Abstract

The use of multiple channels for transmissions has raised several challenges, for example, multi-channel hidden terminal problem, channel switching delay, and control channel saturation problem. Dedicated control channel techniques simplify channel coordination by eliminating the need for synchronization, however the control channel may become the bottleneck for the performance of the network. A better trade off which can solve the coordination problem, and can mitigate the control channel bottleneck is desirable. Least Channel Variant Multi-channel MAC (LCV-MMAC) is a multi-channel MAC based on IEEE 802.11 MAC. The novel part of this protocol is the channel assignment technique, where a mechanism to avoid unnecessary channel assignment and thus channel switching is used. Further, LCV-MMAC avoids channel contention when the control channel is highly saturated. In this paper, we explore the properties of LCV-MMAC through extensive simulations with the help of ns-2, and compare it with popular existing multi-channel MAC protocols in different mobile and static random topologies. Experimental results validate that LCV-MMAC achieves significantly better aggregated throughput, and fairness index than other multi-channel MAC protocols in different random topologies.
network scenarios.

References

3. Chipcon Products. 2.4 GHz IEEE 802.15.4/zigbeed-ready RF transceiver.
18. A. Tzamaloukas and J. Garcia-Luna-Aceves. Channelhopping multiple access with packet trains for ad hoc networks,. In IEEE International Conference on Device Multimedia

Index Terms

Computer Science Networks

Keywords

LCV-MMAC, random topologies, performance evaluation of LCVMMAC