Performance Comparison Between AODV and DSR In Mobile Ad-Hoc Network (MANET)

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ABSTRACT
Wireless communication technology has advanced rapidly, thanks to the proliferation of wireless devices and services. The spectrum depletion issue was discovered due to the growing number of users and to the fixed spectrum assignment strategies. A mobile ad hoc network (MANET) is a network that doesn't require a central server, specialized gear, or fixed routers to function. As it operates in a distributed peer- to-peer style, each system acts as an individual router and produces individual data where MANET may be used as a stand-alone network or as part of a cellular network that connects to the internet. There are different types of a routing protocol can be applied in MANET, each with its capabilities, advantages, and disadvantage. There is a need to investigate the performance of routing protocol for better network planning. The Ad Hoc On-Demand Distance Vector (AODV) and Dynamic Source Routing (DSR) are two MANET routing protocols investigated in this paper. Four different performance metrics are used to measure these protocols: throughput, path discovery time, traffic received and sent delay, and media access delay. To investigate the behavior of these protocols in the Manet context, a Manet simulation is run using OPNET Modeler Student Edition. According to the data, AODV outperforms other protocols in terms of throughput, amount of traffic received, and transmit performance, whereas DSR has the longest delay. Even when run in the same environment with the same number of nodes, different protocols produce different readings and behaviors. This proves the theory that AODV performs better in terms of performance, delay, and packet transfer ratio.

KEYWORDS
Wireless communication; Media; Throughput; Routing protocols; Time measurement; Delays; Topology

REFERENCES

1. A. azmi Allahham and M. N. Mohammed, "A Modified Route Discovery Approach For Dynamic Source Routing (DSR) Protocol In Mobile Ad-Hoc Networks", Int. J. Softw. Eng. Comput. Syst., vol. 3, pp. 17-30, 2017, [online] Available: http://dx.doi.org/10.15282/ijsecs.3.2017.2.0024.

2. P. Manickam, T. Guru Baskar, M. Girija and D. Manimegalai, "Performance Comparisons of Routing Protocols in Mobile Ad Hoc Networks", Int. J. Wirel. Mob. Networks, vol. 3, no. 1, pp. 98-106, 2011.

3. V. Kushwah and G. Sharma, An approach to understand secure MANET routing using OPNET., Berlin, Heidelberg:Springer Berlin Heidelberg, vol. 62, December 2012.

4. S. Mirza and S. Z. Bakshi, "Introduction to MANET Routing", Int. Res. J. Eng. Technol., vol. 05, no. 1, pp. 17-20, 2018.

5. A. Aneiba and M. Melad, "Performance Evaluation of AODV DSR OLSR and GRP MANET Routing Protocols Using OPNET", Int. J. Futur. Comput. Commun., vol. 5, no. 1, pp. 57-60, 2016.