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网络、通信、安全

异构集群系统中实时通信信号处理调度算法

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摘要 当宽带大容量数据采集进入并行计算机网络后，通过集群计算方式对强衰弱通信信号实现高增益、低延时处理，达到有效实时解译通信数据的目的。提出了一种新的动态启发式调度算法——MDS算法。该算法综合考虑任务的时间要求、系统吞吐率和负载均衡。在任务的截止期较短的情况下，MDS算法仍能保证任务具有较高的调度成功率；同时在满足任务截止期的条件下系统具有较高的吞吐率并达到负载均衡。通过实验测试，分析了一些任务参数对MDS算法的影响，并与其他算法进行了比较。实验结果表明，MDS算法优于其他算法。

关键词 调度 启发式算法 异构 集群
分类号

Scheduling algorithm for processing real-time communication signals on heterogeneous clusters

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Abstract
When vast data collected from broad-band network enter the parallel computing network，the data that are much feeble communication signals will realize the process of high gain and low delay and then achieve the purpose of explaining communication data efficiently by using cluster computing platform.The paper proposes a novel dynamic heuristic scheduling algorithm named MDS（Multi-Dimensional Scheduling） algorithm，which takes timing constraints，throughput and load balancing into account while scheduling.The MDS algorithm is capable of achieving high guarantee ratio even when the tasks have tight deadlines.In addition，the MDS algorithm can make the system have high throughput and achieve load balancing on the basis of high guarantee ratio.By several simulation experiments，this paper analyzes the performance impact of some parameters and compares the MDS algorithm with two best known algorithms.The experimental results show that the MDS algorithm outperforms other ones.

Key words scheduling heuristic algorithm heterogeneous cluster

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