Abstract: Multi-Channel MAC Protocol with Two Transceivers for Cognitive Radio Ad Hoc Networks

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Abstract

The electromagnetic spectrum is a limited resource of high needs. It is a key resource to enlarge the radio and broadcasting industry that helps develop other industries. The demand of the spectrum is increasing daily with the innovation of new technologies and businesses. Current spectrum licensing system is not efficient and this system waste spectrum bandwidths. Cognitive radio came up with an idea to use the unutilized spectrums in the license bands. In addition to other responsibilities, MAC protocol for cognitive radio networks has one more responsibility, i.e. it has to protect incumbent license users. In this paper, we study the performance of the multi-channel MAC protocol with two transceivers for cognitive radio ad hoc networks. This protocol utilizes licensed spectrum white spaces by ensuring incumbent licensees’ rights. We simulate and compare our protocol with the single transceiver based protocol. Simulations show the proposed protocol outperforms existing single transceiver based protocol in terms of goodput and delay.

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