International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE)
ISSN: 0976-1353 Volume 25 Issue 10 – NOVEMBER 2018.

# A NOVEL METHOD FOR DATA PROPAGATION IN NETWORK BROADCASTING USING MANETS

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***Abstract*— Due to the rapid growth in information technology especially in the area of network lot of innovation has happened. It plays a vital role in every field of human life and mainly for the communication propose. In this research work proposed a model for efficient manage transmission. In the existing system the message communication takes place only by the server. It leads to collision of message, scheduling, processing time makes the entire process more complexity. To propose a novel methodology SSB of implementing sub servers to reduce the work of main server. Also, here used two efficient algorithms Sender Based Algorithm for sending the message to server or node and Receiver Based Algorithm is receive the message from server or node.**

**In the projected SSB model the message from the server established by the sub server then it program and find the neighbour node to send the message efficiently in this proper destination. The planned model is naturally used in the propagation of message to all nodes within the short period of time without any error. The implement of this work is done with C#.net which is more user friendly to complete these experimental labs.**

***Index Terms*— Information, Communication, Server, Receiver.**

## I. INTRODUCTION

Internet can be compared with a library. Like a library, the Internet is also a source of enjoyable, important and varied information that can be obtained and used by millions of people across the world. The Internet also, like our library contains different forms, like text sound and graphics. Super library does not allow just anybody to browse books or cassettes; this facility is available only for authorized members of the library. In a similar way only authorized users of the Internet can access it to obtain information. Internet is a global collection of computer networks. Internet is a cooperative effort of many people and organizations. The computers on the Internet can communicate because they are physically linked and because they share a common language called TCP-IP language that two computers use to communicate. This definition describes acceptable messages and outlines the rules that two computers must follow to exchange those messages. The major transport protocol in Internet set of rules suite. It provides reliable communication between two computers in the network. The network protocol in the internet IP provides a best effort to deliver an IP packet between two networks on the Internet. File Transfer Protocol is a method of transferring files from one computer to another. A protocol is a rule or set of rules that have to be followed by both the client and the server computers so that communication can take place between them. It is the same in case of FTP, the computer that is requesting for a file is the FTP client, while the computer, which services the request, is the FTP server and both of them follow the FTP protocol. Advantages of FTP are Speed, Cost and Choice.

### *A. METHODS OF COMMUNICATION*

The electronic mail messages to world wide discussion groups, communicating with others is the most popular use of the Internet. The Internet offers electronic versions of familiar types of communication including Mail, Discussion groups, Telephone conversations, Radio programs, and teleconferencing. The computer that is requesting for some service from another computer is called the client. A web browser is a program that accepts requests for information framed according to the hypertext transport protocol (http). The server processes these requests and sends the requested document. When you access a www server, the document is transferred to your computer and then the connection is terminated. This reduces network traffic by not having to hold on to a line, which you read a document.

### *B. INTRANET*

Intranet is a private network that is contained within an enterprise. It may consist of many interlinked local area networks and also use leased lines in the wide area network. Typically, an intranet includes connections through one or more gateway computers to the outside Internet. The main purpose of an intranet is to share company information and computing resources among employees. An intranet can also be used to facilitate working in groups and for teleconferences. An intranet uses TCP/IP, HTTP, and other Internet protocols and in general looks like a private version of the Internet. With tunneling, companies can send private messages through the public network, using the public network with special encryption/decryption and other security safeguards to connect one part of their intranet to another. Typically, larger enterprises allow users within their

intranet to access the public Internet through firewall servers that have the ability to screen messages in both directions so that company security is maintained. When part of an intranet is made accessible to customers, partners, suppliers, or others outside the company, that part becomes part of an extranet.

### C. ABOUT MOBILE NETWORK

A mobile phone network consists of a system of adjoining zones called 'cells'. Cells vary in size with the radius generally between 2 and 10 kilometers. Each cell has its own base station which sends and receives radio signals throughout its specified zone. Base stations produce very weak radiofrequency (RF) electromagnetic energy (EME) exposure levels.

Mobile phone base stations must be carefully located in relation to each other, so each cell in the network functions efficiently to ensure minimum network congestion and good signal quality. When a call is made in Australia from a mobile phone, the network allocates the call to an available RF channel (or carrier frequency) within each cell. Unless the call is to another mobile phone within the same cell, the call is then "switched" to a conventional phone line. If the mobile phone user is travelling, the network will pass the call on to the base station that can provide the best available signal. Multiple cells are required because of the finite nature of the number of calls each base station can accommodate at any given point in time. There are a number of networks that operate in Australia. The Global System for Mobile communication (GSM), which operates in the 900 and 1800 MHz band, the Wideband Code Division Multiple Access (WCDMA) and Universal Mobile Telecommunications System (UMTS) networks which operate in the 850, 900 and 2100 MHz band, the Long Term Evolution (LTE) network which operates in the 1800 MHz band, and Bluetooth, which operates in the 2400 MHz band.

MANETs are a kind of wireless ad hoc networks that usually has a routable networking environment on top of a Link Layer ad hoc network. The growth of laptops and 802.11/Wi-Fi wireless networking has made MANETs a popular research topic since the mid 1990s. Many academic papers evaluate protocols and their abilities, assuming varying degrees of mobility within a bounded space.

## II. 2. RELATED WORK

### A. DATA MONITORING USING MANETS

MANETS can be used for facilitating the collection of sensor data for data mining for a variety of applications such as air pollution monitoring and different types of architectures can be used for such applications. It should be noted that a key characteristic of such applications is that nearby sensor nodes monitoring an environmental feature typically register similar values. This kind of data redundancy due to the spatial correlation between sensor observations inspires the techniques for in-network data aggregation and mining. By measuring the spatial correlation between data sampled by different sensors, a wide class of specialized algorithms can be developed to develop more efficient spatial data mining algorithms as well as more efficient routing strategies. Also researchers have developed performance models for MANET by applying queuing theory.

### B. SECURITY OF MANETS

Lot of research was done in the past but the most significant contributions were the PGP (Pretty Good Privacy) and the trust based security but none of the protocols made a decent trade of between security and performance. In an attempt to enhance security in MANETs many researchers have suggested and implemented new improvements to the protocols and some of them have suggested new protocols.

### C. CLASSIFICATION OF ATTACKS ON MANETS

These attacks on MANETs challenge the mobile infrastructure in which nodes can join and leave easily with dynamics requests without a static path of routing.

Network Layer: Sybil, Flooding, Black Hole, Grey Hole. Worm Hole, Link Spoofing, Link Withholding, Location disclosure etc.

Data Link/MAC: Malicious Behavior, Selfish Behavior, Active, Passive, Internal External

Physical: Interference, Traffic Jamming, Eavesdropping

### D. BROADCASTING

Broadcasting is a process of transferring a message to all recipients simultaneously. Broadcasting can be performed as a high level operation in a program, for example broadcasting Message Passing Interface or it may be a low level networking operation. Computer networking, broad casting refers to transmitting a packet that will be received by every device on the network. In practice, the scope of the broadcast is limited to a broadcast domain. Broadcast a message is in contrast to unicast addressing in which a host sends datagrams to another single host identified by a unique IP address.

### E. DYNAMIC TOPOLOGY

Hosts are mobile and can be connected dynamically in any arbitrary manner. Links of the network vary and are based on the proximity of one host to another one, Autonomous no centralized administration entity is required to manage the operation of the different mobile hosts.

## III. RECENT METHODS

### A. BROADCASTING TASK

Two hosts in an ad hoc network can communicate directly only if they are in the physical neighbourhood of each other, which is determined by a communication range. Due to propagation path loss, the transmission radii are limited thus communications must take place via a multi-hop routing. To establish a connection between two hosts not directly connected, messages must be routed by intermediate hosts. Hosts A and B are not able to communicate directly, every communication between them must be relayed by an intermediate host C. In this example, when A wants to send a message to B, it is simple for C to relay the message, because it is a neighbor of both of them.

In larger networks, with hundreds of hosts, it is much more difficult for an host to find a route to another one, because of the lack of fixed infrastructure.

### *B. TRANSMISSION RANGES*

Route discovery is performed by a broadcasting task, while the route reply is a unicast routing operation. Traditional broadcasting used in DSR is called a blind flooding because every node in the network retransmits once the message, upon receiving the first copy of it, and will consequently ignore further copies of the same message.

The broadcasting task is therefore a fundamental mechanism in route discovery, so the design of an efficient broadcast in ad hoc networks prime importance, in order to decrease the overhead, while maintaining a maximal diffusion. This is achieved by minimizing the number of emissions while still reaching all nodes, or by minimizing the total transmission power if the transmission ranges are adjustable.

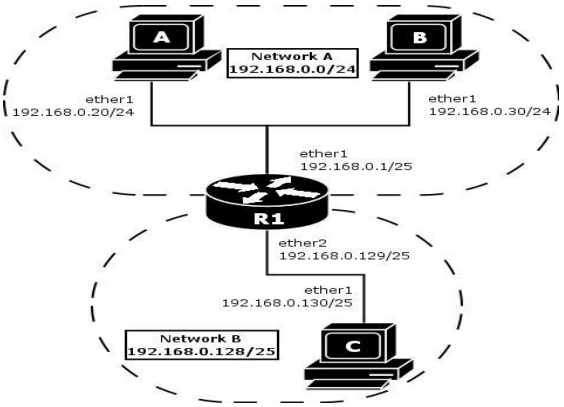
### *C. BROADCASTING*

Broadcasting is a fundamental communication operation in which one node sends a message to all other nodes in the network. Broadcasting is widely used as a basic mechanism in many ad hoc network protocols. For example, ad hoc on-demand routing protocols such as AODV and DSR typically use broadcasting in their route discovery phase.Broadcasting is also used for topology updates, for network maintenance or warning message. High broadcast redundancy can result in high power and bandwidth consumption in the network. Moreover, it increases packet collisions, which can lead to additional transmissions. This can cause severe network congestion or significant performance degradation, a phenomenon called the broadcast storm problem.

Consequently, it is crucial to design efficient broadcasting algorithms to reduce the number of required transmissions in the network. A set of nodes is called a Dominating Set if any node in the network either belongs to the set or is a 1-hop neighbor of a node in the set. The set of broadcasting nodes forms a Connected DS. Therefore, the minimum number of required broadcasts is not less than the size of the minimum CDS. Unfortunately, finding the minimum CDS is NP-hard, even for the unit disk graphs.

Some distributed algorithms that can find a CDS whose size is smaller than a constant factor of the size of the minimum CDS. These algorithms can be employed to find a small-sized CDS that can be used as a virtual backbone for broadcasting in ad hoc networks. However, this approach is not efficient in networks with frequent topology changes, as maintaining a CDS is often costly.

## IV. ARCHITECTURE DIAGRAM




## V. PROBLEM FORMULATION

The existing methodology employed to provide an efficient methods and technique that aims to achieve the objectives of this research. Mainly the proposed methodology is to simplify the analysis process and also to explain the requirements and formulations of the thesis. This is very important to ensure that the phases of the research work have been done smoothly and timely.

### *A. EFFICIENT AND DYNAMIC PROBABILISTIC BROADCASTING*

The probabilistic scheme is one of the alternative approaches to simple flooding that aims to reduce redundancy through rebroadcast timing control in an attempt to alleviate the broadcast storm problem. In this scheme, when receiving a broadcast message for the first time, a node rebroadcasts the message with a pre-determined probability p so that every node has the same probability to rebroadcast the message, regardless of its number of neighbors.

In dense networks, multiple nodes share similar transmission ranges. Therefore, these probabilities control the frequency of rebroadcasts and thus might save network resources without affecting delivery ratios. Note that in sparse networks there is much less shared coverage; thus some nodes will not receive all the broadcast packets unless the probability parameter is high.

#### *1) ALGORITHM*

A brief outline of the EDPB algorithm is presented in algorithm and operates as follows. On hearing a broadcast message m at node X, the node rebroadcasts a message according to a high probability if the message is received for the first time, and the number of neighbours of node X is less than average number of neighbours typical of its surrounding environment. Hence, if node X has a low degree (in terms of the number of neighbours), retransmission should be likely. Otherwise, if X has a high degree its rebroadcast probability is set low. EDPB algorithm is a combination of the probabilistic and knowledge based approaches. It dynamically adjusts the re- broadcast probability p at each mobile host according to the value of the local number of

neighbours. The value of p changes when the host moves to a different neighbourhood.

### B. NETWORK LIFE TIME EXTENSION

The network lifetime as the duration of time until the first node in a network fails due to the battery exhaustion. In case all the nodes have identical initial energy level, the node that spends the battery power at the highest rate will exhaust its battery first. To extend the lifetime of the network, it is critical to incorporate the residual battery energy into route selection criteria. The BIP algorithm produces a power efficient multicast routing tree for a single transmission of a packet (which is efficient for a short term period), it does not deal with maximization of the lifetime (which is a long term period) of a network.

### C. ROUTING PROTOCOLS

Pro-active or Table-Driven routing protocols require each node to maintain up-to-date routing information to every other node (or nodes located within a specific region) in the network. On-demand routing protocols are designed to reduce the overheads in Table-Driven protocols by maintaining information for active routes only as and when required. Hybrid protocols combine the features of both proactive and reactive routing strategies to scale well with the increase in network size and node density.

## VI. PROPOSED WORK

The proposed broadcasting algorithm is a sender based algorithm, each sender selects a subset of nodes to forward the message. Each message can be identified by its source ID and a sequence number incremented for each message at the source node. Algorithm is a general sender-based broadcasting algorithm and indicates the structure of our proposed sender-based broadcasting algorithm. Upon expiration of the timer, the algorithm requests the MAC layer to schedule a broadcast. The message scheduled in the MAC layer is buffered and then broadcast with a probability p. This adds another delay in broadcasting the message.

The MAC-layer delay in IEEE 802.11 is a function of several factors including the network traffic. Note that there is a chance that a node changes its decision during the MAC-layer delay due to receiving other copies of the message. This chance is not negligible when the delay in the MAC layer is comparable to the average value of the timer set in the broadcasting algorithm. As stated one solution to this problem is a cross-layer design in which the network layer is given the ability to modify or remove packets that are present in the MAC-layer queue.

This solution allows the broadcasting algorithms to perform close to their ideal performance even for very small average timer values. The MAC-layer delay is negligible compared to the average delay set by the algorithm or the network layer is able to modify or remove packets buffered in the MAC-layer queue.

The sender-based broadcasting algorithms can be divided into two subclasses. In the first subclass, each node decides whether or not to broadcast solely base on the first received message and drops the rest of the same messages that it receives later. Liu et al.'s algorithm falls in this subclass and achieves local optimality by selecting the minimum number of forwarding nodes in the lowest computational time complexity.

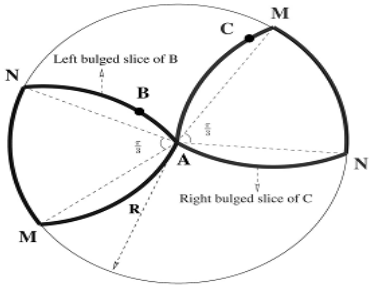



FIG 1. PROPOSE SYSTEM

### A. GENERAL STUDY

A node can have several different B-coverage sets. Therefore, there is more than one slice-based selection algorithm. For example, a trivial slice-based selection algorithm would be one that selects all of the neighbours as the B-coverage set. Clearly, this algorithm will result in flooding if it is used as the forwarding-node selection scheme in algorithm can achieve full delivery if it uses any slice-based algorithm to select the forwarding nodes. We then present an efficient slice-based algorithm that selects 11 nodes in the worst case and has computational complexity, where n is the number of neighbours.

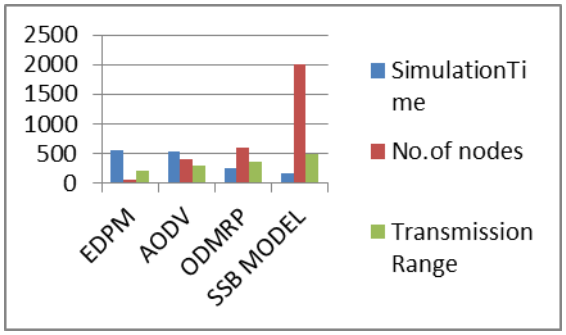
### B. RECEIVER BASED BROADCASTING ALGORITHM

A novel receiver based broadcasting algorithm that can significantly reduce redundant broadcasts in the network. As mentioned earlier, in receiver-based broadcasting algorithms, the receiver of the message decides whether or not to broadcast the message. Therefore, a potential advantage of receiver-based broadcasting algorithms over sender-based ones is that they do not increase the size of the message by adding a list of forwarding nodes. A trivial algorithm is to refrain broadcasting if and only if all the neighbours have received the message during the defer period. Although this algorithm is simple to implement, it has limited effect in reducing the number of redundant broadcasts.

The node will broadcast if some of its neighbors (at least one) have not received the message by t. However, this broadcast is redundant if all such neighbors receive the message from other nodes after time. This scenario typically occurs when t is small compared to the maximum defer time. In the next section, we introduce a responsibility-based scheme (RBS) that further reduces the redundant broadcasts without any changes in the MAC-layer defer-time design

## VII. IMPLEMENTATION

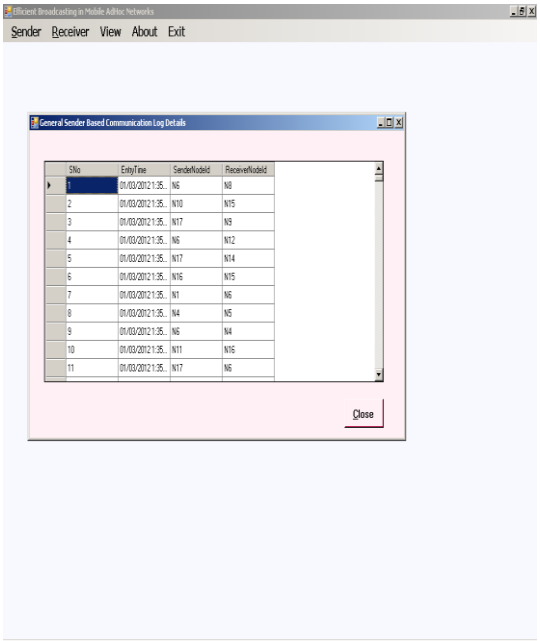
### A. COMPARISON GRAPH FOR SSB WITH EXISTING MODEL



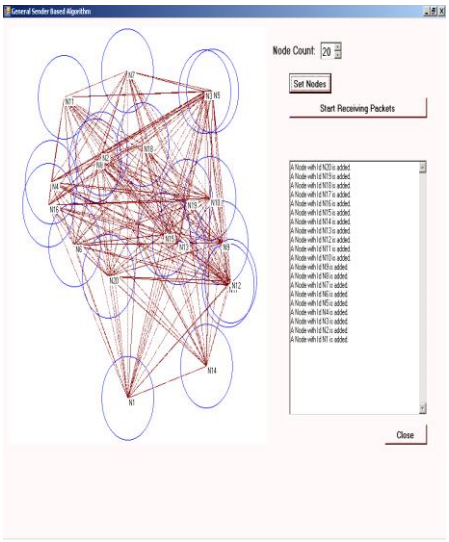

From the above chart the simulation time of our proposed SSB models proves 175 sec in which the existing ODMRP method takes 200 sec. Such that used the maximum number of nodes in the range 25-2000 in which the other model contains 25-1000 the maximum.

The transmission time also is high in the proposed model. The performance evaluation of pictorial presented below.

### B. SET OF NODES




### C. RECEIVING PACKETS




## VIII. CONCLUSIONS

In this thesis propose a novel SSB model for forwarding message to the nodes using sub servers. In the introduction chapter it is explain in detail about the basic network concepts and also regarding the MANET. Next, the literature survey chapter clearly shows the literature and the existing work which are presently available.

The methodology chapter in the thesis detail explains the various methodologies which are presently used to solve this message forwarding issues. The various types of algorithm send based algorithm to send messages, receiver based RB algorithm which is used to receive message. This issues in the exist or present methods were overcome with our proposed method for message transmission.

According the proposed methodology the message is send to the main server using sender based algorithm and the server receive the message and scheduled to transmit to the relevant sub servers. The sub server used in our methodology is reducing the complexity of the server in scheduling and sending message to the corresponding node. It is reduced by the sub server and the sub server share the task and forward the message to the particular Id. Due to our proposed methodology the collision and transmission time was reduced.

In future the process of data such as

To increase the bandwidth form 2mbps to more.

To increase the packets size more than 1024 bytes.

To broadcast manage to huge number of nodes without collision

## IX. ACKNOWLEDGEMENT

The paper was developed under the supervision of the Authors thank their support, navigation and help at different stages of the project.

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