Chapter 2
Using Value-Based Approach for Managing Cloud-Based Services

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ABSTRACT

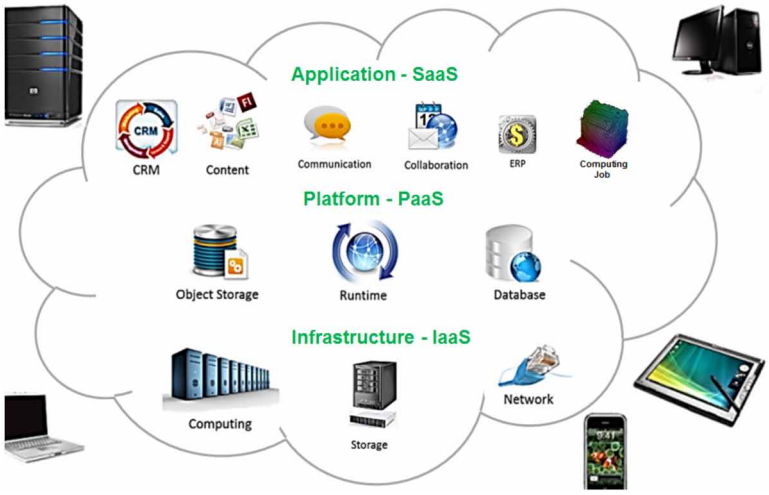
Software-as-a-Service (SaaS) providers are influenced by a variety of characteristics and capabilities of the available cloud infrastructure resources (IaaS). As a result, the decision made by business service owners to lease and use certain resources is an important one in order to achieve the planned outcome. This chapter uses value based approach to manage the SaaS service provided to the customers. Based on our approach, customer satisfaction is modeled not only based on the response time, but also based on the allotted budget. Using our model, the application owner is able to direct and control the decision of renting cloud resources as per the current strategy. This strategy is led by a set of defined key performance indicators. In addition, we present a scheduling algorithm that can bid for different types of virtual machines to achieve the target value. Furthermore, we proposed the required Ontology to semantically discover the needed IaaS resources. We conduct extensive simulations using different types of Amazon EC2 instances with dynamic prices.

INTRODUCTION

The high cost and effort required to operate traditional business applications makes it very important to improve organizational efficiency and to reduce operational cost. With cloud computing, the shared infrastructure and services made it possible to mitigate those issues by presenting it as a utility, where you only pay for what you need and transfer the headache of operation, maintenance and upgrade to the other party.

DOI: 10.4018/978-1-5225-1721-4.ch002

Figure 1. Cloud computing deployment models



The use of Cloud systems leads to promising business models and benefits for both of the providers and end-users (Armbrust et al., 2009). These benefits may include greater efficiency, increased agility, improved compliance, reduced costs, and limitless ability to scale and to provide on-demand resources.

As illustrated in Figure 1, a cloud can offer three service models: Software as a Service, Platform as a Service, and Infrastructure as a Service (Litoiu, Ng, & Iszlai, 2010).

Software as a Service (SaaS)

Software as a Service is the delivery of software functionality through the internet, this functionality is similar to the one installed on a local machine. Buyya et al. (2010) provide examples of the SaaS services including the services that are provided by Google for office automation, this includes Google Mail, Google Documents, and Google Calendar. SalesForce.com is a provider of commercial solution which provides online CRM (Customer Relationship Management). Another commercial solution provider is Clarizen.com which provides a project management services. Appirio is an integrated solution that provides complete support for any management aspect of modern enterprises from project management to resource planning.

Platform as a Service (PaaS)

It is a service model where all resources required to build applications are provided through the internet without the need to install software. Examples of such platforms are the application servers and database servers. Google AppEngine, Microsoft Azure, and Manjrasoft Aneka are examples of PaaS services and their providers.