



## DIAGNOSE WITH CONFIDENCE NVIDIA® QUADRO® 2000D

Review high-resolution, detailed patient imagery and make a confident diagnosis faster with the NVIDIA® Quadro® 2000D – the industry's most advanced diagnostic imaging graphics solution.

Delivering best-in-class performance, two dual-link DVI connectors for display flexibility, support for 10 and 12 bit grayscale monitors up to 10Mpixels, and DICOM monitor calibration capabilities – the Quadro 2000D enables more confident medical analysis.

With Quadro 2000D's dual-link DVI connectivity, you can review multiple grayscale patient images at once, or a single ultra high resolution 10MP monitor image, requiring the bandwidth of both dual-link connectors.

Detecting abnormalities revealed in patient imagery requires both monitors and graphics solutions capable of presenting extremely subtle grayscale differences only possible with 10 and 12 bits per pixel. With the Quadro 2000D you get 10 and 12 bit pixel packing support over DVI, qualified by industry leading monitor makers. Since monitor tonal characteristics change over time and vary even between the same models, Quadro 2000D supports monitor DICOM calibration over DVI to maintain gray-level consistency

across monitors and over their lifetime.

Quadro 2000D delivers advanced capabilities including NVIDIA® 3D Vision™ and 3D Vision Pro for the highest quality stereoscopic 3D environments. In addition, NVIDIA® SLI® Multi-OS drives multiple Windows or Linux environments from a single workstation, and Mosaic Technology enables any application to scale across up to eight displays using multiple Quadro graphics boards.

The entire Quadro family takes leading professional applications to a new level of interactivity, leveraging the Fermi architecture to enable hardware-accelerated features, performance and quality not found in any other products. From the 6 GB Quadro 6000 at the ultra-high-end<sup>1</sup> to the small form factor Quadro 600 at the entry-level, NVIDIA solutions deliver the productivity you need at every price point. With Quadro solutions your work flows — design, iterate and deliver higher quality results in less time.



### QUADRO 2000D PRODUCT SPECIFICATIONS

- CUDA PARALLEL PROCESSING CORES
  - > 192
- FRAME BUFFER MEMORY
  - > 1 GB GDDR5
- MEMORY INTERFACE
  - > 128-bit
- MEMORY BANDWIDTH
  - > 41.6 GB/s
- DISPLAY CONNECTORS
  - > 2x Dual Link-DVI-I
- MAX POWER CONSUMPTION
  - > 62 W
- GRAPHICS BUS
  - > PCI Express 2.0 x16
- FORM FACTOR
  - > 4.376" H x 7" L, Single slot
- 3D VISION PRO
  - > Support via USB

## NVIDIA® QUADRO® 2000D

GPU Features	Benefits
NVIDIA® Scalable Geometry Engine™	Dramatically improves geometry performance across a broad range of medical imaging, CAD and DCC applications enabling professionals to work interactively with models and scenes that are an order of magnitude more complex than before.
GPU Tessellation with Shader Model 5.0	Quadro Tessellation Engines automatically generate finely detailed geometry, delivering the highest quality imagery without sacrificing performance.
10 and 12 bit Grayscale and 30 bit Color Fidelity	Only with thousands of discrete shades of gray delivered by 10 and 12 bits can subtle nuances of patient imagery be identified. 30 bit color fidelity (10 bits per color) enables billions rather than millions of color variations for rich, vivid image quality with the broadest dynamic range.
NVIDIA® SLI® Multi-OS	NVIDIA SLI Multi-OS 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. <sup>2</sup>
NVIDIA® Mosaic Technology	NVIDIA Mosaic Technology enables transparent scaling of any application across up to eight display channels. <sup>3</sup>

## TECHNICAL SPECIFICATIONS

### SUPPORTED PLATFORMS

- > 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
- > Shader Model 5.0
- > OpenGL 4.1
- > DirectX 11
- > Optimized compiler for Cg and Microsoft HLSL
- > Up to 16K x16K 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, or 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 or 64-bit double precision
- > Dual Warp Scheduler (schedules and dispatches simultaneously instructions from two independent warps)

### ADVANCED DISPLAY FEATURES

- > 30 bit color (10 and 12 bit per each red, green, blue channel)
- > Support for any combination of two connected displays

- > Dual Dual-link DVI-I output (up to 2560 x 1600 @ 60Hz and 1920 x 1200 @ 120Hz)
- > Internal 400 MHz DAC DVI-I output (analog display up to 2048 x 1536 @ 85Hz)
- > 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™ and 3D Vision Pro 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

### 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, 96 KHz, 176 KHz, 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](http://www.nvidia.com/quadro)  
Follow Quadro on Twitter @NVIDIAQuadro.

<sup>1</sup> 6 GB is supported on Win7 and Linux64 (4GB memory limit on Windows XP64) via Rel 256 driver

<sup>2</sup> Only available on SLI Multi-OS certified platforms.

<sup>3</sup> May require multiple Quadro boards.

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