Special issue: sixth international conference on autonomic computing and communications (ICAC 2009)

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Addressing the increasing complexity of large-scale computing systems requires that computers and applications learn to manage themselves in accordance with high-level guidance from humans—a vision that has been referred to as *autonomic computing*. The purpose of the International Conference on Autonomic Computing and Communications (ICAC) series of conferences is to bring together researchers and practitioners addressing all aspects of self-management in computing systems and applications, and to work together to realize the vision of large-scale self-managing systems. This special issue is based on ICAC 2009, the sixth conference in the ICAC series, which was held in Barcelona, Spain in June 2009. The issue includes extended versions of 5 representative papers that capture core issues addressed at the conference:

Paper I, “Ranking the Importance of Alerts for Problem Determination in Large Computer Systems,” addresses the challenges of system management due to large volumes of monitoring data, and proposes a novel peer review mechanism to rank the importance of alerts so that the top ranked alerts are more likely to be true positives.

Paper II, “Plato: A Genetic Algorithm Approach to Run-Time Reconfiguration in Autonomic Computing Systems,” addresses the challenges of designing and managing the set of reconfiguration rules and the potential inconsistencies produced, and proposes an approach to leverage genetic algorithms in the decision-making process of an autonomic system.

Paper III, “Enabling Dynamic Data Centers with a Smart Bare-Metal Server Platform,” addresses the discovery, configuration, and provisioning of new servers, and describes pre-boot capabilities endowing the bare metal server with the ability to be discovered, queried, configured, and provisioned at time zero using industry standards.

Paper IV, “Loosely Coupled Coordinated Management in Virtualized Data Centers,” addresses the coordination of management actions taken by different management layers, and proposes vManage, a solution for loosely coupling platform and virtualization management and facilitating coordination between them in data centers.

Paper V, “Synthesis of Application-Level Utility Functions for Autonomic Self-Assessment,” presents an approach to self-assessment for Autonomic Computing based on the synthesis of utility functions, and describes the fundamental steps of the approach.

Addressing the grand challenges of autonomic computing requires scientific and technological advances in a wide variety of fields, as well as new software and system architectures that support the effective integration of the constituent technologies. We hope that the papers in this special issue will provide some insight into these challenges and some innovative solutions, and will inspire further research in this area.

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