

ACO-TS: an ACO-based Algorithm for Optimizing Cloud Task Scheduling

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Abstract : The current trend by a large number of organizations and individuals to use cloud computing. Many consider it a significant shift in the field of computing. Cloud computing are distributed and parallel systems consisting of a collection of interconnected physical and virtual machines. With increasing request and profit of cloud computing infrastructure, diverse computing processes can be executed on cloud environment. Many organizations and individuals around the world depend on the cloud computing environments infrastructure to carry their applications, platform, and infrastructure. One of the major and essential issues in this environment related to allocating incoming tasks to suitable virtual machine (cloud task scheduling). Cloud task scheduling is classified as optimization problem, and there are several meta-heuristic algorithms have been anticipated to solve and optimize this problem. Good task scheduler should execute its scheduling technique on altering environment and the types of incoming task set. In this research project a cloud task scheduling methodology based on ant colony optimization ACO algorithm, we call it ACO-TS Ant Colony Optimization for Task Scheduling has been proposed and compared with different scheduling algorithms (Random, First Come First Serve FCFS, and Fastest Processor to the Largest Task First FPLTF). Ant Colony Optimization (ACO) is random optimization search method that will be used for assigning incoming tasks to available virtual machines VMs. The main role of proposed algorithm is to minimizing the makespan of certain tasks set and maximizing resource utilization by balance the load among virtual machines. The proposed scheduling algorithm was evaluated by using Cloudsim toolkit framework. Finally after analyzing and evaluating the performance of experimental results we find that the proposed algorithm ACO-TS perform better than Random, FCFS, and FPLTF algorithms in each of the makespaan and resource utilization.

Keywords : cloud Task scheduling, ant colony optimization (ACO), cloudsim, cloud computing

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