

## **Resource allocation algorithm for improving performance of the OFDMA based connection oriented networks**

### **ABSTRACT**

To enhance network performance, PHY and MAC layer has direct influence besides other factors as these are major layers of OSI based communication system. One way of enhancing network performance is the managing the radio resources intelligently. As cross layer based systems might be faster responding in case of network resource distribution and due to the spectrum limitation for commercial use, there are active researches in this area that targets to enhance the network users' experience, though RA might be considered as an evergreen topic for all evolving communication systems. This paper aims to focus specifically on how to increase throughput and delay performance leading to overall higher system performance and fairness. We use techniques of graph theoretic tools and optimization mechanism in our solution to improve radio resource allocation. After we optimize the subcarrier allocation using cross layer interaction of mainly MAC and PHY, the final assignment is done along with power allocation to all users. Then we reevaluate each new incoming resource request and use threshold based allocation techniques to cater for more users. Besides showing the performance enhancement we also show the fairness comparison to other existing state of the art research as benchmarking by means of simulation.

**Keyword:** OFDMA; Resource allocation; Radio resource; Connection oriented networks; Wireless networks; Algorithms; Graphs; QualNet; Cross layer