Developing and Validating a Practical Methodology for Cloud Services Evaluation

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1 Background and Motivation

Given the diversity of Cloud services and price models, service utilisation or comparison would require deep understanding of how the different candidate services may (or may not) match particular demands. Thus, Cloud services evaluation is crucial and beneficial for both service consumers (e.g., cost-benefit analysis) and providers (e.g., direction of improvement).

According to our research, there is a lack of sound methodologies to guide the practice of Cloud services evaluation. Although each of the existing studies must have (at least intuitively) followed a particular approach, the evaluation approaches described in different reports vary, and some of them may even have conceptual issues in evaluation methodology. For example, some studies treated evaluation methodology as experimental setup and/or preparation of experimental environment only, and to the best of our knowledge, none of the existing studies emphasized all the evaluation steps and their corresponding strategies.

“A methodology refers to an organised set of principles which guide action in trying to ‘manage’ (in the broad sense) real world problem situations.” [1]

Peter Checkland and Jim Scholes

2 Solution and Contribution

We have developed and validated the generic and practical Cloud Evaluation Experiment Methodology (CEEM) [2] for evaluating Cloud services and Cloud-based applications. CEEM emphasizes the evaluation procedure (rather than just the evaluation results) through a set of steps that utilise our developed artefacts and strategies.

We developed knowledge artefacts (Taxonomy, Metrics Catalogue, Experimental Factor Framework, and Conceptual Model) to make CEEM more Cloud-specific and more practical. Guided by CEEM, evaluators can perform systematic Cloud services evaluation following our rigorous procedure. More importantly, by generating and reusing CEEM-based evaluation templates, evaluations would be more reproducible and comparable.


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