博士论坛

数据网格的动态复制选址策略及应用研究

董晓华 邓伟 吴中福 李季

重庆大学 西南交通大学 计算机与通信工程学院 重庆大学计算机科学与工程学院

摘要　　动态复制技术对于提高数据网格的性能是非常重要的。本文对目前的动态复制策略进行了综述。鉴于目前效果较好的动态复制策略均为单选址算法，对于延迟较大、分布较广的网格存在很大局限性。本文提出三种多选址的动态复制策略，并将它们转化为经典的数学问题进行求解。在给出了多选址动态复制策略在远程教育资源管理中的应用后，我们在欧洲数据网格试验床1拓扑上进行了仿真实验，实验结果表明：与目前效果较好的选址策略相比，本文提出的多选址策略对于减少网络负载和网络延迟效果显著。

关键词　　教育资源　数据网格　动态复制　复制选址

分类号

Dynamic Replication Strategies and Application in Data Grids

Abstract

Within data grid environments, dynamic replication is a general mechanism to improve performance and availability for distributed applications. In the paper, we firstly review the dynamic replication strategies till now. As the experimentally efficient strategies are based on single-location algorithms, they are not suitable for geographically broad grids with long latency. To address such issues, three multiple-location strategies are proposed, which are converted into classical mathematic problems that can be solved by some famous approximation algorithms. After explaining the strategies are suitable for resource management in the remote education, we do some experiments in the topology of EU Data Grid Testbed 1. The simulation results demonstrate that our multiple-location strategies significantly improve the bandwidth consumption and access latency in data grid.

Key words　　Education resources　Data Grid　Dynamic Replication　Replica Placement

通讯作者 董晓华　dhlsoft@163.com