Cloud and Grid computing are now consolidated paradigms that share many characteristics as both emerged from the "computing as a utility" paradigm. Nevertheless, whereas Grid Computing evolved to a cooperation model, where resources are shared between (sometimes spread around the world) organizations or between departments in the same organization, Cloud Computing is often based on a business model where users have on demand access to elastic resources on a pay-per-use model. The aim of this special issue is to explore recent advances, in both theory and technologies, in the areas of grid and cloud computing.

More than 20 papers were submitted to this special issue and, with the help of more than 50 dedicated reviewers, five high-quality articles were selected. They were selected on the basis of their originality and fundamental ideas/concepts rather than the thoroughness of techniques deployed. The papers are organized as follows.

The first paper, "Performance Evaluation of Cloud Computing Platforms using Statistical Methods", by Gültekin Atas and Vehbi Cagri Gungor, proposes a framework for evaluating the performance of PaaS providers. The authors present a suitable set of benchmarking algorithms that can help determine the most appropriate PaaS provider based on different resource needs and application requirements. Performance evaluations of three well-known Cloud computing PaaS providers are conducted using the analytic hierarchy process and the logic scoring of preference methods.

The second paper, "Energy-Efficiency Enhanced Virtual Machine Scheduling Policy for Mixed Workloads in Cloud Environments", by Peng Xiaoa, Zhigang Hub, Dongbo Liua, and Xizheng Zhanga, presents Share-Reclaiming with Collective I/O (SRC-I/O), a virtual machine scheduling policy which is aiming at reducing the energy-efficiency losses caused by I/O virtualization mechanisms. The proposed SRC-I/O scheduler allows VMs to reclaim extra CPU shares in certain conditions so as to increase CPU utilization. Meanwhile, it separates I/O-intensive VMs from CPU-intensive ones and schedules them in a collective manner, so as to reduce the context-switching cost when scheduling mixed workloads.

The next paper, "Admission Control and Scheduling of Remote Processes in Loosely-Coupled Distributed Systems" by Susmit Bagchi, is also about task scheduling. Here, the author proposes the Admission Control and Scheduling (ACS) algorithm for execution of remote processes in a node based on online estimation method. The experimental results illustrate that the algorithm successfully schedules a large set of CPU-bound and I/O-bound remote processes without degrading overall performance of a node, so that the performance and responsiveness of local-processes in a node remain unaffected.

The fourth paper is titled "Feedback Control for Multi-Resource Usage of Virtualized Database Server", by Özgür Armağan, who proposes an application of the classical control theory for resource management in virtual database servers. His focus is to control CPU usage and memory consumption of a virtual database machine in a data center under a time-varying heavy workload. The author highlights that a virtualized database server might be modeled as a linear time-unvarying system.

The last paper is "Secure and Efficient Privacy-Preserving Public Auditing Scheme for Cloud Storage", by Chunxiang Xu, Jining Zhao, and Xiaohu He. This article presents a public auditing scheme with a third-party auditor (TPA) that performs data auditing on behalf of user(s). The authors show that the proposed scheme can alleviate the problem of data integrity by keeping its privacy using blinding technique.

The guest editors wish to thank all the authors of this special issue for contributing high quality papers. We would also like to thank the referees who have critically evaluated the submitted manuscripts in a timely manner. Thanks are also due to Dr. Manu Malek, the Editor-in-Chief, and his editorial staff for their support and help in the preparation of this special issue.

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Guest Editors

Danielo G. Gomes
Universidade Federal do Ceará, Brazil
E-mail address: danielo@ufc.br

Rodrigo N. Calheiros
The University of Melbourne, Australia
E-mail address: rnc@unimelb.edu.au

Rafael Tolosana-Calasanz
Universidad de Zaragoza, Spain
E-mail address: rafaelt@unizar.es

Danielo G. Gomes is an assistant professor at the Department of Teleinformatics Engineering of the Federal University of Ceará, in Fortaleza, Brazil. He received his Ph.D. degree in Computer Networks and Telecom from the University of Evry, France (2004). His research interests include wireless sensor networks, performance analysis of ICT systems, cloud and green computing. Danielo is an associate editor of Computers & Electrical Engineering (0045-7906) and Sustainable Computing (2210-5379).

Rodrigo N. Calheiros is a Research Fellow in the Department of Computing and Information Systems, The University of Melbourne, Australia. He works in this field of Cloud computing since 2008, when he designed and developed CloudSim, an Open Source tool for simulation of cloud platforms used by academic institutions and companies all around the world. His research interests also include virtualization, grid computing, and simulation and emulation of distributed systems.

Rafael Tolosana-Calasanz is currently Associate Professor at the Computer Science and Systems Engineering Department of the Universidad de Zaragoza, Spain. He holds a PhD from University of Zaragoza and his research interests lie in the intersection of Grid, Cloud and Green computing and Concurrent Systems, Scientific Workflows and Petri nets.