



Analysis of Energy-Efficient Routing Protocols in Mobile Ad Hoc Network

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Abstract

Limited energy resource, routing of packets and security are the major challenges in Mobile Ad hoc Networks (MANET) due to their inherent characteristics. This paper focuses on energy consumption in MANET, which is a very serious issue because this affects the network lifetime directly. The authors concentrate on selection of energy-efficient routing protocols to minimize energy consumption by the nodes during message transmission. Attempt has been made to point out the causes of unnecessary consumption in the network. Comparative analysis of different energy-efficient routing techniques has been performed and an attempt has been made to propose a better solution. Quality of service also has been taken into account.

Keywords

Mobile Ad Hoc Networks Routing algorithms Energy consumption

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References

1. Gorantala, K.: Routing protocol for mobile ad-hoc network. Master's thesis, Umea University, Department of Computing Science, Sweden (2006)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Gorantala%2C%20K.%3A%20Routing%20protocol%20for%20mobile%20ad-hoc%20network.%20Master%E2%80%99s%20thesis%2C%20Umea%20University%2C%20Department%20of%20Computing%20Science%2C%20Sweden%20%282006%29)

[q=Gorantala%2C%20K.%3A%20Routing%20protocol%20for%20mobile%20ad-hoc%20network.%20Master%E2%80%99s%20thesis%2C%20Umea%20University%2C%20Department%20of%20Computing%20Science%2C%20Sweden%20%282006%29](https://scholar.google.com/scholar?q=Gorantala%2C%20K.%3A%20Routing%20protocol%20for%20mobile%20ad-hoc%20network.%20Master%E2%80%99s%20thesis%2C%20Umea%20University%2C%20Department%20of%20Computing%20Science%2C%20Sweden%20%282006%29))

2. Kanakaris, V., Ndzi, D., Azzi, D.: Ad-hoc networks energy consumption: a review of the ad-hoc routing protocols. *J. Eng. Sci. Technol. Rev. (Kavala Institute of Technology)* **3**, 162–167 (2010)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Kanakaris%2C%20V.%2C%20Ndzi%2C%20D.%2C%20Azzi%2C%20D.%3A%20Ad-hoc%20networks%20energy%20consumption%3A%20a%20review%20of%20the%20ad-hoc%20routing%20protocols.%20J.%20Eng.%20Sci.%20Technol.%20Rev.%20%28Kavala%20Institute%20of%20Technology%29%203%2C%20162%20E2%80%93167%20%282010%29)

[q=Kanakaris%2C%20V.%2C%20Ndzi%2C%20D.%2C%20Azzi%2C%20D.%3A%20Ad-hoc%20networks%20energy%20consumption%3A%20a%20review%20of%20the%20ad-hoc%20routing%20protocols.%20J.%20Eng.%20Sci.%20Technol.%20Rev.%20%28Kavala%20Institute%20of%20Technology%29%203%2C%20162%20E2%80%93167%20%282010%29](https://scholar.google.com/scholar?q=Kanakaris%2C%20V.%2C%20Ndzi%2C%20D.%2C%20Azzi%2C%20D.%3A%20Ad-hoc%20networks%20energy%20consumption%3A%20a%20review%20of%20the%20ad-hoc%20routing%20protocols.%20J.%20Eng.%20Sci.%20Technol.%20Rev.%20%28Kavala%20Institute%20of%20Technology%29%203%2C%20162%20E2%80%93167%20%282010%29))

3. Larsson, T., Hedman, N.: Routing protocols in wireless ad-hoc networks—a simulation study. Masters thesis, Lulea University of Technology, Computer Science and Engineering, Stockholm (1998)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Larsson%2C%20T.%2C%20Hedman%2C%20N.%3A%20Routing%20protocols%20in%20wireless%20ad-hoc%20networks%E2%80%94a%20simulation%20study.%20Masters%20thesis%2C%20Lulea%20University%20of%20Technology%2C%20Computer%20Science%20and%20Engineering%2C%20Stockholm%20%281998%29)

[q=Larsson%2C%20T.%2C%20Hedman%2C%20N.%3A%20Routing%20protocols%20in%20wireless%20ad-hoc%20networks%E2%80%94a%20simulation%20study.%20Masters%20thesis%2C%20Lulea%20University%20of%20Technology%2C%20Computer%20Science%20and%20Engineering%2C%20Stockholm%20%281998%29](https://scholar.google.com/scholar?q=Larsson%2C%20T.%2C%20Hedman%2C%20N.%3A%20Routing%20protocols%20in%20wireless%20ad-hoc%20networks%E2%80%94a%20simulation%20study.%20Masters%20thesis%2C%20Lulea%20University%20of%20Technology%2C%20Computer%20Science%20and%20Engineering%2C%20Stockholm%20%281998%29))

4. Feeney, L.M.: An energy consumption model for performance analysis of routing protocols for mobile ad-hoc networks. *Mob. Netw. Appl. (Springer)* **6**, 239–249 (2001)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Feeney%2C%20L.M.%3A%20An%20energy%20consumption%20model%20for%20performance%20analysis%20of%20routing%20protocols%20for%20mobile%20ad-hoc%20networks.%20Mob.%20Netw.%20Appl.%20%28Springer%29%206%2C%20239%20E2%80%93249%20%282001%29)

[q=Feeney%2C%20L.M.%3A%20An%20energy%20consumption%20model%20for%20performance%20analysis%20of%20routing%20protocols%20for%20mobile%20ad-hoc%20networks.%20Mob.%20Netw.%20Appl.%20%28Springer%29%206%2C%20239%20E2%80%93249%20%282001%29](https://scholar.google.com/scholar?q=Feeney%2C%20L.M.%3A%20An%20energy%20consumption%20model%20for%20performance%20analysis%20of%20routing%20protocols%20for%20mobile%20ad-hoc%20networks.%20Mob.%20Netw.%20Appl.%20%28Springer%29%206%2C%20239%20E2%80%93249%20%282001%29))

5. Toh, C.K., Cobb, H., Scott, D.A.: Performance evaluation of battery-life-aware routing schemes for wireless ad hoc networks. In: *IEEE International Conference*, vol. 9, pp. 2824–2829, Citeseer (2001)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Toh%2C%20C.K.%2C%20Cobb%2C%20H.%2C%20Scott%2C%20D.A.%3A%20Performance%20evaluation%20of%20battery-life-aware%20routing%20schemes%20for%20wireless%20ad%20hoc%20networks.%20In%3A%20IEEE%20International%20Conference%2C%20vol.%209%2C%20pp.%202824%20E2%80%932829%2C%20Citeseer%20%282001%29)

[q=Toh%2C%20C.K.%2C%20Cobb%2C%20H.%2C%20Scott%2C%20D.A.%3A%20Performance%20evaluation%20of%20battery-life-aware%20routing%20schemes%20for%20wireless%20ad%20hoc%20networks.%20In%3A%20IEEE%20International%20Conference%2C%20vol.%209%2C%20pp.%202824%20E2%80%932829%2C%20Citeseer%20%282001%29](https://scholar.google.com/scholar?q=Toh%2C%20C.K.%2C%20Cobb%2C%20H.%2C%20Scott%2C%20D.A.%3A%20Performance%20evaluation%20of%20battery-life-aware%20routing%20schemes%20for%20wireless%20ad%20hoc%20networks.%20In%3A%20IEEE%20International%20Conference%2C%20vol.%209%2C%20pp.%202824%20E2%80%932829%2C%20Citeseer%20%282001%29))

6. Maleki, M., Dantu, K., Pedram, M.: Lifetime prediction routing in mobile ad hoc networks. *Wirel. Commun. Netw. (IEEE)* **2**, 1185–1190 (2003)

Google Scholar ([https://scholar.google.com/scholar?](https://scholar.google.com/scholar?q=Maleki%2C%20M.%2C%20Dantu%2C%20K.%2C%20Pedram%2C%20M.%3A%20Lifetime%20prediction%20routing%20in%20mobile%20ad%20hoc%20netw)

[q=Maleki%2C%20M.%2C%20Dantu%2C%20K.%2C%20Pedram%2C%20M.%3A%20Lifetime%20prediction%20routing%20in%20mobile%20ad%20hoc%20netw](https://scholar.google.com/scholar?q=Maleki%2C%20M.%2C%20Dantu%2C%20K.%2C%20Pedram%2C%20M.%3A%20Lifetime%20prediction%20routing%20in%20mobile%20ad%20hoc%20netw)

orks.%20Wirel.%20Commun.%20Netw.%20%28IEEE%29%202%2C%201185%E2%80%931190%20%282003%29)

7. Garcia, J.E., Kallel, A., Kyamakya, K., Jobmann, K., Cano, J.C., Manzoni, P.: A novel DSR-based energy-efficient routing algorithm for mobile ad-hoc networks. In: Vehicular Technology Conference, vol. 5, pp. 2849–2854. IEEE (2003)
Google Scholar (<https://scholar.google.com/scholar?q=Garcia%2C%20J.E.%2C%20Kallel%2C%20A.%2C%20Kyamakya%2C%20K.%2C%20Jobmann%2C%20K.%2C%20Cano%2C%20J.C.%2C%20Manzoni%2C%20P.%3A%20A%20novel%20DSR-based%20energy-efficient%20routing%20algorithm%20for%20mobile%20ad-hoc%20networks.%20In%3A%20Vehicular%20Technology%20Conference%2C%20vol.%205%2C%20pp.%202849%E2%80%932854.%20IEEE%20%282003%29>)
8. Domingo, M.C., Remondo, D., León, O.: A simple routing scheme for improving ad hoc network survivability. In: Global Telecommunications Conference, GLOBECOM '03, vol. 2, pp. 718–723. IEEE (2003)
Google Scholar (<https://scholar.google.com/scholar?q=Domingo%2C%20M.C.%2C%20Remondo%2C%20D.%2C%20Le%C3%B3n%2C%20O.%3A%20A%20simple%20routing%20scheme%20for%20improving%20ad%20hoc%20network%20survivability.%20In%3A%20Global%20Telecommunications%20Conference%2C%20GLOBECOM%20%28E2%80%939803%2C%20vol.%202%2C%20pp.%20718%E2%80%93723.%20IEEE%20%282003%29>)
9. Rishiwal, V., Yadav, M., Verma, S., Bajapai, S.K.: Power aware routing in ad hoc wireless networks. J. Comput. Sci. Technol. **09**, ISTECS (2009)
Google Scholar (<https://scholar.google.com/scholar?q=Rishiwal%2C%20V.%2C%20Yadav%2C%20M.%2C%20Verma%2C%20S.%2C%20Bajapai%2C%20S.K.%3A%20Power%20aware%20routing%20in%20ad%20hoc%20wireless%20networks.%20J.%20Comput.%20Sci.%20Technol.%2009%2C%20IISTEC%20%282009%29>)

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