PERFORMANCE ANALYSIS OF PROPHET ROUTING PROTOCOL UNDER RANDOM MOBILITY

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Abstract - Delay-Tolerant Networking (DTN) or Disruptive-Tolerant Networking comes under the category of networks that works over the TCP/IP infrastructure. DTN is capable of using the stationery also as mobile routers for communication. The communications network which is accomplished of storing packets temporarily in intermediate nodes until certain time an end-to-end route is been re-established or regenerated which is understood as Delay Tolerant Networks. Malicious and selfish behaviors represent an enormous threat against routing in Disruption Tolerant Networks (DTNs). Due to the unique network characteristics, designing a misbehavior detection scheme in DTN is taken under consideration an outstanding challenge. The extensive analysis and simulation results show that the proposed scheme substantiates the effectiveness and efficiency of the proposed scheme. By avoiding such predictable consequences occurred by malicious nodes through the proposed algorithm by using the previous transactions.

Key Words: Delay Tolerant Network, Probability routing protocol using history of encounters and transitivity (PRoPHET)

1. INTRODUCTION

A **network** is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to one another to allow the sharing of data. there are two types of networks.

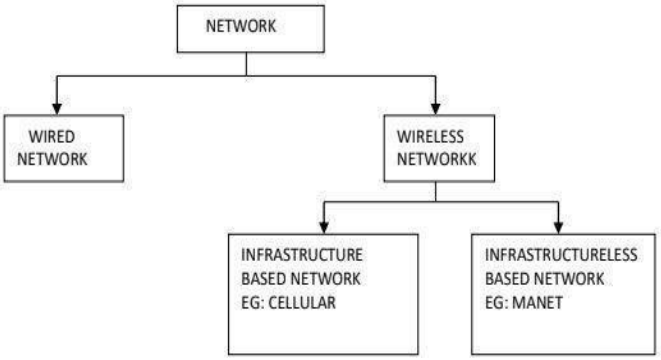

Fig.1 Network

DELAY-TOLERANT networks (DTNs) have the power to connect the nodes and have the capacity to serve areas of the world that are being serviced by general networks. The main difference between Internet and DTN communication is absent of end to finish communication path which leads disconnection, variable delay, and high error rate in communication DTN uses store and forward concept to send message or packet from source to destination. DTN has various routing protocol supported knowledge or replication strategy for successful delivery of packet from sender to receiver. But some of them ignored the Energy Consumption technique. Taking these factors into concern, the main vision of mobile ad hoc networking is to support robust and efficient operation in mobile wireless networks by incorporating routing functionality into mobile nodes. Such networks are envisioned to have dynamic, sometimes rapidly-changing, random, multi hop topologies which are likely composed of relatively bandwidth-constrained wireless links.

2. ROUTING PROTOCOL:

Because of the Opportunistic connectivity and lack of continuous path in DTN, it uses the routing protocols. DTN suffer from the lack of continuous path, at that time messages are store in buffer until the perfect path establish between nodes. Whenever node gets the opportunities to forward the messages then it send the messages. Hence, DTN routing has several methodologies that which is the best technique to

successfully deliver the messages. Following are the basic DTN Routing Protocols:

1) Replication based (flooding) protocols

2) Knowledge based (store and forward) protocols

3) Coding based protocols

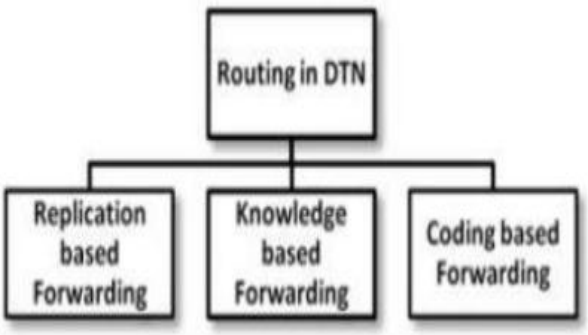

Fig.2 Routing in DTN classification

3. PROPHET PROTOCOL:

In order to improve the delivery probability of messages and reduce the network and node resources, Lindgren et al. proposed PRoPHET routing protocol [7, 8]. The basic idea of PRoPHET is that a mobile node does not move randomly, instead it has repeated movement patterns, i.e. it tends to pass through some locations more often than others and more likely meet the nodes it has met in the past again. Therefore, if a node X encounters a node Y frequently, node Y has higher delivery probability for messages of node X. So, when node X encounters node Y and some other nodes which it has not met before it will forward messages to Y instead of other nodes. Unlike Epidemic routing protocol, in PROPHET routing protocol, a node forwards messages only to some higher delivery probability nodes, not all nodes it encounters thus saves resources. PROPHET was proposed by Avri Doria and Anders Lindgren under the SNC (Sami Network Connectivity) project in 2002. Specific algorithm is defined to count delivery probability. The Prophet protocol works in three parts. When node A meets node B and node B meets node C then node C it's more fordable node and it's also update the delivery probability. This is called as transitivity of the nodes. Advantages of prophet protocol: Delivery ratio increase, probability, delay can be less.

4. SIMULATION TOOL:

Many personal mobile devices include capabilities to speak with infrastructure networks but also with one another. The latter are often wont to form ad-hoc networks where common infrastructure is not any longer needed for communication among hosts participating within the network. Adhoc networks also can help mobile nodes to succeed in infrastructure if some node within the network is in a position and willing to act as a gateway and possibly other nodes as relays for the traffic. Networks are often formed this manner as long because the node density is large enough in order that there exist possible end-to-end paths between all nodes eager to communicate. However, if the node density decreases or the connectivity breaks for a few other reason (e.g., the radios are transitioned occasionally), traditional network communication protocols are not any longer ready to provide means for multi-hop communication. Delay Tolerant Networking (DTN) could also be a communication networking paradigm that permits communication in environments where there may be no end-to-end paths, communication opportunities come and go and their interval are often very long and not even . This has created a requirement to seek out new routing protocols that take efficiently under consideration the distinct nature of those networks. Different approaches are often tested and evaluated by simulation. So here we are been considering One (Opportunistic Network Environment Simulator).

5. OUTPUT:

Extensive simulations were run by varying the simulation parameters in Table 1 in order to understand how energy is consumed in MANETS in terms of each of the proposed performance metrics in section II. The simulation results shown in the figures are the average of five different simulations that were executed using the same representative parameters but with different mobility scenarios.

NODES	CREATED	DELIVERED	OVER_HEAD RATIO	LATENCY
50	35	3	48.3	401.6
60	35	7	12	277.8
80	35	4	17.5	137
90	35	4	64.2	650.7

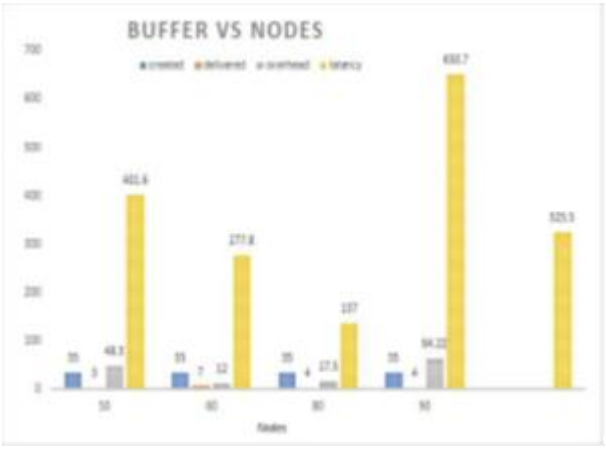

Fig 3.Buffer vs nodes

TRANVSMITRANGE	CREATED	DELIVERED	OVER_HEAD RATIO	LATENCY
100	35	2	38.5	649.5
200	35	3	36.6	546.66
300	35	3	45	405.3
400	35	3	46	404

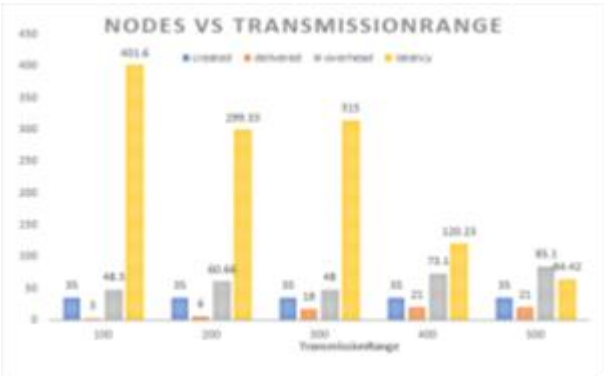

Fig 4.Nodes vs TransmissionRange

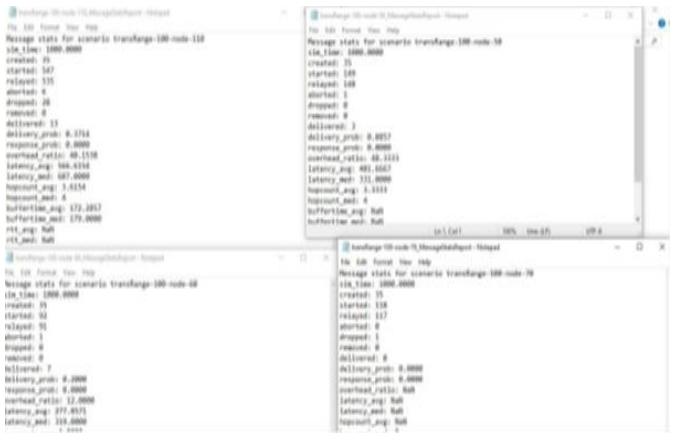

Fig 5.Output

6. CONCLUSION

In this paper, we propose a Enhancing the Performance of Prophet protocol using ONE simulator, which could reduce the detection overhead effectively. We show that an appropriate probability setting could assure the security of the DTNs at a reduced detection overhead. Our simulation results confirm that will reduce transmission overhead incurred by misbehavior detection and detect the malicious nodes effectively. Our future work will focus on the extension of path detection in other kinds of networks.

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