

Keith Underwood

Session 5

Title: Will the Cloud Crush HPC? Lessons from Ultra Ethernet

Abstract:

Prognosticators have said that the future of HPC is bleak. As the story goes, HPC will be condemned to buy whatever hardware The Cloud (now AI) wants to use and doomed to use components engineered for a different purpose. One alternative that has been laid out is daunting: to use a defense contracting model to build fully bespoke systems. But, has anything really changed? Almost thirty years ago, the first Terascale system was built with commodity microprocessors. Over 15 years ago, the first Petascale system was built based on a part made for Playstations. In the past 3 years, three Exascale systems have been delivered using modern GPUs. For decades, HPC has invested strategically to build exceptional systems from ordinary parts meant for volume markets. To be sure, the coming decade has massive hurdles for computing to overcome, but AI systems are reaching to unprecedented scales and bringing more alignment than ever between high volume customers and HPC. Using the recently developed Ultra Ethernet standard as a case study, this talk explores the convergence between the needs of HPC and AI, and where the unique needs of HPC continue to need investment. Perhaps AI will be friendly after all.

Bio:

Keith Underwood is a Senior Distinguished Technologist in the HPE Slingshot advanced architecture group where he leads next generation NIC architecture definition. In addition, he is a co-author of the Ultra Ethernet Transport Specification. Prior to joining HPE, Keith lead the Omni-Path 2 NIC architecture at Intel. He was part of the team that created the Portals 4 Network API, and the MPI-3 RMA extensions.