Abstract

In this paper, we have proposed some changes to MAC protocol for improving the performance of transport layer in cognitive radio ad-hoc networks. We have studied effects of different MAC and routing protocols on TCP in cognitive radio technology enabled environments. We have reviewed performance of TCP in two different situations. In first situation, all users are secondary users while in second situation both of primary and secondary users exist. We used CRCN simulator which is based on NS2. We added cognitive radio qualifications to different MAC protocols by sequential MAC method. This method appoints prioritized access for primary users in specified channels in offline mode with acceptable overhead. As we know, route failure is a notable problem in network layer so we handle different routing protocols in ad-hoc networks. We observed routing algorithms based on maintenance of multiple routes and periodic messages for route checking has appropriate effect on TCP performance. Simulation results shows our changed MAC protocols have better performance in Throughput, End to End Delay and Packet Delivery Ratio than prepared MAC protocol for CRNs.

Index Terms

Computer Science
Networks

Keywords

PDR (Packet Delivery Ratio) CRN (Cognitive Radio Networks) E2ED (End To End Delay) PU (Primary User)

CRAHN (Cognitive Radio Ad-Hoc Networks)