphics solutions, built on the innovative NVIDIA Fermi architecture, are the first professional graphics solutions to integrate high-performance computing with advanced visualization, transforming modern workflows.

Delivering up to 4x faster performance than the previous generation, the NVIDIA® Quadro® 5000 professional solution drives a broad range of design, animation and video applications. Featuring a new Scalable Geometry Engine™ technology, Quadro 5000 can process an amazing 950 million triangles per second, setting the standard for 3D performance benchmarks.[1]

Modern applications harness the latest NVIDIA® CUDA™ parallel processing architecture of the Quadro GPU to deliver performance gains up to 8x compared to previous generations when running computationally intensive applications such as ray tracing, video processing and computational fluid dynamics. For high-precision, data-sensitive applications, Quadro GPUs are the only professional solution that features ECC memory and fast double precision capabilities to ensure the accuracy and fidelity of your results. From medical imaging to structural analysis applications, data integrity and precision is assured, without sacrificing performance.

In addition, the Quadro 5000 solution enables advanced capabilities including stereoscopic 3D, scalable visualization and high-definition 3D broadcasting. With Quadro 5000, your work flows - design, iterate and deliver higher quality results in less time.

PRODUCT SPECIFICATIONS

CUDA PARALLEL PROCESSING CORES
> 352

FRAME BUFFER MEMORY
> 2.5 GB GDDR5

MEMORY INTERFACE
> 320-bit

MEMORY BANDWIDTH
> 120 GB/s

MAX POWER CONSUMPTION
> 152 W

GRAPHICS BUS
> PCI Express 2.0 x16

DISPLAY CONNECTORS*
> DVI-I (1), DisplayPort (2)

STEREO 3D CONNECTOR
> 3-pin mini DIN

3D VISION PRO SUPPORT
> 3 pin mini DIN or USB

FORM FACTOR
> 4.376" H x 9.75" L Dual slot

THERMAL SOLUTION
> Active

ECC MEMORY
> Yes

FAST DOUBLE PRECISION
> Yes

NVIDIA SLI TECHNOLOGY
> Available on Quadro SLI certified paltforms

G-SYNC
> Compatible

HD SDI CAPTURE/OUTPUT
> Compatible

*Two out of any three connectors can be active at a time

[1]Raw throughput number calculated by graphics processing clusters, GPU clock rate, and triangle throughput.

NVIDIA® QUADRO® 5000

Features	Benefits
Scalable Geometry Architecture	Dramatically improves geometry performance across a broad range of CAD, DCC and medical applications, enabling you to work interactively with models and scenes that are an order of magnitude more complex than ever before.
GPU Tessellation with Shader Model 5.0	Quadro Tessellation Engines automatically generate finely detailed geometry, for cinematic quality environments and scenes, without sacrificing performance.
Featuring 2.5 GB of GDDR5 memory with ultra fast bandwidth	Featuring 2.5 GB of memory and memory bandwidth of 120 GB/sec, Quadro 5000 is ideal for display of large models and complex scenes, as well as computation of large datasets.
NVIDIA GigaThread™ Engine	Provides up to 10x faster context switching compared to previous generation architectures, concurrent kernel execution, and improved thread block scheduling.
Dual Copy Engines	Enables the highest rates of parallel data processing and concurrent throughput between the GPU and host, accelerating techniques such as ray tracing, color grading and physical simulation.
NVIDIA Parallel DataCache™	Supports a true cache hierarchy combined with on-chip shared memory. L1 and L2 caches drive exceptional throughput, accelerating features such as real-time ray tracing, physics and texture filtering.
NVIDIA® SLI® Mosaic Technology	NVIDIA® SLI® Mosaic Technology enables transparent scaling of any application, tear-free across up to four display channels, including support for 4K projection, while delivering full performance from a single SLI certified workstation. Available on Quadro SLI certified platforms only.

TECHNICAL SPECIFICATIONS

SUPPORTED PLATFORMS

- Support for two operating systems, from a Quadro SLI Multi-OS certified workstation, with each operating system assigned to a dedicated Quadro GPU
- Microsoft Windows 7 (64-bit and 32-bit)
- Microsoft Windows Vista (64-bit and 32-bit)
- Microsoft XP (64-bit and 32-bit)
- Linux® - Full OpenGL implementation, complete with NVIDIA and ARB extensions (64-bit and 32-bit)
- Solaris®

3D GRAPHICS ARCHITECTURE

- Scalable geometry architecture
- Hardware tessellation engine
- NVIDIA® GigaThread™ engine with dual copy engines
- Shader Model 5.0 (OpenGL 4.0 and DirectX 11)
- Optimized compiler for Cg and Microsoft HLSL
- Up to 16Kx16K texture and render processing
- Transparent multisampling and super sampling
- 16x angle independent anisotropic filtering
- 128-bit floating point performance
- 32-bit per-component floating point texture filtering and blending
- 64x full scene antialiasing (FSAA)/128x FSAA in SLI Mode
- Decode acceleration for MPEG-2, MPEG-4 Part 2 Advanced Simple Profile, H.264, MVC, VC1, DivX (version 3.11 and later), and Flash (10.1 and later)
- Blu-ray dual-stream hardware acceleration (supporting HD picture-in-picture playback)

NVIDIA CUDA PARALLEL PROCESSING ARCHITECTURE

- API support includes:
  - CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
- NVIDIA® Parallel DataCache™ hierarchy (configurable L1 and unified L2 caches)
- Error correction codes (ECC) memory
- 64 KB of RAM (configurable partitioning of shared memory and L1 cache)
- Full IEEE 754-2008 - 32-bit and high performance 64-bit double precision
- Dual Warp Scheduler (schedules and dispatches simultaneously instructions from two independent warps)

ADVANCED DISPLAY FEATURES

- 30-bit color (10-bit per each red, green, blue channel)
- Support for any combination of two connected displays
- Dual DisplayPort (up to 2560x1600 @ 60Hz and 1920x1200 @ 120Hz)
- Dual-link DVI-I output (upto 2560x1600 @ 60Hz and 1920x1200 @ 120Hz)
- Internal 400 MHz DAC DVI-I output (analog display up to2048x1536 @ 85Hz)
- DisplayPort to VGA, DisplayPort to DVI-D (single-link and dual-link) and DisplayPort to HDMI cables (resolution support based on dongle specifications)
- DisplayPort 1.1a, HDMI 1.3a, and HDCP support
- 10-bit internal display processing (hardware support for 10-bit scanout for both windowed desktop and full screen, only available on Windows and Linux with Aero disabled)
- NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and other 3D stereo format support
- Full OpenGL quad buffered stereo support
- Underscan/overscan compensation and hardware scaling
- NVIDIA® nView® multi-display technology
- NVIDIA® SLI® Mosaic Technology

DISPLAYPORT AND HDMI DIGITAL AUDIO

- Support for the following audio modes:
  - Dolby Digital (AC3), DTS 5.1, Multi-channel (7.1 LPCM, Dolby Digital Plus (DD+), and MPEG-2/MPEG-4 AAC
- Data rates of 44.1 KHz, 48 KHz, 88.2 KHz, 96KHz, 176KHz and 192 KHz
- Word sizes of 16-bit, 20-bit and 24-bit

To learn more about NVIDIA Quadro, go to **www.nvidia.com/quadro**

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