

### 异构无线网络中基于SINR和层次分析法的SAW垂直切换算法研究

刘胜美\* 孟庆民 潘甦 糜正琨\*

南京邮电大学江苏省无线通信重点实验室 南京 210003

## A Simple Additive Weighting Vertical Handoff Algorithm Based on SINR and AHP for Heterogeneous Wireless Networks

Liu Sheng-mei Meng Qing-min Pan Su Mi Zheng-kun\*

Jiangsu key Laboratory of Wireless Communications, Nanjing University of Posts and Telecommunications, Nanjing 210003, China

摘要

参考文献

相关文章

Download: PDF (262KB) [HTML](#) 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 B3G或者4G无线网络体系致力于集成各种异构无线接入网络, 其中一个主要的设计课题是支持垂直切换的研究。该文将多属性QoS考虑在内, 针对各业务特点, 提出一种基于SINR(信干噪比)和层次分析法(AHP)的SAW(简单加权法)垂直切换算法(SASAW)。它综合考虑SINR的影响以及要获得同等数据速率情况下, 目标网络需要的等效SINR数值、用户通信代价、网络可用带宽等来构造属性矩阵做切换判决。为了评估性能, 考虑3GPP定义的4类业务, 利用层次分析法中的特征向量法来决定各个QoS属性之间的权重关系, 构造比较判决矩阵并检验其一致性; 根据判决矩阵, 利用特征根法获得权重向量; 最后根据属性矩阵和权重向量, 利用SAW垂直切换算法进行判决。通过对算法的通过率、丢话率、垂直切换次数、平均用户代价等的性能比较, 结果表明该文提出的算法能够根据各业务特点综合考虑各属性间关系, 获得优良的系统性能。

关键词: 异构无线网络 垂直切换 简单加权法 层次分析法 信干噪比

Abstract: The architecture for the Beyond 3rd Generation or 4th Generation wireless networks aims at integrating various heterogeneous wireless access networks over an IP backbone. To provide seamless mobility, one of the design issues is the vertical handoff support. In this paper, a SINR (Signal to Interference plus Noise Ratio) and AHP (Analytic Hierarchy Process) based SAW (Simple Additive Weighting) (SASAW) vertical handoff algorithm is proposed, which uses the combined effects of SINR with SINR value from one network being converted to equivalent SINR value to the target network for getting the same data rate, user required bandwidth, user traffic cost and available bandwidth of the participating access networks to construct the attribute matrix and make handoff decisions for multi-attribute QoS consideration according to the features of the traffic. For performance evaluation, four traffic classed defined by 3GPP are considered. The weight relations of decision elements are determined by eigenvalue method of AHP to construct the comparison decision matrix, and then check its Consistency. The weight vector is then produced using the eigenvalue method according to the decision matrix. Finally, SAW algorithm is used to make decision according to the attribute matrix and weight vector. The performance of throughput, dropping probability, user traffic cost and the number of vertical handoff between different vertical handoff decision algorithms are compared. The results show that the proposed scheme can achieve excellent performance according to the characteristics of the traffic by considering the relations of multiple attributions synthetically.

Keywords: Heterogeneous wireless networks Vertical handoff SAW (Simple Additive Weighting) AHP (Analytic Hierarchy Process) SINR (Signal to Interference plus Noise Ratio)

Received 2010-02-11;

本文基金:

国家自然科学基金(60772061, 60872018, 60902015)资助课题

通讯作者: 刘胜美 Email: smliu@njupt.edu.cn

引用本文:

刘胜美, 孟庆民, 潘甦, 糜正琨. 异构无线网络中基于SINR和层次分析法的SAW垂直切换算法研究[J] 电子与信息学报, 2011, V33(1): 235-239

Liu Sheng-Mei, Meng Qing-Min, Pan Su, Mi Zheng-Kun. A Simple Additive Weighting Vertical Handoff Algorithm Based on SINR and AHP for Heterogeneous Wireless Networks[J], 2011, V33(1): 235-239

链接本文:

<http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2010.00154> 或 <http://jeit.ie.ac.cn/CN/Y2011/V33/I1/235>

#### Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

#### 作者相关文章

- ▶ 刘胜美
- ▶ 孟庆民
- ▶ 潘甦
- ▶ 糜正琨