عنوان مقاله:

Cost Reduction Using SLA-Aware Genetic Algorithm for Consolidation of Virtual Machines in Cloud Data Centers

محل انتشار:

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خلاصه مقاله:

Cloud computing is a computing model which uses network facilities to provision, use and deliver computing services. Nowadays, the issue of reducing energy consumption has become very important alongside the efficiency for Cloud service providers. Dynamic virtual machine (VM) consolidation is a technology that has been used for energy efficient computing in Cloud data centers. In this paper, we offer solutions to reduce overall costs, including energy consumption and service level agreement (SLA) violation. To consolidate VMs into a smaller number of physical machines, a novel SLA-aware VM placement method based on genetic algorithms is presented. In order to make the VM placement algorithm be SLA-aware, the proposed approach considers workloads as non-stationary stochastic processes, and automatically approximates them as stationary processes using a novel dynamic sliding window algorithm. Simulation results in the CloudSim toolkit confirms that the proposed virtual server consolidation algorithms in this paper provides significant total cost savings (evaluated by ESV metric), which is about ۴۵% better than the best of the benchmark algorithms.

کلمات کلیدی:

component, Cloud Computing, Green IT, SLA violation, VM Consolidation, Genetic Algorithms.