

论文

根据用户数目妥善安排传输的多址接入协议性能的理论分析

刘 静, 李建东, 周 雷, 张光辉

西安电子科技大学ISN国家重点实验室信息科学研究所“宽带无线通信实验室 西安 710071

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摘要

该文基于有效竞争接入、高效无冲突轮询传输的思想改进了根据用户数目妥善安排传输的多址接入(UPMA)协议, 根据业务需求对上下带宽资源实行动态分配, 使用有效的冲突解决策略保证节点尽快接入信道, 采用高效的无冲突轮询传输避免了传输开销。该文还给出了协议的理论分析模型, 并通过计算机仿真验证了理论模型的正确性。理论值和仿真结果表明提出的协议可以提供高的通过量、较低的平均消息时延和较小的平均消息丢弃率。最后通过理论计算给出了在给定无竞争服务周期长度的情况下竞争接入周期的最佳长度。

关键词 [多址接入协议](#) [自组织算法](#) [性能分析](#)

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Theoretic Analysis on the Performance of User-Dependent Perfect-Scheduling Multiple Access Protocol

Liu Jing, Li Jian-dong, Zhou Lei, Zhang Guang-hui

State Key Lab. of ISN and Information Science Institute Lab. of Broadband Wireless Communication,
Xidian University, Xi'an 710071, China

Abstract

Based on the idea of contention reservation access and polling transmission, a modified User-dependent Perfect-scheduling Multiple Access (UPMA) protocol is proposed, the bandwidth can be allocated dynamically to the uplink and downlink according to the service requirement, the active node can access the channel rapidly by effective collision resolution scheme, and no transmission overhead will be wasted during transmission by the valid polling scheme. Meanwhile, the theoretic analytical model is proposed and its correctness is validated by simulation. The theoretic value and the simulation results show that the proposed protocol has a high throughput, low information delay and small information dropping probability. Finally, with the theoretic analysis, to a given length of polling period, the optimal length of contention access period is given.

Key words [Multiple access protocol](#) [Self-organizing algorithm](#) [Performance analysis](#)

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通讯作者

作者个人主页 刘 静; 李建东; 周 雷; 张光辉

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