QoS analysis of the MANET routing protocols with respect to delay, throughput, & network load: Challenges and open issues

ABSTRACT

Mobile Ad Hoc Networks (MANETs) are types of wireless networks that communicate with mobile devices without centralized infrastructures. MANET networks are established through interconnected devices that communicate wirelessly within a relatively small, shared area. In MANET every single mobile node is presumed to travel in all directions at different speeds with challenges and open issues. Hence there is no guaranteed long-term path from one node to the next. This work proposes testing the three most common ad hoc routing protocols Adhoc On-demand Distance Vector (AODV), Dynamic Source Routing (DSR) and Optimized Link State Routing Protocol (OLSR) using Optimized Network Engineering Tool (OPNET) Modeler simulations using the performance metrics of Throughput, Delay, and Network loading to find an effective routing protocol for routing. The traffic network is used by the File Transfer Protocol (FTP), Digital Education, Battlefield, Surveillance and Security Agencies may benefit from the research work. MANETs reduced the costs of installation, maintenance and operation of such facilities as base stations and also reduced the risk to a minimum such as pollution. The outcome of the simulation shows that: according to the AODV and DSR, the lowest delay in 50 nodes was around 31.25 seconds respectively. And OLSR also had a high throughput performance of around 80 per cent compared with AODV and DSR. And it can be concluded that OLSR is the most suitable routing protocol for MANET, based on the routing protocols suggested.