A review and comparison of efficient flooding schemes for on-demand routing protocols on mobile ad hoc networks (MANETs)

Abstract

Since the basic components of ad hoc wireless networks are mostly battery-operated portable devices, power conservation is one of the central issues of such networks. Power-conservative designs for ad hoc networks pose many challenges due to the lack of central coordination facilities. Existing on-demand routing protocols perform route discovery by flooding the network with a query message requesting a route to the destination. Flooding is used because of its simplicity and greater success in finding the best route between the source and destination available at that time of route discovery. However, as flooding involves querying all reachable network nodes, frequent flooding can rapidly deplete the energy reserved at each node. In addition to consuming significant portions of the available network bandwidth. Further, as the number of communicating nodes increases, more congestion, contention, and collisions can be expected. This paper reviews and compares approaches for optimizing bandwidth efficiency of route discovery, where several efficient flooding schemes have been presented based on different techniques to solve the problems related with the traditional blind flooding.