

Title:

Trends in High Performance Computing: Towards Exascale by Evolution or Revolution?

Speaker:

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Abstract:

Academic, Scientific Research and Industrial HPC environments underwent significant changes in the past years. Widely established standards at processors, node, interconnect and software level helped significantly to lower costs and to ease cross-site and cross-region collaboration and in many cases even load-sharing. Examples of typical environments will be analyzed and future trends and new challenges including the potential use of HPC Clouds will be discussed.

But even more changes are imminent at the infrastructure and software development level: energy efficiency and extreme density are becoming the new paradigms and will lead to completely new system architectures. At the very high end the focus has shifted from Petascale systems to conceptual designs that would deliver three magnitudes more performance and thus provide Exascale capabilities at the end of the decade. The innovative technologies required will be discussed and implementation details of a potential architecture will be shown.