A Review on Tuning Of OLSR Routing Protocol IN VANET

Radhika Chauhan[1], Nitin Goyal[2] , Rakesh Kumar[3]

Department of Computer Science & Engg., JMIT Radaur, Kurukshetra University, India[1, 2]
Department of Computer Science & Engg., NITTTR Chandigarh, India[3]

ABSTRACT

OLSR (Optimization Link State Routing Protocol) was premeditated firstly for Mobile Adhoc NETworks (MANETs), but later it is used for Wireless Sensor Networks (WSNs) and Vehicular Adhoc NETworks (VANETs) also. The protocol builds and maintains the route connecting source and the destination with minimum cost with the help of Hello and control messages. The OLSR protocol is applicable for high density networks. The OLSR operation permits incorporation into accessible working system. The performance of network depends upon the routing protocol. OLSR does not give the satisfactory performance with existing values of parameters. Therefore it is necessary to modify OLSR parameters for better performance. Our main purpose of this survey paper is to study the various techniques used for parameter tuning for OLSR and analyze the gap between these techniques. This is accomplished by simulation study of the existing techniques using NS2 simulator.

Keywords: *Vehicular ad hoc networks, OLSR, MPR, MANET, QOS, Wireless- sensor-network.*

I. INTRODUCTION

Wireless Sensor Network (WSN) consisting of a large number of sensor nodes. These nodes deployed in vehicles form Vehicular Ad-hoc NETworks (VANETs) [9-16]. VANET have become visible successful application of mobile ad-hoc networks. VANET produces a wireless network communication between vehicles. VANET's primary goal is to improve the road safety as well as transportation system. VANET focus on investigating routing algorithms even in the presence of high dense network topology. Wireless technologies in VANET have some limitations. Due to this, routing protocols in such network becomes a significant task to get new best routing protocol and evaluate these protocol. Another event of network fragmentation in VANET is to reduce the diffusion ratio. VANET applications consist of some safety structure, which are worn to service drivers to desist collision. This is done by coordinating with drivers at cutting point such as intersection and high way entries. Some organizations declare information, such as incident, traffic jamming, and speed rating of motor vehicle in the locality of said side. This lends a hand to skip squad vehicles as well as progress road ability with this safety system the road accidents and related break are proposed to be basically reduced.

> **Optimized Link State Routing Protocol**

Optimized link state routing (OLSR) is a table driven (proactive) protocol, in which routing information is given by every node to another node. OLSR protocol is generally based on universal link state algorithm. For updating the data message are systematically exchange through nodes in the presence of mobility and failure. Multipoint relay design is mainly worn to reduce the flooding during each route packets. OLSR needs to decrease end-to-end delay to enhance throughput through traffic pattern. The main functionality is accomplished by using three unlike messages.

Hello: Hello messages are transmitted by all the neighbors. These messages are basically used for finding the information about link state, MPR control and host's neighbor.

Topology Control: Topology Control messages are the condition signal done by OLSR. These messages are propagate all over the network. These messages are used by broadcast information about individual disseminate

neighbor which hold at least the MPR selector list. Periodically these messages are declared and only the MPR hosts can forward the TC message.

MID: Multiple interface declaration messages are forward by nodes running OLSR on more than single interface. Multiple interface declaration messages list all AP addresses used by a nodes. These messages are circulated all over entire network only by MPR.

➢ **OLSR Configuration**

These message have been tuned by many Authors devoid using every automatic tool, and they are the halts since resending HELLO, MID, and TC messages (HELLO_ INTERVAL, REFRESH_INTERVAL and TC_INTERVAL respectively). The "validity time" of the knowledge is gathered through three messages and the denial of the node that represent the whole time which the multipoint relay record information about the transmitted packet.

➢ **Packet Format**

A detail of system is shown below as the transport system. OLSR prepares use of "Hello" (Fig. 1) to get 1 hop neighbors and 2 hop neighbors. Here the sender can choose its MPR (multi point relays) that offer the best routes to the two hop nodes. Every node has as well as an MPR (multi point relay) selector set, then total nodes. OLSR values topology control (Fig. 2) messages as well as MPR forwarding to provide neighbors data all over the network.
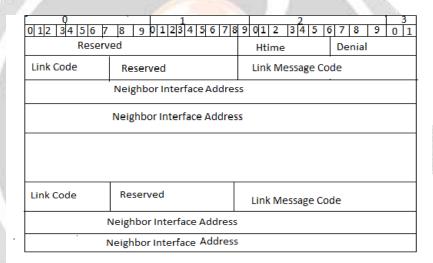

Fig. 1 Hello Format [5]

Fig. 2 TC Format [5]

II.   LITERATURE SURVEY

➢ **Simulation and Performance Analysis**

The author discusses and evaluate optimize link state protocol (OLSR) to better performance. We are using OPNET simulator tool for evaluation. Simulation does applying on the OLSR protocol for better performance and creates in

small size network (20 nodes), medium size network (30 nodes), and large size network (40 nodes) the complex of MANET. We are analyzing the MRC, total hello message sent, routing traffic sent and receive, total transmission count message already sent and receive [4].

➤ **Scalability Issues in OLSR**

There exist network condition that extremely change the feat of the routing protocol. Networking is using for manageability, and scalability reason. OLSR, AODV, DSR are the main ad-hoc routing solution. OLSR is a proactive link state routing protocol optimized for mobile ad-hoc network, which uses hello and transmission control to discover and then spread the information throughout the mobile ad- hoc network. Every node calculates the next hop destination using shortest path forwarding. MANET is presented the scalability of issue in OLSR regarding the increasing number of nodes [5].

➤ **Tuning of OLSR**

VANETs provide wireless network communication between vehicles. It is based on network topology. QoS is tough to achieve because topology may be changed so fast and the available state information for routing uncompleted. Intelligent water drop algorithm is used for optimize .They optimize the OLSR (optimize link state routing) parameter. IWD algorithm parameter is turned OLSR protocol do reduce the network traffic load and communication cost and improve the packet delivery ratio (PDR). In such network we face the challenge of limited resources and wireless channel loss [1].
OLSR is in vogue protocol for use in MANET networks. Author probe the different force of tuning interval timer on OLSR performance for various node speed and density. Through this technique it is found that by the reduction of refresh interval OLSR performance gets improved. It is also found that the impact of interval timer extend with the increase mobility network and density [7].
In wireless technology give rise to the issue of VANETs (vehicular ad-hoc network). A bound coverage of Wi-Fi with high nodes mobility makes frequent topology changes and network fragmentations. For this generalization when there is no central manager entity, routing packet is the challenging task through a network. Optimal parameters are based on the metaheuristic algorithm (PSO, DE, GA, and SA) and also find the optimal configuration of this routing protocol [8]. It is challenging to discover an optimal value for improved QoS in VANET. Since, the author have projected a PSO based algorithm to find the best combination in AODMV (ad-hoc on demand multiple distance vector) [6].

➤ **Adaptive Optimized Protocol for VANET**

VANET is a derived class of mobile ad-hoc network (MANET).VANET provides the communication between vehicles. The performance of this type of communication is based on the routing. How can the routing performs better in given network and data dependent routing protocol. VANET is depend upon different ways of the routing .OLSR is best for mobile network and Position based routing is one of the best protocol for vehicular network which are highly dynamic in nature. It is affecting the multipoint relay [2].

➤ **Optimized OLSR with Cognitive**

The author use the cognitive optimize link state routing (COLSR).The COLSR boost the performance and throughput and provide the best solution to the problem. The author discuss the enhancement of OLSR, generation and reputed trust mechanism additionally [3].

Author name	Year of Publishing	Techniques used	Finding	Features
Yang Cheng Huang, Saleem Bhatti, Daryal parker	2006	Tuning soft state refresh interval	Impact of refresh interval timer	Progress is not linear along with the decrease of interval
Jamal Toutouh, Jose Garcia-Nieto, Eneique	2012	Metaheuristic algorithm consist of (DE, SA, PSO and GA)	Optimal configuration	High rates of packet delivery
Manpreet Kaur, Kunwarpal	2013	Reputed trust mechanism and weighting mechanism	Cognitive OLSR routing protocol to remove the congestion on nodes and packet dropping problem.	Remove the problem and enhance the COLSR and implement the COLSR.
Kunal Vikas Patil, M.R.Dhage	2013	Position based routing protocol it also provide robustness for highly dynamic wireless network.	OLSR is revised of MPR selection	Revised OLSR protocol is used to get better performance.
M.Gunasekar, S.J.Hinduja	2014	IWD (Intelligent Water Drop algorithm optimization	IWD finds the optimal paths and provide multi-path data transmission to communication in other dense network.	They can improve the packet delivery ratio and control the overhead.
D K Lobiyal, C P Katti, A k Giri	2015	Particle Swarm Optimization	They are tested on real map scenario to obtain the optimal value of parameter in AOMDV.	Improve the QOS compared to the default value of parameter.

Table 1: Different techniques used for OLSR

III.   CONCLUSION

In VANET, a routing protocol has critical role for circulate massage with moving vehicles and protocol based upon value of parameters. The applicable standard protocols are constructive in VANET (Vehicular Ad-hoc network). Better and better performance is always needed. By analyzing these protocols get the performance evaluation is essential to find out the efficiency of a routing protocol with other protocol. The standard OLSR is improved with multipoint relay (MPR) draft. Hence the improved OLSR is used to get better performance and throughput. Through a various algorithm is improved the packet delivery ratio.

REFERENCES:

[1]   M.Gunasekar, S.J.Hinduja, "Tuning of OLSR routing protocol using IWD in VANET", International Journal of Innovative Research in Computer, Vol. 2, Issue 1, March 2014.

[2]   Kunal Vikas Patil, M.R.Dhage, "The Adaptive Optimized Routing Protocol for Vehicular Ad-hoc Networks", International Journal of Computer Science and Network, Vol. 2, Issue 3, June 2013.

[3]   Manpreet Kaur, Kunwarpal, "optimize OLSR with Cognitive in Wireless Mesh Network", International Journal of Engineering and Advanced Technology, Vol. 2, Issue 3, Febraury 2013.

[4]   Kuldeep Vats, Sachdeva, Dr. Krishan Saluja, Amit Rathee, "Simulation and Performance Analysis of OLSR routing protocol using OPNET", International Journal of Advanced Research in Computer Science and Software Engineering, Vol. 2, Issue 2, Febraury 2012.

[5]   B.A.Mohan, Dr. Sarojadevi, "Scalability Issue IN Optimized Link State (OLSR) Protocol", International Journal of Advance Technology & Engineering Research, Vol. 2, Issue 4, July 2012.

[6]   D K Labiyal, C P Kathi, A K Giri, "Parameter Value Optimization of Ad-hoc on Demand Multipath distance Vector Routing Using Particle Swarm Optimization", International Conference on Information and Communication Technology, 2014.

[7]   Yang Cheng Huang, Saleem Bhatti, Daryl Parker, "Tuning OLSR", the 17th Annual IEEE International Symposium on Personal Indoor and Mobile Communication, 2006.

[8]   Jamal Toutouh, jose Garcia-Nieto, Enrique, "Intelligent OLSR routing protocol optimization for VANETs", IEEE Transaction on vehicular Technology, Vol. 6, Issue 2, 2012.

[9]   Nitin Goyal, Alka Gaba, "A New Approach of Location Aided Routing Protocol Using Minimum Bandwidth in Mobile Ad-Hoc Network", International Journal of Computer Technology & Applications, Vol. 4, No. 4, pp. 653-659, July 2013.

[10] Nitin Goyal, Alka Gaba, "A review over MANET-Issues and Challenges", International Journal of Enhanced Research in Management & Computer Applications, Vol. 2, Issue 4, pp. 16-28, April-2013.

[11] Tanuja Khurana, Sukhvir Singh, Nitin Goyal, "An Evaluation of Ad-hoc Routing Protocols for Wireless Sensor Networks", International Journal of Advanced Research in Computer Science and Electronics Engineering, Vol. 1, Issue 5, July 2012.

[12] Nitin Goyal, Maynak Dave, Anil Kumar Verma, "Fuzzy Based Clustering and Aggregation Technique for Under Water Wireless Sensor Networks", International Conference on Electronics and Communication System (ICECS-2014), Feb 2014.

[13] Harpreet Chawla, Nitin Goyal, "Quality of Service and Scalability in Vehicular Ad Hoc Networks", International Journal of Engineering Research and General Science, Vol. 3, Issue 3, May-June, 2015.

[14] Alka Gaba, Nitin Goyal, "Review over Diverse Location Aided Routing", Global Journal for Current Engineering Research, Vol. 2, No. 2, pp. 141-144, 2013.

[15] Mohit Kumar, Nitin Goyal, "Reviewing Underwater Acoustic Wireless Sensing Networks", International Journal of Computer Science and Technology, Vol. 5, Issue 2, June 2014.

[16] Pratibha Kamboj, Nitin Goyal, "Survey of Various Keys Management Techniques in MANET", International Journal of Emerging Research in Management & Technology, Vol. 4, Issue 6, June 2015.