Abstract

Routing protocols are fundamental in establishing linkages and communication amongst nodes in Mobile Ad-hoc Networks (MANET). Since Ad-hoc On-demand Distance Vector (AODV) protocol shuns loops and minimizes route broadcasts its predominantly utilized in MANET. This systematic review sought to uncover approaches employed in extending AODV for performance improvement in MANET, their limitations, and AODV characteristics that are extendable. Barbara Kitchenham's original guidelines (2007) guided the research, while studies were retrieved from IEEE, Science Direct, Wiley, Semantic Scholar, ACM Digital Library, EBSCOhost, and Google Scholar databases. The common approaches employed are consideration of parameters to improve quality of service, artificial intelligence and machine learning, and use of the signal strength. The limitations of the approaches can be optimized for improved performance in terms of reduced control traffic and packet loss, efficient bandwidth and memory utilization, reduced processing costs, and energy consumption. The AODV characteristics commonly extended are route discovery, selection, and maintenance. Future work could investigate clustering and zoning, and caching mechanisms approaches to enrich the reliability, performance, and efficiency of AODV protocol.