Jordan University of Science and Technology

Cognitive Radio Based Bandwidth Allocation Scheme for WiMAX Networks

Authors: Moad Y. Mowafi, Mamoun F. Al-Mistarihi, and Mohammad S. Marei

Abstract: In WiMAX networks managing the uplink access is an important issue as it deals not only with the available bandwidth but also with the QoS requirements of different traffic classes. This paper proposes a new scheme for bandwidth allocation in WiMAX systems, named WiMAX Dual Cognitive Radio Scheme (WDCRS). The proposed scheme uses cognitive radio in order to attain high bandwidth utilization and to increase the total throughput. For performance analysis, an analytical model is developed, and the effect of applying cognitive radio on different service classes is studied and the bandwidth utilization for each service class is analyzed. The results show that the proposed scheme provides higher bandwidth utilization and lower blocking probability in comparison to several existing schemes.