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Abstract

In MANETs, routing is a complex task as many factors affect the network performance. The major factors in routing are node mobility, node energy and congestion in the wireless bandwidth limited channel and battery operated nodes with dynamic topology. A new routing protocol is proposed (OPS-AODV) to select an optimal path in MANET by including the node energy and congestion status in route selection process. A cross layer approach is used to address the issue of node mobility by monitoring the received node signal power (RNSP), which indicates the node movement with respect to another node. The RNSP is used to address the node mobility issue while energy and congestion metric are used in selecting optimal path between source and destination.

References

1. S. R. Murthy and B. S. Manoj. Ad hoc wireless networks architectures and protocols. Pearson Education, 2007.

2. D. A. Tran and H. Raghavendra. "Congestion adaptive routing in mobile ad hoc networks". IEEE Trans Parallel Distributed Systems, Vol. 17, No. 11, pp. 16-28, 2006.
3. S. Lindsey, K. Sivalingam, and C. S. Raghavendra. Power Optimization in Routing Protocols for Wireless and Mobile Networks. Handbook of Wireless Networks and Mobile Computing, I. Stojmenovic, Ed., Wiley, 2001.
4. C. Perkins and P. Bhagwat. "Highly dynamic destination-sequenced distance-vector routing for mobile computers". In ACM SIGCOMM'94 Conf. on Comm. Architectures, Protocols and App., pp. 234-244, 1994.
5. C. E. Perkins and E. M. Royer. "Ad-hoc On-Demand Distance Vector Routing". Proceedings of the Second IEEE Workshop on Mobile Computer Systems and Applications, pp. 90, Feb. 25-26, 1999,
6. D.B. Johnson, D. A. Maltz and J. Broch. DSR: the dynamic source routing protocol for multihop wireless ad hoc networks. Ad hoc networking, Addison-Wesley Longman Publishing Co., Inc., Boston, MA. 2001.
7. N. Beijar. Zone Routing Protocol (ZRP). Networking Laboratory, Helsinki University of Technology, Finland. Licentiate course on Telecomm. Technology, 2002.
8. V. Srivastava and M. Motani. "Cross layer design: a survey and the road ahead". IEEE Comm. Mag., Vol. 43. No. 12, pp. 112-119, 2005.
9. M. Conti, G. Maselli and G. Turi. "Cross-layering in mobile ad-hoc network design". IEEE Comp. Soc., pp. 48-51, Feb. 2004.
10. The ns Manual, [Online]. Available: www.isi.edu/nsnam/ns/ns-documentation.html.
11. V. Rishiwal, A. Kush and S. Verma. "Stable and Energy Efficient Routing for Mobile Ad hoc Networks". IEEE Fifth International Conf. on Information Technology: New Generations, pp. 1028-1033, 2008.
12. S. Singh, M. Woo and C. S. Raghavendra. "Power-aware routing in mobile ad hoc networks". In Proc. of 4th Annual ACM/IEEE International Conference on Mobile Computing and Networking, pp. 181-190, 1998.
13. P.K.Suri, M.K.Soni and P. Tomar. "QoS enabled power aware routing protocol (QEPAR)". International Journal of Engineering Science and Technology, Vol. 2, No. 9, pp. 4880-4885, 2010.
14. T. S. Kumaran and V. Sankaranarayanan. "Early congestion detection and adaptive routing in MANET". Egyptian Informatics Journal, Elsevier, Vol. 12, No. 3, pp. 165-175, Nov. 2011.
15. A. Nedumaran and V. Jeyalakshmi. "CAERP: A Congestion and Energy Aware Routing Protocol for Mobile Ad Hoc Network". Indian Journal of Science And Technology, Vol. 8, No. 35, 2015.
16. S. P Terdal, V. D. Mytri and A. Damodaram. "A Load Aware Routing Mechanism for Improving Energy Efficiency in Mobile Ad Hoc Networks". International Journal of Computer Applications, Vol. 10, No. 3, pp. 6-11, Nov. 2010.

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Keywords

MANETs, AODV, Optimal Path Selection, OPS-AODV, RNSP.