通信学报
Journal on Communications
主管单位：中国科学技术协会
主办单位：中国通信学会

孙杰,郭伟.认知无线多跳网中结合QoS查找的跨层多信道MAC协议[J].通信学报,2013,(4):10~18

认知无线多跳网中结合QoS查找的跨层多信道MAC协议

Cross-layer multi-channel MAC protocol combined withQoS search for cognitive wireless multi-hop networks

投稿时间： 2012-03-20

DOI：10.3969/j.issn.1 000-436x.2013.04.002

中文关键词：认知无线电 无线多跳网 MAC协议 QoS保证

英文关键词:cognitive radio wireless multi-hop networks MAC protocol QoS guarantee

基金项目:国家科技重大专项基金资助项目（2010ZX03005-002, 20102X03006-002），国家重点基础研究发展计划（“973”计划）基金资助项目（2009CB320405）

作者	单位
孙杰，郭伟	电子科技大学 通信抗干扰技术国家级重点实验室,四川 成都 611731

中文摘要:

针对认知无线多跳网中频谱资源具有较大时变性及差异性的问题，设计了一种结合QoS查找的跨层多信道MAC协议。该协议将按需QoS查找与动态频谱分配跨层相结合，仅让参与传输的节点执行频谱分配并按QoS要求获取频谱资源。此外，协议使用频分双工收发机实现了对公共控制信道的不间断监听，并设计了一套支持不同数量收发机节点间混合通信的接入算法。大量仿真结果表明，该协议能有效保证对端到端传输的QoS要求的满足，并显著提高端到端吞吐量及时延。

英文摘要:

In cognitive wireless multi-hop networks, the spectrum resources are highly variable and diverse. A cross-layer multi-channel MAC protocol combined with QoS search was proposed. The protocol combines the on-demand QoS search with dynamic spectrum allocation via cross-layer method, which only permits the transmission nodes to participate in the spectrum allocation and can guarantee the allocation results meet the QoS requirement. Besides, frequency division duplex transceivers are introduced to continuously listen to the common control channel, and an access algorithm is carefully designed to realize hybrid communication between nodes with different number of transceivers. Extensive simulations show that our protocol can efficiently guarantees the QoS requirement for end-to-end transmission and significantly improves end-to-end throughput and delay.

查看全文 查看/发表评论 下载PDF阅读器

关闭