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A Fault Tolerant based Efficient Power Route Discovery Approach for MANET

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ABSTRACT

In MANET, nodes are mobile which are connected based on communication range. Mobility of the nodes is varied. In Packet transmission process, a logjam attack has been occurred and it increase fault rate. So, to discover the efficient power route is necessary in MANET without any packet loss. Network failure affects the overall performance. From the previous analysis, cluster based routing is deployed but not able to tackle faults namely node failures, connection failure breakage and malicious activities. It will guide to more power consumption. To overcome these issues, an Enhanced Multi Channel Pinpoint Tuning (EMCPT) algorithm proposed for determining power route among the network. In proposed scheme, multi channel denotes multi path, channel routing is established to improve fault tolerance and network lifetime. In first part, multi channel is established to check every channel there is any logjam attack involved or not, if attack occurred terminate the channel transmission. In second part, each channel maintains their neighbor table and fault tolerant table to obtain status of packets dropped, packets duplicated and packets received. Tuning channels are efficient for communication from source node to destination node with removal of Logjam attack in third part. By using network simulator, the proposed scheme achieves better than our previous works namely EFDCB and FDCB.

Keywords: Multi channel tuning, Fault tolerant routing, Enhanced Multi channel Pinpoint tuning, Node ranking, logjam attack, packet delivery ratio, network reusability, and overhead.

1. INTRODUCTION

Mobile networks have currently appearing a platform used for vital observation and managing uses [1]. Normally sensor has different limited capabilities, it densely arranged in network. Each node maintains a routing table that contains a history of node energy usage. Energy loss causes a communication network issues like allocation of channel, time delay, Throughput, Packet delivery ratio, and Security. Tiered hierarchical architecture is vital method to network lifetime enhancement. Network lifetime based on the time onwards until the initial node in the network to loss energy usage. In military application sensor sense the chemical reactions energy consumption of sensor is increased, because it cause sensor lifetime is unsafe for lager coverage field in mobile ad hoc networks. To analyze the Energy usage of sensor is either use or loss resource available. Energy consumption useful focus transmitting and receiving packet, Sleep mode of network, and fault tolerance. To reduce energy consumption presents more number of protocols. There are three models, they are first model tells transmission power level at each node to enhance network capacity; providing an efficient network connectivity [2].

In second model goes to decision making in routing based on power optimization is objective. Third model manages the network topology nodes in sleep state denotes rest state else awake state nodes in communication mode [3]. Fault occurred in different behaviors of nodes are analyzed. In malicious node affects the performance like packet transmission, make dropping packets. Path planning is vital role in communication between nodes. Decision making the network path has no attacker node, select only a

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trustworthiness node. It improves the packet delivery rate and throughput. If any failure path is selected the process is repeated up to get efficient path, to overcome this delay, focus on fault tolerance routing, achieve lesser network overhead [4].

In this work, an EMCPT Enhanced Multi Channel Pinpoint Tuning is proposed for Mobile adhoc Network. Network source node finds the new channel provides communication to destination node. The Pinpoint tuner tuning to efficient channel in network, misbehaving logjam attack nodes are detected, because it is in abnormal condition, and link connection between node cause failures. Then network overload occurred for every transmission. Simulation results show that the proposed EMCPT attained higher performance compared than existing intrusion detection systems are AFTR, TBDS, and QFTS. The rest of the paper is prepared as follows: the part 2 discusses related works on Fault tolerance systems. Part 3 describes the proposed methodology Enhanced Multi Channel Pinpoint Tuning. Part 4 experiences simulation outcome of proposed procedure. Part 5 concludes the work.

2. RELATED WORKS

Shah et al., [5] proposed results against fault. Normally lot of computer network nodes used in different applications. It focuses to minimize response time and size of agent is maximized. Detection Method: usual detection method suggests using speed up detection Methods such BPNN not minimize response time and then minimize the false alarm rate reason for no packet loss. Length of packet is monitored usual detection method; ANN based method which required minimum resource can be used. Additionally if the data forwarded to this detection method, is minimized and justified reduce the length of packet depends on ANN based BPNN detection method.

IElamparithi, IIS. Radhamani, et al., [6] presents MANET mobile node position information possible to enhance the network performance. In position monitoring information is useful to launch a new route discovery approach. Ad-hoc On-Demand Distance vector provides a vital role as a part of network process enhancements. Nearest neighbour to resend the failure packet is called as broadcast storm, of Request packets dropping in usual on-demand routing method. CNRR Candidate Neighbours to Rebroadcast the Request approach to minimize the overhead. It monitors the position of each node to choose a efficient four neighbour nodes for rebroadcasting the received request in routing table planned destination in request packet. CNRR have source routing strategy achieves the best route discovery.

Nekrasov, et al., [7] propose UCDS -Unified CDS and E-CDS Essential CDS algorithms which build two hop neighbors. Identify the faults apply various techniques to enhance the process. Network node capacity such mobility and stability are evaluated. Expert method used to improve the fault tolerance. Nodes move separately around the network, the node mobility varied, performance can be improved. Minimum distance path is constructing with the help of CDS algorithm Constraining shortest path length in E-CDS algorithm allows to capture data only in thin networks. Adding transmission try is best only in static networks, mobile nodes speed is adjusted with instable state in one transmission try in mobile network. UCDS is useful to provide a little better result than E-CDS with varied changes.

Rathore, et al., [8] Presents attack detection and removal along the fraudulent nodes. In initial step find fraud nodes in machine, and reject those nodes with help of immune-inspired method. Finally the similar kind of malicious behavior is visit another time; Acknowledgement can be sends to sender node. Present method can be designed to obtain the accurate result. It contains the network capacity and immune technique. The network capacity method is used for the identifying the fraudulent nodes; immune method is used to removing the attacker nodes present in network. Threshold value is fixed to check the time, during transmission change the sampling time interval rate, tuning up the sensor in best rate.

Sarma et al., [9] propose method any of the nodes can add or relieve from network not consider the security problems is difficult one. Main security problem the misbehaving node indicates backhole attack makes as black hole node added in the network. Black hole has misbehavior during in efficient path finding method. The sender node gives a request receiver gives false reply packet to sender node. Sometimes packets are dropped because node is attacker its capacity is very low. Survey various existing method for finding a black hole attacks in mobile network and their drawbacks are analyzed to prevent them. Present a proactive routing protocol has an efficient packet delivery ratio and correct discovery probability, but have minimum network failure. It's ideal detection and removing method.

Qasim M Alriyami et al., [10] present delay of transmission in dynamic node movements. They are used in military applications to improve security. The military captures high quality of security need, and then also contains special intrusion detection method. In IDS -Intrusion Detection System has central control and detecting attacks cannot be applied to MANETs. Results to protect these networks are based on distributed and cooperative safety. Survey of IDS especially for MANETs and denotes the positive and negative marks of process. Introduce matrix for measuring the attacks and its affects IDS for MANETs in an urgent situation response. Intrusion detection in MANETs depends on packet collected and exchanged between nodes. Urgent situation packets transmission, nodes fixing and operation between nodes to achieve a efficient result.

Alenezi, et al., [11] presents DDOS attack occurred when the process not yet finished.It contains three step prevention, detection and response. It provides a best detection against the attacks involved. TCP gives efficient connection links between nodes with CUSUM -cumulative sum. Attack detection is vital role against the attack, the CWDT - congestion window detection technique is depends on focusing the congestion window value in communication between node. Output CUSUM - common change point algorithm, was used to sense the DoS attack. It is extremely fitting for straightforward deployment as the congestion window analyze already calculated within TCP implementations and the CUSUM has low resource necessities.

Sathish, R et al., [12] presents nowadays more number of nodes are fixed for simulation, very difficult to achieve efficient routing in lot of nodes. It allows secure transmission between nodes, survey the different efficient algorithms to find the copying attacks in WSN. Differentiate these algorithms contains many difficulties, based on positive and negative feedbacks of each node. Nowadays focus the best solution for memory usage and communication inaccuracy, and repeated process until take an efficient detection schemes, it improve throughput for every transmission, and reduce time delay.

Nadeem, et al., [13] presents an deployement MANET routing protocols have no malicious intruder node. It has various types of attacks to overcome using detection and prevention. Differentiate method as either point detection algorithms contract with a single type of attack, or as intrusion detection systems with certain range. Present compare to protection method it detects attack and protection method to overcome losses. Hope that development and deployment of network security policies are important in Mobile network; it reduces time delay during communication.

Bindra et al., [14] presents the blackhole and grayhole attacks monitoring and eliminating. An EDRI-Extended Data Routing Information Table provides best result to overcome the faults; routing details are stored in routing table. This method is able to finding a misbehaving node, maintains a history of all node's information. It has more advantages packet refreshment, renewing, reply, and request. It follows the chain of process to finding malicious nodes. This grayhole attacker node already fixed in mobile network and presents an acceptable output.

Kshirsagar et al., [15] presents a wireless network is capable to find fault near the beginning and then apply the recovery method to improve QoS - quality of service. It indicates lot of problems existing fault finding and fault analyzing methods in WSN. Fault tolerance use WSN as a best one to managing more number of difficulties in network, reach robust fault management method is necessary. Survey the issues of fault finding and recovery the original. It divides to compare different methods, detect strong and weak point of each node, to choosing correct path for particular applications.

Konate et al., [16] various kind of tools are used to detect the attacks achieve secured communication. More number of attacks is occurred during transmission such as Blackhole, Blackmail, overflow, and selfish are simulated in ns2. Proposed much another chance of DoS attacks meet in mobile networks, function of the method to count the attacks. Simulations of certain attacks like selfish, sleep, Blackhole, diffusion in bandwidth and energy losses.

Thaneswaran Velauthapillai et al., [17] present technologies are used until node failure clear. Single point detection with acknowledgement is an initial step to overcome the distributed attacks. This kind of attack removal is uneasy; because spread global defense systems put an effort. Propose a distributed defense to finding attacks globally used a cooperative overlay network and exchanging information. It finds attack with a detection threshold rate is fixed false alarms. It differentiates positively alongside other general methods including change point detection. Proposed discrete solution finds attacks network overlay. Exchange information with its constant outcome of packets. Give response to the attacks are thus possible to take on destination.

Abbas et, al., [18] identify their position of each node , packets received result is varied and notify neighbors position updates. In location checking, network nodes check the position of each node and make reach each physical position is proof for node in every time during communication. Lastly present one-time localization is innovative method to detect the attacks, which cause some changes to minimum communication overhead; node position monitoring is used to detect Sybil attacks in network. The network overhead is reduced with node position information. Additionally more problems occurred in communication. Launch localization algorithm attains higher efficiency and trust or reputation method mingled to localization process to achieve trust based results.

Feily, et al., [19] presents botnets command is used to control the channels which can be dynamically updated. Currently, botnet detection is best combines with cyber-threat and cyber-crime prevention. Survey of botnet and botnet detection, four models: signature-based, anomaly-based, DNS-based, and mining-base, each compares and give justified results. Creates a output against the cyber security, so to provide the key for communication to overcome DDoS - Distributed Denial of Service attacks beside dangerous condition. Despite the more number of malicious botnets, simply little survey has examined the botnet issues and botnet explore in early network. Variety of botnets protocols and structures makes botnet discovery is not easy process. Survey botnet detection techniques based on inactive network overload is reduced.

Kale, et al., [20] presents difficult to affects of node failure in network. Fault recovery is an easy way to functioning of network, removal of faulty node and adding of recovered node disturbing the process setup. Planned to find a fault, take recovery process, and identify the positive and negative method applied. Many fault management method is compared with present approach. Hybrid approach gives a report best of them. Failure mostly focuses on node deployment with lesser connectivity problems. Propose a best link and coverage between nodes to manage the fault occurrence during packet transmission. Another option of node failure unexpected energy losses. To provide a communication with certain range to less number of hops power usage also minimized & hence option of failure due to battery usage also minimized, communication done only in single hop.

3. OVERVIEW OF PROPOSED SCHEME

In the proposed provides multichannel Fault tolerant routing, there are three phases involved namely Establishment of channel Searching, Multi channel Tuning and Fault Removal method. In multichannel to tuning the each and every channel up to reaches an efficient channel for communication along sender side node to receiver side node. If any channels affected for attacks to detect them, and removed from network environment. In present work the channel tuning is most important over logjam attack in communication channel. In EFDCB method channels are discovered if any failure occurred that causes the more power

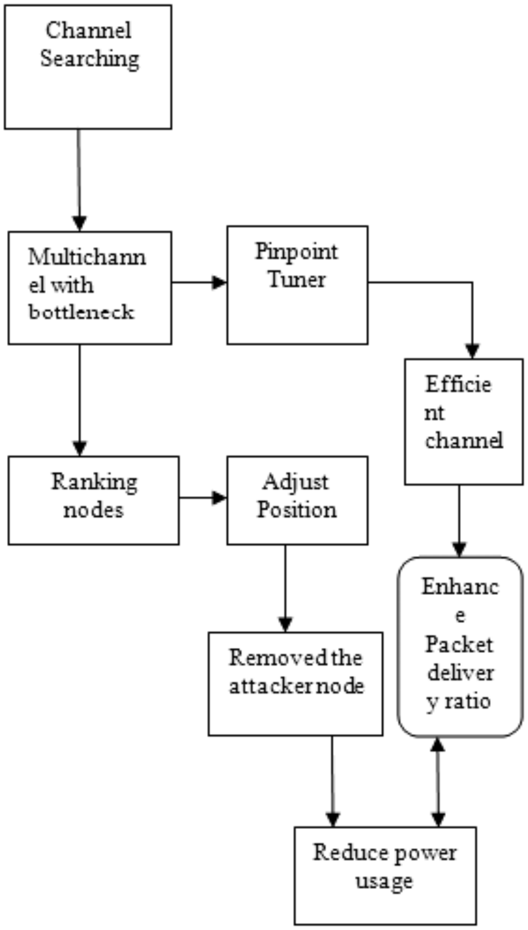

Figure 1: Block diagram of Multi channel pinpoint tuner

consumption during packet transmission between the neighbor nodes. It not fixed a power level as certain range; they are varied during broadcast packet size.

Figure 1 shows the block diagram of Multi channel pinpoint tuner, Mobile nodes searching the channel from source to destination provides a communication, that time allocate multichannel transmitting a bottleneck data, Pinpoint tuner tuned to efficient channel and improves the packet delivery ratio. All nodes analyzed and arranged based on ranking method, if any of the nodes get minimum rank it tried like a attacker node to remove from network, adjust the node position to out of coverage and connectivity, it reduce the power consumption of efficient channel selection.

3.1. Channel Searching

The main aim of proposed multi channel tuning is to find multiple channels between source node to destination node. This kind of intermediate nodes performs abnormal transmission. During channel searching not follow the nodes reliability, that looks only communication, else success or failure of transmission. Nodes are connected to displace routes, also known as totally displace routes, and contain no common links or nodes. Link displace routes have no links in common, but may have nodes in normal. The non-displace routes may have lower aggregate resources than displace routes, because non-displace routes share links or nodes.

Packets are transmitted in hop by hop in particular channel, each hop receives packet and forwarded to neighbor hop in certain channel list. Network having a wireless channel MAC is used to search based IP address with transmission range. Node gets failure if it is lower capacity for transmitting certain packets, all of the nodes are not maintain same capacity based on power and energy they are varied. Each node searching the channel sequentially without consider the packet delivery ratio, it makes the node go to logjam attack, the packet contains a bottleneck field. Every packets having the same bottleneck data, causes an attacks. Any dis-connectivity between node packets is in waiting state queuing also known as attack. In that time traffic occurred for every transmission lot of protection methods are involved to overcome in existing method but more power consumed.

3.2. Multi channel Pinpoint Tuning

Initially, first channel allocated and packets are forwarded to neighbor node, estimate the power utilization and packet receiving rate, how many of them get losses during transmission, nodes are well deployed but slide updating in their position because of MANET. There is any time latency occurred traffic is caused by routing in particular channel. Then tuning the channel to certain frequency, allocate a new channel for communication.

The channel is a model packet transmission there is any external interference like out of range signal in network environment. Tune the channel to certain coverage range of frequency and get extract results. Frequency signals are faded, so tune a signal to obtain accurate results. Packets are jammed in certain area in network to overcome this type of attack tune the new channel check the coverage and connectivity of every node present in the link. Tuner check the channel capability is applicable one or not, if it applicable one test and go to further transmission, else not applicable stops the channel process. Source node forwards the packets in step by step to destination node. If one channel failed goes next channel apply the condition is repeated until to reach the efficient transmission. Nodes transmits a REQ is request packet, nodes are gives the reply packet for successfully received or not, RER is error packet, REP is reply packet received. All channels are not access in particular time, every time channel allocation is changed. One time one channel is accessed for communication, it reduces the traffic occurrence.

$$Kp = K(K - 1) \tag{1}$$

$$Cp = C1 - Cn/Kp \tag{2}$$

Kp is neighbor node point, *Cp* is Channel point denoted. K neighbor node is incremented and checks up to one channel get finished. All Channels are information's are stored in neighbor node. Higher priority channel gives the result as efficient transmission over logjam attack. Pinpoint tuner tuned to different channels in a Mobile network. Packets are forwarded in queue format, every pinpoint gives a varied output, so then select an efficient channel using this pinpoint tuner method

$$S_n = Cp(1/Kp) + T(1/Kp)$$

$$n(d,m) = \sum_{Ki=0}^{N-1} S_n / Cp > Kp(d,m) \tag{3}$$

$$n(d,m) = \sum_{Ki=0}^{N-1} 1/N.Kp(d,m) \tag{4}$$

Where S_n is source node, it choose a channel in efficient manner through the pinpoint tuner where$d$ is distance from Ki = 0 starting to ending point m. Evaluate power to tuning minute points also extract observed.

$$n(d,m) = \sum_{Ki=0}^{N-1} 1/N * Kp(d,m) + Sn/Cp * Kp(d,m)$$

$$n(d,m) = \sum_{Ki=0}^{N-1} Sn/N.CP\{Kp(d,m) + Kp(d,m)\}$$

$$n(d,m) = \sum_{Ki=0}^{N-1} Sn/N.Cp \tag{5}$$

Channel tuning is derived source node choose neighbor node Kp with maximum packet delivery ratio and minimum power consumption. Allocate best one from multiple channel $Cp(x)$.

Algorithm for enhanced Multi channel pinpoints Tuning:

```
For each node, after receiving HELLO messages from its neighbours, do:
Step 1:  Establish its own set of $Kp1(x)$ and $Kp2(x)$ nodes
Step 2:  Initiate with empty channel set Cp set $Cp(x)$
Step 3:  Then choose single hop neighbour in $Kp1(x)$ as Cp are one and only neighbour of some node in kp$2(x)$, and insert single-hop neighbour nodes to $Cp(x)$
Step 4:  if it stops, some nodes in $Kp2(x)$ that are not covered by $Cp(x)$
Step 5:  For each node in K$p1(x)$ which is not in $Cp(x)$, compute the number of nodes that it covers among the uncovered nodes in the set $Kp2(x)$.
Step 6:  Insert the node of $Kp1(x)$ to $Cp(x)$ for number count reaches maximum level.
Step 8:  for each (Cp(x)) if it available some nodes in kp2($x$) that are within range Cp($x$)
Step 9:  For each node in $kp1(x)$ check until reaches the kpn(x).
Step 10: if(Kp1 = 1) 1st channel selected and forward packets.
Step 11: Analyze the maximum coverage channel in efficient manner If ($K = 1$).
Step 12: insert the node of $kpn(x)$ to $Cp(x)$
Step 13: $Cpn$ = Cp(x)+1 for each all sets $kp1(x)$ to $kpn(x)$, then choose the Cp set with minimum number of nodes.
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3.3. Removal of attacks in network environment

In this sub section, nodes power usage is estimated, after process nodes have a placed in different position of the entire network, every time probabilistic nature of the node is ranked, and them clean out the attacker nodes from network. Historical information of each node is estimated and efficient channel not having the attacker node. It records the forwarded request, so ranking the node to choose a best node, lesser rank value nodes are filter out from MANET. Records are maintained in routing table, the position of attacker node has to be change and its mobility of each attacker is adjusting to high level, and then removes from network.

Attacker node removal algorithm

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Step 1:  node get established a request packet
Step 2:  If the Request packet is forwarded then stops
Step 3:  Appear up node ID whom sends request that are recorded into table.
Step 4:  Locate node ID and Position.
Step 5:  For each if rank< threshold then put node ID into record list and Request time should be null.
Step 6:  Adjust the position of min rank node to out of coverage from entire network region.
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Attacker node removal algorithm track the node ID position and analyzes the ranking mechanism to get best transmission node have higher rank, and worst node have lower rank. Fix the threshold value for ranking and capture attacker node with minimum value of ranking, Position of node is altering to out of coverage from this network.

Packet ID: It contains each and every mobile node details. It contains a node’s position and casual updates identification it fixed in network structure.

Source ID	*DestinationID*	*Multi Channel*	*Pinpoint tuner*	*Powerusage*	*Ranking*
2	2	4	4	4	2

Figure 2: EMCPT Packet format

In figure 2: the present EMCPT packet format is given. Here the source node ID field occupies 2 bytes and destination node ID field takes 2 bytes. Third one is Multi channel. The Packet communication selects multi channel, search the every channel available in network. In fourth field, the Pinpoint tuner is indicated. It estimates pinpoint tuner tuning the channels between source and destination node. Monitors the channels enhanced for each packet transmission. In fifth, the power usage in each transmission, analyze lesser power consumption channel. The last filed Ranking, to rank the network nodes available, tracing the node behavior, and put ranking.

4. PERFORMANCE ANALYSIS

4.1. Simulation Representation and Parameters

The proposed EMCPT is simulated with Network Simulator tool (NS 2.34). In our simulation, 100 mobile nodes move in a 900 meter × 900 meter square region for 55 milliseconds simulation time. Each Mobile node move randomly, with varied mobility around the network environment. Each mobile node has coverage area for 250 meters in network. The simulated traffic is Constant Bit Rate (CBR) provides a constant speed of packet transmission in network. EMCPT tune the packet communication until reaches the efficient transmission. In simulation settings and parameters are summarized in table 1

Table 1
Simulation Setup

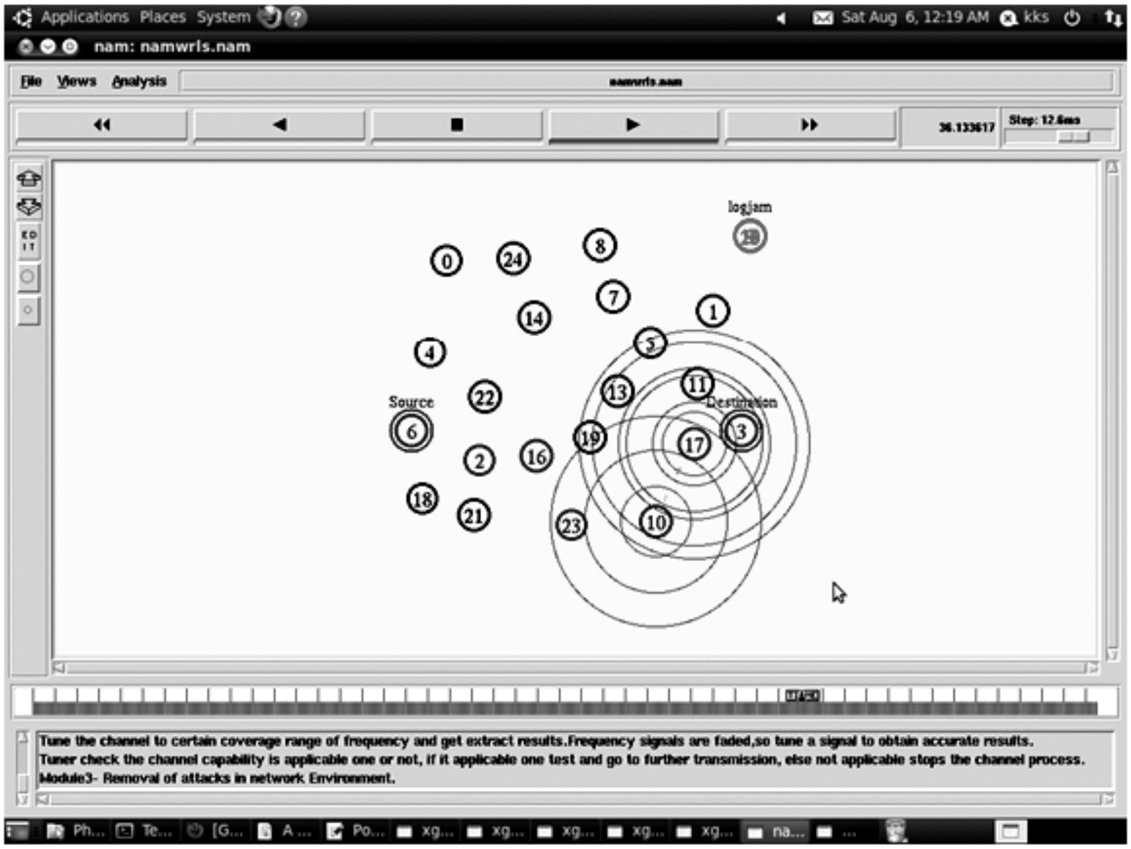
No. of Nodes	100
Area Size	900 × 900
Mac	802.11
Radio Range	250m
Simulation Time	55 ms
Traffic Source	CBR
Packet Size	150 bytes
Mobility Model	Random Way Point
Protocol	DSR

Simulation Results: Figure 3 show that the proposed EMCPT scheme have pinpoint tuner tuning the channel to got efficient communication compared with existing AFTR [2] QFTS [3], and TBDS. It enhances Packet delivery ratio to remove the attacks occurred in network, and also reduce the power usage during transmission based on EMCPT.

4.2. Performance Analysis

In simulation to analyzing the following performance metrics using X graph in ns2.34.

Delay: Figure 4 shows Time delay is calculated by the time taken to transmit packet from start point to end point, entity node is traced using behavior. In proposedEMCPT method pinpoint tuner to tuned minimum time channel, end to end delay is minimized compared to Existing method AFTR, TBDS, and QFTS.



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Tune the channel to certain coverage range of frequency and get extract results.Frequency signals are faded,so tune a signal to obtain accurate results.
Tuner check the channel capability is applicable one or not, if it applicable one test and go to further transmission, else not applicable stops the channel process.
Module3- Removal of attacks in network Environment.
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Figure 3: Proposed EMCPT Result

Delay = End Time – Start Time

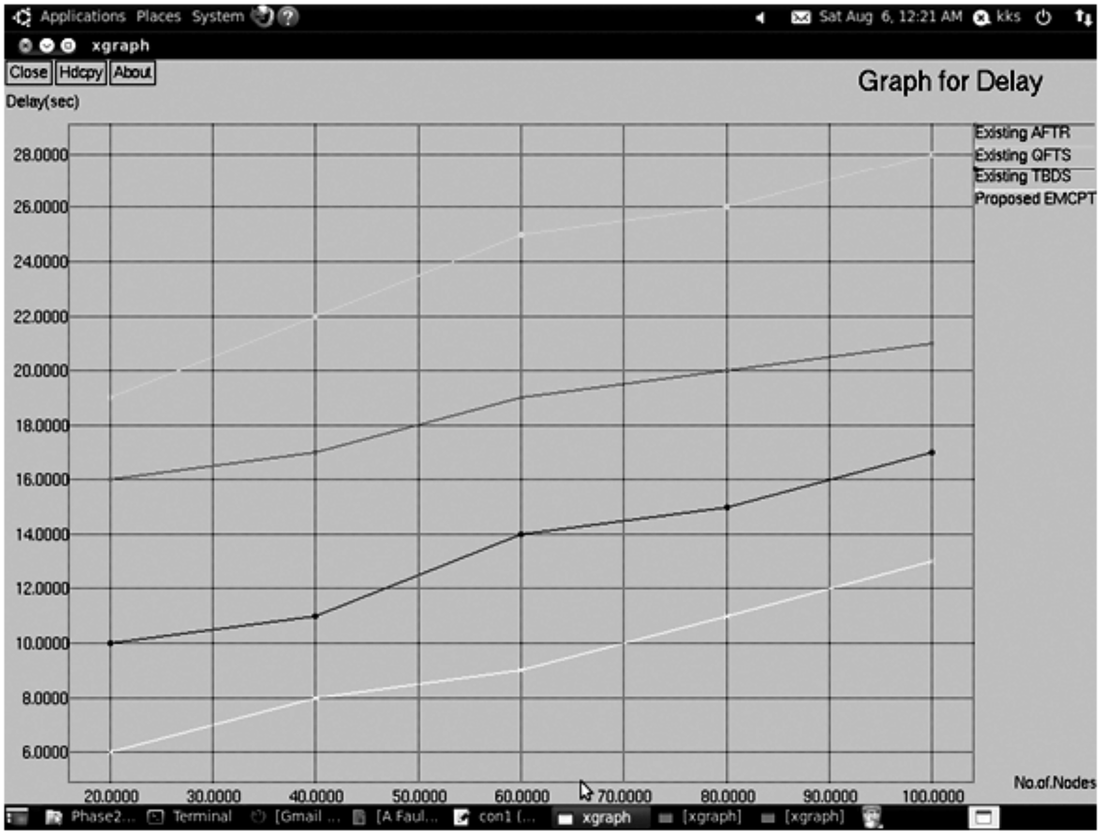

Figure 4: Graph for No of Nodes vs. Delay

Fault Rate: Figure 5 shows Packet drops during transmission between sender nodes to receiver node in channel path that occurs when one or more packets, collapse to attain the receiver node based on node ability. Minimum number of node has lesser ability for achieve packet to the receiver node. In proposed EMCPT method pinpoint tuner select efficient channel, Fault rate is minimized compared to Existing method AFTR, TBDS and QFTS.

***Fault Rate* = (*Error Packet Losses/Packet Received*) * 100**

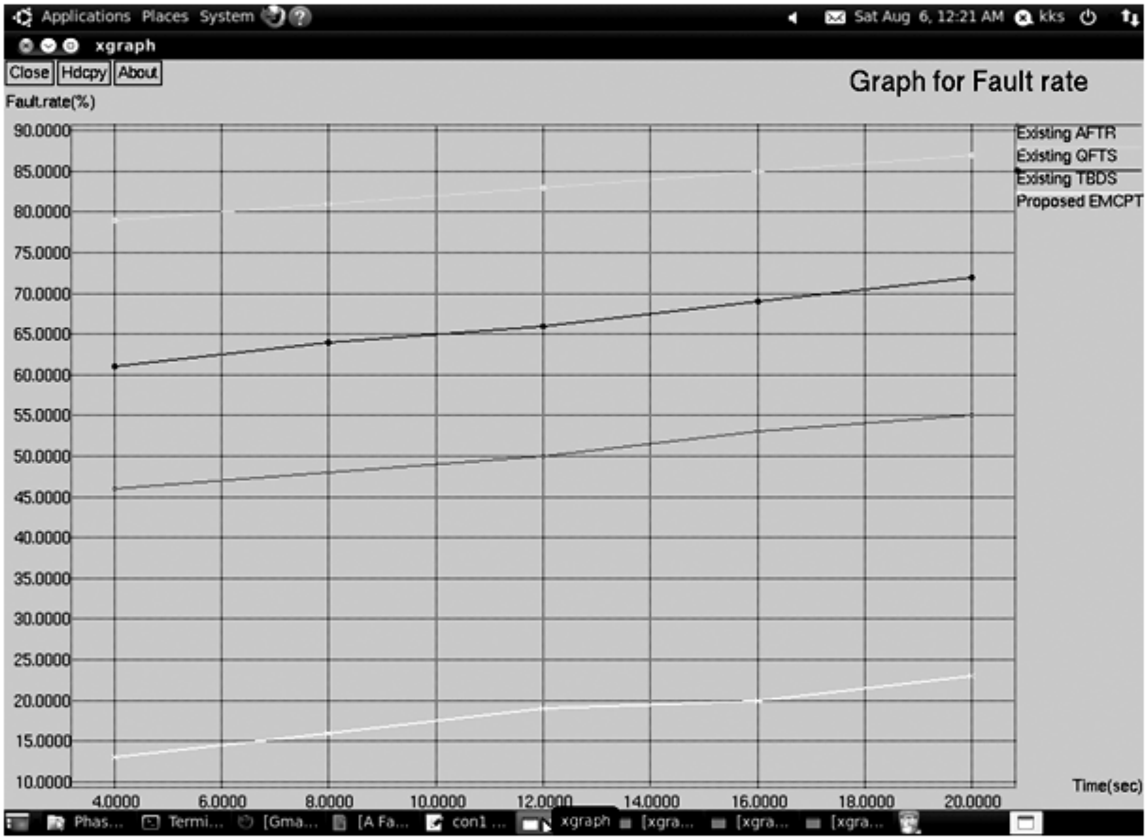

Figure 5: Graph for Time vs. Fault Rate

Packet delivery Ratio: Figure 6 shows Packet delivery ratio is measured by number of received packet from number of packet sent. Speed instance is various, but this simulation set speed is 100(bps).In proposed EMCPT method pinpoint tuner is allocate channel Packet Delivery ratio is increased compared to Existing method AFTR, QFTS and TBDS.

Network Overhead: Figure 7 shows Network Overhead, Attacks are occurred packet transmission is repeated from source node to Destination node. More time spent to detect the logjam attacks.In proposed EMCPT method channel check minutely, so network overhead is decreased compared to existing method AFTR, TBDS and QFTS.

Power: Figure 8 shows power consumption, amount of power used for particular packet transmission, that means evaluate power consumption initial transmitting power to final transmitting power. In proposed EMCPT method ranking node is low level attacks are removed power consumption is reduced compared to Existing method AFTR, QFTS and TBDS.

Network Reusability: Figure 9 show that Reusability of the network is estimated by nodes time taken to utilize network from overall network ability to perform communication. In proposed EMCPT method ranking provides efficient connectivity. Network Reusability is improved compared to Existing method AFTR, TBDS and QFTS.

Packet delivery ratio = (Number of packet received/Sent) * 100

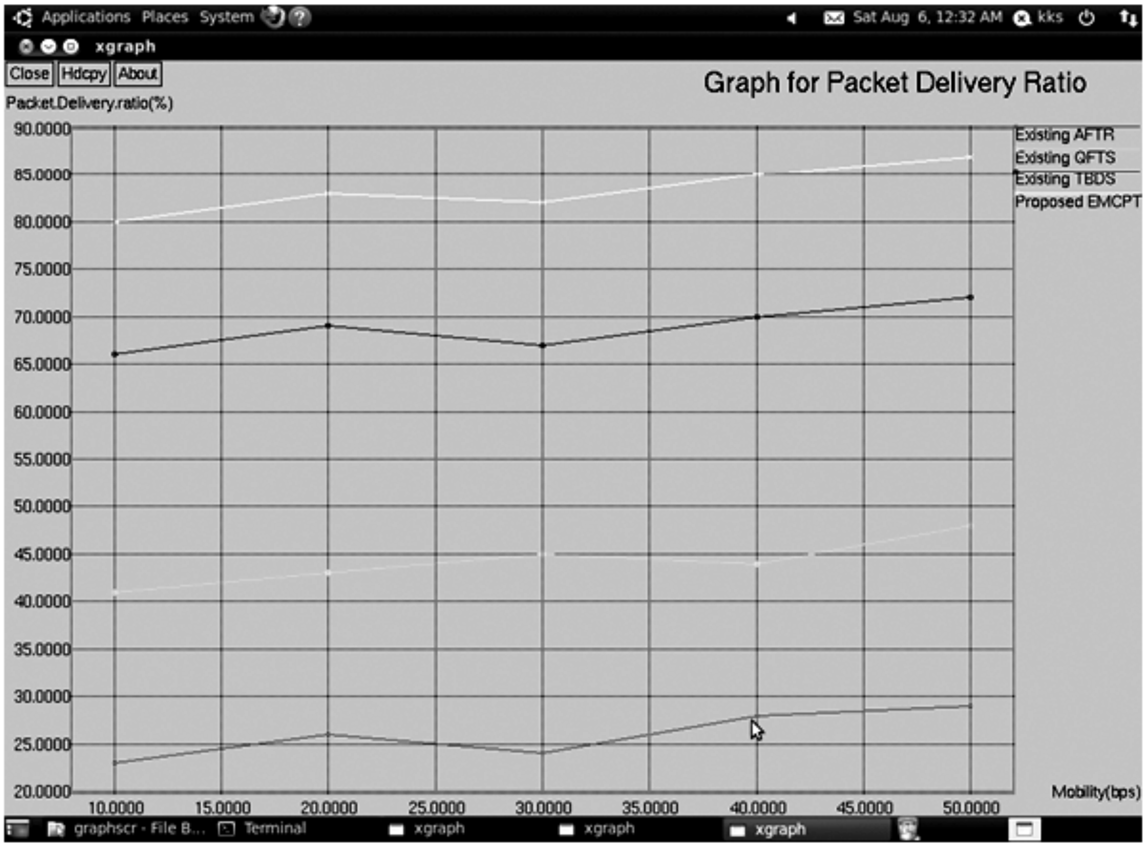

Figure 6: Graph for Mobility vs. Packet Delivery ratio

Network Overhead =Process repeat attack detection time/overall time

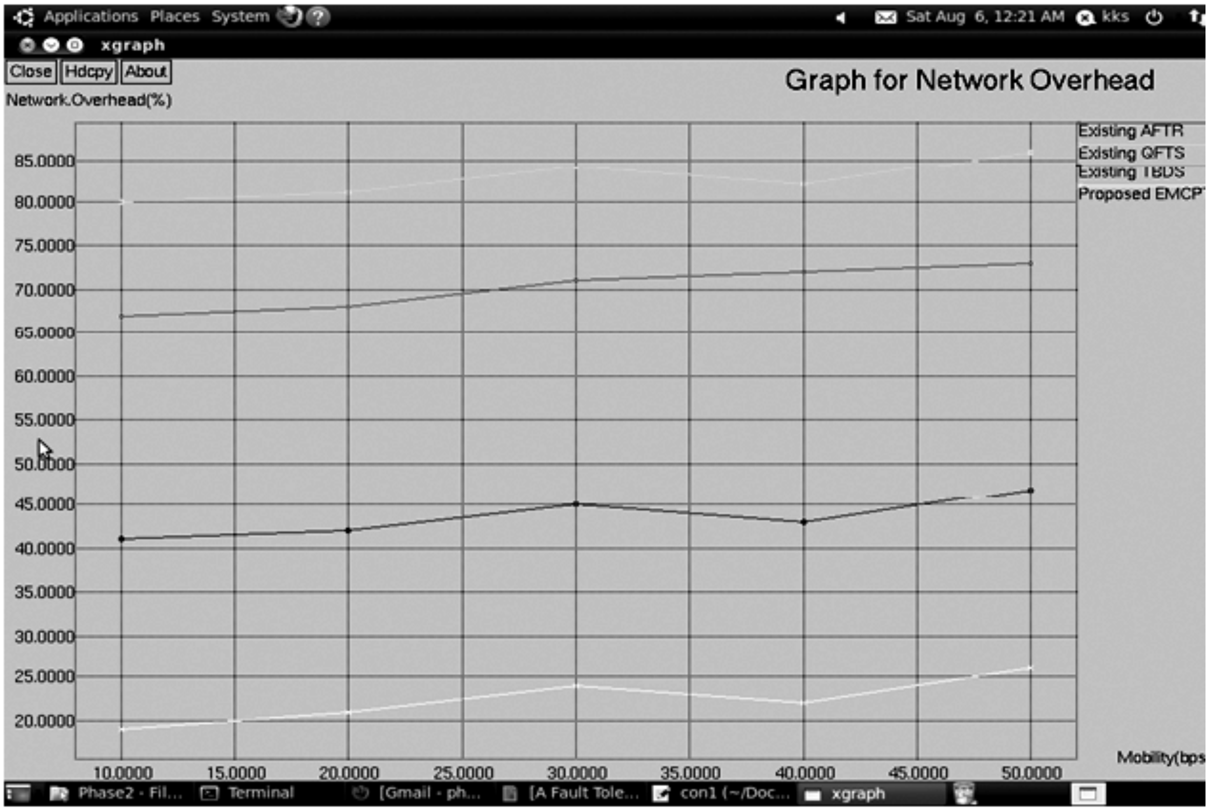

Figure 7: Graph for Mobility vs. Network Overhead

Power Consumption =Initial transmitting Power – Final transmitting power

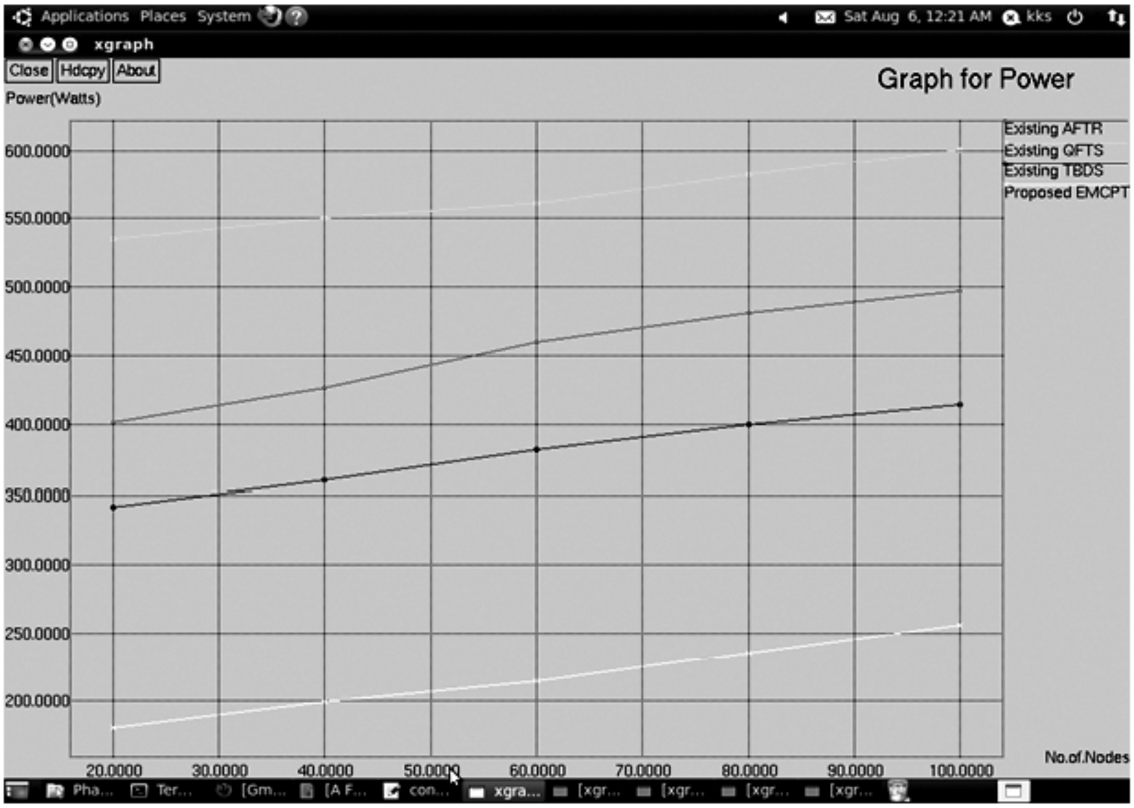

Figure 8: Graph for No of Nodes vs. power

Network Reusability =time taken to utilize network/overall ability

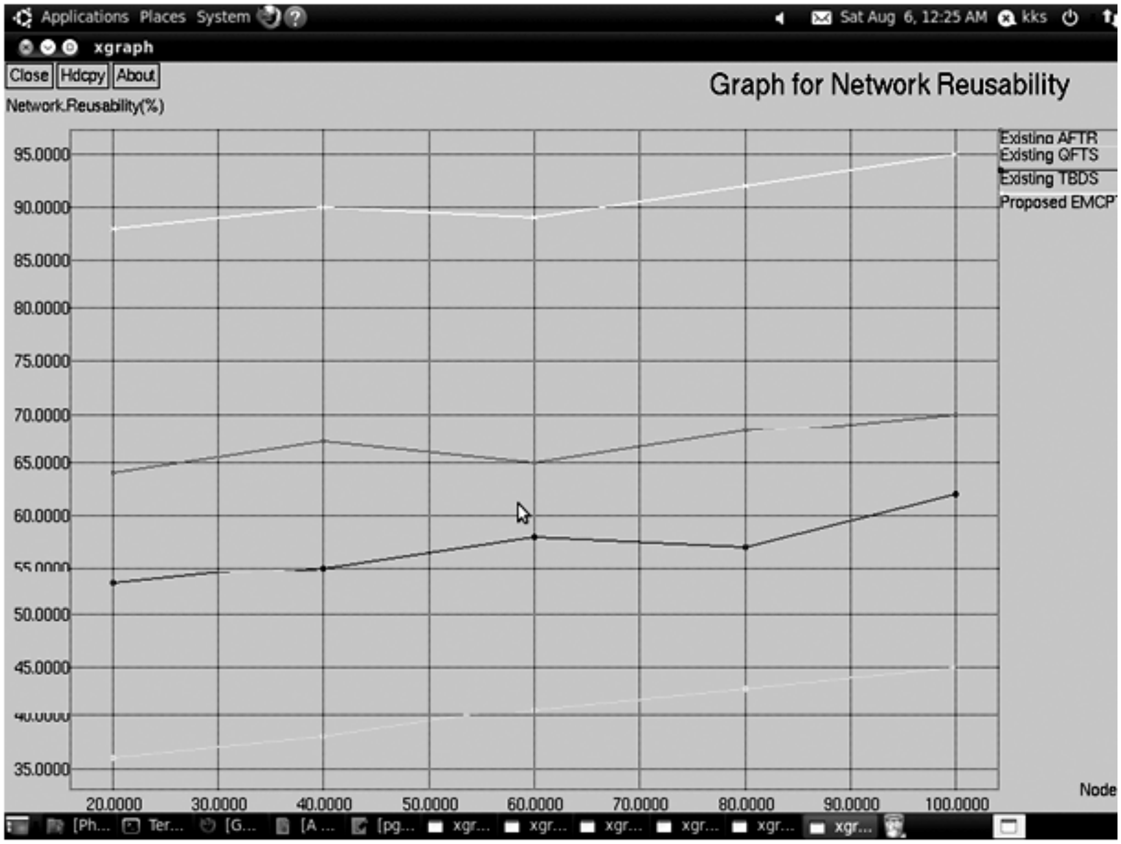

Figure 9: Graph for Nodes vs. Network Reusability

5. CONCLUSION

Mobile ad hoc Network are arranged based on source node and Destination node is created. To enhance the Packet delivery ratio go forproposed Enhanced Multi channel pinpoint tuning(EMCPT) algorithm. Pinpoint tuner is used to tuning the channel check the node condition and then select efficient channel with help of tuner. Find the any logjam attack occurred, and removed from the network using ranking method to provide the rank if any of the node get minimum rank that nodes are moved to out of coverage in particular network area. This type of logjam attack caused by bottleneck field of data's in communication between nodes. It reduces power usage for every transmission in efficient channel allocation. Simulated in NS2, is a discrete event simulator, Proposed EMCPT method, to minimize power consumption, reduce delay, attains lesser fault rate, improve packet delivery ratio, maximize network lifetime and increased network reusability. In future use Enhanced shifting based routing algorithm, to analyze the time delay.

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