



"We're leveraging the compute power of Summit to explore an even larger number of possibilities in a much shorter time."

Georgia Tourassi, Director of ORNL's Health Data Sciences Institute



## SUMMIT: Scaling New Heights

The Oak Ridge Leadership Computing Facility (OLCF), a US Department of Energy (DOE) Office of Science User Facility at Oak Ridge National Laboratory (ORNL), provides access to the nation's fastest, most powerful supercomputer to address some of the grand challenges of our time and enable scientific breakthroughs in many areas of science and engineering.

In 2018, the OLCF launched Summit, the latest leap in leadership-class computing systems for open science. The IBM AC922 system offers scientists 200 petaflops of performance (200 million billion calculations per second). That's about eight times the performance of Summit's predecessor, the Titan supercomputer, and a substantial step toward the nation's first exascale machine, a system capable of a billion billion calculations per second.

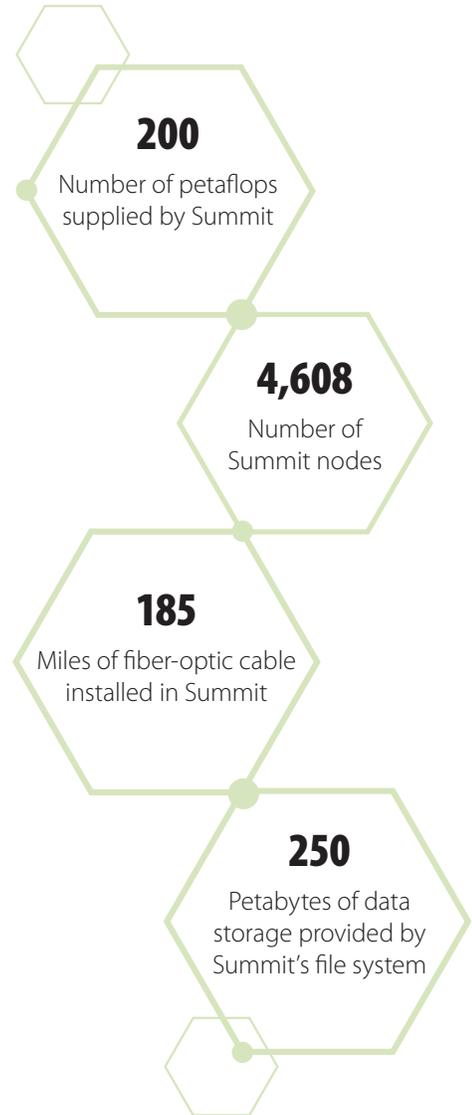
### Leading the Way

Summit will allow researchers to add much more complexity to their codes than past systems, enabling simulations of greater resolution and higher fidelity to advance human knowledge in science domains as diverse as biology, nuclear science, and cosmology. Some early Summit research projects include the following:

- Studying exploding stars at unprecedented scales
- Simulating particle turbulence in sustainable fusion reactions
- Researching materials for high-temperature superconductors
- Carrying out fluid dynamics simulations to accelerate combustion science

### An AI Supercomputer

In addition to modeling and simulation, Summit offers researchers unparalleled opportunities for the integration of artificial intelligence (AI) and scientific discovery. Applying AI techniques like machine learning and deep learning to automate, accelerate, and drive understanding at supercomputer scales will help scientists achieve breakthroughs in human health, energy, and engineering and answer fundamental questions about the universe.



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Contact: Buddy Bland, Program Director  
 Oak Ridge Leadership Computing Facility  
 blandas@ornl.gov, 865-576-6727  
 One Bethel Valley Road, Oak Ridge, TN 37830

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