



NVIDIA PROFESSIONAL GRAPHICS SOLUTIONS

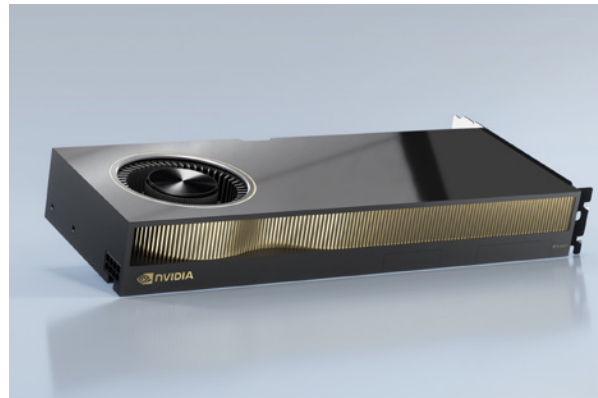
You need to do great things. Create and collaborate from anywhere, on any device, without distractions like slow performance, poor stability, or application incompatibility. With NVIDIA RTX™, you can unleash your vision and enjoy ultimate creative freedom.

NVIDIA RTX and NVIDIA Quadro professional visualization products power a wide range of laptop, desktop, and data center solutions. 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.



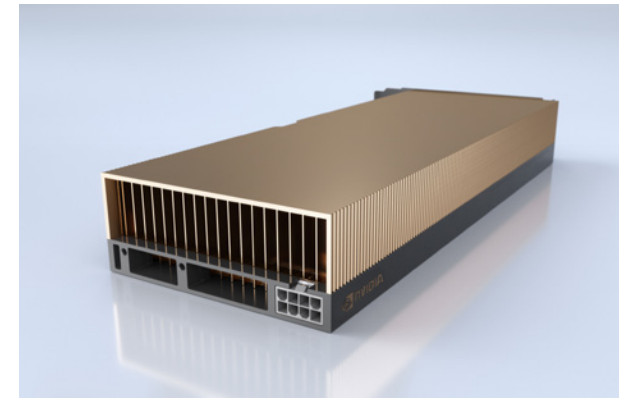
NVIDIA Professional Laptop GPUs

Professionals today increasingly need to work on complex workflows like VR, 8K video editing, and photorealistic rendering on the go. NVIDIA RTX and Quadro RTX laptop GPUs deliver world-class performance in a portable form factor. NVIDIA RTX laptop GPUs combine the latest advancements in real-time ray tracing, advanced shading, and AI-based capabilities, so professionals can tackle demanding workflows from anywhere.



NVIDIA Desktop Workstation GPUs

NVIDIA RTX and Quadro RTX powered desktop workstations are designed and built specifically for artists, designers, and engineers, to drive their most challenging workloads. Connect multiple high-end desktop 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 Data Center 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 SPECIFICATIONS						PERFORMANCE					DISPLAY TECHNOLOGY					VIRTUAL REALITY		OPTIONS				
NVIDIA CUDA® Processing Cores ¹	NVIDIA RT Cores	Tensor Cores	GPU Memory	Peak Memory Bandwidth	NVIDIA® NVLink®	Floating-Point Performance, Single Precision (TFLOPS, Peak) ²	Accelerated Double Precision	Tensor Performance (TFLOPS, Peak) ^{3,4}	Error-Correcting Code (ECC) Memory	Maximum Active Displays	DisplayPort 1.2 ⁵ and 1.4 ⁶	HDMI via Adaptors, HDMI	NVIDIA SLI ^{8,9}	USB-C Connector	High-Dynamic Range (HDR) ⁶	NVIDIA Quadro® Mosaic Technology	VR Ready ⁷	Variable Rate Shading	GPUDirect [®] for Video	Graphics Synchronization with Sync II	3D Stereo*	Encode/Decode ¹⁰

LAPTOP GPUs

NEW	GPU Model	CUDA Cores	RT Cores	Tensor Cores	GPU Memory	Peak Memory Bandwidth	NVLink	FP32 Perf (TFLOPS)	Acc. DP Perf	Tensor Perf (TFLOPS)	ECC Mem	Max Displays	DP 1.2/1.4	HDMI	SLI	USB-C	HDR	Mosaic	VR Ready	VR Shading	GPUDirect	Sync II	3D Stereo	Encode/Decode
	NVIDIA RTX A5000	6,144	48 (2nd Gen)	192 (3rd Gen)	16 GB	448 GB/s		21.7		174.0		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA RTX A4000	5,120	40 (2nd Gen)	160 (3rd Gen)	8 GB	384 GB/s		17.8		142.5		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA RTX A3000	4,096	32 (2nd Gen)	128 (3rd Gen)	6 GB	264 GB/s		12.8		102.2		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA RTX A2000	2,560	20 (2nd Gen)	80 (3rd Gen)	4 GB	192 GB/s		9.3		74.7		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA T1200	1,024			4 GB	192 GB/s		3.7				4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA T600	896			4 GB	160 GB/s		2.5				4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	NVIDIA T500	896			2 GB or 4 GB	80 GB/s		3.0									•	•	•	•	•	•	•	•
	Quadro RTX™ 6000	4,608	72	576	24 GB	672 GB/s		14.9		119.4		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro RTX 5000	3,072	48	384	16 GB	448 GB/s		9.4		75.2		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro RTX 4000	2,560	40	320	8 GB	448 GB/s		8		63.9		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro RTX 3000	1,920	30	240	6 GB	336 GB/s		5.4		42.9		4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro T2000	1,024			4 GB	128 GB/s		3.5				4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro T1000	896			4 GB	128 GB/s		2.6				4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro P620	512			4 GB	96 GB/s		1.5				4*	Yes*	Yes*			•	•	•	•	•	•	•	•
	Quadro P520	384			2 GB or 4 GB	48 GB/s		1.1									•	•	•	•	•	•	•	•

DESKTOP GPUs

NEW	GPU Model	CUDA Cores	RT Cores	Tensor Cores	GPU Memory	Peak Memory Bandwidth	NVLink	FP32 Perf (TFLOPS)	Acc. DP Perf	Tensor Perf (TFLOPS)	ECC Mem	Max Displays	DP 1.2/1.4	HDMI	SLI	USB-C	HDR	Mosaic	VR Ready	VR Shading	GPUDirect	Sync II	3D Stereo	Encode/Decode
	Quadro GV100	5,120		640	32 GB	870 GB/s	•	14.8	•	118.5	• ¹¹	4	4	4	•		•	•	•	•	•	•	•	•
	NVIDIA RTX A6000	10,752	84 (2nd Gen)	336 (3rd Gen)	48 GB	768 GB/s	•	38.7		309.7	• ¹²	4	4	4	•		•	•	•	•	•	•	•	•
	NVIDIA RTX A5000	8,192	64 (2nd Gen)	256 (3rd Gen)	24 GB	768 GB/s	•	27.8		222.2	• ¹²	4	4	4	•		•	•	•	•	•	•	•	•
	NVIDIA RTX A4000	6,144	48 (2nd Gen)	192 (3rd Gen)	16 GB	448 GB/s		19.2		153.4	• ¹²	4	4	4	•		•	•	•	•	•	•	•	•
	NVIDIA T1000	896			4 GB	160 GB/s		2.5				4	4	4			•	•	•	•	•	•	•	•
	NVIDIA T600	640			4 GB	160 GB/s		1.7				4	4	4			•	•	•	•	•	•	•	•
	NVIDIA T400	384			2 GB	80 GB/s		1.0				4 ¹³	3	3			•	•	•	•	•	•	•	•
	Quadro RTX 8000	4,608	72	576	48 GB	672 GB/s	•	16.3		130.5	• ¹²	4	4	4	•	•	•	•	•	•	•	•	•	•
	Quadro RTX 6000	4,608	72	576	24 GB	672 GB/s	•	16.3		130.5	• ¹²	4	4	4	•	•	•	•	•	•	•	•	•	•
	Quadro RTX 5000	3,072	48	384	16 GB	448 GB/s	•	11.2		89.2	• ¹²	4	4	4	•	•	•	•	•	•	•	•	•	•
	Quadro RTX 4000	2,304	36	288	8 GB	288 GB/s		7.1		57		4	3	4			•	•	•	•	•	•	•	•
	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				4 ¹³	3	3			•	•	•	•	•	•	•	•

DATA CENTER GPUs

NEW	GPU Model	CUDA Cores	RT Cores	Tensor Cores	GPU Memory	Peak Memory Bandwidth	NVLink	FP32 Perf (TFLOPS)	Acc. DP Perf	Tensor Perf (TFLOPS)	ECC Mem	Max Displays	DP 1.2/1.4	HDMI	SLI	USB-C	HDR	Mosaic	VR Ready	VR Shading	GPUDirect	Sync II	3D Stereo	Encode/Decode
	NVIDIA A40	10,752	84	336	48 GB	696 GB/s	•	37.4		299.4	•	4	3	3	•		•	•	•	•	•	•	•	•
	NVIDIA A10	9,216	72	288	24 GB	600 GB/s		31.2		249.9	•						•	•	•	•	•	•	•	•
	NVIDIA A16	4x 1,280	4x 10	4x 40	4x 16GB	4x 16GB/s		4x 4.45		4x 17.82	•						•	•	•	•	•	•	•	•
	Quadro RTX 8000 (Passive Thermal Solution)	4,608	72	576	48 GB	624 GB/s	•	14.9		119.4	• ¹²						•	•	•	•	•	•	•	•
	Quadro RTX 6000 (Passive Thermal Solution)	4,608	72	576	24 GB	624 GB/s	•	14.9		119.4	• ¹²						•	•	•	•	•	•	•	•

* 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.
- Peak rates are based on GPU Boost clock.
- FP16 matrix multiply with FP16 or FP32 accumulate.

4. Effective TFLOPS using the Ampere sparsity feature.

5. NVIDIA Turing™, Volta™ and Pascal architectures support DP1.4. Adaptors available for DVI-SL, DVI-DL, HDMI, and VGA.

6. NVIDIA RTX Turing and Ampere architecture-based active desktop GPUs support display stream compression (DSC).

7. SLI functionality is provided via NVLink.

8. Supported adaptors are required for HDMI.

9. Supports multi-view rendering (MVR) feature.

10. For details on GPU-specific video encode/decode format support, refer to: <https://developer.nvidia.com/video-encode-and-decode-gpu-support-matrix-new>

11. Ensures data integrity and reliability by eliminating soft errors on both GPU cache and on-board DRAM.

12. Ensures data integrity and reliability by eliminating soft errors on direct random-access memory (DRAM) only.

13. NVIDIA T400 and Quadro P400 desktop GPUs can drive four displays via multi-stream transport (MST).

For more information on NVIDIA professional graphics solutions, visit: www.nvidia.com/en-us/design-visualization/rtx/

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PROFESSIONAL GRAPHICS SOLUTIONS LINE CARD

