# NVIDIA PROFESSIONAL GRAPHICS SOLUTIONS

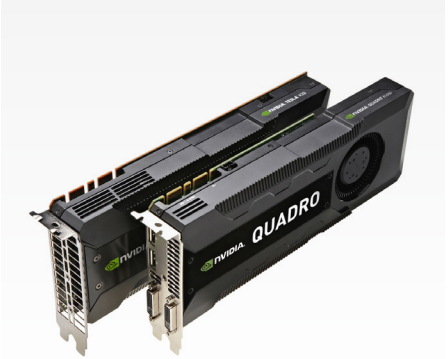
Accelerate your creativity and expand your innovation with NVIDIA® Quadro®—the world's most powerful workstation graphics. Support for multiple 4K displays, large memory capacity, advanced photorealistic rendering, and flexible multi-GPU configurations let you tackle the most challenging visual computing tasks effortlessly. Whether you're developing revolutionary products or telling spectacularly vivid visual stories, Quadro gives you the performance to do it brilliantly.


## NVIDIA® Quadro® 3D Workstation Professional Graphics Solutions

Designed and built specifically for artists, designers, and engineers, NVIDIA Quadro GPUs power more than 100 professional applications across a broad range of industries. Professionals trust them to enable their best work using applications such as Adobe® Creative Cloud, Avid Media Composer, Autodesk Suites, Dassault Systemes, CATIA and SOLIDWORKS, Siemens NX, PTC Creo, and many more.


## NVIDIA® Tesla® Co-Processors

NVIDIA Tesla GPU parallel processors are tailored to provide high-performance NVIDIA CUDA® acceleration for your workflow. Designed for professional systems and demanding professional applications, Tesla GPUs perform the complex calculations required for CAE/CFD calculations, seismic processing, ray-traced rendering, compositing, image processing, physics, and effects many times faster than a CPU.




## NVIDIA® Multi-GPU Technology

NVIDIA® Multi-GPU Technology leverages combinations of Quadro and Tesla GPUs to intelligently scale the performance of your application and dramatically speed up your workflow. This delivers significant business impact across industries such as Manufacturing, Media and Entertainment, and Energy Exploration.

## NVIDIA® NVS™ Commercial Graphics Solutions

NVIDIA NVS graphics boards are the standard for multi-display commercial graphics and are built for seamless enterprise deployment. They're the graphics solutions of choice for financial institutions, emergency call centers, digital signage systems, and other mission-critical environments.

# NVIDIA PROFESSIONAL GRAPHICS SOLUTIONS

PROFESSIONAL GRAPHICS SOLUTIONS LINE CARD

## Quadro for Desktop Workstations

| | DESKTOP | | | | | MOBILE | | GPU SPECIFICATIONS | | | PERFORMANCE | | DISPLAY TECHNOLOGY | | | | | | | | | | | | | OPTIONS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ThinkStation P900 Tower[1] | ThinkStation P700 Tower[1] | ThinkStation P500 Tower[1] | ThinkStation P300 Tower | ThinkStation P300 Small Form Factor | ThinkPad W550s | ThinkPad W540/W541 | NVIDIA® CUDA® Processing Cores[2] | GPU Memory | Memory Bandwidth | Floating-Point Performance-Single Precision (Tflops, Peak) | Error Correcting Code (ECC) Memory | Dual-Link DVI[3] | DisplayPort 1.2[4] | HDMI Via Adaptors | UHD 3840 x 2160 @ 60Hz | Cinema 4K 4096 x 2160 @ 60Hz | VGA Adaptor | Maximum Active Displays[5] | FSAA (Maximum) | NVIDIA® FXAA™ and TXAA Antialiasing | NVIDIA® TXAA™ Antialiasing | NVIDIA® SLI® | NVIDIA Quadro® Mosaic Technology | OpenGL | DirectX | NVIDIA® Multi-OS Workstation Support | NVIDIA® SLI® Frame Rendering Support | HD SDI Capture/Output | GPUDirect™ for Video | Graphics Syncronization[6] | NVIDIA Mulit-GPU Technology-Enabled[7] |
| Quadro M6000 **NEW** | 3[8] | 2[9] | 1 | | | | | 3,072 | 12 GB | 317 GBps | 7 | 1[11] | 1 | 4 | 4 | 4 | 4 | | 4 | 64x | FX / TX | • | • | • | 4.4 | 11.2 | | | | • | • | • |
| Quadro K5200 | 3[8] | 2[9] | 2[9] | | | | | 2,304 | 8 GB | 192 GBps | 4 | 1[11] | 2 | 2 | 4 | 2 | 2 | | 4 | 64x | FX / TX | • | • | • | 4.4 | 11.2 | | • | • | • | • | • |
| Quadro K4200 | 4[8] | 2[9] | 2[9] | 1 | | | | 1,344 | 4 GB | 173 GBps | 2.3 | | 1 | 2 | 3 | 2 | | | 4 | 64x | FX / TX | • | • | • | 4.4 | 11.2 | | • | • | • | • | • |
| Quadro K2200 | 4 | 3 | 2 | 1 | | | | 640 | 4 GB | 80 GBps | 1.4 | | 1 | 2 | 3 | 2 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.2 | | | | | | • |
| Quadro K1200[10] **NEW** | | | | | 1 | | | 512 | 4 GB | 80 GBps | 1 | | | 4 | 4 | 4 | | | 4 | 64x | FX / TX | • | | • | | | | | | | | |
| Quadro K620 | 4 | 3 | 2 | 1 | 1 | | | 384 | 2 GB | 29 GBps | | | 1 | 1 | 2 | 1 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.2 | | | | | | • |
| Quadro K420 | 4 | 3 | 2 | 1 | 1 | | | 192 | 1 GB | 29 GBps | | | 1 | 1 | 2 | 1 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.2 | | | | | | • |
| Quadro K6000 | 3[8] | 2[9] | 1 | | | | | 2,880 | 12 GB | 288 GBps | 5.1 | 1[11] | 2 | 2 | 4 | 2 | 2 | | 4 | 64x | FX / TX | • | • | • | 4.4 | 11.2 | | | • | • | • | • |
| Quadro K5000 | 3[8] | 2[9] | 2[9] | | | | | 1,536 | 4 GB | 173 GBps | 2.1 | 1[11] | 2 | 2 | 4 | 2 | | | 4 | 64x | FX / TX | • | • | • | 4.4 | 11.1 | • | • | • | • | • | • |
| Quadro K4000 | 4 | 2 | 2 | 1 | | | | 768 | 3 GB | 134 GBps | 1.2 | | 1 | 2 | 3 | 2 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.1 | | | • | • | | • |
| Quadro K2000 | 4 | 3 | 2 | 1 | | | | 384 | 2 GB | 64 GBps | 0.73 | | 1 | 2 | 3 | 2 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.1 | | | | | | • |
| Quadro K2000D | 4 | 3 | 2 | 1 | | | | 384 | 2 GB | 64 GBps | | | 2 | 1 | 3 | 1 | | | 4 | 64x | FX / TX | • | | • | 4.4 | 11.1 | | | | | | • |
| Quadro K600 | 4 | 3 | 2 | 1 | 1 | | | 192 | 1 GB | 29 GBps | | | 1 | 1 | 2 | 1 | | | 2 | 64x | FX / TX | • | | • | 4.4 | 11.1 | | | | | | • |
| Quadro 410 | 4 | 3 | 2 | 1 | 1 | | | 192 | 512 MB | 14 GBps | | | 1 | 1 | 2 | | | | 2 | 32x | FX / TX | • | | • | 4.4 | 11.1 | | | | | | • |
| Quadro Sync | 1[12] | 1[12] | 1[12] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## Tesla for Desktop Workstations

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| Tesla K40 | 2 | 1 | 1 | | | | | 2,880 | 12GB | 288 GBps | 5[13] | 1 | | | | | | | | | | | | | | | | | • | | • |
| Tesla K20 | 2 | 1 | 1 | | | | | 2,496 | 5 GB | 208 GBps | 3.5 | 1 | | | | | | | | | | | | | | | | | • | | • |

## GRID for Desktop Workstations

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| GRID K2 | 2[14] | 1 | 1 | | | | | 3,072 | 8GB | 320 GBps | 4.5 | 1[11] | | | | | | | 4 (virtual) | | | | | | 4.4 | 11.1 | | | | • | | |

## Quadro for Mobile Workstations

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| Quadro K2100M | | | | | | | 1 | 576 | 2 GB | 48 GBps | 750 | | 1[15] | 1 | 1[16] | | | 1 | 3[15] | 64x | • | • | | • | 4.4 | 11.1 | | | | | | |
| Quadro K1100M | | | | | | | 1 | 384 | 2 GB | 45 GBps | 550 | | 1[15] | 1 | 1[16] | | | 1 | 3[15] | 64x | • | • | | • | 4.4 | 11.1 | | | | | | |
| Quadro K620M **NEW** | | | | | | 1 | | 384 | 2 GB | 14.4 GBps | | | | 4 | 4 | | | | 4 | 64x | • | • | | • | | | | | | | | |

## NVS for Desktop Workstations

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NVS 510[16] | 6 | 5 | 4 | 2 | 2 | | | 192 | 2 GB | 29 GBps | | | | 4 | 4 | 4 | | | 4 | | | | | • | | | | | | | | |
| NVS 315[16] | 6 | 5 | 4 | 2 | 2 | | | 48 | 1 GB | 14 GBps | | | | 2 | 2 | | | | 2 | | | | | • | | | | | | | | |
| NVS 310[16] | 6 | 5 | 4 | 2 | 2 | | | 48 | 512 MB | 14 GBps | | | | 2 | 2 | | | | 2 | | | | | • | | | | | | | | |

For more information on NVIDIA NVS mobile solutions, please visit **www.nvidia.com/object/notebook-nvs.html**

1. See Lenovo ThinkStation power supply and CPU configuration.
2. CUDA parallel processing cores cannot be compared between GPU generations due to several important architectural differences that exist between streaming multiprocessor designs
3. Maximum display resolution: 330M Pixels/sec (ex 2560x1600 @ 60hz or 1920x1200 @ 120Hz)
4. Adaptors available for DVI-SL, DVI-DL, HDMI, and VGA. NVS 315 offers DP1.2 through the use of DMS-59 to DP1.2 cable.
5. Quadro K4000, K2000, and K2000D are equipped with 3 on-board display connectors with the option to connect a fourth display using DisplayPort 1.2's new multi-streaming capabilities. 4 Displays require a supported DisplayPort 1.2 Multi-Stream capable hub or displays.
6. Quadro K-series GPUs are only compatible with NVIDIA Quadro Sync.
7. Quadro K-series GPUs are only compatible with Tesla K20 and K40.
8. Quadro Sync synchronizes displays connected; up to four GPU's for Quadro Mosaic. Supported on Quadro K4200, K5000, K5200, K6000 and M6000 and on Lenovo ThinkSations P500, P700 and P900.
9. SLI technology uses a cable which enables simple synchronization over dual GPU installations for Quadro Mosaic.
10. Available in low profile (half height) form factor only. No ATX version.
11. Ensures data integrity and reliability by eliminating soft errors on DRAM only
12. Special bid; requires K4200 or higher GPU.
13. The Single Precision theoretical peak performance for Tesla K40 is calculated for the highest GPU Boost level of 875MHz. For more information on Tesla K40 and GPU Boost visit, **www.nvidia.com/tesla**
14. GRID K2 is available on Lenovo systems via Special Bid only.
15. Lenovo's ThinkPad Ultra Dock includes the following DisplayPorts: a DVI port, an HDMI port and a VGA port.
16. In some Lenovo workstations, a high number of installed graphics boards may require the use of smaller than x16 PCIe card slots.

For more information on NVIDIA Workstation products, visit **www.nvidia.com/workstation**



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