

网络与通信

基于P2P的计算资源共享与聚集平台PCP

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摘要: 构造了一个基于P2P的计算资源共享与聚集平台(PCP)。PCP平台可以把Internet上空闲的异构计算资源高效地聚集起来,完成大规模的并行分布式计算。PCP平台具有对等性、易用性、高效率等特点。该平台的对等性得益于建立在对等网络JXTA协议上的应用层覆盖网络及节点组织机制;易用性得益于建立在JXTA协议通信库上的并行编程库,通过作业管理子系统来完成并行应用程序的提交管理与监控。模拟实验结果表明,PCP平台在处理主/从类型的并行应用问题上,吞吐量、加速比等方面有较好的性能。

关键词: 分布式计算 对等网络 通信协议 并行处理

PCP: P2P-based computing resource sharing and aggregation platform

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Abstract: A P2P-based computing resource sharing and aggregation platform called PCP was developed and constructed in this paper. PCP is a platform harnessing the immense computational resources available in the Internet for parallel and distributed computing. PCP platform is peer-to-peer based, easy to use and efficient. These features are strongly supported by a network overlay over which peers can communicate with each other. The authors made use of a general-purpose P2P library, JXTA, supporting the common requirements of P2P software, including network overlay. Other features of the P2P library, such as Ad Hoc self-organization, discovery and grouping of peers, also support PCP efficiently. A parallel programming library was also presented in PCP by JXTA communicating library. A volunteer node can submit and monitor the parallel applications by job management subsystem to complete the whole computation. The results obtained from performance analysis show that the throughput and speedup ratio of PCP are better in master-slave style parallel applications.

Keywords: distributed computing Peer-to-Peer (P2P) communication protocol parallel processing

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