Overview

NVIDIA Quadro M6000 Graphics



NVIDIA Quadro M6000 12GB Graphics	L2K02AA
NVIDIA Quadro M6000 24GB Graphics	T7T61AA

INTRODUCTION

Push the frontier of graphics processing with the new NVIDIA Quadro M6000 12GB or 24GB graphics card. The Quadro M6000 features the top of the line member of the latest NVIDIA® Maxwell-based GPU architecture, delivering a step function improvement in graphics and GPU computing performance over the previous generation NVIDIA Quadro K6000.

Combining breakthrough performance and advanced capabilities in a power-efficient design, the Quadro M6000 GPU enables leading creators/stylists and designers to tackle visualization and analysis workloads of unprecedented size and scope. In addition, the M6000 is an excellent choice for demanding analysis and simulation applications that rely on high performance single precision GPU computing.

Overview

PERFORMANCE AND FEATURES

The Quadro M6000 graphics card is based on the NVIDIA Maxwell™ architecture. Key performance features and capabilities include:

- 12GB or 24GB ultra-fast GDDR5 graphics memory lets designers and animators model and render characters and scenes at unprecedented scale, complexity and richness
- 3,072 streaming multiprocessor (SMX) cores deliver faster visualization and compute horsepower than previous-generation products
- Supports four simultaneous displays up to Cinema 4k resolution with DisplayPort™ 1.2
- Ultra-low latency video I/O and support for large-scale visualizations
- Full PCI Express 3.0 support

Quadro Boost: a mechanism that automatically maximizes application performance while staying within the specified power envelope. For workloads that do not reach the allowed power level, the GPU clock is automatically increased to "Boost Clock" in order to leverage the remaining power budget for additional increased performance. The GPU will always try to reach the higher "Boost Clock" in order to maximize application performance.

The Quadro Boost feature will disable "Boost Clocking" in the following scenarios:

- When Quadro Sync, or SLI is enabled, the Quadro M6000 will clock to Base Clock automatically.
- If the user manually selects the "Prefer Consistent Performance" Control Panel option to lock explicitly to Base Clock (can be useful for performance tuning of applications during development).

COMPATIBILITY

The Quadro M6000 is supported on the following HP Z Workstations:

- HP Z840 Workstation
- HP Z640 Workstation

SERVICE AND SUPPORT

The NVIDIA Quadro M6000 has a one-year limited warranty or the remainder of the warranty of the HP product in which it is installed. Technical support is available seven days a week, 24 hours a day by phone, as well as online support forums. Parts and labor are available on-site within the next business day. Telephone support is available for parts diagnosis and installation. Certain restrictions and exclusions apply.

Technical Specifications

TECHNICAL SPECIFICATIONS

NVIDIA Quadro M6000 12GB Graphics

Form Factor	4.42” H x 10.5” L Dual Slot Power: 250 Watts Weight: ~1030 grams
Graphics Controller	NVIDIA Quadro M6000 Graphics Card based on the GM200 GPU Core Count: 3072 Base Clock: 1026 MHz Boost Clock: 1152 MHz Idle Clock: 324 MHz
Bus Type	PCI Express 3.0 x16
Memory	12GB GDDR5 384-bit memory I/O path 317 GB/s memory bandwidth ECC Memory (disabled by default)
Connectors	DP (x4) DL-DVI(I) 3-pin mini-DIN connector SLI connector Quadro Sync connector One 8-pin auxiliary power connector Factory configured option: No adapter included with card. Option Kit: No adaptor included with card. DVI to VGA, DisplayPort to VGA, DisplayPort to DVI, and DisplayPort to Dual-Link DVI adapters available as accessories.
Image Quality Features	DisplayPort with Multi-Stream Technology (MST) and High Bit Rate 2 (HBR2), HDMI 1.4, and HDCP 1.3 support NVIDIA 3D Vision™ technology NVIDIA Premium Mosaic and nView
Display Output	400 MHz integrated RAMDAC • Maximum resolution over VGA (through DVI to VGA cable): 2048 × 1536 × 32 bpp at 85 Hz Dual-link internal TMDS (DVI 1.0) • Maximum resolution over digital port (single GPU and SLI mode): 2560 × 1600 × 32 bpp

	at 60 Hz (reduced blanking) Single-link internal TMDS (DVI 1.0) • Maximum resolution over digital port (single GPU and SLI mode):1920 × 1200 × 32 bpp at 60 Hz (reduced blanking) DisplayPort 1.2 with MST and HBR2. Each DisplayPort connector has the following capabilities: • Maximum pixel clock: 592 MPixel/s • Maximum bandwidth: 17.2 Gbps • Example maximum resolution: 4096 × 2160 × 30 bpp at 60Hz HDMI • Maximum resolution (requires DP to HDMI adapter): 4096 × 2160 × 8 bpp at 60Hz
Shading Architecture	Shader Model 5.0
Supported Graphics APIs	Full OpenGL 4.4 Full DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
Available Graphics Drivers	Windows 10 Windows 8.1 Windows 8 Windows 7 Professional Linux HP qualified drivers may be preloaded or available from the HP support Web site: http://www8.hp.com/us/en/drivers.html
Notes	- NVIDIA GRID VGX Pass Through feature supported on NVIDIA Quadro M6000 to enable direct mapping of GPU to Virtual Machine. - No display output adapter included. - For HP Z840 Workstation configurations, the 1125W power supply option must be used.

TECHNICAL SPECIFICATIONS

NVIDIA Quadro M6000 24GB Graphics

Form Factor	4.42” H x 10.5” L Dual Slot Power: 250 Watts Weight: 1023 grams
Graphics Controller	NVIDIA Quadro M6000 Graphics Card based on the GM200 GPU Core Count: 3072 Base Clock: 1026 MHz Boost Clock: 1152 MHz Idle Clock: 324 MHz
Bus Type	PCI Express 3.0 x16
Memory	24GB GDDR5 384-bit memory I/O path 317 GB/s memory bandwidth ECC Memory (disabled by default)
Connectors	DP (x4) Dual-Link DVI-I Optional Stereo SLI connector Quadro Sync connector One 8-pin auxiliary power connector Factory configured option: No adapter included with card. Option Kit: No adaptor included with card. DVI to VGA, DisplayPort to VGA, DisplayPort to DVI, and DisplayPort to Dual-Link DVI adapters available as accessories.
Image Quality Features	DisplayPort with Multi-Stream Technology (MST) and High Bit Rate 2 (HBR2), HDMI 1.4, and HDCP 1.3 support NVIDIA 3D Vision™ technology NVIDIA Premium Mosaic and nView
Display Output	400 MHz integrated RAMDAC • Maximum resolution over VGA (through DVI to VGA cable): 2048 × 1536 × 32 bpp at 85 Hz Dual-link internal TMDS (DVI 1.0) • Maximum resolution over digital port (single GPU and SLI mode): 2560 × 1600 × 32 bpp

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Shading Architecture	Shader Model 5.0
Supported Graphics APIs	Full OpenGL 4.4 Full DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
Available Graphics Drivers	Windows 10 Windows 8.1 Windows 8 Windows 7 Professional Linux HP qualified drivers may be preloaded or available from the HP support Web site: http://www8.hp.com/us/en/drivers.html
Notes	- NVIDIA GRID VGX Pass Through feature supported on NVIDIA Quadro M6000 to enable direct mapping of GPU to Virtual Machine. - No display output adapter included. - For HP Z840 Workstation configurations, the 1125W power supply option must be used.

Summary of Changes

Date of change:	Version History:		Description of change:
October 1, 2015	From v1 to v2	Added	Windows 10 in Available Graphics Drivers
		Changed	Display Output options
April 1, 2016	From v2 to v3	Added	24GB option

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