Topic 1: Support Tools and Environments

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The spread of systems that provide parallelism either "in-the-large" (grid infrastructures, clusters) or "in-the-small" (multi -core chips), creates new opportunities for exploiting parallelism in a wider spectrum of application domains. However, the increasing complexity of parallel and distributed platforms renders the programming, the use, and the management of these systems a costly endeavor that requires advanced expertise and skills. Therefore, there is an increasing need for powerful support tools and environments that will help end-users, application programmers, software engineers and system administrators to manage the increasing complexity of parallel and distributed platforms.

This topic aims at bringing together tool designers, developers, and users in order to share novel ideas, concepts, and products in the field of Support Tools and Environments. The Program Committee sought high-quality contributions with solid foundations and experimental validations on real systems, and encouraged the submission of new ideas on tools for parallel programming as well as tools for clusters and grids with possibly large numbers of nodes and some degree of heterogeneity.

This year, twenty-one papers were submitted to Topic 1 and eight papers were accepted. The accepted papers cover a wide range of interests and contributions:

- Two papers examine aspects of runtime environments in the context of clusters and parallel supercomputers. In particular, the paper titled "MPC: a unified parallel runtime for clusters of NUMA machines" introduces a runtime environment, which aims at providing programmers with an efficient system for existing MPI, POSIX Thread or hybrid MPI+Thread applications that run on top of clusters with multi-core nodes. The paper titled "Providing non-stop service for message-passing based parallel applications with RADIC" introduces a software layer that performs fault-masking and provides fault-tolerance support to message-passing systems.
- Three papers discuss tools for grids: the paper titled "DGSim: Comparing Grid Resource Management Architectures Through Trace-Based Simulation" describes the design and implementation of a framework for simulating grid resource management architectures, whereas the paper on "Supporting Parameter Sweep Applications with Synthesized Grid Services" introduces a tool to support the deployment of an important class of applications (parameter sweep) over service-oriented grids. Finally, the paper titled "A P2P Approach to Resource Discovery in On-line Monitoring of Grid Workflows" examines the use of structured P2P technologies for the development of Grid monitoring systems.

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- Two papers focus on performance analysis. In particular, the paper titled "Clock Synchronization in Cell BE Traces" presents an algorithm that can be used to assign consistent time-stamps to the trace records collected from a heterogeneous multi-core processor, thus enabling the trace analysis for the performance evaluation of parallel workloads. The paper titled "On-Line Performance Modeling for MPI Applications" introduces an online performance modeling technique that supports the automated, runtime discovery of causal execution flows composed of communication and computational activities in message-passing programs.
- Last, but not least, the paper "Transparent mobile middleware integration for Java and .NET development environments" presents an automatic code-generation tool that supports the transparent integration of applications on mobile middleware, facilitating the development of distributed applications on resource constrained mobile devices.