

A performance optimization model of task scheduling towards green cloud computing

ABSTRACT

Cloud computing becomes a powerful trend in the development of ICT services. It allows dynamic resource scaling from infinite resource pool for supporting Cloud users. Such scenario leads to necessity of larger size of computing infrastructure and increases processing power. Demand on the cloud computing is continually growth that makes it changes to scope of green cloud computing. It aims to reduce energy consumption in Cloud computing while maintaining a better performance. However, there is lack of performance metric that analyzing trade-off between energy consumption and performance. Considering high volume of mixed users' requirements and diversity of services offered; an appropriate performance model for achieving better balance between Cloud performance and energy consumption is needed. In this work, we focus on green Cloud Computing through scheduling optimization model. Specifically, we investigate a relationship between performance metrics that chosen in scheduling approaches with energy consumption for energy efficiency. Through such relationship, we develop an energy-based performance model that provides a clear picture on parameter selection in scheduling for effective energy management. We believed that better understanding on how to model the scheduling performance will lead to green Cloud computing.

Keyword: Computer cloud; Computing infrastructure; Energy consumption