Cloud Service Brokerage - 2014: Towards the Multi-Cloud Ecosystem

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Abstract. In the future multi-cloud ecosystem, many cloud providers and consumers will interact to create, discover, negotiate and use software services. Cloud service brokers will play a central role in bringing providers and consumers together, assisting with software service creation (from abstract models to platform-specific deployments), multi-cloud translation (model-driven adaptation and deployment of services) quality assurance (governance; functional testing and monitoring), service continuity (failure prevention and recovery) and market competition (arbitrage; service optimization; service customization). The emerging ecosystem will be supported by common standards, service models, methods and mechanisms that will operate across a wide variety of platforms and infrastructure, and across disparate service protocols.

Preface

This volume contains the proceedings of the 2nd International Workshop on Cloud Service Brokerage (CSB-2014), which was held on 2 September 2014 in the historic city of Manchester, the home of Computer Science, co-located with the 3rd European Conference on Service Oriented and Cloud Computing (ESOCC). The theme of this second workshop, which was organised and co-sponsored by the EU FP7 Broker@Cloud and PaaSage projects, is the role of Cloud service brokerage in catalysing the emergence of the multi-Cloud ecosystem.

Cloud service brokers will play a major role in matching providers with consumers. Industry analysts such as Gartner and Forrester have foreseen brokers playing the role of intermediaries, either integrating different partners, or aggregating their services, offering added value on brokered platforms. This was the motivation behind the EU FP7 Broker@Cloud project, whose goal is to investigate methods and mechanisms for continuous quality assurance and optimization for Cloud service brokerage.

Furthermore, many potential Cloud consumers are challenged by the process of porting their business to the Cloud, particularly when the major vendors in the marketplace offer strictly incompatible interfaces to their platforms and services. Model-driven engineering has been suggested as one technology for keeping control of your software investment, while retaining the capability to deploy on many Clouds. This was the inspiration behind the EU FP7 PaaSage project, whose goal is to provide model-based Cloud platform "upperware", in a development and deployment environment for vendor-neutral Cloud software services.

This workshop reports recent research findings from these two projects; but also presents a number of papers from elsewhere. Altogether, nine papers were accepted from eighteen submissions, each of which was reviewed by at least three different referees from our international Programme Committee.

The first workshop session, entitled "Towards the Multi-Cloud Ecosystem", highlighted progress made towards overcoming vendor lock-in and increasing the predictability of service offerings. Baur et al. describe model-based Cloud platform "executionware," a model-based engine that enacts the provisioning, deployment, monitoring, and adaptation of Cloud-based applications in a multi-Cloud environment. In contrast, Gonidis et al. describe a framework-based approach, offering a homogeneous Java interface to heterogeneous Cloud services. Becker et al. argue that the Cloud computing paradigm reduces the impact of Quality-of-Service mismatch induced by interoperability errors, so reducing risk.

The second session, entitled "Service Composition - Verification and Testing", looked at economic incentives for composing services; and how to verify and test single and composed services. Brangewitz et al. explore the game-theoretic incentives affecting the design of composed service contracts. Lefticaru and Simons describe a method for complete functional test-generation from verified service specifications. Kiran and Simons show how intelligent test pruning and testing assumptions can reduce the size of test suites drastically, when testing composed services.

The third session, entitled "Service Description - Rules and Reasoning", looked at descriptive technologies for expressing business policies and rules. Domaschka et al. describe a Scalability Rule Language for specifying complex scalability rules for Cloud-based applications. Arampatzis et al. map business-level Linked USDL descriptions into checkable WS-Agreement templates. Friesen et al. derive Cloud service broker policies from the hosting platform's service descriptions in Linked USDL.

Altogether, the papers collected here represent a diverse range of analyses, ranging from the envisioning of the future, to the technical challenges and solutions and the measurement of economic benefits for Cloud Service Brokerage. We hope that you find these insights stimulating!

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