Abstract

Cloud computing has emerged as a flexible and powerful computing platform which offers different types of services to users. However, the energy consumption and carbon emission in cloud data centre have massive impact on global environment triggering intense research in this area. Growth in demand for cloud based services is resulting in increasing of utilization of cloud resources and consequent increase in the energy consumption. While there is a need to maximize utilization of the resources, the energy consumption needs to be reduced. Therefore we need to determine the operational optimal point which reduces the energy consumption for a desired value of resource utilization. In this paper, we propose a technique to find such an optimal operational point in Cloud computing environment. The technique is based on measuring the energy consumption of VMs created for a task, classifying the VMs based on their energy consumption and resource utilization, and then performing scheduling of VMs. The time efficiency of this algorithm is $O(n)$ where $m$ is the number of VMs. The effectiveness of the proposed technique has been verified by simulating on CloudSim. Experimental results confirm that the technique proposed here can significantly reduce energy consumption for the desired value of resource utilization.
- Aman Kansal, Feng Zhao, Jie Liu, Nupur Kothari and Arka A. Bhattacharya(2010), "Virtual Machine Power Metering and Provisioning", copyright 2010 ACM.

Index Terms
Keywords

VMs (Virtual Machines)  EDU (Energy Distribution Unit)  PDU (Power Distribution Unit).