PREFACE

Wireless Mesh Networks (WMNs) enable the users to access the Internet anywhere anytime with the help of wireless mesh routers. These routers can be used to connect WMNs with several other wireless networks such as cellular network, Wi-Fi and WiMedia networks. Hybrid mesh network is a combination of both infrastructure and client mesh network. It consists of static mesh routers forming the backbone of the network and mobile mesh clients which perform routing and forwarding operations.

Multicast communication is a process of transferring a single message from the source node to several receivers simultaneously. Quality of Service (QoS) multicast routing technique is used to determine a multicast tree which extends up to every receiver and fulfills the QoS requisites of transmission. The essential elements for QoS multicasting are admission control, resource allocation, service provisioning and route recovery.

Load balancing is important to judge the performance of any network system. The multicast routes should be selected such that traffic is effectively distributed across the network without giving burden on a single router or link to transfer the data.

Mobility management provides seamless handover when a mobile client moves from one network to another network. Hence, it is advisable to provide roaming of mobile nodes within such mesh networks. Existing solutions of Mobile Adhoc Network (MANET) cannot be directly applied to WMNs due to the nature of their traffic patterns and mobility scenarios.

In order to solve the above mentioned issues, this thesis presents a multicast routing framework for WMNs. The thesis comprises six chapters.