

An Overview of High Performance Computing and Future Requirements

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In this talk we examine how high performance computing has changed over the last 10 years and look toward the trends of the future. Recent changes have had, and will continue to have, a major impact on our numerical scientific software. A new generation of software libraries and algorithms are needed for the effective and reliable use of (wide area) dynamic, distributed, and parallel environments.

Some of the software and algorithm challenges have already been encountered, such as management of communication and memory hierarchies through a combination of compile-time and run-time techniques. But the increased scale of computation, depth of memory hierarchies, range of latencies, and increased run-time environment variability will make these problems much harder.

In this talk we will focus on the redesign of software to fit multicore architectures.