

## **Abstract**

Radio spectrum resource is of fundamental importance for wireless communication. To increase utilisation of this valuable resource concept of open spectrum and dynamic spectrum access are introduced, which allow unlicensed users equipped with Cognitive Radios (CR) to opportunistically access the spectrum not used by primary or licensed users. MAC layer in CR networks performs the function of identifying available spectrum resource through spectrum sensing, coordinating with other user for spectrum access and deciding on optimal sensing and transmission times. The varying channel availability at nodes in CRAHN gives rise to the following Medium Access Control (MAC) layer issues: How does a node decide when and on which channel it should tune to in order to exchange data with its neighbors, how do the nodes decide on a MAC-layer schedule in the absence of a central authority.

In this project a time slotted multichannel MAC protocol is proposed for Cognitive Radio Ad Hoc Networks. In our proposed scheme two radio transceivers are needed for each node, one control transceiver that listens for control signals and the other data transceiver which is used for data transmission, data receipt and sensing purpose. In every channel, Communication time is divided into slots and nodes negotiate these slots for communication on different channels. Here use of dedicated Common Control Channel is avoided. Thus this scheme is free from control channel saturation problem, denial of service attack and problem of finding a globally available control channel. We verified the performance of our proposed scheme through simulation in Network Simulator 2 with Cognitive Radio Cognitive Network extension and also compared the results with Mac-Ngenhanced protocol.