Chapter 8
Client–Centric Cloud Service Composition

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ABSTRACT

Recent computing world has seen rapid growth of the number of middle and large scale enterprises that deploy business processes sharing variety of services available over cloud environment. Due to the advantage of reduced cost and increased availability, the cloud technology has been gaining unbound popularity. However, because of existence of multiple cloud service providers on one hand and varying user requirements on the other hand, the task of appropriate service composition becomes challenging. The conception of this chapter is to consider the fact that different quality parameters related to various services might bear varied importance for different user. This chapter introduces a framework for QoS-based Cloud service selection to satisfy the end user needs. A hybrid algorithm based on genetic algorithm (GA) and Tabu Search methods has been developed, and its efficacy is analysed. Finally, this chapter includes the experimental analysis to present the performance of the algorithm.
INTRODUCTION

Consumers of web based services continuously search for new and innovative approaches to increase service utility and gradually can minimize their costs. Technologies are required, which can maximize their profits using best available services at minimum expenses. Cloud computing has emerged among one of the potential solutions for delivery of on-demand services in a pay-as-you-go manner. Cloud computing provides customized service selection capability and customers pay only for what they use. Most of the companies are switching their services to cloud platforms. The merits of cloud computing include resource sharing, rapid elasticity, cost effectiveness and measured service. It also attracts more and more enterprises and service providers to provide their services through cloud computing models.

Cloud computing can be defined as an Internet-based computing, which usually offers the dynamically scalable and virtualized resources as their services. There are different definitions for clouds. As reviewed by (Mell and Grance, 2011), National Institute of Standards and Technology(NIST), Information Technology Laboratory defines it as a model which provides a convenient way for user to make on-demand access to a configurable pool of shared resources (e.g., computing, applications, storage, and services) and which can be easily provisioned and managed.

Cloud Computing has become an encouraging platform for delivery and consumption of scalable services in the area of service computing. Cloud services are designed to facilitate on demand services in a way to improve scalability, self-configurability, performance, robustness, and flexibility. According to the National

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**Figure 1. NIST Cloud Definitions**

- Essential Characteristics
  - Measured Service
  - Rapid Elasticity
  - On-Demand Self Service
  - Broad Network Access
  - Resource Pooling

- Service Models
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)

- Deployment Models
  - Public
  - Private
  - Hybrid
  - Community
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