PRESS RELEASE

HPC Leading Institutes Announce Formation of the UCX Consortium to Expand Collaboration within HPC Community

Group Aims to Expedite Advances in High Performance Computing Worldwide; Takes the Next Step toward Achieving Exascale Performance

SC15, Austin, Texas - November 16, 2015 – The OpenUCX community today, under the leadership of Oak Ridge National Laboratory, announced its intention to form the UCX Consortium, an industry group focused on the proliferation and continued evolution of the UCX High-Performance Computing Communication Framework. The Consortium will be formed to increase collaboration between government laboratories, universities and commercial businesses within the HPC community, expanding the possibilities for discovery and advancement. Members of the Consortium will benefit from shared knowledge and resources, a fast and flexible access to a wide range of worldwide utilities and communication directives. Furthermore, they will profit from a production-grade low-level flexible communication software environment, which can be used as a vehicle for revolutionary research, a key to foster innovation.

The UCX framework is the result of a co-design effort between government laboratories, universities and commercial users to provide the highest performing, open source communication framework capable of meeting the needs for future systems and applications. UCX unites the strengths and capabilities of MXM (Mellanox), PAMI (IBM) and UCCS (Oak Ridge National Laboratory) programming API and provide support for all of the leading communication libraries, including MPI, SHMEM/PGAS and UPC. This unified communication framework encourages co-design between software and hardware, delivers the building blocks essential for the development of a high-performance communication ecosystem that is critical to power tomorrow's leading HPC systems.

"UCX provides the fine grain flexibility for researchers to customize and adjust the communication software framework for their unique and specific needs," said Pavel

Shamis, research scientist at the Department of Energy's Oak Ridge National Laboratory. "Co-Design was critical in order to make this type of individual optimization possible. Through the UCX framework researchers have the ability to influence hardware architecture and can learn about new features or capabilities of the hardware, which, in turn, enables the development of Exascale programming models."

"UCX will enable Argonne to build efficient high-performance systems, and to leverage the collaborative effort to improve our research activities," said Pavan Balaji, computer scientist and group lead, Argonne National Laboratory. "We plan to incorporate UCX into our MPICH MPI communication library and to contribute from our development into the UCX consortium."

"A valuable advantage of UCX is that it offers well designed software architecture for supporting accelerators higher up the networking stack. For example optimizing data movement across multiple types of memories including accelerator memories, is abstracted as different transports.", said Duncan Poole, Director Platform Alliances. "By contributing to this effort, NVIDIA can deeply integrate GPU enabled features like GPUDirect RDMA, and GPU Peer-to-Peer to this framework and make them available to current and next generation programming models."

"The path to Exascale, in addition to many other challenges, requires programming models where communications and computations unfold together, collaborating instead of competing for the underlying resources," said George Bosilca, research director, Innovative Computing Laboratory, University of Tennessee, Knoxville. "In such environments, providing holistic access to the hardware is a major component of any programming model or communication library. With UCX, we a vehicle for production quality software, a flexible and efficient low-level research infrastructure for dynamic and portable support for future-ready programming models."

"UCX is a strategic open-source communication framework for future high-performance systems," said Jim Sexton, IBM Fellow and Director of Data Centric Systems at IBM.

"IBM -- working alongside the OpenPOWER Foundation and its members -- plans to contribute key innovations from our high-performance messaging software, PAMI, that are already in use in our Blue Gene and POWER systems."

"There is an ever growing need for higher performance and UCX is just the first example of what can be achieved through co-design," said Gilad Shainer, vice president of marketing, Mellanox. "Until the creation of UCX, there were a number of software frameworks out there, but none of them enabled the highest performance. UCX ensures performance portability of multiple HPC libraries on a broad variety of hardware architectures and with the number of contributors and developers on UCX growing each day, we are confident that the joint efforts within this consortium will bring us that much closer to achieving Exascale level performance."

The members currently engaged in the formation of the Consortium include Argonne National Laboratory, IBM, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Mellanox, NVIDIA, Oak Ridge National Laboratory (ORNL), and the University of Tennessee Knoxville (UTK).

Organizations that would like more information about the UCX Consortium can send inquiries to info@openucx.org.

The UCX project at ORNL and UTK is funded by the United States Department of Defense and uses resources of the Extreme Scale Systems Center located at ORNL. This project is being developed using resources of the Oak Ridge Leadership Computing Facility at ORNL, which is supported by the Office of Science of the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

Supporting Resources:

- Learn more about the UCX Consortium

About the UCX Consortium

In collaboration with Argonne National Laboratory, IBM, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Mellanox, NVIDIA, Oak Ridge National Laboratory and the University of Tennessee, the UCX Consortium is an industry group focused on the proliferation and continued evolution of the UCX High-Performance Computing Communication Framework. The UCX Consortium spurs collaboration between government laboratories, universities and commercial businesses to create an open-source production-grade communication framework for data-centric and High-Performance Computing (HPC) applications to enable the highest performance through co-design of software-hardware interfaces. For more information on the UCX Consortium and Framework, please visit: http://www.openucx.org.