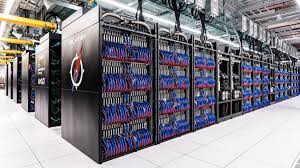
The fastest computer in the world

**The fastest computer in the world is frontier it is a supercomputer,** **Frontier uses approximately 50,000 processors , the frontier is located in Oak Ridge National Laboratory and U.S. Department of Energy , The computer that comes in second place is a RIKEN Center for Computational Science Japan and it is clusters.**

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The [**Frontier**](https://www.olcf.ornl.gov/frontier/) supercomputer at the Department of Energy’s Oak Ridge National Laboratory earned the top ranking today as the world’s fastest on the 59th [**TOP500**](https://www.top500.org/) list, with 1.1 exaflops of performance. The system is the first to achieve an unprecedented level of computing performance known as exascale, a threshold of a quintillion calculations per second.

Frontier features a theoretical peak performance of 2 exaflops, or two quintillion calculations per second, making it ten times more powerful than ORNL’s Summit system. The system leverages ORNL’s extensive expertise in accelerated computing and will enable scientists to develop critically needed technologies for the country’s energy, economic and national security, helping researchers address problems of national importance that were impossible to solve just five years ago.

“Frontier is ushering in a new era of exascale computing to solve the world’s biggest scientific challenges,” ORNL Director Thomas Zacharia said. “This milestone offers just a preview of Frontier’s unmatched capability as a tool for scientific discovery. It is the result of more than a decade of collaboration among the national laboratories, academia and private industry, including DOE’s [**Exascale Computing Project**](https://www.exascaleproject.org/about/), which is deploying the applications, software technologies, hardware and integration necessary to ensure impact at the exascale.”

Rankings were announced at the [**International Supercomputing Conference 2022**](https://www.isc-hpc.com/) in Hamburg, Germany, which gathers leaders from around the world in the field of high-performance computing, or HPC. Frontier’s speeds surpassed those of any other supercomputer in the world, including ORNL’s [**Summit**](https://www.olcf.ornl.gov/summit/), which is also housed at ORNL’s [**Oak Ridge Leadership Computing Facility**](https://www.olcf.ornl.gov/), a DOE Office of Science user facility.

Frontier, a HPE Cray EX supercomputer, also claimed the number one spot on the Green500 list, which rates energy use and efficiency by commercially available supercomputing systems, with 62.68 gigaflops performance per watt. Frontier rounded out the twice-yearly rankings with the top spot in a newer category, mixed-precision computing, that rates performance in formats commonly used for artificial intelligence, with a performance of 6.88 exaflops.

The work to deliver, install and test Frontier began during the COVID-19 pandemic, as shutdowns around the world strained international supply chains. More than 100 members of a public-private team worked around the clock, from sourcing millions of components to ensuring deliveries of system parts on deadline to carefully installing and testing 74 HPE Cray EX supercomputer cabinets, which include more than 9,400 AMD-powered nodes and 90 miles of networking cables.

“When researchers gain access to the fully operational Frontier system later this year, it will mark the culmination of work that began over three years ago involving hundreds of talented people across the Department of Energy and our industry partners at HPE and AMD,” ORNL Associate Lab Director for computing and computational sciences Jeff Nichols said. “Scientists and engineers from around the world will put these extraordinary computing speeds to work to solve some of the most challenging questions of our era, and many will begin their exploration on Day One.”