



INTRODUCTION TO THE SPECIAL ISSUE ON SCALABLE AND DISTRIBUTED APPLICATIONS

Dear SCPE readers,

The special issue of SCPE covers issues of Scalable and Distributed Applications that cope with increased demand for data-intensive computations, deployed on GPUs, Grids, Clusters, supercomputers, cloud-based or other virtualized resources. Speeding up the computations and increasing the bandwidth require many techniques like algorithm optimizations, load balancing, parallelization, resource brokering, reducing communication, etc.

This special issue provides a selection of articles that concern large scale computations and scalable computing in distributed systems. The idea was born at the 2014 Fedcsis conference, particularly at the 7th workshop on Large Scale Computations on Grids (LaSCoG) and 2nd workshop on Scalable Computing in Distributed Systems, but the call was open to any submission.

Two papers were selected out of seven for our current special issue. The first paper deals with GPU implementation of a multiple string matching. This paper evaluates the speedup of the basic parallel strategy and the different optimization strategies for parallelization of Aho-Corasick, Set Horspool, Set Backward Oracle Matching, Wu-Manber and SOG algorithms on a GPU. The authors obtain speed up between 2.5 and 10.9 over the equivalent sequential version of the algorithms, and a variety of speedup factors between 11 and 34 for parallel implementations of the analyzed algorithms.

The second paper presents a scalable and distributed solution version of a Broker As A Service for the SLA-based brokering of Cloud resources and for Multi-Cloud brokering. It describes the design of a service that takes as input a set of service requirements and a set of resource providers, and finds the best (or at least a good) combination of providers. The authors discuss how their architecture of a distributed broker overcomes the problems of the centralized broker allowing a Multi-User and a Multi-Cloud utilization. Their prototype implementation is a scalable solution, by distributing smaller tasks among independent agents, whose population dynamically scale together with the computing infrastructure.

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