

Opening Plenary

Parallel Computing in 2010: Opportunities and Challenges in a Networked World

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High-performance computing is periodically transformed due to exponential changes in underlying technologies; the emergence of commodity clusters is just the latest instance of this phenomenon. I examine two technology trends that seem likely to have such a transforming effect in the next ten years, namely optical networking and web services. I argue that these two trends will both make parallel computing increasingly important and introduce new challenges due to the need for parallel programs to operate in increasingly dynamic and heterogeneous environments. I describe technologies being developed to address these challenges in three projects in which I am involved, namely Globus, GrADS, and Cactus.

For more information:

Globus: www.globus.org

GrADS: hipersoft.cs.rice.edu/grads/

Cactus: www.cactuscode.org and www.ascportal.org

Grid architecture: www.globus.org/research/papers/anatomy.pdf