Energy Aware OLSR-Based
Mobile Ad Hoc Networks

OLSR is a well-known proactive routing protocol designed for mobile ad hoc networks (MANETs). OLSR adopts a concept of an MPR mechanism where only mobile nodes selected as MPR nodes can retransmit broadcast packets received from other mobile nodes. Although OLSR reduces the number of broadcast packets, MPR nodes consume more energy than other mobile nodes. Since mobile nodes in MANETs are powered by battery with limited energy, energy efficiency is a critical issue in designing a routing protocol that affects the overall network performance. This paper proposes a residual energy-based OLSR protocol named RE-OLSR. The RE-OLSR takes residual energy level of each node into account to select MPR nodes. The RE-OLSR also considers the reachability and the degree of one-hop neighbor nodes. The aim of RE-OLSR is to avoid selecting mobile nodes with small residual energy as MPR nodes and concentrating energy consumption in specific nodes. The performance of RE-OLSR is evaluated through simulation experiments. The results show that the proposed scheme improves energy efficiency and enhances network throughput efficiently.