P.O.Box 8718, Beijing 100080, China	Journal of Software Jan. 2003,14(1):139-145
E-mail: jos@iscas.ac.cn	ISSN 1000-9825, CODEN RUXUEW, CN 11-2560/TP
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移动分布式实时嵌套事务提交

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Received 2002-03-05; Accepted 2002-05-29

Abstract
For transactions' mobility and the inherence limitations of wireless network, traditional real-time transaction management mechanisms are incompetent to support the execution of mobile distributed real-time transactions in mobile distributed computing environment. In this paper, the commit mechanism for mobile real-time transactions is studied. First, a nested transaction model based on functional alterative tasks is given by analyzing the characteristics of real-time transactions in mobile distributed environment. Then a three-tier commit structure supporting the suggested model is presented. And a three-phase real-time commit protocol 3PRTC (three-phase real-time commit) is also proposed, which can guarantee the atomicity and structural correctness of the mobile real-time transactions. By performance testing, it is shown that the suggested transaction model and its commit mechanism can improve the successful ratio of real-time transactions.

Liu YS, Liao GQ, Li GH, Xia JL. Commitment of mobile distributed real-time nested transaction. *Journal of Software*, 2003,14(1):139~145.
http://www.jos.org.cn/1000-9825/14/139.htm

摘要
在移动分布式计算环境中,事务移动性和无线网络固有的缺陷使得传统的分布式实时事务管理机制不足以支持移动分布式实时事务的执行,故有必要为移动实时事务研究新的事务处理机制,以提高其成功率.着重研究移动实时事务的提交机制.首先,通过分析移动分布环境中实时事务的特点给出了一个基于功能替代的移动实时嵌套事务模型.然后,提出了一个基于此模型的三层提交结构以及能够保证移动实时事务原子性和结构正确性的三阶段实时提交协议3PRTC(three-phase real-time commit).性能测试表明,所提出的事务模型及其提交机制能够提高实时事务的成功率.

基金项目：Supported by the National Natural Science Foundation of China under Grant No.60073045 (国家自然科学基金); the Defence Pre-Research Project of the 'Tenth Five-Year-Plan' of China under Grant No.413150403 (国家"十五"国防预研基金); the National Research Foundation for the Doctoral Program of Higher Education of China under Grant No.2002048706 (国家教育部博士点基金)

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