QoS AND MOBILE TECHNOLOGIES

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CHAPTER 29

ASSOCIATION MANAGEMENT SCHEMES FOR WIRELESS MESH NETWORK

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29.1 INTRODUCTION

In a wireless mesh network, a mesh client needs to associate with a mesh access point for network access. Conventional association mechanisms which is developed for WLAN networks assume a high-speed backhaul and only the access link being the bottleneck. while, in wireless mesh networks traffic could be bottlenecked either by the access link or by the bandwidth-limited wireless backhaul.802.11-based mesh networks have become the solution of choice for essentially all metropolitan Wi-Fi systems. In such networks,mobile nodes use received signal strength (RSS)-based association techniques that can lead to inefficient use of network resources, especially in mesh networks [1]. therefore a new association schemes need to be developed to fit with wireless mesh networks. Many mechanizm have been proposed in litereture to improve the performance of the association mechanism in wireless mesh networks.

29.2 THE ASSOCIATION MECHANIZM IN 802.11 BASED WIRELESS MESH NETWORKS

The IEEE 802.11 standards define the Received Signal Strength Indication (RSSI) value to be the only metric for the association with an AP. Thus, the mesh client is associated with the AP that has the strongest RSSI after an active or passive scanning, and it will not change its association until the RSSI becomes below a certain threshold. However, only utilizing RSSI as metric does not take into account the traffic load of an AP. Thus, a client might make an inappropriate decision (e.g. choosing an overloaded AP) and cause inefficient use of resources, serious unbalance of traffic load, and poor performance of network. Therefore the access point selection or the Mesh Access Point (AP) selection problem in wireless mesh networks becomes even more crucial [2] [3] [4]. This because that the multi-hop backhaul path from the MAP to the Internet Gateway (IGW) of a WMN can be the bottleneck, which is different from a WLAN where only one wireless link can be the bottleneck. If an mesh client