QoS AND MOBILE TECHNOLOGIES

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CHAPTER 6

QOS ROUTING IN AD-HOC WIRELESS NETWORKS

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6.1 INTRODUCTION

QoS routing is certainly essential in providing routing algorithms with the capability of identifying paths which satisfy the maximum possible number of flows with end-to-end limitations or restrictions. The key objectives of QoS routing can be summarized as follows:

1. Active establishment of feasible paths from among possibly many choices that will accommodate the requirements of the given flow.
2. Optimization of resource handling. Network resource can be utilized efficiently as well as total throughput can be improved.
3. Compensation for brief shortcomings in network which can lead to graceful performance degradation [1].

Due to the bandwidth constraints and dynamic network topology of MANETs, none of researches done on QoS support in the Internet can be directly used. Information such as delay, bandwidth, cost, loss rate, and error rate in the network should be available and manageable to provide QoS support. Unfortunately, it is very difficult to get and manage the information in MANETs since the quality of a wireless link could vary with the surrounding circumstances. Moreover, the resource limitations and the mobility of hosts require implementation of complex QoS functionality with limited available resources in a dynamic environment [2].

QoS support in MANETs consists of QoS models, QoS resource reservation signalling, QoS routing, and QoS Medium Access Control (MAC). The relationships among all these QoS components are as follows. First of all, a QoS model specifies an architecture in which some kinds of services could be provided in MANETs. It acts like the system goal that should be implemented. Meanwhile, all other QoS components such as QoS signalling, QoS routing, and QoS MAC must work together to achieve this goal. Second, QoS signalling acts as the control centre in QoS support. It coordinates the behaviours of QoS routing, QoS MAC, and other components such as admission control and scheduling. QoS model determines the functionality of QoS signalling. Third, QoS routing looks for a path with enough resources. However, the resources reservation along the path is handled by QoS signalling. The reservation is decided by QoS routing or other