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Semi

Nvidia GTC 2024: A quick take

Nvidia hosted GTC 2024 this morning, showcasing its latest developments in various sectors, including healthcare, auto, and quantum computing, along with the introduction of the most powerful GPU architecture named Blackwell, featuring 208bn transistors and using a 4nm process from TSMC. The Blackwell GPU consists of two reticle-sized chips, each with 104bn transistors, connected by NVLink 5.0 interconnects that join them seamlessly. The first Blackwell chip is called GB200 and is planned for shipment later in 2024. When comparing to its predecessor, H100, as well as competing products from AMD, Intel, and others, the new Blackwell GPU accelerators are poised to offer a huge upgrade for AI companies.

- GB200 Superchip: Nvidia introduced the GB200 Blackwell superchip, which represents a significant leap in AI computing, connecting B200 GPUs with a Grace CPU for maximum performance. According to Nvidia, "the new Blackwell GPU can train 1trn parameter models, providing 20 petaflops of AI performance on a single GPU and delivering 4x the training performance of Hopper, 30x the inference performance overall, and 25x better energy efficiency." (link) Amazon, Google, Microsoft, and Oracle have all expressed interest in selling access to the GB200 through cloud services. Additionally, one of the key improvements is a second-gen transformer engine that doubles the compute, bandwidth, and model size. (link)
- AI Foundry "NIM": Nvidia also announced NIM (Nvidia Inference Microservice), a new software platform to simplify deploying AI models into production. NIM optimizes and packages AI models as microservices in containers, significantly reducing the time required for developers to deploy AI solutions. It supports models from major companies and platforms, and Nvidia is partnering with major hyperscalers to integrate NIM into their cloud services, aiming to accelerate the AI deployment process and foster an ecosystem of AI-ready solutions. This also serves as a sustainable monetization strategy for Nvidia as it gets Nvidia server users to sign up for Nvidia enterprise, subscription of which shall cost \$4,500 per GPU annually.
- New networking gear: Nvidia also released the X800 series, the industry's first networking switches capable of 800GB/s throughput. The Quantum-X800 combines the Nvidia Quantum Q3400 switch and ConnectX-8 SuperNIC, offering unprecedented bandwidth and In-Network Computing capabilities. The Spectrum-X800 features the Spectrum SN4600 switch and BlueField-3 SuperNIC. It is optimized for gen-Al clouds and large enterprises. These platforms have already attracted major CSPs like Microsoft Azure and Oracle Cloud Infrastructure.
- We remain positive on the AI supply chain, especially for chip manufacturer TSMC (TSM US); HBM suppliers SK Hynix (000660 KR), Micron (MU US), which is working with Nvidia on HBM3e for its future product rollout, Samsung (005930 KR); networking suppliers Broadcom (AVGO US), Marvell (MRVL US); optical transceivers Innolight (300308 CH, BUY), TFC (300394 CH). We also expect increasing demand for copper cables and liquid cooling.

OUTPERFORM (Maintain)

China Semi Sector

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Figure 1: Nvidia's new Blackwell GPU benchmarked against previous generations

	B200	H200 (SXM)	AMD MI300X	H100 (SXM)	A100 (80GB SXM)
FP4	20 PFLOPS	NA	NA	NA	NA
FP8	10 PFLOPS	4 PFLOPS	5.2 PFLOPS	4 PFLOPS	NA
FP16	5 PFLOPS	2 PFLOPS	2.6 PFLOPS	2 PFLOPS	312 TFLOPS
FP32	2.5 PFLOPS	67 TFLOPS	1.3 PFLOPS	67 TFLOPS	19.5 TFLOPS
FP64	45 TFLOPS	34 TFLOPS	163 TFLOPS (matrix)	34 TFLOPS	9.7 TFLOPS
Memory	192GB HBM3e / 8TB/s	141 GB HBM3e 4.8TB/s	192ĠB HBM3 / 5.2TB/s	80GB HBM3 / 3.35TB/s	80GB HBM2e / 2TB/s
TDP	1000W	700W	750W	700W	300W
Process node	TSMC 4nm	TSMC 4nm	TSMC 5nm	TSMC 4nm	TSMC 7nm
Release date	2024	2023 (exp. to ship in 2H23)	2023	1H23	2020

Source: Nvidia, Tomshardware.com, CMBIGM



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