Battling the MAC Bottleneck in IEEE 802.11 WLANs

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***Abstract*—As the physical layer (PHY) data rates increase and wireless local area network (WLAN) frames become shorter, the medium access control (MAC) overheads account for a larger fraction of the total transmission time. This problem is known as the MAC bottleneck because it limits the throughput available to the user no matter how advanced PHY techniques are used. Current standardization efforts circumvent the problem by using aggregation. By aggregating multiple network packets in a single MAC layer frame, the MAC overhead per useful network layer bit is reduced.**

CSMA/ECA is an evolution of the well known CSMA/CA protocol that reduces the MAC contention overhead and therefore helps in battling the MAC bottleneck problem. The core idea is the use of a deterministic backoff after successful transmissions. In this paper we provide a survey of all the related contributions in the last years and describe the algorithm that can reach collision-free operation even for a large number of contenders. We present simulation results to quantify the potential performance gains.

I. Introduction

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II. Conclusion

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References

[1] H. Kopka and P. W. Daly, *A Guide to LaTeX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.