

# NVIDIA PROFESSIONAL GRAPHICS SOLUTIONS

You need to do great things. Create and collaborate from anywhere, on any device, without distractions like slow performance, poor stability, or application incompatibility. With NVIDIA  $RTX^{\mathsf{M}}$ , you can unleash your vision and enjoy ultimate creative freedom.

NVIDIA RTX powers a wide range of mobile, desktop, and data center solutions for millions of professionals. Leverage the latest advancements in real-time ray tracing, AI, virtual reality (VR), and interactive, photorealistic rendering, so you can develop revolutionary products, tell vivid visual stories, and design groundbreaking architecture like never before. Support for advanced features, frameworks, and SDKs across all of our products gives you the power to tackle the most challenging visual computing tasks, no matter the scale.



#### **NVIDIA Laptop GPUs**

Professionals today increasingly need to work on complex workflows like VR, 8K video editing, and photorealistic rendering on the go. NVIDIA RTX mobile GPUs deliver desktop-level performance in a portable form factor. With up to 24 gigabytes (GB) of massive GPU memory, NVIDIA RTX mobile GPUs combine the latest advancements in real-time ray tracing, advanced shading, and Al-based capabilities, so professionals can tackle demanding workflows from anywhere.



### **NVIDIA Desktop Workstations GPUs**

NVIDIA RTX-powered desktop workstations are designed and built specifically for artists, designers, and engineers, to drive their most challenging workloads. Connect multiple NVIDIA RTX GPUs to scale up to 96 GB of GPU memory and performance to tackle the largest workloads and speed up your workflow. This delivers significant business impact across industries like manufacturing, media and entertainment, and energy.



#### **NVIDIA Servers GPUs**

Demand for visualization, rendering, data science, and simulation continues to grow as businesses tackle larger, more complex workloads. Scale up your visual compute infrastructure and tackle graphics-intensive workloads, complex designs, photorealistic renders, and augmented and virtual environments at the edge with NVIDIA GPUs. Optimized for reliability in enterprise data centers, NVIDIA GPUs feature both active and passive thermal solutions to fit into a variety of servers.

## **NVIDIA PROFESSIONAL GRAPHICS SOLUTIONS**

	GPU SPE	ATIONS	;	PERFORMANCE				DISPLAY TECHNOLOGY							VIRTUAL REALITY			OPTIONS						
	NVIDIA CUDA® Processing Cores¹	NVIDIA RT Cores	Tensor Cores	GPU Memory	Peak Memory Bandwidth	NVIDIA® NVLink®	Floating-Point Performance, Single Precision (TFLOPS, Peak)	Accelerated Double Precision	Tensor Performance (TFLOPS, Peak)²	Error-Correcting Code (ECC) Memory	Maximum Active Displays	Dual-Link DVI or DVI-D <sup>3</sup>	DisplayPort 1.2 <sup>4</sup> and 1.4 <sup>5</sup>	HDMI via Adaptors, HDMI	NVIDIA SLI®6	High-Dynamic Range (HDR) <sup>7</sup>	NVIDIA Quadro <sup>®</sup> Mosaic Technology	VR Ready <sup>8</sup>	VirtualLink™	Single-Pass Stereo	GPUDirect® for Video	Graphics Synchronization with Sync II	3D Stereo	Encode/Decode <sup>9</sup>
LAPTOP GPUS																								
Quadro RTX™ 6000	4,608	72	576	24 GB	672 GB/s		14.9		119.4		4*	Yes*	Yes*	Yes*		•	•	•		• 10	•		•	•
Quadro RTX 5000	3,072	48	384	16 GB	448 GB/s		9.4		75.2		4*	Yes*	Yes*	Yes*		•	•	•		•10	•		•	•
Quadro RTX 4000	2,560	40	320	8 GB	448 GB/s		8		63.9		4*	Yes*	Yes*	Yes*		•	•	•		•10	•		•	•
Quadro RTX 3000	1,920	30	240	6 GB	336 GB/s		5.4		42.9		4*	Yes*	Yes*	Yes*		•	•	•		•10			•	•
Quadro T2000	1,024			4 GB	128 GB/s		3.5				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro T1000	768			4 GB	128 GB/s		2.6				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro P620	512			4 GB	96 GB/s		1.5				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro P520	384			2 GB or 4 GB	48 GB/s		1.1																	
Quadro P5200	2,560			16 GB	230 GB/s		8.9				4*	Yes*	Yes*	Yes*		•	•	•		<b>●</b> 11	•		•	•
Quadro P4200	2,304			8 GB	224 GB/s		7.6				4*	Yes*	Yes*	Yes*		•	•	•		<b>●</b> 11	•		•	•
Quadro P3200	1,792			6 GB	168 GB/s		5.3				4*	Yes*	Yes*	Yes*		•	•	•		• <sup>11</sup>			•	•
Quadro P2000	768			4 GB	96 GB/s		2.4				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro P1000	512			4 GB	96 GB/s		1.6				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro P600	384			4 GB	80 GB/s		1.2				4*	Yes*	Yes*	Yes*		•	•						•	•
Quadro P500	256			2 GB	40 GB/s		0.75																	
DESKTOP																								
NVIDIA RTX A6000	10,752	84	336	48 GB	768 GB/s	•	38.712		309.713	•14	4		4	4	•	•	•	•		•10	•	•	•	•
Quadro GV100	5,120		640	32 GB	870 GB/s	•	14.8	•	118.5	<ul><li>15</li></ul>	4		4	4	•	•	•	•			•	•	•	•
Quadro RTX 8000	4,608	72	576	24 GB	672 GB/s	•	16.3		130.5	<ul><li>14</li></ul>	4		4	4	•	•	•	•	•	<ul><li>10</li></ul>	•	•	•	•
Quadro RTX 6000	4,608	72	576	24 GB	672 GB/s	•	16.3		130.5	●14	4		4	4	•	•	•	•	•	•10	•	•	•	•
Quadro RTX 5000	3,072	48	384	16 GB	448 GB/s	•	11.2		89.2	•14	4		4	4	•	•	•	•	•	• 10	•	•	•	•
Quadro RTX 4000	2,304	36	288	8 GB	288 GB/s		7.1		57		4		3	4		•	•	•	•	<ul><li>10</li></ul>	•	•	•	•
Quadro P2200	1,280			5 GB	200 GB/s		3.8				4		4	4		•	•						•	•
Quadro P1000	640			4 GB	80 GB/s		1.8				4		4	4		•	•						•	•
Quadro P620	512			2 GB	80 GB/s		1.3				4		4	4		•	•						•	•
Quadro P400	256			2 GB	32 GB/s		0.6				316		3	3		•	•						•	•
SERVER																								
NVIDIA A40	10,752	84	336	48 GB	696 GB/s	•	37.712		301.913	•	3		3	3	•	•	•	•		•10	•	•	•	•
Quadro RTX 8000 (Passive Thermal Solution)	4,608	72	576	48 GB	624 GB/s	•	14.9		119.4	•14					•	•	•				•			•
Quadro RTX 6000 (Passive Thermal Solution)	4,608	72	576	24 GB	624 GB/s	•	14.9		119.4	<ul><li>14</li></ul>					•	•	•				•			•

- \* Check with OEM manufacturer for specific display topology.
- CUDA parallel processing cores cannot be compared between GPU generations due to several important architectural differences that exist between streaming multiprocessor designs.
- 2. FP16 matrix multiply with FP16 or FP32 accumulate.
- 3. Maximum display resolution: 1,050M pixels/sec [32.4 Gb/s] [ex 7680 x 4320 @ 60 hz or 5120 x 2880 @ 60 hz]. NVIDIA Pascal™ GPUs support dual-link DVI-D.
- 4. NVIDIA Turing", Volta" and Pascal architectures support DP1.4. Adaptors available for DVI-SL, DVI-DL, HDMI, and VGA.
- Quadro RTX 8000, Quadro RTX 6000, and Quadro RTX 5000 active cards support display stream compression (DSc).
- 6. SLI functionality is provided via NVLink.
- 7. Supported adaptors are required for HDMI.
- VR Ready GPUs have the performance and features required for high-quality VR experiences.
- 9. For details on GPU-specific video encode/decode format support, refer to: developer.nvidia.com/video-encode-decode-gpu-support-matrix
- 10. Supports Turing GPU's multi-view rendering (MVR) feature.

- 11. Supports Pascal GPU's simultaneous multi-projection (SMP) feature.
- 12. Peak rates are based on GPU Boost clock.
- 13. Effective TFLOPS using the new sparsity feature.
- Ensures data integrity and reliability by eliminating soft errors on direct random-access memory (DRAM) only.
- Ensures data integrity and reliability by eliminating soft errors on both GPU cache and on-board DRAM.
- 16. P400 can drive four displays via multi-stream transport (MST).

