Comparative Analysis of Various Issues and Challenges for Position Based Routing Protocols in Manet and Designing Efficient Protocol.

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Abstract: Mobility of MANET have been still research area in mobile computing and in wireless network with lots of mobility algorithms to design the efficient mobility model. This paper is focused on analysis of five different techniques such as Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks, Location Based Transmission using a Neighbour Aware with optimized Extended Inter-Frame Spacing (EIFS) for Ad Hoc Networks MAC ,Energy Efficient Multipath Routing Protocol for Mobile Ad-Hoc Network Using the Fitness Function , A review of forest fire surveillance technologies: Mobile ad-hoc network routing protocols perspective, Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs. But some problems exist in each mobility method To overcome these problems that are given in analysis and discussion and to improve this "new efficient routing protocol" is proposed to improve various challenges and issues in Manet. There are some problems in manet while sending data in network like bandwidth, topologies,Interference etc.

Keywords: Mobile ad hoc network, interference, overhead, throughput, transmission power, routing protocols and energy efficient.

I. Introduction

Interference limits the throughput of communication in MANETs by corrupting some of the packets that are exchanged among the mobile devices. Therefore, it is of critical importance to study the interference that affect the receivers in the MANETs environment[1]. In a resource-constrained Ad Hoc networks, interference is a significant limiting factor in achieving high throughput. As the interference range is directly proportional to the transmission range, controlling transmission range of the active nodes dictates the density of parallel or simultaneous communication and sub subsequently the overall network performance [2].

This paper, discusses five different routing protocol such as, Minimizing Communication Interference for StablePosition-Based Routing in Mobile Ad Hoc Networks, Location Based Transmission using a Neighbour Aware with optimized Extended Inter-Frame Spacing (EIFS) for Ad Hoc Networks MAC ,Energy Efficient Multipath Routing Protocol for Mobile Ad-Hoc Network Using the Fitness Function , A review of forest fire surveillance technologies: Mobile ad-hoc network routing protocols perspective, Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs.These mobility schemes provide the better overhead and packet delivery .But these methods also have some problem so to overcome such problems improve version of mobility scheme that is "new efficient routing protocol"to improvevarious challenges and issues in Manet. There are some problems in manet while sending data in network like bandwidth, topologies,Interference etc.

II. Background

Many studies on mobility models have been done to develop the mobility scheme in recent past years. Such schemes are:

To achieve high network efficiency in MANETs, parallel transmissions on more than one link must be considered by routing and scheduling protocols. Interference in MANETs is a result of concurrent transmissions taking place in the neighborhood (asynchronous) and is also associated with collisions (which produce corrupted data) arising from nodes outside the range of each other transmitting to a common receiver at the same time (synchronous)[1].This paper proposes a new cross layer Medium Access Control (MAC) algorithm called Location Based Transmission using a Neighbour Aware with optimized Extended Inter-Frame Spacing (EIFS) for Ad Hoc Networks MAC (LBT-NA with optimized-EIFS MAC) that aims to reduce the transmission power when communicating with the next hop receiver based on node's location which is made available during node deployment [2].Energy consumption is considered as one of the major limitations in MANET, as the mobile nodes do not possess permanent power supply and have to rely on batteries, thus reducing network lifetime as

batteries get exhausted very quickly as nodes move and change their positions rapidly across MANET[3]. MANET has gained increased interest from researchers and developers for various applications such as forest fire detection. Forest fires require continuous monitoring and effective communication, technology, due to the big losses are brought about by this event[4]. This paper studies performance of proactive and reactive routing protocols in a scenario with agro-sensors.in simulation shows that AODV routing protocol performs better for a large-scale network while the DSR routing protocol performs better in a small-scale network given the particular scenario[5].

This paper introduces five mobility scheme i.e. Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks, Location Based Transmission using a Neighbour Aware with optimized Extended Inter-Frame Spacing (EIFS) for Ad Hoc Networks MAC ,Energy Efficient Multipath Routing Protocol for Mobile Ad-Hoc Network Using the Fitness Function , A review of forest fire surveillance technologies: Mobile ad-hoc network routing protocols perspective, Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs.

These are organizes as follows: **Section I** Introduction. **Section II** discusses Background. **Section III** discusses previous work. **Section IV** discusses existing methodologies. **Section V** discusses attributes and parameters and how these are affected on mobility models. **Section VI** proposed method and outcome result possible. Finally **section VII** Conclude this review paper.

The paper is organized as follows: **Section I** Introduction. **Section II** discusses Background. **Section III** discusses previous work. **Section IV** discusses existing methodologies. **Section V** discusses attributes and parameters and how these are affected on mobility models. **Section VI** proposed method and outcome of result. Finally **Section VII**conclude this analytical paper.

III. Previous Work Done

In research literature, many mobility models have been studied to provide various mobility schemes and improve the performance in terms of capacity-throughput-delay tradeoffs, overhead and packet delivery ratio.

Thomas Fevens et al. (2015) [1] has proposed Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks to achieve high network efficiency in MANETs, parallel transmissions on more than one link must be considered by routing and scheduling protocols.

David Lancaster et al. (2017) [2] has proposed This paper proposes a new cross layer Medium Access Control (MAC) algorithm called Location Based Transmission using a Neighbour Aware with optimized Extended Inter-Frame Spacing (EIFS) for Ad Hoc Networks MAC (LBT-NA with optimized-EIFS MAC) that aims to reduce the transmission power when communicating with the next hop receiver based on node's location which is made available during node deployment.

AQEEL TAHA et al. (2017) [3] has proposed protocol with fitness function is called AOMDV-FF. The Fitness function is used to find the optimal path from source node to destination node to reduce the energy consumption in multipath routing.

Musatafa Abbas AbboodAlbader et al. (2017) [4] has proposed an extensive review of the modern techniques used in the forest fire detection based on recent MANET routing protocols such as reactive Location-Aided Routing (LAR), proactive Optimized Link State Routing (OLSR) and LAR-Based Reliable Routing Protocol (LARRR). MANET has gained increased interest from researchers and developers for various applications such as forest fire detection.

Kazy Noor E AlamSiddiquee et al.(2017) [5] has proposed Optimal Dynamic Routing Protocols For Argo-Sensor Communication in MANETs. This shows that AODV routing protocol performs better for a large-scale network while the DSR routing protocol performs better in a small-scale network given the particular scenario.

IV. Existing Methodologies

Many mobility schemes have been implemented over the last several decades. There are different methodologies that are implemented for different mobility models i.eEnhanced mobility-based Opportunistic Routing protocol, hybrid routing scheme, General-order Linear Continuous-time mobility model, impact with Opportunistic Routing Algorithm and three-hop store-carry-accelerate-forward scheme.

Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks:Minimizing Interference Schemes: Minimizing interference to maintain communication stability by decreasing the number of packets corrupted in Position-based routing protocol. To improve network efficiency (in terms of network through-put) and overall communication interference using ideas such as choosing the

hereafter hop either to be a node with few neighbors or a node utilized in few paths instead of simply using the closed node with the destination[1].

Location based transmission using a neighbour aware with optimized EIFS MAC for ad hoc networks:Transmission power calculation: When a node has a data to send, it starts by broadcasting an RTS frame at full power and the intended next hop receiver replies with a CTS control frame to reserve the channel. When the in- tended destination node N D with coordinates (X_D ,Y_D ,0) receives an RTS frame from a Source node N S which is located at (X_S ,Y_S ,0), it extracts the location information and calculates the corresponding Euclidian distance d= $\sqrt{(XD - XS)\,2 + (YD - YS)\,2}$ between the two nodes[2].

Energy Efficient Multipath Routing Protocol For Mobile Ad-Hoc Network Using The Fitness Function: The FF-AOMDV initially broadcasts a RREQ in order to gather information regarding the available routes towards the destination as shown in figure where the fitness function performs a scan on the network in order to locate nodes that have a higher level of energy (red nodes). The source point will then receive a RREP that contains information on the available routes towards the destination along with their energy levels. Calculating each route's energy level, the fitness function will then compare to finding the route with highest energy level[3].

Forest Fire Surveillance Technologies: Mobile Ad-Hoc Network Routing Protocols Perspective: When the source node S fails to distinguish the location of the destination node D, the expected zone is set to be similar to the whole network. The ability of the source node S to ascertain a request zone is dependent on the S locations and expected zone. Depicts a node (I1) that passes a route request packet to its neighbors on receiving a route request packet from S because it is within the request zone. However, when the request packet reaches (I2), which is out of the request zone, the request packet is rejected at once[4].

Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs: Here a scenario is centered on a village in the district of Chittagong, Bangladesh, where sensors are placed in plane land for obtaining measurements of soil moisture and PH value source and destinations have routing protocols. Three distinct parameters End-to-End delay , Network load and throughput are studied and analyzed[5].

V. Analysis And Discussion

In this proposed new two approaches to improving the performance of the algorithm of GBR-CNR in terms of reducing the communication interference in MANETs[1]. According to the algorithm the node dynamically adjusts its transmission power, if there is an active neighbour located beyond the communicating source and destination pair to avoid hidden nodes[2].The mobile nodes do not possess permanent power supply and have to rely on batteries, thus reducing network lifetime as batteries get exhausted very quickly as nodes move and change their positions rapidly across MANET[3]. Forest fires require continuous monitoring and effective communication, technology, due to the big losses are brought about by this event. As such, disaster response and rescue applications are considered to be a key application of the MANET [4]. In simulation shows that AODV routing protocol performs better for a large-scale network while the DSR routing protocol performs better in a small-scale network given the particular scenario[5].

Table 1: Comparisons between different schemes.

Proposed scheme and techniques	Advantages	Disadvantages
Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks	It show proposed algorithms significantly improved the performance of the packets delivery assuring higher network stability.	Improvement is established with a cost which is the increase of the number of hops between a source and a destination when constructing the path.
Location based transmission using a neighbour aware with optimized EIFS MAC for ad hoc networks	LBT-NA with optimized-EIFS MAC adjusts the transmission power based on neighbour's activity to avoid hidden node issues.	Hidden nodes may starve and lead to an unfair channel access during contention, if a fixed inaccurate deferring EIFS time is used.
Energy Efficient Multipath Routing Protocol For Mobile Ad-Hoc Network Using The Fitness Function	Fitness Function performs scan on network in order to locate node.	The network topology may undergo random change since the nodes' distribution and its movement are random.
A Review Of Forest Fire Surveillance Technologies: Mobile Ad-Hoc Network Routing Protocols Perspective	LAR protocol has been adapted to route the data among wireless nodes for monitoring a fire in the forest.	The LAR algorithm is degraded to the fundamental flooding algorithm through the blind search of the entire network.
Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs	Different numbers of nodes has a greater impact on consuming energies.	It shows of analysis on higher density sensor networks where thousands of sensors may be used in single MANET of WSN.

VI. Proposed Methodology

One of the key challenges in such networks is to design dynamic routing protocols that are efficient, that is, consume less overhead. Whenever a traffic source needs a route, it initiates a route discovery process by sending a route request for the destination (typically via a network-wide flood) and waits for a route reply. Each route discovery flood is associated with significant latency and overhead. This is particularly true for large networks. Therefore, for on-demand routing to be effective, it is desirable to keep the route discovery frequency low.The main challenge of MANETs is to route with low overheads even when conditions are dynamic. Overhead here is defined in terms of routing protocol control messages which consume both channel bandwidth as well as the battery power of nodes for communication/processing. Existing routing protocols in ad-hoc networks utilize the single route that is built for source and destination node pair. methods based on different parameters i.e accuracy, packet delivery ratio, time, overhead, bandwidth, throughput, delay, capacity ,etc. There are still problems which trouble in this field. New mobility method called "Simulation of manet and new position based routing" is propose here to overcome the problems of this model. Diagrammatic representation of proposed method is shown as follows:

Basic steps of algorithm:
Step1: It Study the Mobile Ad hoc network
Step2: List out issues and challenges
Step3:Then download and install NS_2.
Step4: Create manet in NS_2 with phone, laptops, etc.
Step5: Apply various routing algorithm with TCP/IP,UDP and stimulate network.
Step7: Collect the data generated by simulation
Step8: Suggest a new protocol design for MANET to overcome the issues and Design a new protocol

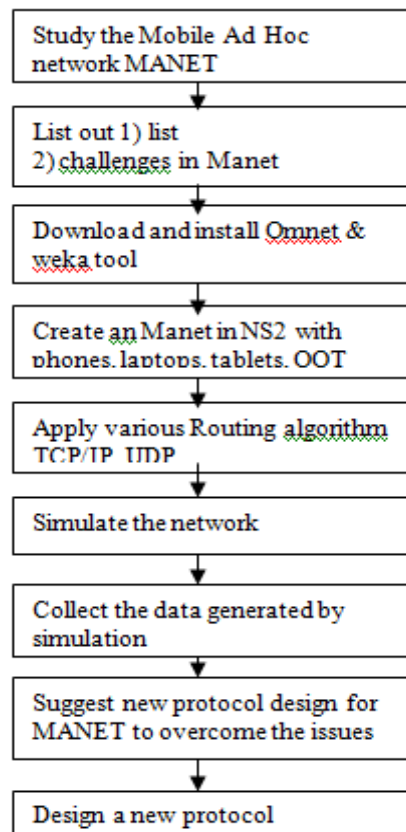Diagrammatic representation of proposed method is shown as follows:

Figure: *Data flow diagram of new efficient routing protocol*

VII.   Outcome And Possible Results

In this way the proposed method is "new efficient routing protocol". When node moves in network then the propose method provide the location of movable node also its topologies and also its bandwidth, security of the packets.But there are some problems in manet while sending data in network like bandwidth, topologies etc. so to improve this. It solve various challenges and issues in Manet.

VIII.   Conclusion

This paper focused on the study of various mobility scheme   i.e. Minimizing Communication Interference for Stable Position-Based Routing in Mobile Ad Hoc Networks, Location based transmission using a neighbour aware with optimized EIFS MAC for ad hoc networks, Energy Efficient Multipath Routing Protocol For Mobile Ad-Hoc Network Using The   Fitness Function, A Review Of Forest Fire Surveillance Technologies: Mobile Ad-Hoc Network Routing Protocols Perspective, Optimal Dynamic Routing Protocols For Argo-Sensor Communication In MANETs. But there are some problems in manet while sending data in network like bandwidth, topologies, interference etc. so to improve this "new efficient routing protocol" is proposed here. When node moves in network then the propose method provide the location of movable node also its topologies and also its bandwidth, security of the packets.

IX. Future Scope

From observations of the proposed method the future work will include exact accuracy of location, also provide a network where all issues are minimize with the help of more close form of expression.

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