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Abstract

Broadcasting is one of the essential communication models of MANETs. Many MANET multicast routing protocols rely heavily upon MAC layer's broadcast support. However, the broadcast mechanism of the standard IEEE 802.11 cannot provide reliable broadcasting service. In this paper, we improve the IEEE 802.11 broadcast mechanism's reliability by introducing the new layer of MAC called Dual MAC.

Multihop ad-hoc wireless networks offer great challenges for protocol designers. Stations in such networks are constrained by factors like low power, limited bandwidth, link errors, and collisions. Changes are needed at various levels of the protocol stack, most importantly at the medium access layer (MAC). The medium access mechanism in multihop wireless networks should minimize collisions, and take care of the hidden and exposed node problems. The IEEE 802.11 MAC with Distributed Coordination Function (DCF) does not scale well in such networks.

We introduce Point Coordination Function (PCF) in the region of high traffic areas, and discuss its effect on network performance.

To improve network scalability and throughput, we propose the design of a new MAC called Dual MAC. This work discusses architecture and working of the dual MAC in detail.

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Key words

Medium Access Layer
Distributed Coordination function
Point coordinated function

