

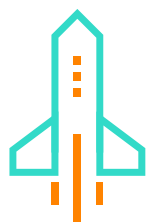
There's fast, and there is Frontier fast

Frontier—ORNL's supercomputing for the exascale era



Oak Ridge National Laboratory's (ORNL's) new supercomputer—named Frontier—marks a new era in artificial intelligence, scientific research, and innovation. Frontier's unprecedented performance—performing 1.1 quintillion operations per second—makes it the world's first supercomputer to break the exascale speed barrier, becoming the world's fastest supercomputer.¹ The supercomputer will support a wide range of scientific applications for advanced modeling and simulation, applications of high-performance data analytics, and artificial intelligence to advance scientific knowledge. The exascale-capable hardware required to deliver this performance is massive.

How fast is Frontier?



At 1.1 exaflops² of performance, **Frontier is faster than**



A quintillion is a lot of processing power! But how big? Let's look at it in terms of outer space and our solar system.

If the space station travels **42,650 kilometers around the Earth⁴** each day and completes 16 orbits per day,⁵ it would take over

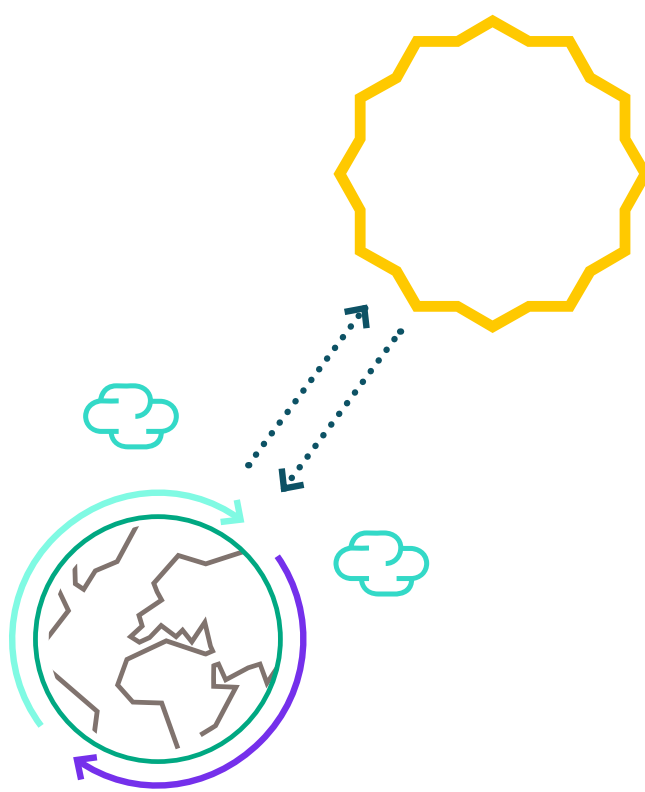
4 billion years

to travel one quintillion kilometers around our blue planet.

On average, the sun is **93 million miles** from Earth. You would need to take about

11 billion

trips to the sun to equal one quintillion miles traveled.



One quintillion is equal to the width of the Milky Way galaxy in kilometers:⁶

1,000,000,000,000,000,000

What else is big?

Each **HPE Cray EX** cabinet weighs about

8,000 pounds

Nearly the equivalent of two full-size pick-up trucks.⁷



The Cray ClusterStor storage system for **Frontier** holds

700 petabytes

of data, which is about

33x



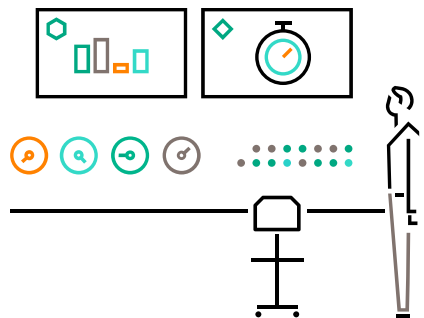
the amount of **data** housed in the Library of Congress.⁸



To cool the **HPE Cray EX** cabinets,

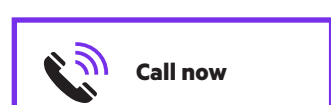
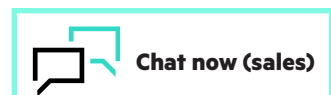
6,000

gallons of water is moved through the system every minute.



Learn more at
hpe.com/supercomputing

Make the right purchase decision. Contact our presales specialists.



¹ "ORNL's Frontier First to Break the Exaflop Ceiling," Top500, 2022

² "Frontier supercomputer debuts as world's fastest, breaking exascale barrier," ORNL, 2022

³ top500.org/lists/top500/2022/11/, Top500 release, November 2022

⁴ "STEMonstrations Classroom Connection," NASA

⁵ nasa.gov/feature/facts-and-figures/

⁶ "The Milky Way," NASA

⁷ edmunds.com/ford/f-150/2022/features-specs

⁸ "Frequently Asked Questions," Library of Congress