



ACCELERATE YOUR WORKFLOW NVIDIA® QUADRO® 4000

The NVIDIA® Quadro® 4000 is the first professional graphics solution in its class to integrate high-performance computing with advanced visualization, transforming modern workflows.

Delivering up to 5x faster performance, the Quadro 4000 professional graphics solution, built on the innovative NVIDIA Fermi architecture, drives a broad range of design, animation and video applications. Featuring a new Scalable Geometry Engine™, Quadro 4000 can process an amazing 890 million triangles per second, breaking previous category 3D performance benchmarks¹.

Modern applications harness the latest NVIDIA® CUDA™ parallel processing architecture of the Quadro GPU to deliver performance gains up to 8x faster than previous generations when running computationally intensive applications such as ray tracing, video processing and computational fluid dynamics. For mission critical applications, Quadro 4000 features fast 64-bit double precision floating point capabilities to ensure the accuracy of

your results. From medical imaging to structural analysis applications, precision is assured without sacrificing performance.

In addition, the Quadro 4000 solution enables advanced capabilities including stereoscopic 3D, scalable visualization and high-definition 3D broadcasting. With Quadro 4000, your work flows - design, iterate and deliver higher quality results in less time.

PRODUCT SPECIFICATIONS

- CUDA PARALLEL PROCESSING CORES
 - > 256
- FRAME BUFFER MEMORY
 - > 2 GB GDDR5
- MEMORY INTERFACE
 - > 256-bit
- MEMORY BANDWIDTH
 - > 89.6 GB/s
- DISPLAY CONNECTORS*
 - > DVI-I (1), DisplayPort (2)
- STEREO 3D CONNECTOR
 - > Optional 3-pin mini DIN
- 3D VISION PRO SUPPORT
 - > 3 pin mini DIN or USB
- MAX POWER CONSUMPTION
 - > 142 W
- GRAPHICS BUS
 - > PCI Express 2.0 x16
- FORM FACTOR
 - > 4.376" H x 9.50" L Single slot
- THERMAL SOLUTION
 - > Active
- FAST DOUBLE PRECISION
 - > Yes
- HD SDI CAPTURE/OUTPUT
 - > Compatible

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

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

NVIDIA® QUADRO® 4000

Features	Benefits
NVIDIA® Scalable Geometry Engine™	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.
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® Multi-OS Technology	Allows a user to run multiple Windows or Linux workstation applications from a single system, with each Operating System directly assigned to a Quadro graphics solution. Only available on SLI Multi-OS certified platforms.

TECHNICAL SPECIFICATIONS

SUPPORTED PLATFORMS

- > Support for two operating systems, from a Quadro SLI Multi-OS certified workstation, with each operation assigned to a dedicated Quadro GPU
- > Microsoft Windows 7 (64-bit and 32-bit)
- > Microsoft Windows Vista (64-bit and 32-bit)
- > Microsoft Windows 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 16K x 16K 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)
- > 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)
- > 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 @ 60 Hz and 1920x1200 @ 120Hz)
- > Dual-link DVI-I output (up to 2560x1600 @ 60Hz and 1920x1200 @ 120Hz)
- > Internal 400 MHz DAC DVI-I output (analog display up to 2048x1538 @ 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
- > NVIDIA® nView® multi-display technology

DISPLAYPORT AND 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 44.1KHz, 48KHz, 88.2KHz, 96KHz, 176KHz, and 192KHz
- > Word sizes of 16-bit, 20-bit and 24-bit

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

