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An Energy-Aware Algorithm for Virtual Machine Placement in Cloud Computing

Abstract

Virtualization technology, as a key technology in cloud computing, makes the virtual machine placement (VMP) play an important role in improving the energy efficiency of data centers. In this paper, an energy-aware algorithm named GATA is proposed for the VMP problem. It combines the genetic algorithm with the tabu search algorithm. The goal is to obtain an optimal VMP scheme to achieve energy efficiency while maximizing load balance among various resources. The algorithm is compared with two meta-heuristic algorithms and a newly proposed algorithm that is based on ant colony algorithm. The execution time of these algorithms is also discussed. The results show that the proposed algorithm is superior to those methods mentioned above.