BSS: A Brokering Model for Service Selection using Integrated Weighting approach in Federated Cloud

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Abstract

Federated Cloud is a multi-cloud platform that integrates various cloud providers either through standardization or an agreement. The services offered by different federation members possess different access patterns, similar characteristics, varied performance levels, different costs, etc. This heterogeneity creates a challenging task for users to decide a suitable service as per their application requirements. Cloud broker, an inter-mediator is required in service and federation management to help both service provider and users. Cloud broker has to store all the information related to services and feedback of users on those services in order to provide the best services to end-users. Brokering model for service selection (BSS) has been proposed which employs integrated weighting approach in cloud service selection. Subjective and objective weights of QoS attributes are combined to compute integrated total weight. Subjective weight is obtained from users' feedback on QoS attributes of a cloud service while objective weight is computed from benchmark tested data of cloud services. Users' feedback and preferences given to QoS parameters are employed in subjective weight computation. Objective weight is computed using Shannon's Entropy method. Total weight is obtained by combining subjective and objective weights. BSS method is employed to rank cloud services. Simulation with a case study on real dataset has been done to validate the effectiveness of BSS. The obtained results demonstrate the consistency of model for handling rank reversal problem and provides better execution time than other state-of-the art solutions.

Full Text

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Figures

Figure 1

Cloud Service Selection Model

Figure 2

Rank for Case Scenario 1

Figure 3

Rank for Case Scenario 2

Figure 4

Rank Analysis of All Cloud Services

Figure 5

Execution Time Analysis