Mobile ad-hoc networks (MANETs) are demanding considerable improvement in energy efficiency, as their applications are being developed continuously and consistently which also includes high level performance oriented application. In MANET the mobile nodes are dynamic in nature. It also suffers from other two constraints which are Limited Processing capability and Limited Power Supply. Energy Consumption in the nodes takes place mainly during the communication process between the nodes. One of the approaches to improve the efficiency in energy is by applying Transmission Power Control (TPC) technique to adjust the transmission power in communication between nodes. Another approach is, distributing the loads within the network and also maintaining clusters in this uncertain network. Therefore, we investigate different effects of TPC on two load distribution approaches like Localized Energy Aware Routing (LEAR) and Conditional Max-Min Battery Capacity Routing (CMMBCR) protocols for MANETs, in a restricted customized environment by forming clusters within the nodes. This improves the network scalability and also decreases the probability of the network failure. This topology control focuses on the clustering of the nodes in a particular formation and
communicates with the nodes according to the status of them in the clusters. The experimental results show a noticeable effect of TPC implementation technique on MANETs in respect to transmission energy consumption and packet received ratio at low node mobility.

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Index Terms

Computer Science Networks

Keywords

MANET, Transmission Power Control, load distribution, Localized Energy Aware Routing (LEAR), Conditional Max-Min Battery Capacity Routing (CMMBCR), clustering.