Energy Efficient Resource Allocation and Scheduling in Cloud Computing Platform

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Abstract : There has been renewal of interest in the relation between Green IT and cloud computing in recent years. Cloud computing has to be a highly elastic environment which provides stable services to users. The growing use of cloud computing facilities has caused marked energy consumption, putting negative pressure on electricity cost of computing center or data center. Each year more and more network devices, storages and computers are purchased and put to use, but it is not just the number of computers that is driving energy consumption upward. We could foresee that the power consumption of cloud computing facilities will double, triple, or even more in the next decade. This paper aims at resource allocation and scheduling technologies that are short of or have not well developed yet to reduce energy utilization in cloud computing platform. In particular, our approach relies on recalling services dynamically onto appropriate amount of the machines according to user’s requirement and temporarily shutting down the machines after finish in order to conserve energy. We present initial work on integration of resource and power management system that focuses on reducing power consumption such that they suffice for meeting the minimizing quality of service required by the cloud computing platform.

Keywords : cloud computing, energy utilization, power consumption, resource allocation

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