Open Master Thesis Topic – Shadow Testing in the Cloud

Keywords: Cloud computing; Infrastructure as a Service; Optimization; Autonomic controllers; Self-* systems; On-line testing

Goals

Thanks to Cloud computing, service providers can dynamically scale their systems when workload fluctuates, that is, they can add resources when the load increases and remove resources when the load decreases. In this way, providers can maintain a consistent level of service, avoid financial penalties due to SLA violations, and reduce costs by using *just* enough resources for *just* the time they are needed.

However, Clouds meter resources on coarse-grained leases, i.e., hours, and this may not match the fluctuations of the workload. Therefore, service providers may end up removing resources before their leases expire, in fact, wasting them. This master thesis aims to (i) investigate the impact of different models of Cloud resource leasing times, (ii) investigate innovative ways to exploit Cloud resources before their leases expire and without negative impacts on the running application, (iii) and, implement autonomic systems that support testing activities such as on-line testing, application profiling, pervasive in-depth monitoring and data analysis in parallel with the running system.

Expected Outcome

The student is required to deliver the following three artifacts: A document that describes the proposed approach for performing shadow testing in the Cloud, a working code that implements the proposed approach, and a design document that explain the main features of the prototype.

Required skills

We are looking for motivated students that will have a chance to work on Cloud computing. Students are required to have some experience in developing Java based distributed software.

Contact

The expected student will work with Alessio Gambi, Hong-Linh Truong and Schahram Dustdar at the Distributed Systems Group. Students will have opportunities to work on real-world cloud systems. For further information please contact Alessio Gambi (a.gambi@infosys.tuwien.ac.at)