

The H100 AI chip helped Nvidia's stock price increase rapidly, surpassing Microsoft

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When a new gadget becomes prominent in the tech world, it's usually a consumer product like a smartphone or gaming console. This year, tech watchers are focusing on a computer component that most people will never even see.

The H100 processor has spawned a new generation of Artificial Intelligence (AI) engines that promise to transform the entire industry, bringing developer Nvidia Corp. surpass Microsoft Corp. to become the world's most valuable company. It shows investors that the buzz around Generative AI is translating into actual revenue, at least for Nvidia and its most essential suppliers. Demand for the H100 is so great that some customers have to wait up to 6 months to receive their goods.

1. What is Nvidia's H100 chip?

The H100, whose name evokes computer science pioneer Grace Hopper, is a more powerful version of the graphics processor commonly found in PCs and helps video viewers get the most realistic visual experience. It includes technology that turns Nvidia chip clusters into single units that can process huge volumes of data and perform calculations at high speeds.

That makes the chip perfectly suited for the power-intensive task of training the artificial neural networks that underpin AI. The company, founded in 1993, pioneered this market with investments nearly two decades ago. Nvidia is betting that the ability to do parallel work will one day make its chips valuable in applications beyond gaming.

2. Why is H100 so special?

Generative AI platforms learn to complete tasks such as translating text, summarizing reports, and synthesizing images using large quantities of available documents. The more they see, the better they become at things like recognizing human voices or writing cover letters. They develop through trial and error, making billions of attempts to achieve proficiency and consuming vast amounts of computing power along the way.

Nvidia says the H100 is four times faster than its predecessor, the A100, in training so-called large language models (LLMs) and responds 30 times faster to user prompts. Since releasing the H100 in 2023, Nvidia has announced versions that it says are even faster – the H200, Blackwell B100 and B200. For companies racing to train LLMs to take on new tasks, that increased performance advantage can be crucial. Many of Nvidia's chips

are considered so key to AI development that the US government has restricted sales of the H200 and some lower-performing models to China.

3. How did Nvidia become a leader in AI?

The Santa Clara, California-based company is a world leader in graphics chips, the computer parts that create the images you see on the screen. The most powerful of them are built with thousands of processing cores that perform multiple computational threads simultaneously, modeling complex 3D renderings like shadows and reflections. In the early 2000s, Nvidia engineers realized they could retool these graphics accelerators for other applications by breaking the task into smaller parts and then executing them all at once. . AI researchers discovered that their work could finally become a reality using this type of chip.

4. Does Nvidia have any real competitors?

According to market research firm IDC, Nvidia currently controls about 92% of the data center GPU market. Dominant cloud providers such as Amazon.com Inc.'s AWS, Alphabet Inc.'s Google Cloud. and Microsoft's Azure is trying to develop its own chips, Nvidia's rivals Advanced Micro Devices Inc. and Intel Corp is no exception. So far, the AI ??accelerator market has not made much progress, and Nvidia's growing dominance has become a concern for regulators.

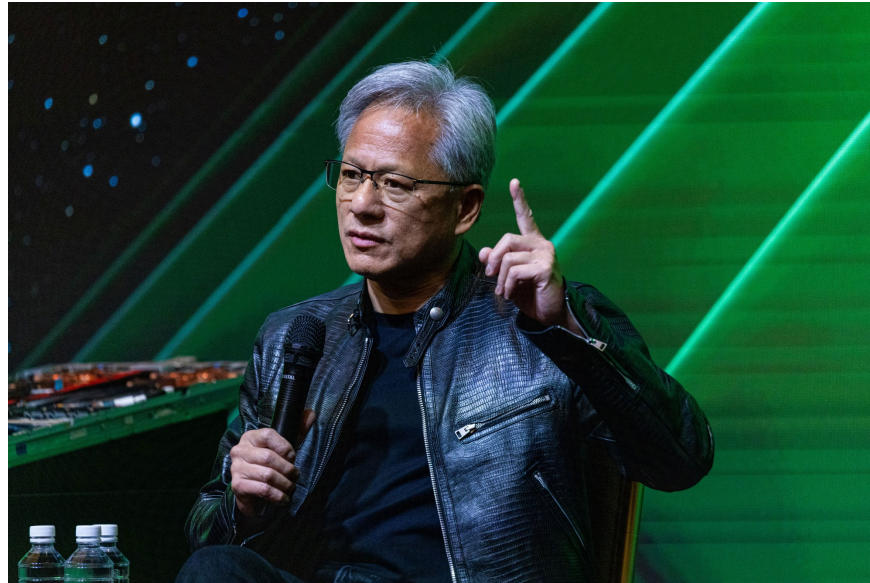
5. How does Nvidia stay ahead of its competitors?

Nvidia has been updating its services, including the software that supports its hardware, at a pace that no other company can match. The company has also come up with various cluster systems to help customers buy H100s in large quantities and deploy them quickly. Chips like Intel's Xeon processors are capable of processing more complex data, but they have fewer cores and process the mountains of information typically used to train AI software much more slowly.

6. What is the correlation between AMD, Intel and Nvidia in terms of AI chips?

AMD, the second-largest maker of computer graphics chips, unveiled a version of the Instinct line last year aimed at a market dominated by Nvidia products. At the Computex show in Taiwan in early June, AMD CEO Lisa Su announced an updated version of the MI300 AI processor will go on sale in the fourth quarter and stated that further products will follow. in 2025 and 2026, demonstrating her company's commitment to this business sector.

Intel is currently designing chips for AI workloads but admits that currently, demand for data center graphics chips is growing faster than for the processors that have traditionally been its strength. . Nvidia's advantage isn't just in hardware performance. The company invented something called CUDA, a language for graphics chips that allows them to be programmed for the kind of work that underpins AI programs.



7. What products does Nvidia plan to release next?

The most anticipated product is Blackwell, and Nvidia said it expects to gain 'a lot' of revenue from the new product range this year. Meanwhile, demand for H-series hardware continues to grow. CEO Jensen Huang has acted as an ambassador for the technology and sought to entice governments and private businesses to order early if they don't want to be left behind. Nvidia also knows that once customers choose its technology for Generative AI projects, it will sell upgrades to customers more easily than competitors hoping to attract users.

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