Comments on the paper 'Analysis of collision probabilities for saturated IEEE 802.11 MAC protocol'

C.H. Foh and J.W. Tantra

The present authors would like to point out that the observation where the channel collision probability depends on whether the channel was busy or idle discussed by Kuan and Dimyati has been reported earlier by the present authors, Foh and Tantra.

Introduction: The recent Letter by Kuan and Dimyati [1] has reported that the accurracy of collision predictions has not been studied extensively in the literature. In [1], the authors indicated the requirement for two distinct probabilities in modelling the IEEE 802.11 distributed co-ordination function (DCF) machanism, namely, p_c^i and p_b^i which describe the collision probabilities given that the channel was idle and busy during the previous period, respectively. With this observation, a new model was developed.

We would like to point out that the above described observation has been presented earlier by us in [2]. We described our observation that the channel access probability, τ, and the station collision probability, p, depend on whether the previous period on the channel is idle or busy. In [2], a new model was presented to precisely model the described observation.

Discussion: Based on the observation described above, both the access probability and collision probability must be conditioned on the previous period on the channel. Dealing with the same observation, the two Letters [1, 2] proposed new models describing the backoff process which captures the details of the observation mentioned above. Although the two presented models are not identical, they do share some similarities which are unique only to them, precisely, the derivations and expressions of the conditioned collision probabilities (p_0 and p_1 in [2], or p_c^i and p_b^i in [1]) and the conditioned access probabilities (τ_i and τ_b in both [2] and [1]). However, the performance study of the two Letters are slightly different, where Foh and Tantra [2] focus on the throughput performance, while Kuan and Dimyati [1] focus on the channel collision probability.

Conclusion: The purpose of this Letter is to provide priority statements for the observation described above.

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References

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