Argonne NATIONAL LABORATORY

Argonne Leadership Computing Facility

Polaris

A supercomputer for AI and data-centric workloads

Polaris provides researchers and developers with a powerful NVIDIA GPU-accelerated platform to carry out simulation, data analysis, and AI tasks at a scale.

Available to the HPC community

Polaris is designed with industry-leading high-performance computing (HPC) and AI solutions to advance investigations into society's most complex and pressing issues, from understanding the biology of viruses to revealing the secrets of the universe. It will also augment ongoing research efforts in areas such as clean energy, climate resilience, and manufacturing.

Built by Hewlett Packard Enterprise (HPE) in collaboration with NVIDIA and AMD, Polaris is a key resource for expanding the ALCF's scope beyond that of a traditional HPC facility. With architectural features that support AI and data-centric workloads, Polaris is particularly well-suited to handle the massive amounts of data being produced by large-scale simulations and experimental facilities.

The HPE Apollo Gen10+ based supercomputer is equipped with 560 AMD EPYC processors and 2,240 NVIDIA A100 Tensor Core GPUs. The system delivers approximately 34 petaflops and nearly 1.4 exaflops of theoretical AI performance, which is based on mixed-precision compute capabilities.

The Polaris software environment is equipped with the HPE Cray programming environment, HPE Performance Cluster Manager (HPCM) system software, and the ability to test programming models, such as OpenMP and SYCL. Polaris users also benefit from NVIDIA's HPC software development kit, a suite of compilers, libraries, and tools for GPU code development.

Polaris Specs

NVIDIA GPU

A100

AMD EPYC Processor

Milan

Platform

HPE Apollo Gen10+

Compute Node

1 AMD EPYC "Milan" processor; 4 NVIDIA A100 GPUs; Unified Memory Architecture; 2 fabric endpoints; 2 NVMe SSDs

GPU Architecture

NVIDIA A100 GPU; HBM stack

System Interconnect

HPE Slingshot 11

Contact

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