

A generic algorithm from the origin in VANET scenarios

Michael Taynnan¹, Anderson Costa¹, Reinaldo Gomes²

Federal Institute of Education, Technology and Science of Paraíba – IFPB – BR

Email : {michael.taob, andersoncostinha}@gmail.com

Federal Institute of Education, Technology and Science of Alagos – IFAL – BR

Email : reinaldo.mgomes@gmail.com

Routing in VANET (Vehicular Ad-hoc Networks) is still a developing area due the specific characteristics of these networks. The most difficult challenge is to prove information transport even that the channel is rapidly modified by the network's mobility. Mobility in VANETs scenarios is a notable issue that has to be faced by the logical part in the network. The network layer needs to guarantee the stability of routing without relying on the mechanisms of traffic information from the physical layer. Routing protocols offer different characteristics to communicate many hosts/vehicles considering the constant topology exchanging. These protocols supports routing in large scale in big avenues [1], intense mobility of vehicles and connections without link breakage[2], an adaptation system to the constantly exchange of nodes in the network [3], dynamics and passivity to prove dynamic routing showed in [4] and [5]. These protocols are subdivided in two types: reactive and proactive protocols. Reactive protocols determine routes on demand. It depends on any external resources and reduces the network overhead. Protocols that have to refresh a routing table to provide selection of routes know are called proactive protocols. The reactive ones have their performance higher than the proactive ones [6]. This performance is achieved by the continuous transmission of packets by proactive protocols. These packets generate a big overhead in the network increasing the waste of information. The discard of information is an important issue that can cost the lives of people who are moving in the vehicles. Based on studies of actual algorithms, note a dispersion of important algorithms that solve various problems in VANET scenarios in separated algorithms. It is necessary a choice of some protocol with the currently problem found in the network, being unable to the network system. The objective of this work is defining a generic algorithm that can put together a great amount of VANET characteristics, taking into account the deficiencies in existing approaches. Intend to develop a routing protocol that: (1) Being dynamic from the origin. That will be a reactive algorithm, routing on demand. (2) Present a good behaviour in small/large scale situations. It will have a successful performance in small streets to big avenues. (3) Recognize the network topology even it is in rapidly exchange of nodes, and made it without wasting information. (4) Provide a bigger connection time between cars to a higher transmission of packets. The protocol must have mechanisms of link breakage. It is interesting that the proposed protocol present the same performance found in protocols that have been already made.

References

- [1] Wang, W.; Xie, F.; Chatterjee, M.. “*TOPO: Routing in Large Scale Vehicular Networks*”. IEEE 66th Vehicular Technology Conference, pages 2106 – 2110.2007.
- [2] Taleb, T.; Sakhaee, E.; Jamalipour, A.; Hashimoto, K.; Kato, N.; Nemoto, Y.; “*A Stable Routing Protocol to Support ITS Services in VANET Networks*”. IEEE Transactions on Vehicular Technology, Volume 56, Issue 6, Part 1, Pages: 3337 – 3347. 2007
- [3] Ali, S.; Bilal, S.M.. “*An Intelligent Routing protocol for VANETs in city environments*”. 2nd International Conference Computer, Control and Communication, Pages:1 – 5. 2009.

- [4] Sommer, C.; Dressler, F.. “*The DYMO Routing Protocol in VANET Scenarios*“. IEEE 66th Vehicular Technology Conference, Pages: 16 – 20. 2007.
- [5] XI , Sun; Li, Xia-Miao; “Study of the Feasibility of VANET and its Routing Protocols”.4th International Conference on Wireless Communications, Networking and Mobile Computing, Pages 1 - 4. 2008
- [6] Gouqing, Zhang; Dejun, Mu; Zhong, Xu; Weili, Yang; Xiaoyan, Cai;.. “*A survey on the routing schemes of urban Vehicular Ad Hoc Networks*”. 27th Chinese Control Conference, Pages 338 – 343. 2008.