

“Application Status and Needs on Emerging Platforms”

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Rethinking programming models for emerging and upcoming platforms is a crucial part of obtaining next generation performance. Indeed, some current standard programming models, especially those of the MPI + x variety, are starting to show increased versatility and performance on new systems. However, even these simpler models still have needs that are unmet by either standardization or implementations. In this talk, we collect and compare some recent results to show the direction most application programmers are starting to take with regards to next generation machines. We give specific examples where successful hybrid programming models have yielded good results on multicore and GPU accelerated platforms. We further introduce the opinions and needs of typical application scientists who are concerned and informed about the architectural changes that are shaping high performance computing. Finally, we give thoughts about some of the newer languages and their utility in the application environment.