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# IMPROVING QOS IN MANET BY SECURE SYNCHRONOUS ROUTING MODEL

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**Abstract:** - As one know that today is the time of network where one can have efficient data and voice communication services as the ability of network is growing the data available in network is also growing every organization are making our good will on the basis of the large database available in the environment of Internet. Internet making communication easy by introducing new techniques and tools to have solution of problems arising when one communicating through network but the quality communication is always have an opportunity in the front of all the manufacturer and developer of this filed . If one thing about a kind of network where one can have small area network with security and reliability are called Ad hoc Network (MANET). If one study all the traditional wireless architecture then one finds is the best example of AD Hoc Network. A Network without infrastructure facing so many problems related to bandwidth, fault tolerance and reliable communication.

In existing research many scientist has been done great job for reliable and efficient communication they had been developed so many model, algorithm to have services to the system so that organization can achieve his goal. In present scenario what one see that for the cost of reliability organization maintaining very high overheads but still they are struggling with the loss of data, Data in consistency, Delay, low throughput, less response time and many more problems.

In our proposed research work one will work on such kind of routing model who play an important role for achieving quality in between in communication among the wireless network node ,choosing route, providing high throughput, reliability, integrity, efficiency, immunity from attacks and reducing loss of data one named it Secure Synchronous Routing Model who follow specified instructions in the form of algorithm SSR Model works on the concept of Synchronous decision making policy, who will take decision to complete the communication process by having efficient bonding in between the mobile nodes to achieve time synchronization among the process on the same network ,in parallel slots ,on the basis of the calculation availability of buffer at the located node or the intermediate nodes to reach to the correct destination.

**Keywords:** MANET, AD Hoc Network, SSR Model, Data loss, Delay, Throughput.

## 1. Introduction

One know that there so many algorithm and model are available in present scenario they all are working either in Static or Dynamic category but loss of information is happening in both the cases due to the congestion or delay in transmission there are so many protocol is also available, who provides efficient services but QoS with reliability factor still not achieved till today. Here one concentrate on the reliability factor to reduce failure in connection, lost of information, on time communication in this research paper one focus on the priority level based service scenario where the QoS will takes a lot of importance for communication network , mostly we can see the quality in communication losses when load reach up to the maximum level , network couldn't manage it no more so quality takes under he consideration that define the unreliability of network , in this research study before presenting the research in implementation level , one like to discuss further definition and scheme of QoS maintenance over ad hoc network , as we can see in [1] Design a realistic based MANET routing model in which capacity for the maintenance of the node has been decide as well as new processing capability has been proposed to experiment the traffic management at maximum level, so that in this model one proposed and design a new model named chaotic routing scheme that work on the realistic nodes at the end author concludes the operation by experimenting highest arrival node rate of each and every individual data packets received at destination node.

In [2] Considering the optimized network policy for the maintenance of dynamic network and the performance study with relay node based structure less network, that has been located in wireless network to get optimize network performance, Author in[3] consider a new solution for the quality factors during the communication in WAN network that perform adaptive routing strategy during the heavy network traffic condition. Two very easy, common and mostly used techniques to perform routing in wide area network are minimum and least hop count routing strategy, designed to be apply during the network traffic maintenance situation such policy also applicable for the measurement of deterministic network solution [4], In minimum hop routing policy network nodes finds the routing detail from route having least number of hops to achieve destination [5], in the similar research proposal in [6] design a deterministic overlay network routing model that uses static route information for selecting the least node among the others. Least cost approach gives least route with minimum cost that measured by computed data rate [7], other metrics also has been used for the same purpose like security issues which athutor has been observed continuously in all the related research of the routing network area to resolve the security and quality issues maximum research consider only the routing part nothing of the network with computing rate nevertheless of maintaining incoming and ongoing ratio of request and response for the primary measurement , therefore in[8] one try to overcome the reliability problem by taking care of the bandwidth and optimality test for the throughput computation measurement has been tested, to investigate regarding the similar routing factors one find another quality achievement approach for managing quality issues one proposed velocity based scheme for the purpose of reliability and efficiency during the routing , research conclude he algorithm quality level by real time network routing performance , energy efficiency and quality in data packets transmission has been watched over here to illustrate the best of communication services in MANET.

## 2. The Proposed Model

One know that there so many algorithm and model are available in present scenario they all are working either in Static or Dynamic category but loss of information is happening in both the cases due to the congestion or delay in transmission there are so many protocol is also available who provide efficient services but QoS with reliability factor still not achieved till today. Here one concentrate on the reliability factor to reduce failure in connection, lost of information, on time communication.

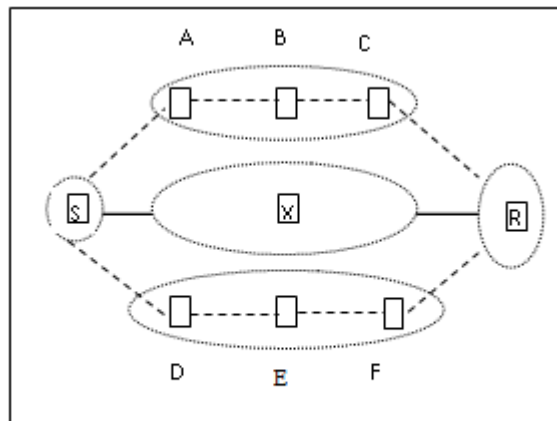


Figure 1 On demand communication scenario in MANET

Figure 1 showing the nodes communication during the routing process the proposed SSR model the each and every node with their neighbor will make session over their based on the availability of buffer at end node, in such a way it will manage the synchronous session for the entire actively participated network node in following way.

The procedure describes a to do routing among the MANET network session wise with optimality measurement level , where one see that how the node S will reach to node R efficiently.

- At the very beginning at initialization level source station as S will perform optimality test al well as synchronize the available nodes to collect routing information and provides the best rout for the required destination. S finds  $X \rightarrow R$ , if  $X = \text{null}$  perform same thing again to update information data base for new route.
- To proceed ahead  $S \rightarrow a$ , {i.e. a, b, c,...R} for all the packets address to R if and only if {a,b,c ==assign address of the next intermediate node until to reach up to right destination }.
- If the optimal route will fail due to any reason succeeded node will approach to next optimal rout which is  $S \rightarrow D$  {i.e. d, e, f...R} so session will also be upgraded synchronously to avoid inefficiency during the packets transmission or routing.

### 3. Synchronous Routing Instruction Set

Proposed routing technique focus on the objective of research work therefore in this section paper consider the approach and instruction that network should attempt during the time of decision that needed for future routing and their optimization, to have communication in MANET with QoS factors the proposed algorithm will work as disclose like following as defined.

- Network will initialize all the nodes which is actively available and called participating node of the MANET, such activity will be treated individually for every node of network therefore it happens at item  $t_1$  and synchronize it with other for coming 10 seconds to perform operation of routing.
- First of all Secure Synchronous Routing Algorithm will initialized all the node available at time T1 period that period will be of 10 sec on every initialization .

- Participated nodes which is the source station of network start buffering operation for getting actual status of the database in initialized MANET for time  $t_1$ .
- At this position network will have the optimum value of buffer as well as address for the next node that will be need to be the next participated node only in the similar way such optimization has been perform successively over network to achieve least cost and optimized solution for the routing process.
- Similarly every node will precede each incoming request and process to it to the next successive node in same manner.
- The time factor will remain the same for every operation for node level.
- To resolve conflict issues optimum buffer status differ every operation value from each other that shows successive synchronization are working reliably and effectively to achieve optimal path.

#### 4. Related work

MANET is demanding networking concept at presently targeted by so many researcher's of computer science, many strategies, models and methodology is going to be developed in near future although MANET gets suffered with so many reliability issues as well, now one need to focus on the basic requirements of present environment where quality of services consideration may take value for commercial networking applications, here we have so many traditional models and planning has been developed by science in past year of research, one take few of them to get compare the benefits of new one with previously developed models.

##### 4.1 AODV Routing Methodology

To perform on demand dynamic routing model designed called AODV with considering the issues of managing heavy load of network, mechanism manage information framework by having table which maintain source and destination info for transmission at run time request therefore it is also called location free implementation policy of routing [8], connection established only when demand raised for some specific destination, to get connection it design a special packets called RREQ known as request packet, by having interaction in between the neighbor nodes of network, nodes interaction contents the updated information about the route will be initiated and gets new fresh nodes path for proceed the request in some intelligent way, in this case another special response packets has been transfer in response from response node called RREP to make connection [9].

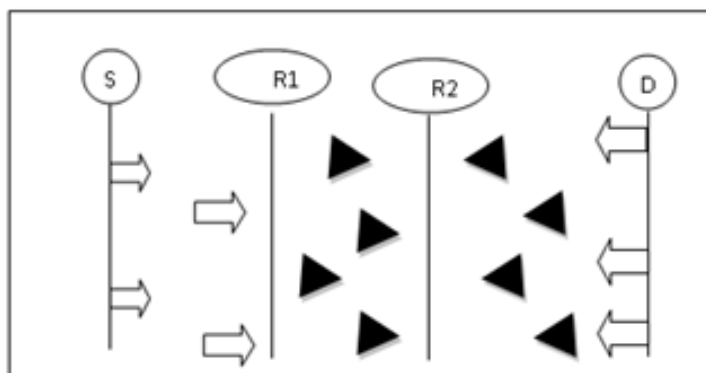


Figure 2 Interaction between the nodes in AODV

#### 4.1.2 Route Discovery Process in AODV

Broadcasting as been introduced here with this routing phase in order to process communication reliability in which source station will broadcast message packets to its neighboring nodes in process if nodes found will then nodes will reply accordingly otherwise specific router rebroadcasted the packets to some different attached network in the similar way packets finally reach to the correct location [10].

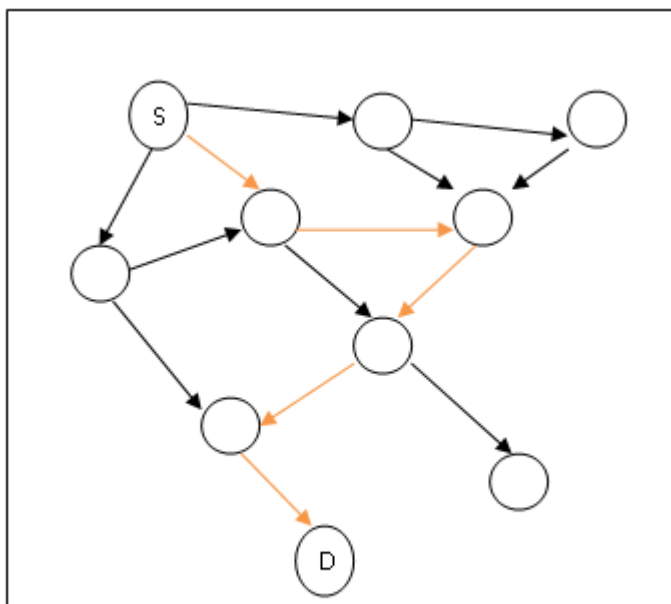


Figure 3 Route Discovery Process in AODV

#### 4.2 Dynamic Source Routing (DSR)

It is just opposite of AODV process where it proceed the unicasting instead of multicasting approach to get resolve the network issues at the same time another important thing is it will reduces the server load over the network from the unicasting strategy, to make such possibility successful in DSR [11] , every participated intermediate node will take care about buffer issues where it uses cache management technique for efficient routing based on the information available at nodes structure and their capacity like AODV methodology DSR follow following way to discover route [12] .

##### 4.2.1 Route Discovery

To resolve route discovery issues DSR discover the routing nodes as per the following figure 4 in this architecture the source node with create a request packets and start it with broadcasting way to its neighbor nodes accordingly it will discover the next node to complete routing process such process is done only some specific node that belongs to that range. Routing request has been process based on available node data along with the destination node address called target node [13], as like the figure 4 showing that a uniqueness has been associate in every process

as its given system generated route id number for this process many node interact frequently as well as the target node will be found with efficiency [14].

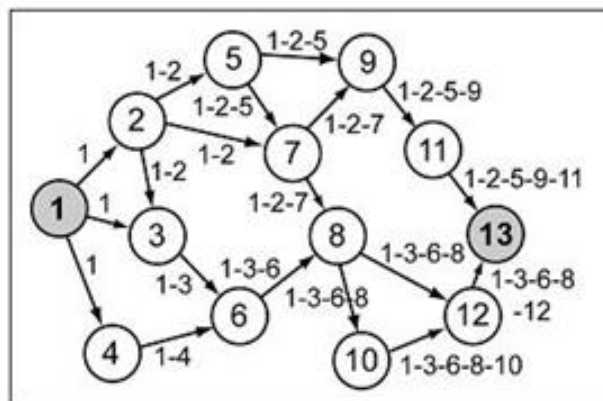


Figure 4 Route Discovery in DSR Routing

### 4.3 Associatively Based Routing (ABR)

This techniques works on the mathematical based metrics computation technique it found the shortest path based on the decision of metric table, a famous shortest path algorithm has been implementation for getting shortest optimality test to precede the request in this technique [15]. It is basically similar like DSR apart form on this that it performs aggregation at every node and associate with it with the aim to get select longer route that help in reducing the routing cost and route maintenance therefore one need to implement associatively among the routing nodes, in the process all the moving network nodes will break the route associativity with their neighbor nodes so that it is good nodes to process request has been discovered , the similar process is going on until the process will not done. ABR is reach upwards to the required destination system from its current position [16,17].

### 4.4 EABR- Enhanced Associativity Based Routing Protocol

From [1] we found the detail study material of EABR scheme by analysis the mechanism it is basically the extension of previously discussed ABR approach therefore one can called it as enhanced associativity policy. Author found in ABR reconstruction phased that there are so possibility during the maintenance that not good as per the appreciation of the network [18] so that need to focus and work only on the source node, intermediate node and destination node at each and every movement of process to reduces network routing issues and knowingly one can been able to isolate and tract such issues so that effectively communication will be their [19, 20].

## 5. Conclusion

Above discussed all the policy for routing is not eligible for long network having multiple node and the intelligence to proceed the requested networking efficiently but getting suffered due to enhancement of networking user and portable networking devices to overcome from the drawback of network one can say that more research is required for more quality of services.

**Table 1: Comparisons of Different Routing Protocols with Proposed Routing Policy**

Protocols Properties	ABR	AODV	DSR	EABR	SSR
Routing Type	Fate	Fate	Fate	Dynamic	Dynamic
Routing Process	Metric	Shortest	Metric	Shortest	Shortest
Discovery of Route	Shortest	Path	Shortest	Shortest	Shortest
Allow Multiple Route	No	No	Yes	No	Yes
Loop free	Yes	Yes	Yes	No	Yes
Multicasting	No	Yes	No	No	Yes
Unicasting	Yes	No	Yes	Yes	No

Table1 describes that how the routing has been classified protocol wise, such classification will be quality of services oriental will specify the policy objectives and mechanism construction.

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