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PERFORMANCE ANALYSIS OFADAPTIVE MULTIPLE QUEUING DISCIPLINES (AMQD) FORVOIPROUTING IN RANDOM WAY POINT MOBILITY MODEL OVER MANET SCENARIO

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ABSTRACT

In Mobile Ad hoc Network (MANET), QOS (Quality of Services) in VOIP application plays anextremelysignificantresponsibility. Queuing disciplinesis anissue of concentratedconversation and research in the wireless network field for development of packets from dissimilar traffic flow for dispensation at anexactnode.Hence Mobility takes an important rolein networks to evaluate the presentation of AMQD with different Codec's for voice Over Internet. VOIPis arisingaccepted Internet application toprovidehigh-quality services through Mobile Adhoc Network (MANET).Based on the analysis and assessment of different mobility models such as Random Waypoint Models, Reference point group models,Manhattan Mobility models , it is pointing out that this network also facea lot of challenges on QOS issueupon the node movement of different mobility. The QoS issues such as packet loss, less throughput, more delay, jitter issues and high energy consumption, Combine these issues together with mobility models, in this paper the researcherestimate the performance of various VOIP codec with Adaptive Multiple Queuing Disciplines (AMQD) namely, IAE3, DBPQ, CBCRTQ over MANET. Simulation and GUI experiments demonstrate thecomparative analysis of different queuing in quality of services parameters.

KEYWORDS: QOS (Quality of Services), AMQD (AdaptiveMultiple Queuing Disciplines), IAE3 (Intelligent Adaptive Energy Efficiency & Effective signal), DBPQ (Distance Based Priority queue), CBCRTQ (Class Based Cluster Round Trip Queue), MANET (Mobile Ad hoc Network).

INTRODUCTION

Wireless communication enable a user to admission the communication services at anytime from whereverapproximately the world MANETs are decentralized scheme consisting of movable nodes ready with wireless messagedevoid of any admission point, MANET application are essentiallytroubled for voice transmission over IP network like tele-emergency system that wants voice communication.[5] Voice over IP is an extremely well-liked skill that allows the message over packet switch network in its place of route switched network. In spite of the rising status of data services, voice services unmoving stay the main profits basis for system repair provider. The two most well-liked conduct of as long as influenceand wireless cellular networks. The use of both of this form of network requires infrastructures that are typically very classy.[7][8] Option solution islife formrequired which can bring good-quality say services at a comparatively lower cost. One method to attain low cost is to use the previously existing IP infra-structure

RELATED WORK

The random waypoint replica is a usually used mobility model for simulations of wireless communication networks. By giving a official account of this representation in conditions of a discrete–time stochastic procedure, we examine a number of of its basic stochastic property with high opinion to: (a) the change length and occasion of a mobile node between two waypoints, (b) the spatial sharing of nodes, (c) the direction angle at the commencement of a association transition, and (d) the cell modify rate if the model is used in a cellular–structured scheme area.[9]

Mobile Ad-hoc Network (MANET) was distinct as a set of mobile nodes that enthusedgenerously and linkedamongst each other without any communications. Limitation representsa tool that evaluates the presentation of an obtainable or future queuing system, under dissimilar configurations of attention and over long period of real time.[4]

COMPARISON OVERVIEW OF ADAPTIVE MULTIPLE QUEUING DISCIPLINES (AMQD) MECHANISM FOR VOIP (QOS) OVER MANET

Advanced Queuing plandetermine the regulation for orderentity in a queue. It defines the order in which they are serve and the way in which capital are alienated between patrons (packets). Each router must equipment some queueregulation to govern the packetbuffer in which packetto come to be transmitting. Queueconjectureconstitute a influential tool in model and presentation analysis of a lot ofmultifacetedsystem, such as computer network, telecommunication system, call centers, developed systems and repair systems. The proposed multiple queuing mechanisms play a vital role in Voice over Internet Protocol over manet environment.[1][2]

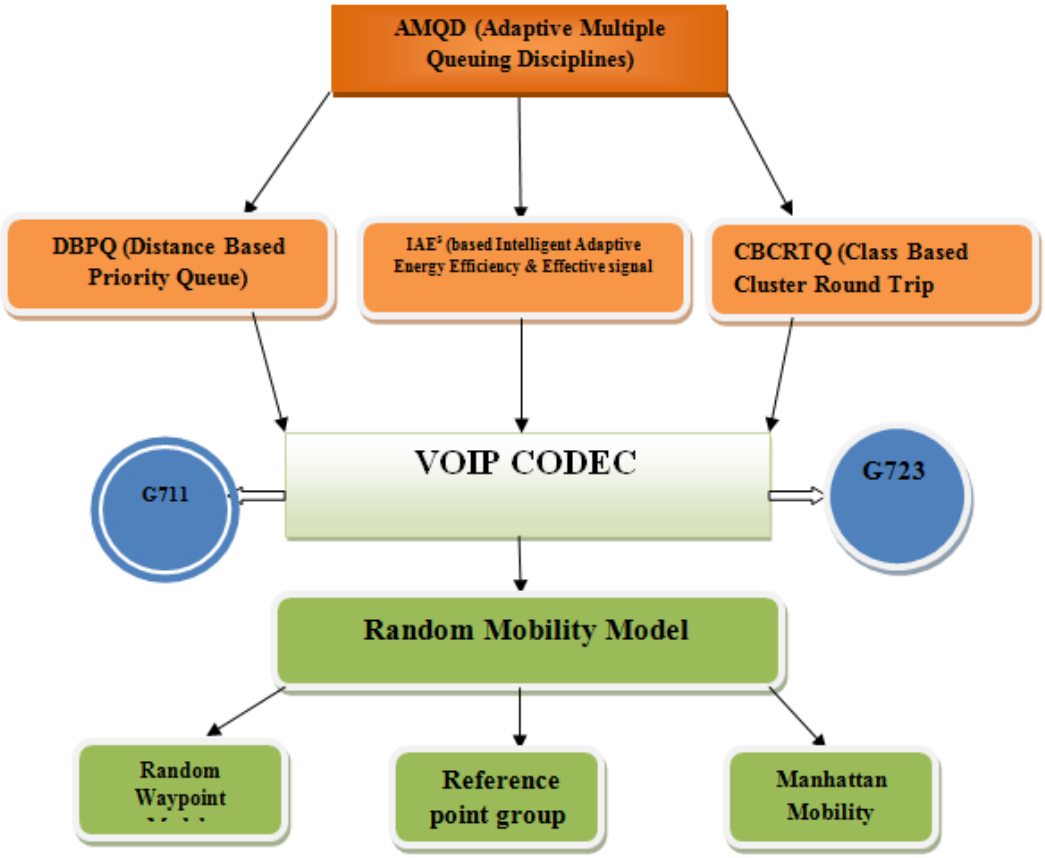

Fig 1: Classification Diagram of (AMQD)

INTELLIGENT PERFORMANCE METRICS

Go toward to the arrangementmeasurement is to get the codec data by monitor the events and performance on an accessiblescheme. Actreplicaprofitsin place of the system by a symbol and influence the model to getin arrange about its events and its performance. The queue routine of the understanding can be conventionalalso directly or by differentiate the system workload mean reply time,[11] the total service time, the workflow, the in order of finished or abortmendneeds, the total to come time, the line length, the figure of transactions finished per unit time, the proportion of blocked association requests**.** To assess the MANET as a queuing system, there are a lot of other presentation metrics that can be used. [13]

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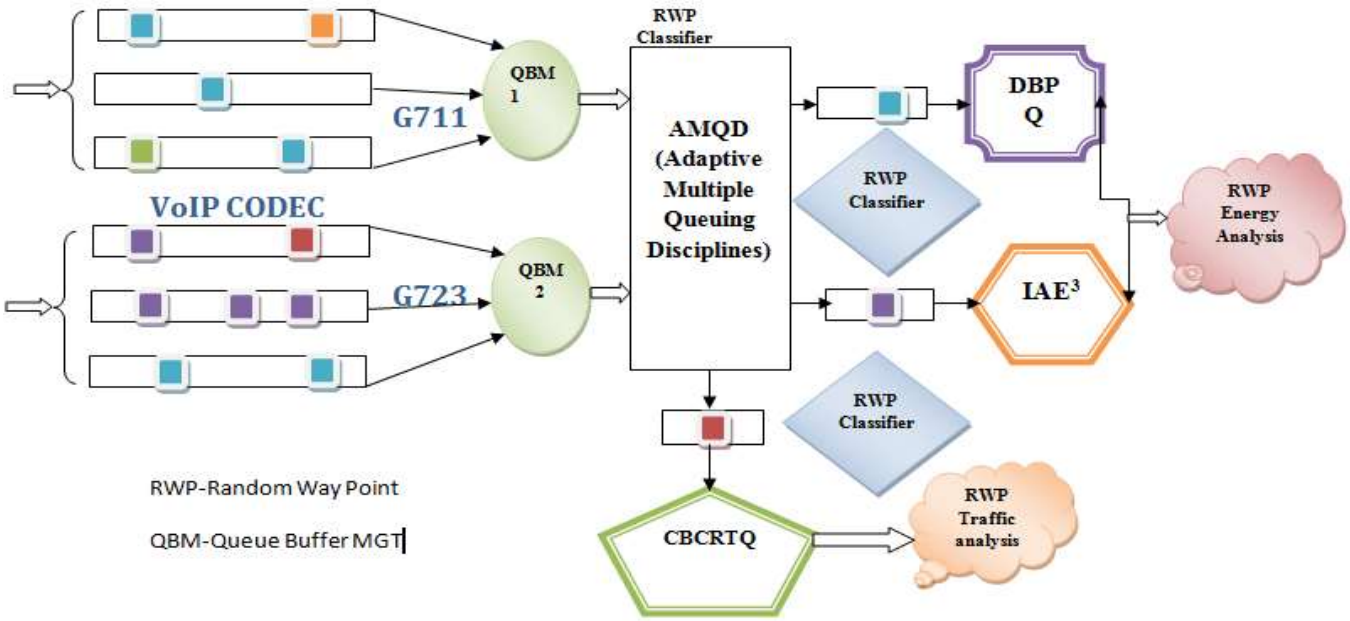

Fig 2: Functional Diagram of Proposed AMQD Mechanism

Our ultimate aim is to reduce the energy consumption and increase quality of services parameters in MANET environment to ensure and analysis with the help of the random waypoint mobility representationintroducedetailedsuspension times between movement'si.e.change in track and momentum.[12] The random waypoint model is the majority popular mobility model working in modern research, and can be measured a base for structure other mobility models.[16]

One of the mainreasons why the multiple queuing take place node distribution resulting from the RWP model is non–uniform is the fact that nodes take a non–consistentlydispersedway angle at the commencement of each group period.[18]

Each node has a prepared queue in which dissimilartype of tasks are placed. Scheduling in the middle ofa variety of tasks takes place with the help of schedulers. Number of queues in anexacting node will be relying on the height of the node in the network. It can be unspoken that nodes that are available in lowest level will not receive packets from distantsite and hence does not need more figure of queues. Mostly, multi-level queue can able to keep away from delay since it has more than a few working phases like aligning the tasks among different queues and scheduling. [22][14]

PROCEDURE FOR RANDOM WAY POINT MOVEMENT

AMQD Algorithm
#specified nodes position randomly
#create node movement using Multi queue methodology
Algorithm
#specified point destination for VOIP codec
Algorithm
#Start for AMQD algorithm

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```
Initial node While Time Simulation <= 50 do
Begin
For i = 0 to number node -1 do
Begin
If current_Queue1_density (node[i])
> beside_Queue2_density (node[j]) then
Begin
Current_Queue1_density (node[i])
= Beside_Queue2_density (node[j]);
Final Beside_Queue3_density (node[k]) =Current
_Queue1_density (node[i]);
End;
 If isbuffer full Intersection occur then
Begin
QBM: = Full;
For j=0 to
Intersection codec number -1 do
Begin
If branch Random point edge[j].density <
Branch Random point edge [j + 1].density then
Begin
QBM: =Min_edge;
Min_edge= j;
End;
End;
If Packet<min_edge then
Next Random point edge = branch edge[k];
Else if
Random branch edge [Min_edge].has traffic
Queue branch edge [Temp].has traffic occur
then
Begin
If
Port classifier edge [min_edge].traffic random selection
.color = indicate thennext_edge =
Branch node [Temp];
If
Random node [Temp].traffic buffer
Or=red then
next_node=branch node [min_edge];
End else if not
Then next_queue = take place
Random node [QBM];
End else next_port =
Branch Queue3 node selecting [min_edge];
End;
Sumofpassingvertex =
Sumofpassingvertex + 1;
If next_node = AMQD vertex distention
then node[i].sumofvertex =
SumofAMQD passingvertex;
End for;
      End while;
```

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QOS METRICS

PACKET DELIVERY RATIO

It is distinct as the ratio of figure of data packets deliver to all the receivers to the number of data packets supposed to be delivered to the receivers. [1]

This ratio represents the routing effectiveness of the protocol:

$$PDR = \frac{\text{Packets delivered}}{\text{Packet Sent}}$$

AVERAGE END-TO-END DELAY

It is the average time taken for a data packet to move from the source to the receivers

$$\text{Avg. EED} = \frac{\text{Total EED}}{\text{No. of packets}}$$

THROUGHPUT

Throughput refers to how much data can be transferred from the source to the receiver(s) in a given amount of time

$$\text{Throughput} = \frac{\text{Number of packets sent}}{\text{Time Taken}}$$

SIMULATION RESULTS AND ANALYSIS

The performance of dissimilar Queue for VoIP application hasbeeninvestigated via NS2 simulator. The non-paymentparameter used in the simulation are listed in the bench

Simulation parameters and values

Parameters	Values
Number of nodes	10
Network size	10000m * 10000m
Mobility	Placed in row an column based model
Communication model	Random way point model with continus movement
Placed in row an column based model	Selection by strict channel match 300m 600 simulation seconds
MAC layer	IEEE802.11 DCF with transmission rate of 12 Mbps for voice application
Routing	AODV
Codec	G.711 and GSM-EFR & G723
Type of service(TOS)	Interactive voice,unicast
Frame size	20ms

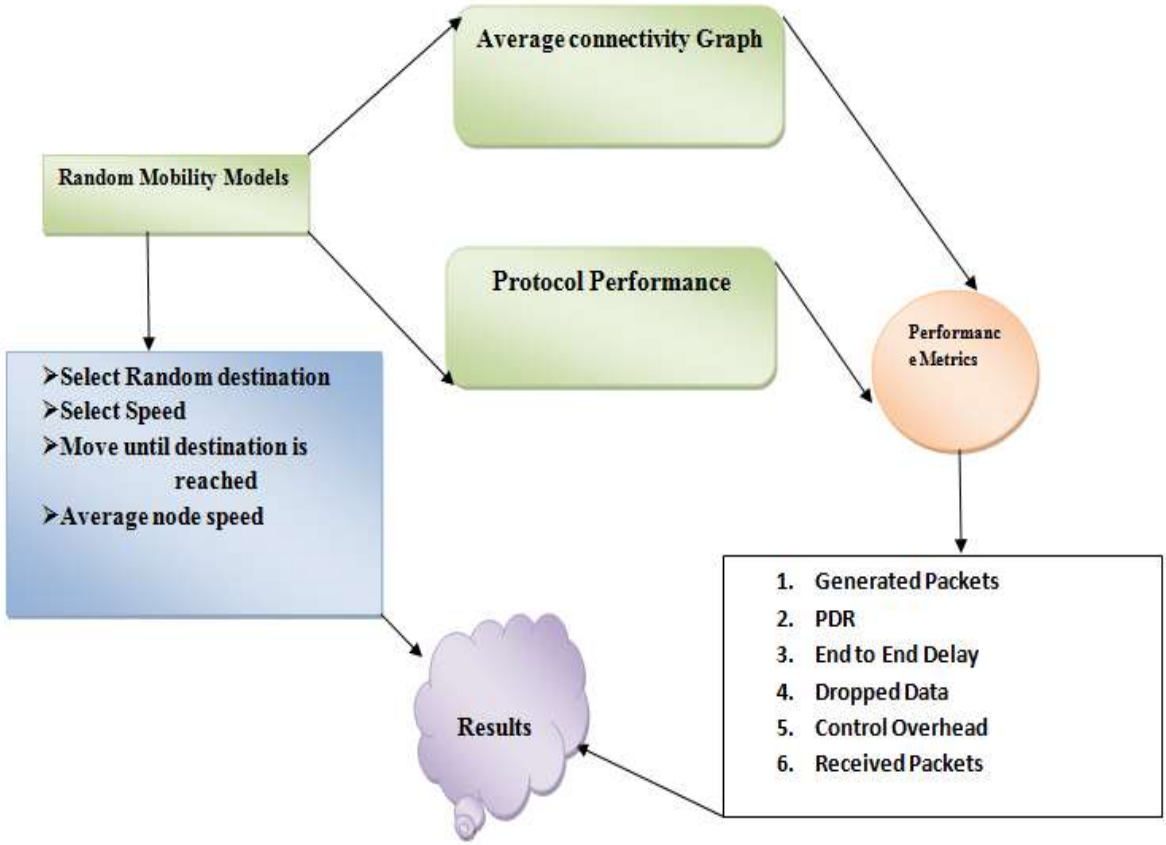
Usually, MANETs are deliberate through simulation and their presentation depends a lot on the mobility model that governs the nodes movement. In the majority cases, the likelihoodsharing of initial location and nodes speeddiffer from the sharing at later stage in the simulation. It is quite true, the likelihood distributions of both site and speed

varies incessantly over time, and meet to a *motionless*sharing. At any immediatethroughout the simulation period, the sharing of site and speed is a weighted average of the initial sharing and the stationary sharing,[10][9]

In this model, each node is assign an initial location (x0, y0), a destination (x1,*y*1), and a velocity of *S*.

The point (x0, y0) and (x1,*y*1) are selectedseparately and consistently in the area of nodes group. The velocity is then chosen consistently on atime (*v*0,*v*1), separately of both the initial site and purpose.

Fig: 3 Functional flow of Random Point model



RESULTS ANALYSIS

In this learn, the presentation of the MANET was evaluate by apply three types of queuing disciplines (DBPQ, IAE3 and CBCRTQ). Different MANET's parameter were tested and experiment to show the belongings of each of the queuing mechanisms on the MANET performance in codec. The optionalunreliable MANET's parameters are: number of nodes, nodes speed, pause times, and simulation areas. [23]

NAM window in Network simulator

Throughput Analysis

As of the non-attendance setup, network throughput increases to anuppermost of 0.6 bit/sec more than midway the transmission time. However, angreat drop is also observed with increasing in the time of transmission. Change in encoding strategy does not influence this nature in any way, and the encryption characteristic does not form the situation any better. Changes in the MAC layer protocols also do not change the behavior. A highest throughput of 0.6bits/sec is still kept all the way.[2][1]

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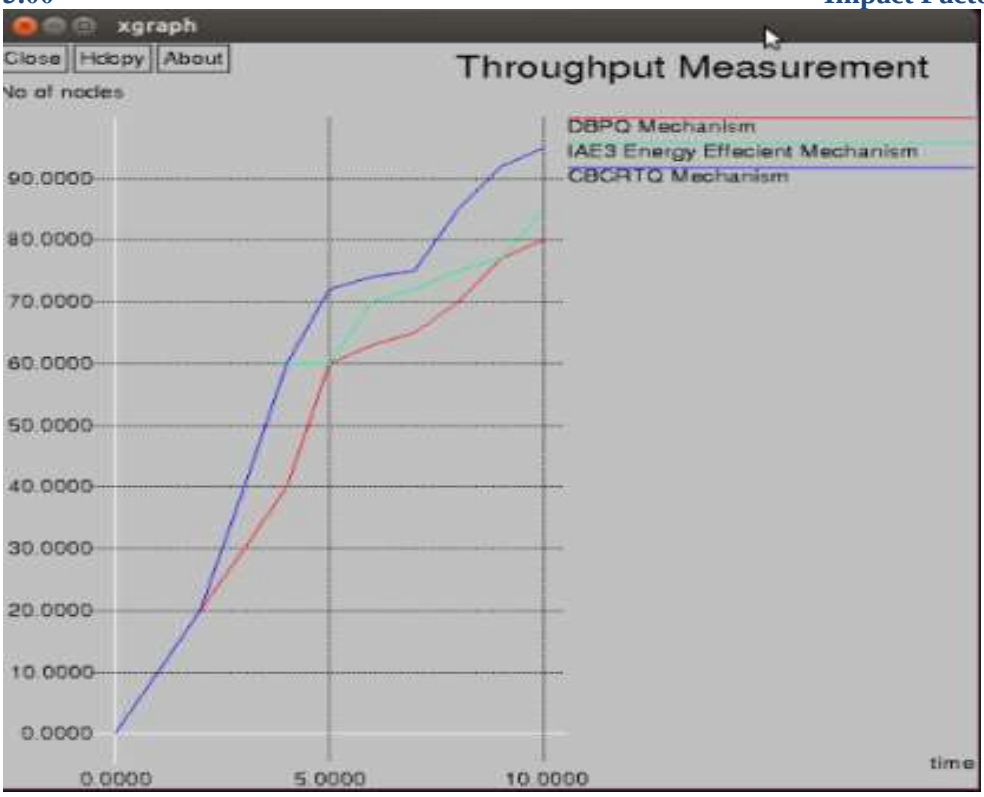

Fig:4 Multiple queuing Throughput measurement

Packet Delivery Ratio

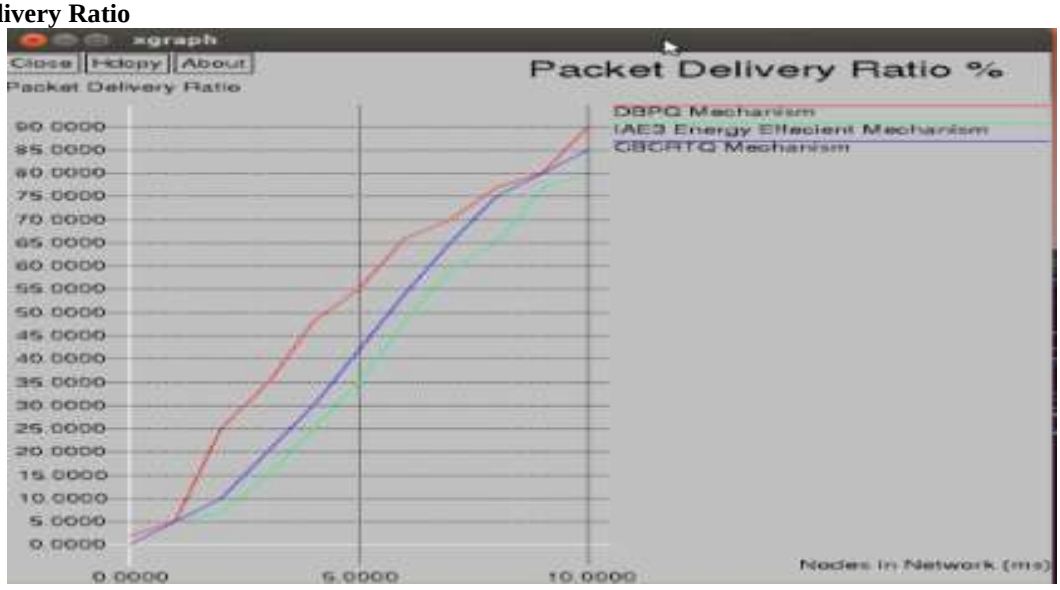

Fig: 5 Multiple Queuing Packet Delivery ratio analysis

End to End Delay analysis

It is realize that end-to-end holdup of a system with node thicknessparameterbegin at about 40 seconds and increase to about 96 seconds with a less time of message. This remainsteady even with the modify in MAC layer protocols and (or) variations in encoding strategy.[5]

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Fig: 6multiple queuing End to End Delay analysis

Jitter Analysis

The jitter of voice message in the MANET utilizeAMQD routing methodology is less than 0.1sec as message time amplified and it at home its uppermost level between 75 to 85 seconds. This resourcesincessantcommuniqué MAC layer protocol also has no effect on voice jitter.[7]

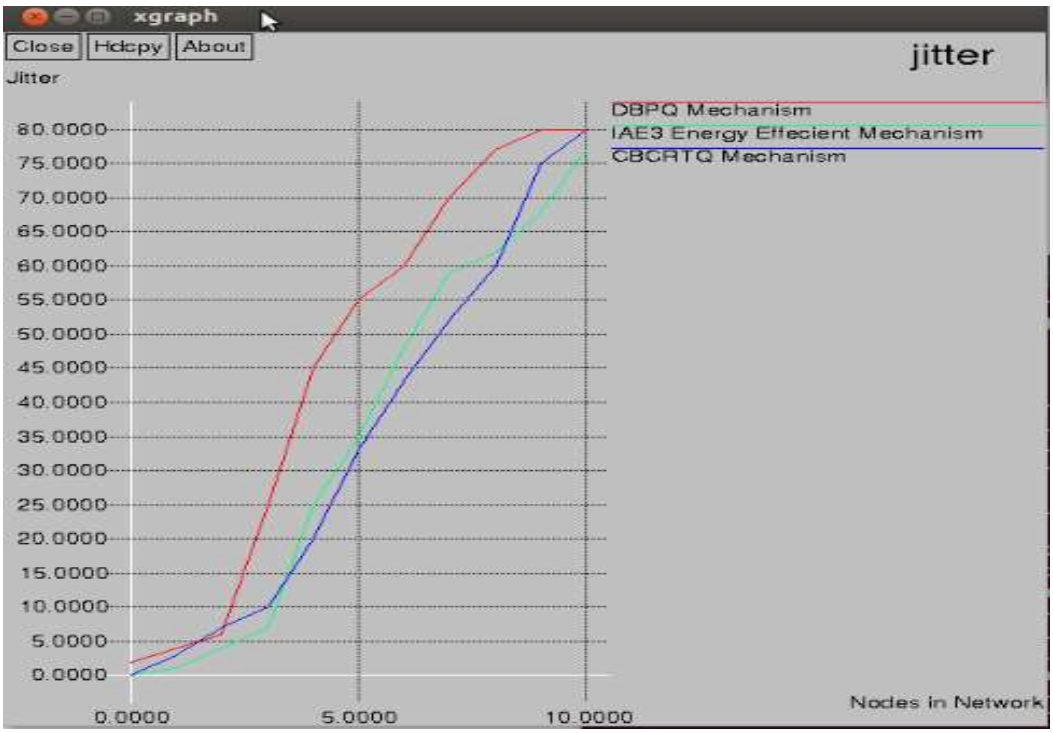

Fig: 7 Multiple queuing Jitter analysis

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Random Way point Model

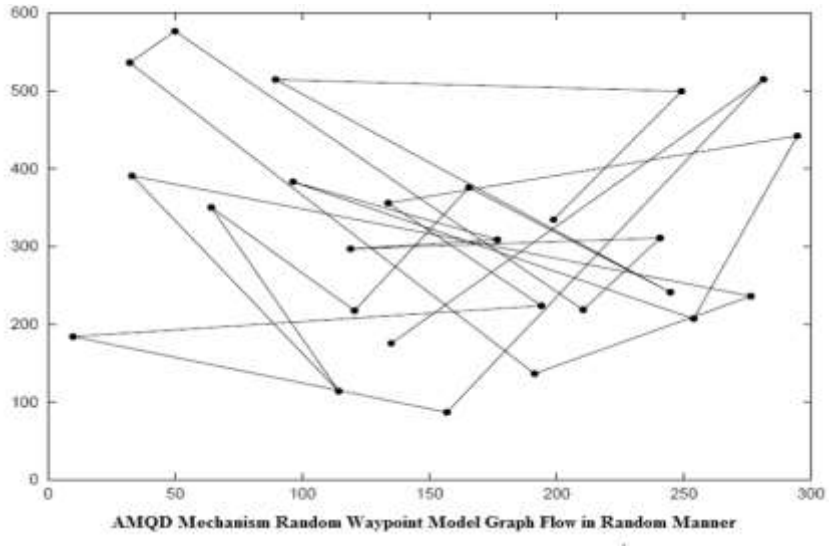

Fig: 8 Random Waypoint Model

The AMN (Adaptive Maximum node)isoriginallydispersedarbitrarily around the imitation area.The high unpredictability in average AMN neighbor proportiondeterminationcreates high unpredictability in presentation.

At the moment, three likelysolution to avoid this initialization difficulty.Put aside the site of the AMNs following a simulation has execute long. At firstdeal out the AMNs in a modethose maps to a sharing more ordinary to the model. Finally, discard the initial 1000 seconds of simulation time.A multifacetedassociationflanked by node speed and pause time.If the Random Waypoint Mobility replica is second-hand in a recital evaluation.[25][12]

CONCLUSION

This research evaluates the presentation and performance of VoIP over MANET by applying AMQD mechanism under various voice codec schemes in Network simulation tool. A comparison has been conducted between two of voice codec scheme. This contrastmeant to recognize which codec offer more acceptablepresentationactions for request like VOIP. A choice which codec offers more acceptablepresentationgauge results is only made depending on varying the number of users;the result shows a selection of G.711 and G723 codec in a simulation. And the configuration of Random waypoint model respectively algorithms performs better, achieving a lower discards rate and lower overall delay.This dissertation work minimizes end-to-end data transmission delay & average packet waiting time and increase overall throughput Experimental results show that the proposed random packet scheduling scheme has better performance than the existing queuing.

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