Multi-objective Evolutionary Optimization of Cloud Service Provider Selection Problems

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Abstract

This paper describes a multi-objective evolutionary approach for solving cloud computing service provider selection problems with dynamic demands. In this investigated problem, not only the service purchase costs and transmission costs of service providers are different, but the demands of service requests also change over the given periods. The objective of this problem is to select a number of cloud service provider while optimizing the total service distance, the total number of serviced demand points, the total service purchase costs, and total transmission costs simultaneously in the given continuous time periods. A multi-objective genetic approach with an inheritance mechanism is proposed to solve the investigated problems. Four trail benchmark problems are designed and solved using the proposed multi-objective evolutionary algorithm. The results indicate that the proposed approach is capable of obtaining a number of non-dominated solutions for decision makers.

Keyword：multiobjective optimization, cloud computing, evolutionary alrogrithms