Priyadarshini Institute of Engineering & Technology, Nagpur.

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# Synopsis On

Implementation of Energy Efficient Routing Protocol for

Wireless Network

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SYNOPSIS

1. Title: Implementation of Energy efficient Routing protocol for wireless network
2. a. Aim : To implement a model which reduces energy consumption & routing overhead

in wireless network..

**b. Introduction :** Networks are classified into two main types based on connectivity,

wired and wireless networks. A wireless network provides flexibility over standard

wired networks. Only with the help of wireless networks, the users can retrieve

information and get services even when they travel from place to place. The single-hop

and multi-hop Networks are the two major classifications of wireless networks.Base

stations are used in single-hop networks to accomplish communication between

nodes. The communication between nodes is accomplished via other nodes which

are called Intermediate or forwarding nodes. So there is a need of routing procedure

between Nodes. And hence routing protocol plays a major role in wireless network

The routing protocols in wireless network are mainly classified using their routing strategy and network structure.Flat routing, hierarchical routing and geographic postion assisted routing are the three major classification of routing protocols based on the network. Based on routing strategy, the routing protocols are grouped as Table-driven and source initiated on-demand driven.

Table-driven protocols usually find routes constantly and maintain in routing table for all source-destination pairs at the expense of high routing overhead. On-demand protocols such as AODV and DSR incur less routing overhead by finding path between a source destination pair only when it is necessary. Compared

to table driven protocols, on-demand protocols utilize less bandwidth and energy consumption.Ad-Hoc On Demand Distance Vector Routing Protocol (AODV) finds route between nodes only when it is necessary.

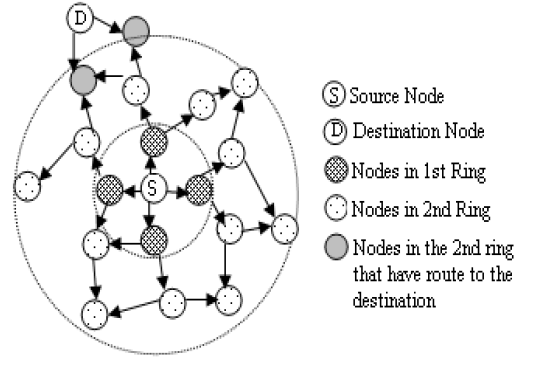
It does not maintain topology information about all other nodes in

the network.In AODV, each time the node initiates the route discovery for some destination using simple flooding for broadcasting the Route Request (RREQ) across

the network. Energy efficiency is an important issue in wireless network where nodes rely on limited power and computational resource, yet are required to cooperate in all sorts of fundamental network activities including routing. So, to control the network wide broadcast of the RREQs, the source node uses the Expanding Ring Search (ERS) technique , which allows a source to broadcast the RREQ of increasingly larger areas

of the network if a route to the destintion is not found.Unfortunately some nodes in ERS technique rebroadcast the RREQs unnecessarily For extending the lifetime of the nodes in wireless network, many energy efficient protocols have been design.

**Conventional ERS System**



1. Source node S wants to send packets to the node D destination node using TTL mechanism.
2. It starts to search D by incrementing the TTL value, say N=1.
3. In the first search source node S can send RREQ to its one hop neighbors.
4. The nodes in the first search do not have information about destination so it increment the TTL value say K. In the figure above some nodes in second search have information about destination, so that nodes will unicasts the RREP (Route Reply) to the source.
5. If the route to destination still not found in second search and TTL value becomes greater than “threshold value” it will set the TTL value to a “limited value” and the RREQ message is broadcasted to entire network.
6. But the conventional ERS system has some disadvantages.
7. In this mechanism, if the destination node is far away from source node then source node has to rebroadcast RREQ message several times.

In this project we propose a simple but energy efficient design for AODV Routing Protocol which makes some nodes silent without forwarding the redundant rebroadcasting of the RREQ packets which is not used by any other node in the network for finding routes.

Using GloMoSim we evaluate the performance of our energy consumption design to AODV, which is named Energy Efficient AODV (E2AODV).

**c. Objective:** Implementation of proposed routing algorithm for some suitable wireless network like wireless sensor network , mobile ad hoc network, wireless mesh network.

**d. Scope of Problem:**

* It will discover an energy efficient route for AODV based on ERS.
* This approach saves energy of the nodes by avoding the redundant rebroadcasting of the rout request packet.
* E2AODV provide efficient energy consuming routing protocol with reduced routing overhead.

**e. Reason for selecting the problem:**

In this research work we process a design which helps in utilizing the

Information before dropping the duplicate RREQ packets to make decision about

Node’s relay value. This helps in making some nodes silent without forwarding the

Redundant rebroadcast of the RREQ and thus reduces energy consumption for

AODV routing protocol. This improved ERS scheme is named as MERS.

**3. Proposed plan of work:**

|  |  |
| --- | --- |
| **Duration of work** | **Action to be taken** |
| July 2012 | Literature review |
| August- October 2012 | Study of Routing Protocol |
| November2012-January 2013 | Study of modified routing protocol for energy efficiency & suitable application for wireless network. |
| February 2013-March 2013 | Development of energy efficient routing protocol for wireless network. |
| April 2013-May 2013 | Conclusion |
| June 2013 | Report writing |

1. **Research Methodology to be employed:**

We used GloMoSim . Global Mobile Information System Simulator is a network

Protocol Simulation software that simulates wireless network system.

1. **Experimental Set-Up:**

We use GloMoSim as our tool for simulation. It will evaluate the performance of our energy consumption design to AODV which is named as energy

Efficient AODV in MANET.

1. **Measurement Techniques:**

The simulation is carried out and performance evaluated in terms of energy

Consumption for the parameter like simulation time ,number of nodes, transmission

Range, bandwidth.

**5. Chapters Schemes:**

1. Introduction
2. Literature Review
3. Methodology
4. Tools
5. Design & Implementation
6. Result
7. Conclusion & Future scope
8. References

**6. Bibliography :**

**[**1]. D.P.Agarwal and Q-A Zeng, Introduction to Wireless and Mobile Systems,

Brooks / Cole Publishing, ISBN No. 0534-40851-6,436 pages,2003.

[2]. Elizabeth M.Royer and C.K.Toh,“A Review of current Routing Protocol for Ad-Hoc Mobile Wireless Networks ”, 2003.

[3]. Woonkang Heo and Minseok Oh, “Performance of Expanding Ring Search Scheme in AODV Routing Algorithm”, Second International Conference on Future Generation Communication and Networking, pp: 128-132, China, 2008.

[4] . D.N.Pham and H.Choo, “Energy Efficient Ring Search for Route Discovery in MANETs” IEEE International Conference of Communication, Turkey, 2008.

[5].D.N.Pham,V.D.Nguyen,V.T.Pham,N.T.Nguyen,X.BacD,T.D.Nguyen,C.Kuperschmidt and T.Kaiser, “An Expending Ring Search Algorithm For Wireless Networks”, International conference on Advanced Technologies for communication Vietnam, 2010.

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