QoS AND MOBILE TECHNOLOGIES

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IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
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Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

ISBN: 978-967-418-142-0

Member of Majlis Penerbitan Ilmiah Malaysia - MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan
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CHAPTER 5

QUALITY OF SERVICE (QOS) AD-HOC ON-DEMAND DISTANCE VECTOR (AODV)

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5.1 INTRODUCTION

The route discovery in AODV is on-demand and follows a route request/route reply query cycle [1]. When a source is in need of a route to a destination, it broadcasts a Route Request (RREQ) control message in search of a route. Nodes having a current route to the indicated destination respond by unicasting a Route Reply (RREP) to the source node.

In order to provide QoS, extensions can be added to these messages during the route discovery process. A node which receives a RREQ with a QoS extension must be able to meet that service requirement in order to either rebroadcast the RREQ (if it does not have a route to the destination) or unicast a RREP to the source. Several extensions are needed in the routing table structure and the RREQ and RREP messages as reported in [2] [3]. The following fields are added to each route table entry corresponding to each destination.

- Maximum delay
- Minimum available bandwidth
- List of sources requesting delay guarantees
- List of sources requesting bandwidth guarantees

Regarding the QoS extensions, [3] suggested that the maximum delay extension and minimum bandwidth extension can be appended to a RREQ by a node requesting a QoS route in order to place a maximum bound on the acceptable time delay experienced on any acceptable path from the source to the destination as well as to specify the minimum amount of bandwidth that must be made available. A special message, QOS-LOST message is generated to handle any QoS violation. The QOS-LOST message is forwarded to all the sources potentially affected by the change in the QoS parameter. These are the sources to which a RREP with a QoS extension has been forwarded before the sources are recorded in a list as a part of the table route entry.

In another proposal made by Perkins and Royer, two extension formats were introduced: QoS Object Extension Format and Maximum Jitter Extension Format. A node may append a QoS Object extension to a RREQ in order to find a path that satisfies the QoS parameters which are present in the QoS Object, which is situated within the QoS Object extension data. As a result, the Maximum Delay Extension Format which has