AI-Based Enhanced Time Cost-Effective Cloud Workflow Scheduling

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Abstract

In this paper, two scheduling algorithms are presented, namely, time-constrained early-deadline cost-effective algorithm (TECA) to schedule these time-sensitive workflows at the lowest cost and versatile time-cost algorithm (VTCA) which consider both time and cost constraints; these algorithms considerably enhance the earlier algorithms. TECA schedules activities to be

completed as soon as possible and optimizes the costs in resource provisioning. VTCA supports quality of service (QoS)-based scheduling, keeping a balance between completion time and cost for the selected QoS level. Both algorithms schedule tasks of the same height within the minimum completion time (using Max-Min algorithm). The tasks get scheduled on new resources only when their completion times are more than the calculated minimum completion times for the given resource. CloudSim-based results show that our algorithms minimize completion time better than other popular algorithms, in addition to reducing costs. The modeling for costs satisfies the criteria of earliest completion time.

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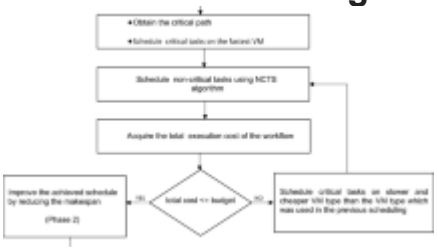

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