Abstract

In mobile communication, routing data through intermediate mobile node is a challenging task due to high mobility of nodes which causes rapid change in network topology and frequent disconnection between pair of nodes. To address these issues, Mobile Relay Station (MRS) is introduced into the network based on IEEE 802.16j standard. The MRS features are similar to the Fixed Relay Station (FRS), however the MRS has capability to move as Mobile Station (MS). In intermittent connection, by adapting the features of Delay Tolerant Network (DTN), the
MRS can store and carry the data until it finds the destination to forward the data. Assuming that
MS is aware of its own movement as well as its closest neighbor nodes. In this paper,  
Dynamic Routing Algorithm (DyRA) has been proposed to select next hop node towards the 
destination. The forwarding decision is based on a computed metric which is a combination of 
Packet Reception Rate (PRR), Link Expiration Time (LET) information and Number of Slots 
(NoS) available at the candidate MRS nodes. Also, the proposed Relay-based Vehicular 
Network (RVN) in WiMAX using cross layer design (CLD) is designed to select the optimal next hop node and set new route when current routing path is no longer available. The preliminary results for system throughput performance and average end-to-end delay are analyzed. The results show that by deploying relay-based in vehicular network can enhance system throughput in terms of packet loss ratio (PLR), packet delivery ratio (PDR), and average end-to-end (ETE) delay. NCTUns simulation environment has been used to study the mobile node performance.

References


Two-hop Relay-based Vehicular Network in WiMAX


Index Terms

Computer Science
Wireless

Keywords
Route selection Link quality Link stability Cross layer design