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ENHANCEMENT OF NEIGHBOR AWARENESS MULTICAST ROUTING PROTOCOL(ENAMP) FOR RELIABLE DATA DELIVERY

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Abstract -- A group of mobile platforms (or) nodes where every node is free to travel randomly is referred as MANET (Mobile Adhoc Network). Each node logically possesses a router that might comprise numerous hosts and also many wireless communication equipments. Adhoc network is the co-operative engagement of a group of mobile nodes without the necessary involvement of any central access point. In this paper, we propose development of reliable data delivery packets from source to destination in Neighbor Aware Multicast Routing Protocol (NAMP). The basic idea of the design is to implement a new method in the protocol SPREAD (Secure Protocol for Reliable Data Delivery to deliver the packets in NAMP. SPREAD can be developed to improve the reliability of the transmitted data compared to the unstable wireless link problem and recurrent topological changes. The latest method to recover link failure and reliable data delivery in MANET is Enhancement of Neighbor Awareness Multicast Routing Protocol (ENAMP) for reliable data delivery.

Keywords:-NAMP, SPREAD, Reliable, Topology ,MANET and ENAMP.

I. INTRODUCTION

The MANET program explains the dispersed, mobile, wireless, multihop networks that function devoid of any existing infrastructure aside from the nodes themselves. A MANET extends the current internet vision in which wireless nodes on the periphery of the network cloud are normally connected and supported by a single wireless hop to fixed, wired infrastructure. A MANET network cloud is compared to independent potentially mobile, wireless nodes that could be connected at the edges to the fixed wired internet. MANET is a quite new concept compared to the mobile packet radio network wherever every node in the network is mobile and wireless multihop (store and forward) routing is used. The adhoc wireless network is a packet switched process were aspects like an emulation of circuit switching, repeated path breaks, mobile hosts with a lot of intelligence and transceiver with routing/switching ability. The main objective of routing is to explore out the ways with the least overhead and conjointly fast reconfiguration of broken ways. Application domains embody battlefields emergency search and rescue operations and cooperative computing.

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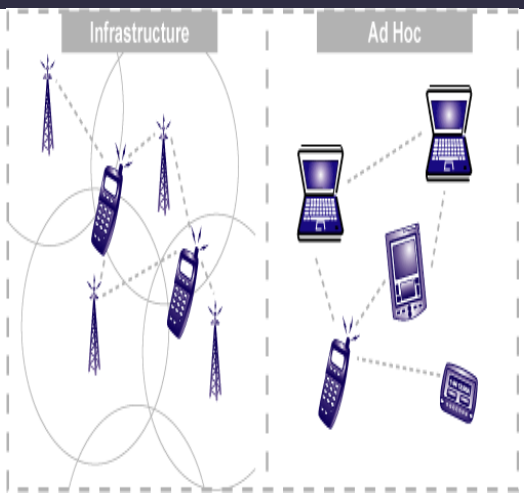

The multicast routing protocol has to recover and reconfigure fast from prospective mobility induced link breaks. A large attempt has been made to build up appropriate security solutions dedicated to a MANET setting. The most significant and essential issue in MANET is the management of security issue which has attracted much attention. Numerous secure routing protocols have also been proposed to defend the precision of diverse types of adhoc routing protocols.This paper focuses on the data confidentiality service in MANET. Data Confidentiality ensures the safety of transmitted data from passive attacks like eavesdropping. Security performance is very less while transferring the data in NAMP. Hence, we propose a new protocol, ENAMP to statistically improve data confidentiality in a MANET. ENAMP developed from neighbour awareness multicast routing protocol and secured protocol for reliable data delivery. NAMP has a problem in the delivery of data securely and SPREAD where there is no awareness of neighbor nodes. Therefore, we are introducing ENAMP to overcome the problems.

II. ABOUT ROUTING PROTOCOLS

Protocols keep track of routes for all destinations in adhoc network. A routing protocol is developed in adhoc wireless networks for mobility of nodes, limited resources, error prone channel status, and exposed terminal problems. Routing protocols are classified into three categories as Proactive, Reactive and Hybrid. According to Selvi et.al[21] different protocols are categorized as follows:

TABLE I

S. No	Routing Protocols		
	Proactive:	***Reactive***	***Hybrid***
1.	DSDV	DSR	ZRP
2.	R-DSDV	AODV	CEDAR
3.	LSP	FORP	SEAD
4.	FSR	TORA	SAODV
5.	TBRPF	ABR	CONFIDANT
6.	OLSR	PLBR	ARAN
7.	DREAM	SSA	ARIADNE
8.	WRP	CBRP	ENDAIRA
9.	CGSR		ENDAIRA Loc
10	GSR		PrAODV
11	HSR		CORE
12	ZHLS		SAR
13	LANMAR		BISS
14			TIARA
15			SRP
16			SPREAD
17			AODV-SEC
18			DHAR
19			ADV
20			IARP
21			SHARP
22			NAMP

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A. NAMP

NAMP uses neighbourhood information and is a tree- based hybrid routing protocol. Conventional request and reply messages helps in construction and maintenance of the routes in the protocol . NAMP protocol utilizes neighbor information of two-hops for transmitting the packets to the recipient. If the receiver isn't within this range, it searches the receiver by dominant pruning flooding methodology and develops a multicast tree using the replies along the reverse path.

B.SPREAD

SPREAD is a hybrid routing protocol that offers data confidentiality security service. It follows a secret sharing scheme among neighbouring nodes to build up data confidentiality and manage the problem of eavesdropping and colluded attacks.

C. ENAMP

ENAMP is the latest multicast routing protocol used to perform well to get better the link failure and securely provide reliable data. ENAMP performs with advanced features of NAMP and SPREAD routing protocol and implement a one-time password (OTP).

III. PERFORMANCE OF ROUTING PROTOCOL

This part comprehends and compares the findings of different routing protocols NAMP, SPREAD and ENAMP. In their papers, Al-Sakib Pathan et.al and Wenjing Lou compared only NAMP and SPREAD for additional routing protocols. Comparison of three protocols for Packet Delivery Ratio, Throughput, Delay, Packet Loss, Time Complexity, Space Complexity, Energy Consumption And Residual Energy are given below:

A. Packet Delivery Ratio

The quantitative relation of packets that area unit with success supplied to a destination compared to the number of packets that are sent out by the sender. Simulation results have obviously found that ENAMP is having the high ratio compares with the other two protocols NAMP and SPREAD.

B. Throughput

Network throughput is the very important critical parameters to assess the performance of wireless ad hoc networks. It means number of packets received time to time. In case of NAMP and SPREAD, it is found to be very low. However our study results indicate that ENAMP is having high throughput.

C. Delay

The delay represents the typical time period of a packet transmittal within the network from a source to the destination. It occurs less in ENAMP and more in case of NAMP and SPREAD.

D. Packet Loss

Packet loss happens once the next hop of a packet is out of range at the instant the packet is sent by the MAC protocol. In ENAMP, we are using advanced NAMP features which help to control the packet loss in a minimal way but in NAMP and SPREAD, the packet loss is maximum.

E. Time Complexity

Time complexity is the amount of time to run algorithm and also transmission time. Time complexity is found to be very less in ENAMP. However, NAMP and SPREAD take more time to transmit the data.

F. Space Complexity

Space complexity means storage cost and it refers to amount of memory space. ENAMP is having less storage cost compared to NAMP and SPREAD.

G. Energy Consumption

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Energy Consumption is referred to as the sum of units essential to the key transmission throughout the duration of the simulation. Thus the energy computed is concerned in the choice of the optimum path which wants minimum energy to route the information from source to destination. The findings clearly have shown that in comparison to NAMP and SPREAD, energy consumption is less in ENAMP .

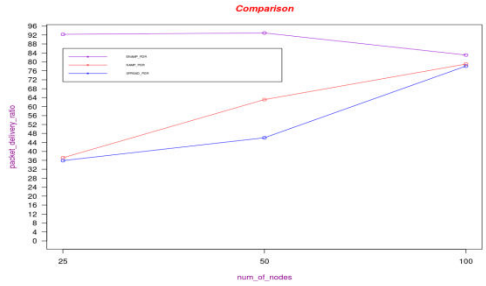
H. Residual Energy

After completion of routing, the protocol, which remains with high energy, is an efficient protocol. It is found in the results that when compared to NAMP and SPREAD, ENAMP is having high energy.

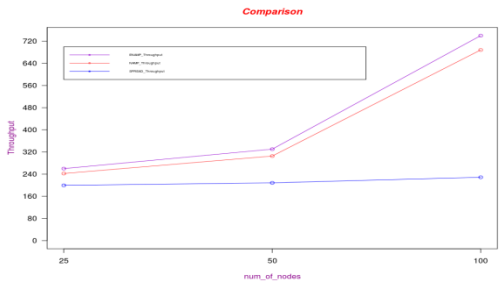
IV. SIMULATION RESULTS

In this part, our simulation efforts to compare the performance of the protocols that we described previously in section III is given below.

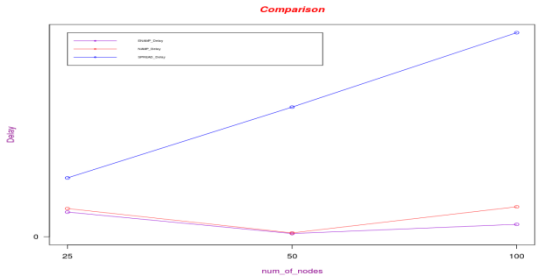
A.Packet Delivery ratio result



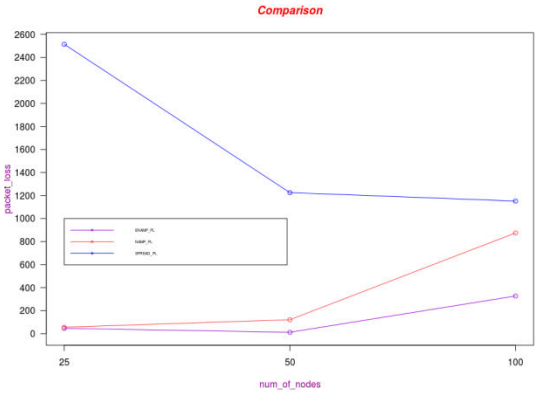
B. Throughput result



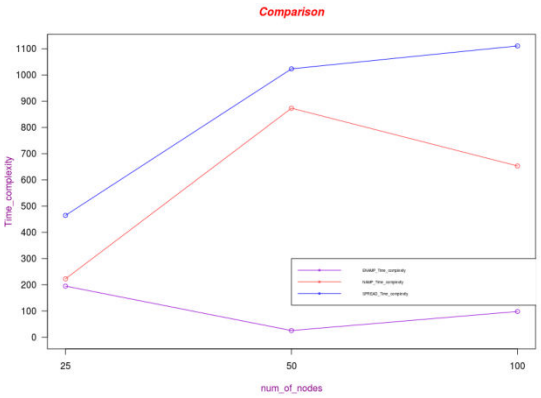
C.Delay result



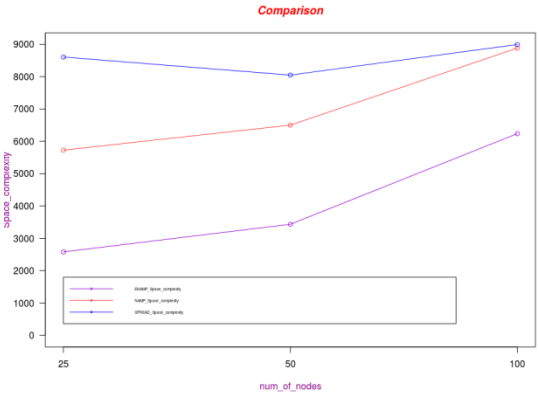
D.Packet Loss result



E.Time Complexity result



F.Space Complexity result



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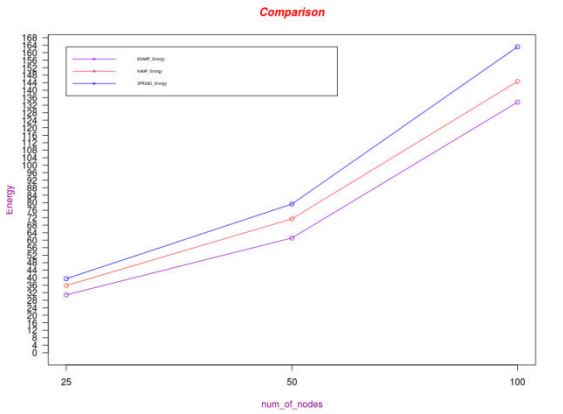
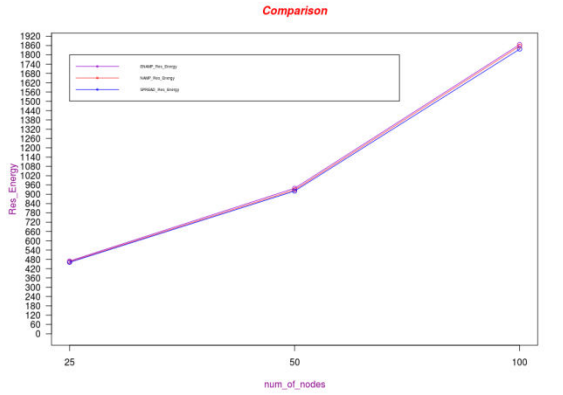
G.E nergy Consumption result



H. Residual Energy result



V.CONCLUSION

The usage of NAMP is to avoid a link failure and give a better performance. SPREAD plans to take care of security while messages are spread across the network, considering the origin and destination are trusted. Finally, the SPREAD is often adaptive within mainly because the initiation node could make the final decision whether a message reached at a definite time according to the security level and **also** the accessibility of many ways. ENAMP is an advanced feature of NAMP and SPREAD. Further, based on our experimental results, ENAMP has produced better performance in all aspect

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