

基于改进蝙蝠算法的云计算任务调度研究

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摘 要: 针对云计算虚拟机调度中存在的资源分配不均衡, 蝙蝠算法收敛速度慢、寻优精度不高等缺点, 提出了一种基于 K-means 和蝙蝠算法的云计算虚拟机调度算法. 利用 K-means 聚类对蝙蝠种群数据进行初始化, 提高初始样本数据解的质量; 利用 Powell 局部搜索算法对当前最优解进行局部搜索, 提高收敛速度和精度; 利用改进蝙蝠算法对虚拟机进行分配时, 充分利用物理机上的资源, 达到了最优化目标. 仿真实验表明, 在虚拟机调度中, 本文改进的调度算法与 K-means 均值调度算法相比, 在物理节点的数量降低了 12%左右, 在系统资源综合利用率上平均提高了 11%左右.

关键词: 蝙蝠算法; K-means; 虚拟机调度; Powell 局部搜索

Cloud Computing Task Scheduling Based on

Improved Bat Algorithm

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Abstract: For cloud computing resource allocation imbalance exists in the virtual machine scheduling, bat algorithm slow convergence speed and optimization accuracy is not high shortcomings, a method is proposed for calculating the virtual machine scheduling algorithm and K-means algorithm based on cloud bat. Algorithm using the K-means clustering initialized to bat population data, improve the quality of the initial solution of the sample data; By Powell local search algorithm for the optimal solution for the current local search and improve the convergence speed and accuracy; when using the improved bat algorithm to allocate the virtual machine, algorithm make full use of the resources on the physical machine to achieve the optimization goal. in the virtual machine scheduling, this paper improves the scheduling algorithm compared with the K-means mean scheduling algorithm, the number of the physical quantity node is reduced by about 12%, and the comprehensive utilization rate of system resources is increased by about 11%.

Key words: bat algorithm; K-means; virtual machine scheduling; powell local search

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