信号处理 2011, 27(7) 1039-1047 DOI: ISSN: 1003-0530 CN: 11-2406/TN

算法研究

无线自组织网络中基于QoS保障准则的可用带宽估计

宋安, 赵海涛, 王杉, 魏急波

国防科技大学电子科学与工程学院

摘要：

对无线自组织网络中可用带宽估计问题进行了研究，提出了在估计过程中必须将全局服务质量（QoS）保障作为可用带宽的估计准则。建立了无线自组织网络中非饱和条件下异构的分析模型，该模型能将业务流的QoS度量映射为网络参数，在此基础上设计了能提供QoS保障的可用带宽估计算法。本文所提出的估计算法将包括时延、丢包率与吞吐量在内的QoS需求不被破坏作为可用带宽估计的约束条件，克服了现有的工作将无约束的最大可达吞吐量作为可用带宽因而导致业务的QoS可能受到影响这一缺陷，从而使得估计结果更加合理与准确。仿真实验证明了分析模型与可用带宽估计算法的准确性。

关键词： IEEE 802.11； 非饱和； 可用带宽； 服务质量

QoS Provision-based Available Bandwidth Estimation in Wireless Ad hoc Networks

SONG An, ZHAO Hai-Chao, WANG Shan, WEI Ji-Bo

College of Electronic Science and Engineering, National University of Defense Technology, Changsha

Abstract:

This paper focuses on the issue of available bandwidth estimation in wireless ad hoc networks and takes the overall QoS provision as the standard in estimation. The analytical model for IEEE 802.11-based networks in nonsaturated heterogeneous conditions is presented which maps the QoS metrics of the flows into the network parameters, based on which we then propose an available bandwidth estimation algorithm for QoS provision. The major feature and thus the advantage of the estimation algorithm over existing algorithms is that it takes the flow's QoS demands on delay, packet loss ratio and throughput as the constraints in available bandwidth estimation, and thus overcomes the drawbacks of the existing schemes that only take the maximum achievable throughput as the available bandwidth while the flow's other QoS demands may be affected. This makes the estimation results more reasonable and accurate. Both the proposed model and the estimation algorithm are validated through extensive simulations.

Keywords: IEEE 802.11 nonsaturation available bandwidth quality of service

收稿日期 2011-05-15 修回日期 2011-06-15 网络版发布日期 2011-07-25

DOI:

基金项目:

国家自然科学基金（61002032）；教育部博士点基金资助项目（20094307110004）

通讯作者:

作者简介:

作者Email: ansong@nudt.edu.cn

参考文献：

本刊中的类似文章

文章评论

反馈人		邮箱地址	
反馈标题		验证码	6284