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面向大规模分布式计算发布订阅系统核心技术

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Abstract

The publish/subscribe system is adapted to the dynamic large-scale distributed computing environment well and will be used widely due to its asynchronous, many-to-many and loosely-coupled communication properties. This paper analyzes the state-of-art of publish/subscribe systems. Many existing systems are classified according to the criteria, such as topology structure, event model and subscription model. Then the key techniques, such as matching algorithm, content-based routing algorithm, formal modeling, quality of service, are explained. Typical pub/sub prototypes and products are compared, and their shortcomings and limitations are discussed. The challenge of enhancing the system intelligence by introducing the event semantic and approximate matching, and the trends of supporting the mobile computing and P2P computing environment is forecasted..

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摘要

发布/订阅系统技术具有异步、松散耦合和多对多通信的特点,适应了目前动态多变的大规模分布式计算环境的需求,有着广阔的应用前景.分析了国内外发布/订阅系统的研究现状,并从拓扑结构、事件模型和订阅模型等不同角度进行了系统的分类,然后分别就其关键问题从匹配算法、基于内容的路由算法、形式化建模和服务质量等方面进行了阐述,并对已有的典型系统进行了分析比较,指出了当前该领域研究存在的问题和不足.同时,分析了在支持语义和近似匹配来增强系统智能性所面临的挑战,展望了发布/订阅系统在支持移动计算、P2P等新型计算环境下的研究趋势.

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