一种高效可靠的移动Agent间通信机制

周竞扬, 陈韬略, 陈道蓄, 吕 建

周竞扬, 陈韬略, 陈道蓄, 吕 建 (南京大学 计算机软件新技术国家重点实验室,江苏 南京 210093)
第一作者: 周竞扬(1979－),男,江苏泰州人,硕士生,主要研究领域为分布式并行计算,移动Agent技术.
联系人: 周竞扬 Telephone: 86-25-3592339, Fax: 86-25-3700710, E-mail: Jingyang@nju.edu.cn

Abstract

Mobile Agent is thought to be the popular computing model for the next-generation distributed system. Collaboration and communication are essential for mobile Agent systems. However, there still exists some deficiency in the current communication mechanism for mobile Agents especially when communication reliability and efficiency are emphasized. In this paper, an efficiently message forwarding scheme (EMFS) for mobile Agents is introduced. This scheme adopts a novel addressing mechanism, which combines the pointer forwarding and central addressing approaches. At the same time, the problem of communication failure can be settled by checking approach with the aid of synchronization. Thus, the performance of the whole communication system can be greatly improved. Meanwhile, besides discussing of setting main parameters of the protocol, the performance of EMFS is analyzed in theory and simulation data is also provided, which illuminates the correctness and the efficiency of EMFS.

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摘要

作为未来分布式系统的一种主流计算模式,移动Agent技术具有广阔的研究前景.协作与通信是移动Agent系统必不可少的组成部分.然而由于Agent的移动性和自主性,现有研究工作所提出的移动Agent间通信机制在可靠性尤其是有效性上存在着一定的不足,如不能够在底层理想地解决通信失效等问题.针对上述问题,设计了一种具有高度自适应性的消息传递机制——EMFS(efficiently message forwarding scheme).该协议在Agent寻址上采取指针寻址和集中式寻址相结合的方式;而对于通信失效的解决则采用了以检测法为主,辅以同步的方法,从而能够在彻底解决通信失效的基础上,较大地提高整个通信系统的性能.此外还对协议的主要参数进行了讨论,从理论上分析比较了EMFS的性能,并给出了模拟实验数据,说明了协议的正确性和高效性.

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