Broker-based Resource Management in Dynamic Multi-Cloud Environment

Naidila Sadashiv
Acharya Institutes
Department of Computer Science Engineering

Dilip Kumar S M
University Visvesvaraya College of Engineering
Department of Computer Science & Engineering

Abstract

Cloud computing is being largely embraced by small, medium and large business organisations to host interactive web-based applications, as they provide unlimited services compared with the classical computing approach. However, providing uninterrupted service at an economical price with efficient utilisation of resources is the challenge faced by cloud service providers especially in serving users spread across the globe. Services from many different clouds can be reaped to address resource availability issues and impart the desired QoS. This paper presents a resource management approach for deploying three-tier applications over a broker-based multi-cloud environment. Strategies for quick cloud site selection, dynamic resource adaptation, and two-level load balancing with high availability are considered as part of this approach. Experiments are carried out on an extended cloudsim simulator using realistic session workloads that are synthesised based on different statistical distributions. Performance evaluation of the approach reveals that these strategies lead to improved resource utilisation, throughput and compliance with SLA even under varying workload scenarios.

Keywords:

Cloud computing,
Resource management,
Multi-cloud environment,
Cloud site selection,
Dynamic adaptation,
Fair share load balancer,
FSLB,
Broker