MULTI-PATH ROUTING AND CHANNEL ASSIGNMENT FRAMEWORK FOR MESH COGNITIVE RADIO NETWORK (MRCAMC)

[1]Amjad Ali, [2]Muddesar Iqbal, [1]Adeel Baig, [3]Xingheng Wang

[1]School of Electrical Engineering and Computer Sciences National University of Science and Technology, Pakistan
`{amjad.ali,adeel.baig}@seecs.edu.pk`
[2]Faculty of Computer Science & Information Technology, University of Gujrat, Pakistan
`m.iqbal@uog.edu.pk`
[3]College of Engineering, Swansea University, Swansea, UK
`xingheng.wang@swansea.ac.uk`

ABSTRACT

Dynamic spectrum access is an attractive area of research these days. Cognitive Radio (CR) enabled networks are being deployed to effectively utilize the RF spectrum. Wireless mesh networks have been experiencing the bandwidth scarcity but such networks can easily enhance their throughput by using the CR transceivers as these networks have the capability of multipath routing. Existing routing proposals for Mesh Cognitive Radio Networks (MCRNs) are not considering the dynamic spectrum availability. They try to treat CRNs as traditional wireless networks. Even some proposals treat the problems of these networks like that of wired networks and use the same parameter for route discovery as for wired networks. In this paper, we propose a joint interaction between on-demand routing and channel assignment that accounts the characteristics of CRNs.

KEYWORDS

CRNs, Routing, Mesh Cognitive Radio Networks

1.INTRODUCTION

Wireless communication has established itself as a popular access technology due to the user preference for flexibility, but its static channel allocation based spectrum management scheme is still a main problem. This static channel allocation scheme is very inefficient as it only allows the licensed users, Primary Users (PUs), to access the channels and does not permit unlicensed users, Secondary Users (SUs), to access the channels although the channels are idle or underutilized. This leads to the wastage of the spectrum resources. To efficiently utilize radio spectrum resources, a novel communication paradigm known as Cognitive Radio (CR) or Dynamic-Spectrum-Access (DSA) has been proposed[1] [2] [3]. Cognitive Radio Networks