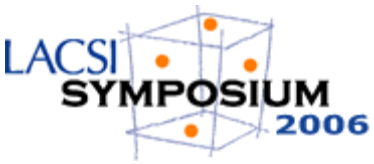



Workshop #3

Performance and Productivity of Extreme-Scale Parallel Systems
(see http://www.c3.lanl.gov/lacsi-wpp/ for a detailed agenda, featuring a keynote presentation by *H. Peter Hofstee*, Cell Broadband Engine Chief Scientist, IBM Austin)

***Organizers:*** Adolfy Hoisie (Los Alamos National Laboratory)
Darren Kerbyson (Los Alamos National Laboratory)
Dan Reed (Renaissance Computing Institute)

Building extreme-scale parallel systems and applications that can achieve high performance has proven to be incredibly difficult. Today's systems have complex processors, deep memory hierarchies and heterogeneous interconnects requiring careful scheduling of an application's operations, data accesses and communication to achieve a significant fraction of potential performance. Furthermore, the large number of components in extreme-scale parallel systems makes failures inevitable; therefore, achieving fault-tolerance in hardware and/or system software becomes an integral part of the performance landscape.

In addition to "classical" performance considerations, the notion of high productivity of systems at scale is now of paramount importance. Productivity encompasses availability, fault tolerance, ease of use, upward portability (including performance portability), as well as code development time. The latter is not a focus of our workshop.

Given this multi-disciplinary mix of performance and productivity, in this workshop we will concern their interplay across system architecture, network, applications and system software design. The invited speakers will not only cover these areas, but will also address the state-of-the-art in methodologies for performance analysis and optimization including benchmarking, modeling, tools development, tuning and steering, as well as metrics for productivity.

We envision the workshop to be composed of 4 sessions comprising 3 talks each:

1. System Performance, including future architectures (processor, memory, network, fault-tolerance)
2. Application Performance (benchmarking, tuning, tools)
3. Performance Analysis Methodology (measurement, modeling)
4. Productivity Analysis and Metrics

The invited speakers will include people from academia, national labs, funding agencies, and R&D people representing computer vendors.