

基于遗传差分算法的云计算任务调度

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摘要: 随着云计算的不断发展,任务调度问题成了研究的难点.如何快速处理用户的任务请求,使得云计算中资源达到负载均衡,使任务的完成时间及成本达到相对最优,通过对比分析了已有任务调度算法存在的问题提出遗传差分算法的云计算任务调度策略,采用种群更新的方式提高算法的鲁棒性、二级变异策略提高种群多样性,加快算法的收敛,加入差分算子提高算法的局部寻优能力.通过 cloudsim 仿真实验并对比遗传算法、差分算法、min-min 算法证明了本算法的在负载均衡度,时间和成本上有效性.

关键词: 云计算; 任务调度; 遗传算法; 差分算法

Scheduling Based on Improved Genetic Algorithm and

Difference Algorithm in Cloud Computing

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Abstract: With the continuous development of cloud computing, task scheduling problem become a crucial aspect. How to deal with tasks quickly, not only meet the needs of users, but also to achieve load balancing and make the completion time, cost to achieve relatively optimal. By comparing and analyzing the existing task scheduling algorithms, we proposed the genetic and difference algorithm policy to solve the problem. We employ population updating scheme to improve the robustness of the algorithm. Using secondary mutation strategy to improve population diversity, accelerate the convergence speed. Adding difference operator to improve the algorithm's local search ability. The performance is analyzed using Cloudsim simulator and compared with existing GA, Min-min algorithm. Simulation results demonstrate that the proposed algorithm has better performance in load balancing, finish time and costs.

Key words: cloud computing; task scheduling; genetic algorithm; difference algorithm

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