Joint RTS/CTS and time slotting for interference mitigation in multi-BSS 802.11 wireless LANs

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Abstract

It is well known that the 802.11 Medium Access Control Protocol faces challenging problems in dense WLAN deployments. The major problem is interference, which leads to collisions or causes wireless nodes to defer from transmission for long time periods. One way to alleviate interference is to employ a time-slotted access scheme when high interference is observed. However, when the number of interfering links is high, it might not be possible to schedule all interfering links with an acceptable number of time slots, especially if both uplink and downlink traffic are considered. In this article, we propose and evaluate a novel idea of combining the RTS/CTS mechanism and time slotting to solve this problem. Results of detailed simulation experiments have shown that such a combined approach has a good potential to be used in future WLANs implementations.