New HPCMP Systems at Army Research Laboratory Supercomputer Resource Center to Provide 15 petaFLOPS of Computing Power to Address Data-Intensive Physics, AI, and ML Applications for DoD Users

The Department of Defense (DoD) High Performance Computing Modernization Program (HPCMP) completed its fiscal year 2020 investment in supercomputing capability supporting the DoD Science and Technology (S&T), Test and Evaluation (T&E), and Acquisition Engineering communities. The acquisition consists of two supercomputing systems with corresponding hardware and software maintenance services. At 15 petaFLOPs, this procurement will increase the DoD HPCMP's aggregate supercomputing capability to 82 petaFLOPs. These systems significantly enhance the Program's capability to support the Department of Defense's most demanding data-intensive computational challenges, and include significant capabilities for artificial intelligence, data analytics, and machine learning. The systems include embedded capabilities to support persistent services in additional to traditional batch-oriented processing.

The new supercomputers will be installed at the U. S. Army Research Laboratory (ARL) DoD Supercomputing Resource Center (DSRC), and will serve users from all of the services and agencies of the Department.

The ARL DSRC on Aberdeen Proving Ground, MD, will receive two Liqid Computing systems containing 48 core Intel XEON (Cascade Lake Advanced Performance) processors integrated with the largest solid-state file systems the HPCMP has deployed to date. The architectures of the systems are as follows:

- A single system of 57,696 Intel XEON "Cascade Lake Advanced Performance" compute cores and 280 NVIDIA Ampere A100 General-Purpose Graphics Processing Units (GPGPUs), interconnected with a 200 Gigabit per second InfiniBand network and supported by 323 terabytes of memory, and 12.5 petabytes of usable non-volatile memory express (NVMe)-based solid state storage.

- A single system of 48,480 Intel XEON "Cascade Lake Advanced Performance" compute cores and 76 NVIDIA Ampere A100 General-Purpose Graphics Processing Units (GPGPUs), interconnected with a 200 Gigabit per second InfiniBand network and supported by 240 terabytes of memory, and 10 petabytes of usable non-volatile memory express (NVMe)-based solid state storage..

The systems are expected to enter production service in mid fiscal year 2021.

About the DoD High Performance Computing Modernization Program (HPCMP)

The HPCMP provides the Department of Defense supercomputing capabilities, high-speed network communications and computational science expertise that enable DoD scientists and engineers to conduct a wide-range of focused research and development, test and evaluation, and acquisition engineering activities. This partnership puts advanced technology in the hands of U.S. forces more quickly, less expensively, and with greater certainty of success. Today, the HPCMP provides a comprehensive advanced computing environment for the DoD that includes unique expertise in software development and system design, powerful high performance computing systems, and a premier wide-area research network. The HPCMP is managed on behalf of the Department of Defense by the U.S. Army Engineer Research and Development Center located in Vicksburg, Mississippi.

For more information, visit our website at: https://www.hpc.mil.