



Abstract

Cognitive radio (CR) has emerged as a proven technique to overcome the spectrum scarcity problem in wireless communication. Data dissemination in CR networks (CRN) is an important activity for successful deployment of CRN. However, in CR network the requirement to identify the spectrum availability through opportunistic access imposes design challenges, which is crucial for data dissemination. Modeling a technique for efficient data dissemination with primary protection in CRN is an interesting problem. Motivated with the problem, a capacity rate constraint Distributed Data Dissemination Protocol (DDDP) is proposed. The proposed protocol equips with a weighted channel selection strategy and a technique to prepare data dissemination schedule adopting a neighbor discovery method for a multi-hop ad-hoc CRN. The data dissemination techniques proposed so far in the literature suffers from the performance in terms of data delivery due to the accuracy to determine the availability of channel for secondary transmission. The main contribution of this work are two-fold: (i) a channel selection scheme by which a secondary user (SU) is able to select best channel for data dissemination and (ii) a Distributed Data Dissemination Schedule that can accomplish message reachability as high as possible. The proposed protocol also addresses the issue of minimizing the broadcast redundancy and collision among CR nodes. The efficacy of the proposed model has been analyzed and found efficient in terms of improved packet delivery ratio, minimization of interference to Primary User (PU) and reducing the number of redundant messages in the network, which eventually improves the channel utilization.

Keywords: Cognitive Radio (CR), Data Dissemination, spectral diversity, primary user (PU),secondary user (SU).