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Performance Approach Of AODV, DSR And DSDV Protocols IEEE 802.15.4 For Vehicular Networks Using NS2

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Abstract: VANET is a special class of custom mobile networks (MANETs) with high mobility and frequent changes in topology. It's a very dynamic wireless network .A network that can be configured without having any pre-existing infrastructure designed to improve it Transmission system by integrating sensors, WLAN, GPS, 2G and 3G with Ad-hoc Networks. Due to the higher movement of the nodes (vehicles), steering became the most difficult task in VANET[1]. A variety of research has been conducted on the guidelines and several protocols have been proposed Implementation. VANET (network vehicles) is also growing rapidly. She has to serve Wide range of applications under different scenarios (city, highway). It has many challenges to adopt Protocols that can serve in a different topology and scenario. The main objective of the dedicated auto networks is To build a strong network among mobile vehicles so that vehicles can talk to each other for human safety Objects[2]. This paper examines the classification of different and different Ad Hoc routing protocols.
Keywords: VANET (custom vehicle network), MANET (dedicated mobile network), routing protocols, AODV, DSR, DSDV.

1. INTRODUCTION:

The VANET or mobile network is made up of Dynamic wireless nodes that can communicate with them Other nodes through wireless links without any Support for fixed infrastructure [1]. Custom vehicles An easier network to organize than a wired network Used in many applications, such a procedure Circumstances surrounding the environment, military, Observation, seismic detection etc. [2]. in the end the goal of VANET is to provide a solution that maintains it Stability between sensors through the network Operation, although the nodes are movable and limited Bandwidth and other resource constraints. According to the dynamic nature of ad-hoc networks It makes it very complex and difficult Mission to get accurate knowledge of Network Status.

There are many routing protocols have been proposed for VANET, which fall into three major categories (Fig 1): table-driven approach (or proactive protocols), on-demand approach (or reactive protocols) and Hybrid. In our study we will focuses only in the two first categories. proactive routing protocol such as Dynamic Source Routing (DSR) [3], Dynamic Destination-sequenced Distance-Vector routing (DSDV) [4], Signal stability-based Adaptive routing (SSA) [5]. Proactive routing protocol has many desirable proprieties especially for applications that include little delay for route discovery. Also maintain routing tables that contains the information and the update for each node in the network to obtain a global optimal route for each destination. These protocols, however, consume significant amount of energy to periodically disseminate routing information, which could be a critical overhead for VANETs with limited battery power. In contrast, reactive initiate route discovery mechanism and maintenance mechanisms only when a route is actually required. The most prominent among existing reactive protocol are the ad-hoc On demand Distance vector AODV [6].

MANTES usually include a working battery Mobile phone devices that connect and exchange Signals and information wirelessly that are Logically resource intensive. Energy saving Supports extend the life of all nodes at same time. This goal can be achieved before Reduce power consumption in each Connection connection caused up Distribution of energy consumption rate in each node.

To extend the life of the dedicated network, it is Necessary to prolong each individual node life By reducing energy consumption Each connectionrequest.

Paper collapse is regulated The following: Section 2 provides a brief description of the Business related.

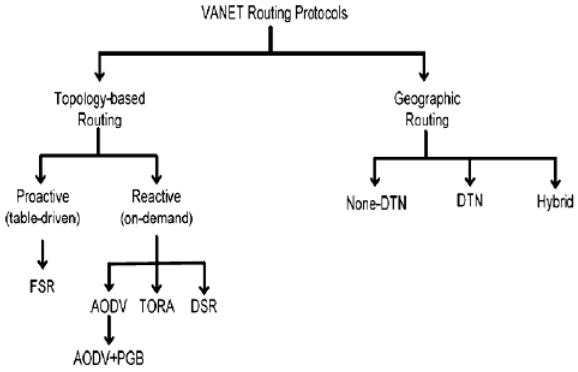
Description Protocol and the simulation environment is explained and discussed In section 3. The conclusion is contained in the section

2. LITERATURE REVIEW

In recent years, there are many studies and Proposal address works not only to improve Energy storage but also lengthen networks The times of life. In this section we analyzed three Routing protocols known for VANET, we Briefly describe the operational and leading methods feautures of these protocols

A.AODV

We started with the most widely used is AODV uses the intended sequence number (Measure only the path through the number of hops) to Ensure freshness and loop freedom.



of the route[6], to reduce the number Broadcast by creating demand-based methods, Which does not apply to DSDV. AODV has two Steps: Discover the path plus the path Maintenance mechanism. When you need a node Sending data to another node does not have root Predefined. The source node starts at the root Discovery stage to determine a new path when Transmission is needed. It broadcasts the way Request (RREQ) to its neighbors [5]. When all If you receive the RREQ node, it works to update the opposite path To the source in the routing table. All adjacent Route Response Package (RREP) containing Increase the sequence number back Route. This means that the contract is given to RREQ by RREP Package only if they have an active track around Destination. The source node restarts the discovery Process to make a new road to the destination if You still need an open road to the destination concerned.

1) Advanced uses of AODV:

Due to its interactive nature, AODV can handle the highly dynamic behavior of AV networks [5].

Used for both mono and multicast using the tag in packets.

2) Limitation of AODV:

Condition on the broadcast medium: The ex-aspects algorithm requires that the nodes in the broadcast medium can detect each other broadcast Routing information is always obtained upon request, including for common traffic

B.DSR

Dynamic Source Directive (DSR): DSR is a simple, efficient routing protocol designed specifically for use in the Ad-hoc multi-hop moble network. Such as AODV features two major steps including road detection and route maintenance [3], these two decades to help assess the best route to the destination continuously. We can distinguish between two cases to reach the destination. If you find a path, the source node uses this routing information to the destination. Other than that, the node stores the packet and finds the routing information to the destination by starting route discovery.

C. DSDV

The DSDV [4], a proactive routing protocol, is a traditional modification of the Bellmond-ford routing algorithm to calculate the shortest path. DSDV was proposed for use in ad-hoc mobile multi-hop networks. Each node maintains the routing table with all intrusive states within the network, and the number of hops required to reach the destination is maintained in the table. The sequence number is mapped to each destination to distinguish old paths and to prevent routing loops. Periodically stations move their routing tables to neighbors. The station also transfers its routing table in the event of a significant change in its schedule from the last update it was sent. Therefore, the update depends on time and events. Routing table updates can be sent in two ways: "dump full or refresh incremental".

1.Advanced uses for DSDV:

The DSDV protocol ensures free paths.

We can avoid additional traffic with incremental updates instead of full discharge updates [4].

2. Determine the DSDV:

It is difficult to maintain the routing table announcement for the larger network. Each host in the network must maintain an ad routing table. But for a large network, this may increase the load, which consumes more bandwidth. DSDV does not support routing multiple paths.

At the end of this section, we analyzed the algorithms that most scientists and researchers are interested in, in an attempt to study them in detail because in our research, we did a comparative study of strengths and weaknesses based on various factors including accuracy, power loss, mobility and complexity for fast wireless networks. This study will guide researchers in integration features to solve many protocols and create successful VANET networks for their applications:

3. Simulated results and analysis

In this section, we described performance measures and implementation details for all three previous study protocols AODV, DSDV, and DSR. The grid consists of 100 knots in a rectangular area of 100 meters x 100 meters. We use the random road point as a model to navigate. Static bit rate (CBR) is used with 512-byte data packets. Source-destination pairs spread randomly across the network. The MAC layer protocol is 802.11. A summary of the key parameters used in simulations is provided in Table 1.

3.1 Performance measures

In our assessment and comparison of the three protocols, our primary focus was on four (4) performance metrics: the packet delivery (PDF)

TABLE 1
COMPARISON OF DSDV, DSR AND AODV

Algorithms Priority	DSDV	DSR	AODV
Reactive	No	Yes	Yes
Normalized throughput with selfish nodes	Best performance	Shortest	Better than DSR
Average end-to-end delay	Shortest	Highest	Modest
Network load balancing	Shortest	Best performance	Modest
Energy consumption	Low	Highest	Modest
weighted path optimality	Best performance	Best than dsdv	Next to DSR
Average packet delay with specific nodes	Lowest average packet delay	higher	Modest

The average delay from start to finish, overhead costs (ROH), and average power consumption per package were delivered.

Thoughput: It is the measurement of the number of packets or data successfully transferred to its final destination via a connection link for each unit of time. Measured in bits per second (bits/s or bps).

Packet delivery (PDF): measures the percentage of data packets generated but the nodes delivered to the aquarium successfully, and are expressed as follows:

(Total number of data packets entered successfully) / (total number of packets sent) x100%.

Average end-to-end delay: Measure the average time it takes to route a data packet from the source node to the sink it expressed as (Updating individual data packets) /

(Total number of packets delivered)

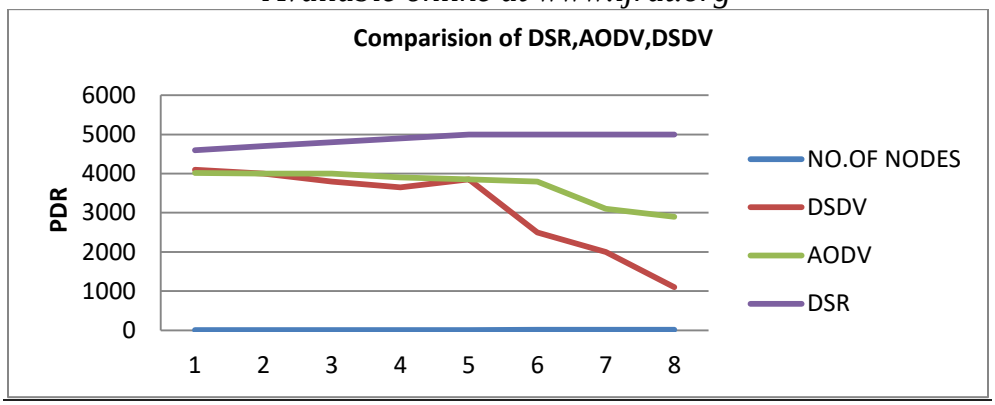
Power consumption per package delivered: This article eliminates the power spent for each packet delivered. This

It is expressed by [3]: (Energy expenditure per node) No of Data Packs Provided)

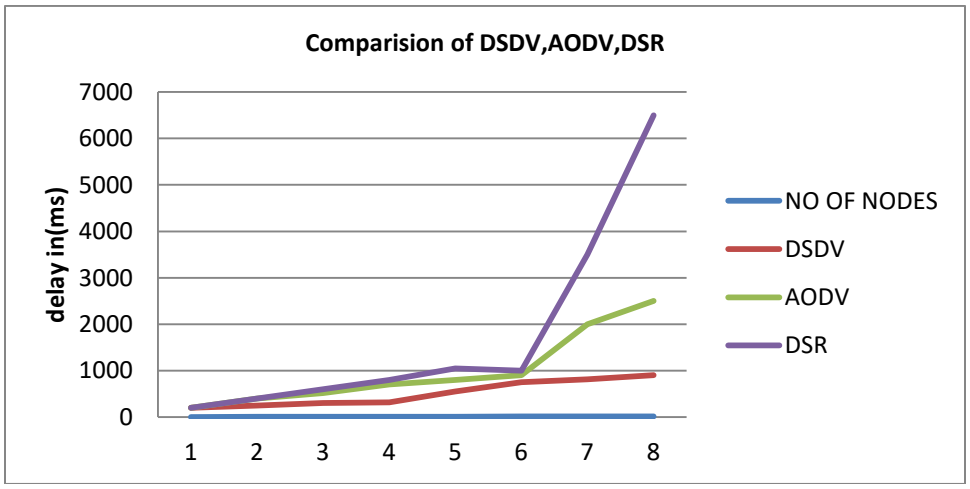
3.2 Analysis

In this section, we detail the scenario for the three routing protocols that are evaluated in a different number of nodes.

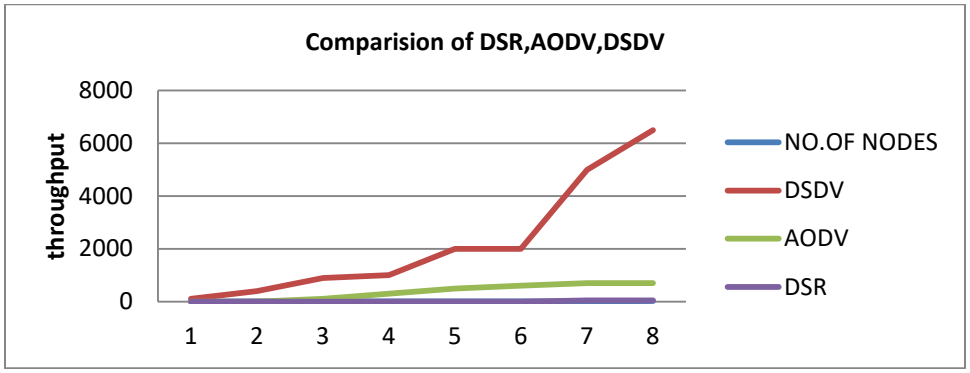
Packet delivery segment: Figure 1 depicts the DSR packet delivery ratio is better than AODV and DSDV with the number of nodes increasing. We can explain the marked decline in AODV after 200 holding this decline in Performance indicates that AODV cannot be handled with increased network traffic. The Second note about the good performance of the DSR because of the known DSR protocol Routers and storage are likely to be a bad choice The road is less. It is very likely that it is on the way Discovery for some destinations such as node D, a Path was found to hold another A, registered, and The latter uses the cache format, this strategy will Ultimately save network bandwidth, which Improves the performance of the DSR protocol, Especially when the number of contracts increases .Power consumption: Power consumption by The three protocol appears in Figure 3, we can He concluded that DSR and DSDV were more efficient than AODV due to high mobility for the latter as well Increased power consumption was found With an increase in the number of contracts[7].



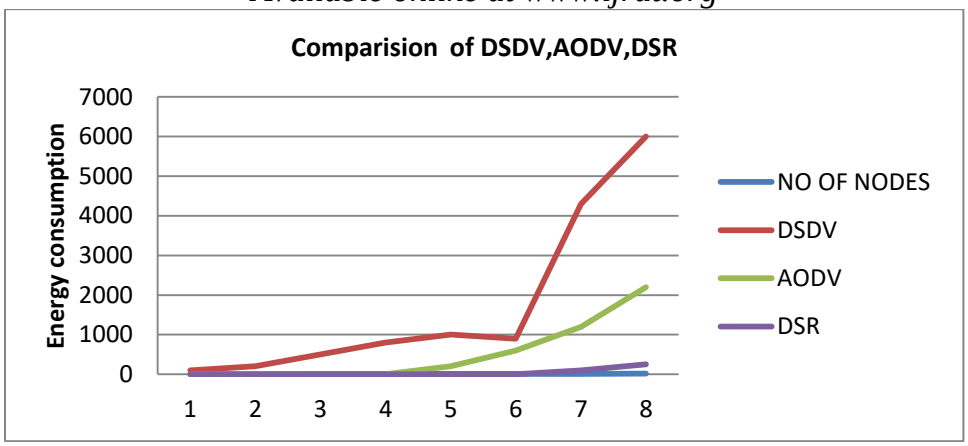
Fig(1).Variation in PDR



Fig(2) variation of end-to-end delay



Fig(3) variation in throughput



Fig(4) variation in energy consumption

3) Throughput: From Figure 3 it was observed that AODV It has a lower rate compared with DSDV DSR. This decline in performance shows that AODV cannot handle the surplus generated in network. In our observation of Fig5 AODV has the lowest Productivity compared with all other countries Protocols considered. Since the AODV is only the first The Access Request Pack (RREAQ) is therefore answered Decreases response count (RREPs) We can conclude this section with key notes Effect of network size after study of experiments

Performance of AODV, DSDV, and DSR protocols.

1) For AODV and DSDV, PDF starts at Quickly decrease the number of sensors Grow beyond 200 sensors.

2) Performance of AODV and DSV does not Guaranteed for wide networks (large size).

3) The DSR protocol indicates a large presence Lower overhead in comparison with

3. CONCLUSION

This paper evaluated AODV performance, DSDV and DSR, routing protocols for VANET Using NS2 simulation. It relied on comparison A variety of performance measures, namely energy consumption. Of the results reports in section 3.We calculated that the DSR protocol is the best in terms provide package of other Protocols making it highly mobile-friendly random Networks.

In conclusion, we have Analyze the algorithms that most scientists have Researchers are interested in trying to study them In detail because in our research, we did our job Work on a comparative study of strengths And vulnerability based on different factors Including average delay, energy efficiency, Transfer data and break the package deli very to Fast emerging wireless networks. this study Researchers will guide the integration features Resolve various protocols and create Successful mobile sensors Applications.

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