Cloud-based application systems are rapidly deployed worldwide in production use via virtualization and services computing technologies. These systems utilize a variety of computing resources deployed in one or more Internet-based data centers in order to provide cost-efficient, dynamic and real-time quality-assured application capabilities.

However, the scaling demands for these application capabilities, compound with different levels of security and trust to the cloud providers, have put forward several new technical challenges. For instance, in an Internet-based virtual computing environment (IVCE), when application capabilities are increasingly delivered remotely and by dynamically composing third-party services (whose providers could be anonymous or unknown to the application consumer), the trustworthiness of the application systems becomes essential.

To address such new challenges, cloud-based application systems need technical innovations in a wide range of services computing technologies, including virtualization, services oriented design, development and deployment, and so on. Desirable innovations include resource-aware elastic scalability of cloud services; modeling and managing intra- and inter-cloud resources at different scales in a consistent manner; achieving high reliability, availability, durability and consistency of IVCE application systems; improving the trustworthiness of anonymous IVCE services; and so on.

This special issue aims at soliciting innovative research findings in virtualization and services provisioning for cloud-based application systems and representative use cases of cloud virtualization and services. Topics of interest for technical papers include, but are not limited to:

- Multi-scale resource management, sharing and collaboration
- Virtualization of intra- and inter-cloud resources
- Elastic scheduling and allocation of computing, storage, and network resources
- Network function virtualization and software-defined networking
- Reliability, availability, consistency and transparency of cloud-based services
- Trust and security of cloud-based services
- Monitoring and fault diagnosis for cloud-based services
- Big data mining, semantic web and linked data
- Cloud-based mobile systems and services
- Architecture for Internet-based virtual computing environments

**Important Dates:**

August 1, 2015: Call-for-paper announcement available for publicity
December 15, 2015: Deadline for paper submission
March 1, 2016: Notification of 1st round review
May 1, 2016: Revised paper due for 2nd review
June 1, 2016: Final notification of all accepted papers
July 1, 2016: Camera-ready of all accepted papers due

Submissions

Please submit your papers through the IEEE TSC online system (https://mc.manuscriptcentral.com/tsc-cs) and select SI on Virtualization and Services for Cloud-Based Application Systems. Paper formatting guidelines are available at the journal website (http://www.computer.org/tsc). Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere.

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