Framework for Ranking Service Providers of Federated Cloud Architecture Using Fuzzy Sets

L. Aruna, author

Abstrak

Federated Cloud Architecture is a heterogeneous and distributed model that provides infrastructures related to the cloud by aggregating different Infrastructure-as-a-Service (IaaS) providers. In this case, it is an exciting task to select the optimal service cloud provider for the customer and then deploy it. In this paper, a new provider discovery algorithm and fuzzy sets ranking model is proposed in the modified federated architecture and then the performance is evaluated. The proposed discovery method shortlists the provider based on the Quality of Service (QoS) indicators suggested by the Service Measurement Index (SMI) with the Service Level Agreement (SLA) that provides improved performance. In addition to that, the cost is also included that represents the fulfillment at the level of the end user. The ranking mechanism is based on a Fuzzy set approach, having three general phases, such as problem decomposition, judgment of priorities and an aggregation of these priorities. With some simple rules, the fuzzy set may be combined with the QoS indicators. The Weighted Tuned Queuing Scheduling (WTOS) Algorithm is proposed to resolve the issue of starvation in the existing architecture and manage the requests effectively. Experimental results show that the proposed architecture has a better successful selection rate, average response time and less overhead, compared to the existing architecture that had supported the Cloud environment.