MOVING AVERAGE FUZZY RESOURCE SCHEDULING FOR VIRTUALIZED CLOUD DATA SERVICES

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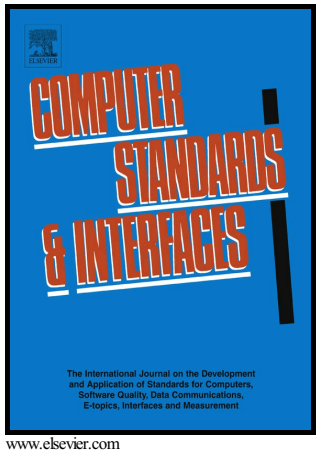

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Abstract

Cloud computing offers simplified system maintenance and scalable resource management with Virtual Machines. Users access resources of data centers by allocating virtual machines (VMs) to hosts. Therefore, to improve the quality of cloud computing environment, not only the conventional multi Quality of Service (QoS) be satisfied, but also specific importance has to be made on certain metrics such as the system accessibility and resource scheduling in a cooperative and dynamic manner. This paper proposes a method called, Moving Average-based Fuzzy Resource Scheduling (MV-FRS) for virtualized cloud environment to optimize the scheduling of resources through virtual machines. Initially, the MV-FRS method starts by predicting the resource (i.e. bandwidth, memory and processing cycle) requirements. Then a measure of relationships between availability of resources and the requirements of resources are made. Finally, a fuzzy control theory is designed to accomplish system accessibility between user cloud requirements and cloud users resources availability. The simulations results demonstrate that the MV-FRS method is able to reduce the total waiting time of cloud user resource requirements and also ensure the feasibility and effectiveness of the overall system accessibility in terms of average success rate and resource usage when running in a cloud computing environment.

Keywords: Cloud computing, Data center, Resource Scheduling, Max Min Fuzzy, Virtual machine

1. Introduction

Resource Allocation and Job Scheduling are the significant process in cloud computing. Since there are limited resources in the cloud data center, therefore we need to discover techniques to effectively allocate the resources and schedule the jobs to the resources. The cloud computing paradigm presents numerous benefits to both cloud