

# Nvidia Turing - The first GPU to own a new generation architecture that helps detect beams in real time

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SIGGRAPH - an annual event in computer graphics - has long since lost its artistic touch, instead of a combination of technology products for both high-end and high-end users. Last year saw the emergence of AMD, this year, perhaps even more remarkable is an Nvidia product.

On SIGGRAPH stage, Mr. Jen-Hsun, Nvidia's CEO, introduced the new generation of Quadro graphics cards called Quadro RTX, using Nvidia's new generation GPU architecture called Turing. Ray Tracing technology is the key to photorealism for the first time given by J. Turner Whitted on VAX-11/780 and later called Nvidia Global Illumination, which is the ability Precise transcription impacts light in an object's environment (detecting the path of light through pixels) to create images that are as realistic as possible.

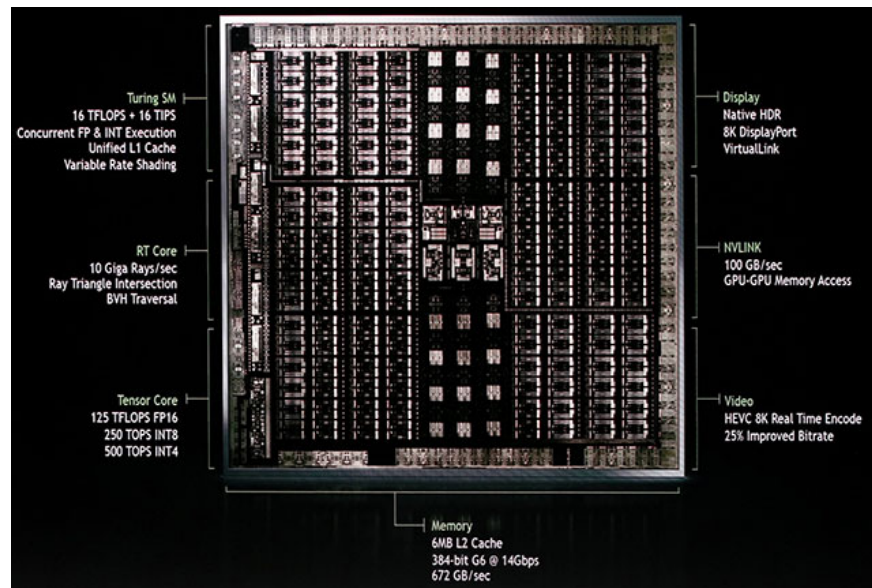
Previously this took several hours, even a few days, to complete. But now Nvidia wants to change that. Nvidia officially introduced three new Quadro cards: Quadro RTX 5000, RTX 6000 and RTX 8000.

Model	Quadro RTX 5000	Quadro RTX 6000	Quadro RTX 8000	Tesla V100 (Volta)
RAM	16GB GDDR6	24GB GDDR6	48GB GDDR6	16GB HBM2
CUDA Cores	3,702	4,608	4,608	5120
RT Cores	Yes	Yes	Yes	No
Tensor Cores	384	576	576	640
Bus	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16
NVLink	Yes	Yes	Yes	Yes
Display	4x DP 1.4, 1x VirtualLink	4x DP 1.4, 1x VirtualLink	4x DP 1.4, 1x VirtualLink	4x DP 1.4
Price	\$2,300	\$6,300	\$10,000	\$10,600 (at launch)

## Summary of new Nvidia cards

Jen-Hsun said it was the most significant achievement since CUDA was born 10 years ago. (Previously, graphics cards and discrete GPUs could only speed up games for better images, but since 2006, Nvidia has introduced

CUDA to allow chips to perform both computing operations in parallel with the main processor of the PC). These are also the first microprocessors capable of real-time ray tracing on the market.



*New architecture graphics card supports Deep Learning, AI and ray detection*

The core of these graphics cards is GPU Turing including:

1. The Core Streaming Multiprocessor (SM) helps calculate and simulate depth.
2. Real Time Raytracing core (RTRT) helps detect beams in real time.
3. Tensor Core for Deep Learning and AI.
4. Video subsystem provides Encode HEVC 8K.
5. 384-bit and memory GDDR6 memory subsystem with 14Gb / sec speed.
6. NVLink subsystem shares frame buffer on all cards at 100Gb / s.
7. The display subsystem can support 4 screens and Virtual Link.

A major change in architecture is the core that Nvidia calls Real Time Ray Tracing (RTRT). There is not much information available about this architecture, aside from Nvidia trying to generate Gigaray figures (the number of rays that each pixel can render a second at a certain frame rate).

In addition, Turing uses the Tensor Core core to accelerate artificial intelligence-related activities. New NVLink eliminates restrictions when sharing frame buffers with total add-on capability, ie, two RTX 8000 cards can share 96GB GDDR6.

Companies have now stepped up to the Quadro RTX 'trains' including Adobe, Autodesk, Dell, HP, Lenovo, Pixar . But this is not a card for gamers, but has to wait for the GeForce RTX 2080 (not the GTX 1180 as rumored Dai) was announced at the Gamescom event that took place on the 20th.

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