Traffic Pattern based Performance Comparison of Two Proactive MANET Routing Protocols using Manhattan Grid Mobility Model

Abstract

Mobile ad-hoc network is a collection of wireless mobile hosts forming a temporary network without the aid of any stand-alone infrastructure or centralized administration. Mobile Ad-hoc networks are self-organizing and self configuring multihop wireless networks where, the structure of the network changes dynamically. This is mainly due to the mobility of the nodes. In the current study we have compared the performance of three MANET routing protocols AODV as reactive, DSDV and OLSR as proactive by using Manhattan Grid mobility model. These share some similar behavior, but the protocols internal mechanism leads to significant performance difference. We have analyzed the performance of protocols by varying network load, mobility and type of traffic (CBR and TCP). Manhattan Grid Mobility model has been generated by IMPORTANT (Impact of Mobility Patterns on Routing in Ad-hoc NeTwork) tool. A detailed simulation has been carried out in NS2. The metrics used for performance analysis are Packet Delivery Fraction, Average end-to-end Delay, Packet Loss, Routing Overhead, Normalized Routing Load and throughput. It has been observed that AODV (reactive) protocol performs better in CBR traffic and in case of real time delivery of packets but at cost of higher routing overhead. But in TCP traffic, proactive routing protocol OLSR gives better result. Overall performance of routing protocols in TCP traffic is much better than CBR traffic.
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References

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- http://www-scf.usc.edu/~fbai/important/, referred on February 2015.
- http://nile.usc.edu/important/, referred on February 2015.

Index Terms

Computer Science
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Keywords
MANET Routing Protocol IMPORTANT TCP CBR Manhattan Grid Mobility Model Metrics Performance