

Topic 3

Scheduling and Load-Balancing

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Topic Chairs

More and more parallel and distributed systems (clusters, grid and global computing) are available all over the world, opening new perspectives for developers of a large range of applications including data mining, multi-media, and bio-computing. However, this very large potential of computing power remains unexploited to a large degree, mainly due to the lack of adequate and efficient software tools for managing the resources. Scheduling problems address the allocation of those resources over time to perform tasks being parts of processes and are the key components in resource management.

As processors are the source of computing power of parallelism, it is crucial to carefully managing them in order to achieve a high efficiency of parallel systems. In most new parallel architectures and distributed platforms, the processors or machines are spatially distributed and communicate via various kinds of interconnections. Therefore, the communication medium is another important resource that must be considered during scheduling. New parameters like heterogeneity, the hierarchical character of memory, versatility of the context, and large scale computing should be taken into account as well. As conventional models and techniques cannot always be used, it is necessary to propose, implement and validate new approaches.

Therefore, the classical topic of Scheduling and Load Balancing remains very active in the perspective of new parallel and distributed systems. The subjects presented in Topic 3 cover all aspects related to scheduling and load-balancing including applications, system level techniques, theoretical foundations and practical tools. Some new trends and emerging models are also presented and discussed.

There were 31 papers submitted to this topic. Each submitted paper has been reviewed by 4 reviewers, and finally 11 papers were chosen to be included into the final program. They reflect the good and necessary synergy between theoretical approaches (models, analysis of algorithms, complexity, approximability results, multi-criteria analysis) and practical realizations and tools (new methods, simulation results, actual experiments, specific tuning for an application).

Finally, we would like to express our thanks to our colleagues, experts in the fields, who helped in the reviewing process.