QoS AND MOBILE TECHNOLOGIES

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CHAPTER 28

A STUDY OF CHANNEL ASSIGNMENT APPROACH TO REDUCE FREQUENT REASSIGNMENT

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28.1 INTRODUCTION

Channel assignment in multi-radio multi-channel wireless mesh network is still a challenging problem. The main question is how to assign a feasible channel for each radio to maximize the network throughput. Many solutions have been proposed by researchers. These proposals can mainly be categorized into static and dynamic strategies, based on how frequently interfaces are switched from one channel to another. The trade-off between the efficient resource utilization and the amount of channel reassignments has to be considered by the channel assignment algorithms. Therefore, an efficient channel assignment scheme is needed to minimizing the amount of reassignment overhead and as a result increase the total achieved throughput of the network.

28.2 THE PROPOSED CHANNEL ASSIGNMENT APPROACHES

Many studies have been done on channel assignment with consideration to reduce the reassignment frequency [1][2][3][4].

Arun at el. [2] propose a reconfiguration algorithm called Clustered Channel Assignment Scheme (CCAS), based on clustering of similar traffic matrices. It clusters a set of traffic matrices in a sequence that to reduce the frequent channel reassignment, thus each cluster has a common channel assignment. As long as the system remains in the same cluster, no channel reassignments take place. In this algorithm, CCAS is invoked at each time the traffic demand changes. But it will avoid the channel reassignment if the sequence of traffic matrices belongs to the same cluster. Each cluster in turn contains a set of traffic matrices and represented by a traffic matrix which is a weighted average of traffic matrices belonging to the cluster. The distance between two successive traffic matrices is calculated by using the Euclidian distance between the corresponding Inversion Vectors [5] (which represent the ordering of the edges) of these two traffic matrices. However, Using this way alone is not enough to give an accurate indication of the need of channel reassignment, because it is not reflected the number of flows that's affected by this traffic load changed due to the current