Abstract

Cloud computing is a new archetype that provides dynamic computing services to cloud users through the support of datacenters that employs the services of datacenter brokers which discover resources and assign them virtually. The focus of this research is to efficiently optimize resource allocation in the cloud by exploiting the Max-Min scheduling algorithm and enhancing it to increase efficiency in terms of completion time (makespan). This is key to enhancing the performance of cloud scheduling and narrowing the performance gap between cloud service providers and cloud resources consumers/users. The current Max-Min algorithm selects tasks with maximum execution time on a faster available machine or resource that is capable of giving minimum completion time. The concern of this algorithm is to give priority to tasks with maximum execution time first before assigning those with the minimum execution time for the purpose of minimizing makespan. The drawback of this algorithm is that, the execution of tasks with maximum execution time first may increase the makespan, and leads to a delay in executing tasks with minimum execution time if the number of tasks with maximum execution
time exceeds that of tasks with minimum execution time, hence the need to improve it to mitigate the delay in executing tasks with minimum execution time. CloudSim is used to compare the effectiveness of the improved Max-Min algorithm with the traditional one. The experimented results show that the improved algorithm is efficient and can produce better makespan than Max-Min and DataAware.

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**Index Terms**

Computer Science  
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**Keywords**

Cloud computing, task allocation, Makespan and Max-Min algorithm.