一种基于改进蚁群算法的多目标优化云计算任务调度策略

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摘 要：提出了一种兼顾任务最短完成时间、成本和负载均衡的改进的集多目标优化的蚁群任务调度算法（time，cost and load balance ant colony optimization, TCL-ACO）.首先，针对云计算下任务调度的特点定义任务完成时间成本的约束函数和负载均衡度函数.对于蚁群算法进行初始信息素、启发函数、信息素更新方式进行改进.然后，用改进的蚁群算法求解目标约束函数得到全局最优解.最后在 cloudsim 下进行仿真，并与 Min-Min 算法和 ACO 算法进行仿真对比，实验结果表明本文算法在成本、任务的执行时间和负载均衡方面优于这两种算法.

关键词：云计算；蚁群算法；负载均衡；成本；任务最短完成时间

A Multi-objective Optimization Algorithm for Cloud Computing

Task Scheduling Based on Improved Ant Colony Algorithm

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Abstract：An improved ant colony task scheduling algorithm (TCL-ACO) based on improved ant colony algorithm is presented, which combines the shortest completion time of task, cost and load balance.Firstly,the constraint function of task completion time and costs and the load balance function are defined according to the characteristics of task scheduling under cloud computing. At the same time, we improved the initial pheromone, heuristic function and pheromone update method of ant colony algorithm.Then, using the improved ant colony algorithm to solve the objective constraint function, the global optimal solution is obtained.Finally, the simulations are carried out under the cloudsim and compared with the Min-Min algorithm and the ACO algorithm. The experimental results show that the algorithm is superior to the two algorithms in terms of cost, task execution time and load balance.

Key words：cloud computing; ant colony algorithm;load balance; cost; shortest comletion time

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