

The fastest supercomputers in the world

Today we will talk about supercomputers, taking a look at the top 10 fastest supercomputers in the world today.

Your gaming computer supports VR, ultra-smooth 3D processing, in short it is very fast, and you are extremely proud of it, right? But that's just a normal computer, why? Because it cannot simulate the entire universe for millions of years, it cannot guarantee the safety and reliability of nuclear weapons or shed light on the causes of European summer storms.

"So that's how it can be, it's the work of supercomputers". Well, you're right, that's exactly the work of a supercomputer. And today we will talk about supercomputers, and list the top 10 fastest supercomputers in the world (as of July 2017).

1. Top 10 IT jobs with the highest salary in the future

What is supercomputer?

Supercomputer or supercomputers are High Performance Computer (HPC) - high-performance computers, with superior computing capabilities, far beyond you can think of. They "plow" hard at universities, laboratories and other large, important institutions around the world. Supercomputers play an important role in the field of computational science, and are used for a variety of complex computational tasks in many fields, including quantum mechanics, weather forecasting, and research. climate rescue, petroleum exploration, molecular modeling (calculating the structure and properties of chemical compounds, biological macromolecules, polymers, crystals), and physical simulations (such as simulating the initial moments of the universe, aerodynamics of aircraft, spacecraft, the explosion of nuclear weapons, nuclear fusion). Throughout their history, supercomputers have proved an important role in cryptographic analysis.

What does supercomputing speed measure?

The speed of supercomputers is measured by FLOPS (floating-point operations per second) instead of MIPS (million instructions per second - millions per second). As of 2015, there are supercomputers that can perform up to four percent of FLOPS, measured by P (eta) FLOPS. Most supercomputers today run Linux-based operating systems.

The speed of the supercomputers in this list is also calculated by petaflop, one petaflop is equivalent to 10^{15} (10 million billion) calculations per second, please just keep on multiplying: D.

Twice a year, the TOP500 project will rank the world's supercomputers in computing power using Linpack standard. The list mentioned in this article was launched in June 2017, although the US has captured 5 out of 10 names but the top 2 belongs to two Chinese supercomputers. This is the top 10 from low to high.

10th place: Trinity

1. Speed: 8.1 petaflop.



Trinity, a Cray XC40 system running at Los Alamos National Laboratory, has a very important job: to help ensure that the US nuclear stockpile is "safe, reliable and secure". . Trinity conducts highly classified data analysis for the Stockpile Stewardship Program of National Nuclear Security Administration. It should be noted that the last US nuclear inspection program was conducted in September 1992, since then, the Stockpile Stewardship Program has ensured safety and reliability for US nuclear weapons without Comprehensive testing, just Trinity supercomputer (according to Oak Ridger newspaper).

9th place: Mira

1. Speed: 8.59 petaflop.



Mira is an IBM BlueGene / Q system operating at Argonne National Laboratory of the US Department of Energy. Since the birth of TOP500, Mira has reached 3rd place in 2012 and has slipped to 4th, 5th, 6th and 9th in 2016. Mira conducts scientific research on seismology and climatology. , material science, transport efficiency and chemical calculations.

8th place: K Computer

1. Speed: 10.5 petaflop.



Do you remember the K-car car of Chrysler back in the 1980s? Imagine the combination of that outstanding K-car with Fujitsu's K computer. Besides being an extremely, extremely large car, it can perform intensive climate research and medical research. K Computer was located at Riken Advanced Institute to perform calculations related to science, in Kobe, Japan. It has slowed a bit compared to other competitors in the table after ranking first in 2011.

7th place: Oakforest-PACS

1. Speed: 13.5 petaflop.



Oakforest-PACS is Fujitsu's PRIMERGY server system, operated by Joint Center for Advanced High Performance Computing of Japan. It is located in the Information Technology Center of Tokyo University. It is the fastest computer in Japan, standing right on K Computer and built to perform research and development tasks in the field of science and technology.

6th place: Cori

1. Speed: 14 petaflop.



This giant Cray XC40 was named after Gerty Cori, the first woman to win a Nobel Prize in the field of Physiology - Medicine, and the first American woman to win a Nobel Prize in science. Her name, Gerty, was inspired by an Austrian warship, and very suitable for her people. She was prevented from participating in scientific and medical research, but still tried to research and leave many valuable documents in her life. The Cori supercomputer was named after her as an honor. It is currently doing a great job as part of the Big Data Center, in a joint project between the US National Energy Research Scientific Computing Center and Intel and five Intel Parallel Computing centers.

5th place: Sequoia

1. Speed: 17.1 petaflop



Sequoia, IBM's BlueGene / Q supercomputer has dropped one grade from last year. If you doubt its speed, see the US Department of Defense's compliment: "IBM Sequoia is one of the fastest supercomputers, consuming less energy than the brain and costing 7.9 megawatt ". Sequoia is located at the Lawrence Livermore National Laboratory of the US Department of Energy to perform important tasks. It helps quantify uncertain figures when digitizing simulations in the performance of nuclear weapons and performing scientific calculations related to modern weapons.

4th place: Titan

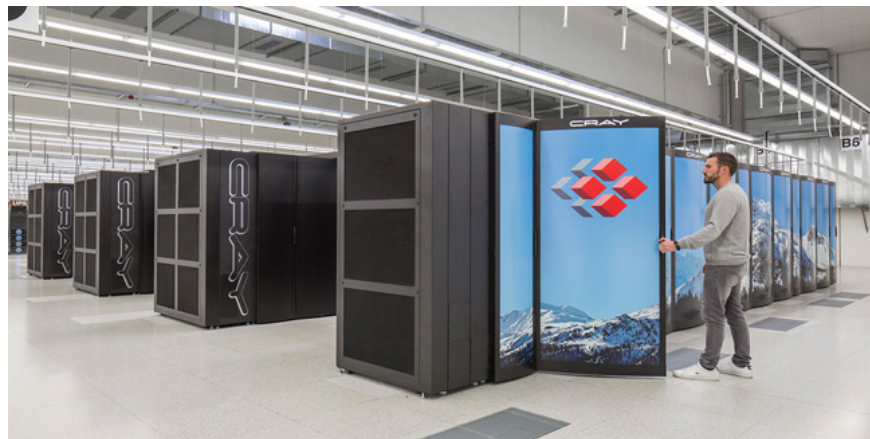
1. Speed: 17.5 petaflop.



Titanium is installed at the Oak Ridge National Laboratory of the US Department of Energy. If you've experienced insomnia nights and wondered how the galactic wind affects stars in the galaxy, you're about to get the answer. Santa Cruz, a University of California, is researching that problem. The team used Titan's enormous computing power to create nearly a trillion simulated stars throughout the galaxy, which could be the largest simulation of the galaxy ever.

3rd place: Piz Daint

1. Speed: 19.5 petaflop.



Piz Daint is a mountain in the Swiss Alps whose name is almost "the top of the peak". This is also the third most powerful supercomputer in the world, installed at the Swiss National Supercomputer Center. In June 2017, the Cray XC50 system now jumped from 8th to 3rd place thanks to a huge upgrade in 2016, increasing its performance by 3 times. Climate scientists in Bern recently used Piz to help better understand the causes of summer storms in Europe.

2nd place: Tianhe-2

1. Speed: 33.8 petaflop.



Tianhe-2 or English name is Milky Way-2, developed by University of National Defense Technology of China and located at the National Supercomputing Center in Guangzhou, China. It ranked first on the list continuously from June 2013 to November 2015, and at No. 2 since then. There is a story behind this drop: In April 2015, the US government rejected an application for Intel's export license, because these devices increase the power of additional CPUs and boards. for the CPU of Tianhe-2. The US is concerned that China will use this computer for nuclear weapons research activities.

1st place: Sunway TaihuLight

1. Speed: 93 petaflop.



Sunway TaihuLight is the fastest supercomputer in the world at the present time, last year it also achieved this title twice. This "monster" located at the National Supercomputing Center in Wuxi, China, with more than 10 million CPU cores it helps create the largest, most detailed simulation universe ever. This simulation model includes millions of years of cosmic history with the aim of helping scientists discover new discoveries. The study author of this model said that this is only the first step. China is building an even larger computer, with the ability to perform 10 times the calculation of TaihuLight.

1. The world's largest virtual universe created by Chinese supercomputers

The top two positions all belong to China, the fastest one has 2.7 times the speed of calculating the second, which is admirable. Let's wait and see if any supercomputer can surpass this 93 petaflop calculation speed in the future.

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