E^2RPQ- Enhanced Energy Receiver Priority queuing Algorithm for VoIP (QOS) Over MANET

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Abstract

Energy Efficient in the VoIP broadcast is the main criterion and issue to be maintaining the small package and data as dispensation VoIP (QoS) over MANET environment. Mobile Adhoc network (MANETs) presents a good stage for the fast use of VoIP services in many request scenarios. The energy competence in handset mechanism for the data small package of say in the queue scheme has not been intense which actually consume the more power as in the queue buffer organization. MANET give a substantial difficulty that makes the broadcast of real-time applications like VoIP a great confront due to inadequate energy for small package transmission. In this investigate a new algorithm is future which enhance the presentation of energy in MANET transport VoIP traffic. Through a simulation and arithmetical look we analyze and assess QoS indicators such as Distance, power, Bandwidth. Several voice codec are studied to determine their effect of inadequate power. Hence a QoS based Intelligent Enhanced Energy Receiver Priority queuing Algorithm for VoIP (QOS) Over MANET. The main objective of this paper is to segregate the distance using RSSI (Received Signal Strength Indicator) energy altitude as per detachment the bandwidth is assign by using our E^2RPQ signal barrier algorithm in MANET surroundings. In huge and lively networks, central algorithms are not suitable due to the lack of responsiveness. The bandwidth allocation is done by E^2RPQ signal buffer algorithm.

Keywords- MANETs, VoIP (QOS), WSN

I. INTRODUCTION

A variable ad hoc system (MANET) is a gathering of wireless mobile hosts which carefully form a scheme. One of the dangerous issues in such application is stand for by the limited ease of use of authority within the scheme and hence use power is very important extra than a few method have be bring in for economy power, such as the use of authority well-organized routing and switching flanked by sleep/active modes for sensors generate a large amount of data in which has to be collective at various levels. The ordered node-energy use in mobile ad-hoc. The aspire of this algorithm is to reduce the power use of the mobile nodes in the system QOS (Quality of Services) appearance in a VoIP Context in sense of power analysis. Network Simulator 2 (ns2) is used to run several simulations, we have established for excise algorithm technique present is some drawback due to overcome those disadvantage we have future a new energy algorithm is called - Enhanced Energy Receiver Priority queuing Algorithm for VoIP (QOS) Over Manet.

II. RELATED WORK

1) Wanli Zhang: In order to overcome the problem of low correctness of the localization algorithm base on RSSI, a better RSSI-based location algorithm is obtainable in this paper. To avoid the influence of the final position caused by error of a single RSSI dimension value, first, middle model is used to right each value of RSSI, then, correct value of RSSI is used to approximation the size of the distance flanked by network nodes which can converse, finally entitled anchor node is used to calculate the position of the unknown node in this algorithm. The algorithm is simple,
2) Forough Yaghoubi: Proposed —Sensor position is a basic block in many location-dependent application of networks. Although the major thing in localization is primarily enhancing the position accuracy, the importance of the energy consumption and localization correctness pose new challenge. The localization is usually assisted with some self-known place sensors called anchor nodes.
3) Zin: Proposed there are more than a few researches that have be complete for power well-organized in Mobile Ad hoc network surroundings particularly for Transmit and receive energy.

A. MANET Overview

MANET (Mobile Ad-hoc network) is self-governing network consisting of two or more movable nodes ready with wireless communication and therefore is self-configuring communications less networks. The infrastructure, agility and low cost are the

main kind of MANETs. A precondition of MANETs is that these network should allow for multi-hop message, while in the customary idea additional frequently than not single-hop communication is used (from the base station to the user and vice versa).MANETs allow message not only flanked by a base station and its users, but also directly flank by individual users. Hence, within a limited region multiple transmissions might take place at the same time as.

III. PROBLEM IDENTIFICATION

Wireless sensor network (WSN) application such as reporting calculation, occasion discovery, Purpose track, and site conscious routing [1]. In such request, sensors nodes are categorized into close nodes (AANs) and unidentified nodes (AUNs). The main difference in the middle of them is that the AANs be acquainted with their location, for example with the help of GPS, while they are unidentified for the UNs [1].

A. Characteristics of MANET

When a node tries to propel in order to additional nodes which is absent of its message variety, the small package be supposed to be forward via one or more middle nodes. In MANET, each movable lump is a self-governing node, which could purpose as both a crowd and a router. Establish their own network. In most cases, the nodes at MANET are movable with less CPU ability, low power storage space and small reminiscence size. The wireless message average is easy to get to any entity with the suitable gear and adequate capital. So right of entry to the channel cannot be restricted.

IV. EXISTING DRAWBACK METHODOLOGIES

The extremely active and unbalanced nature of MANET's makes it hard for the Cluster base routing protocol to split a mobile system into clusters and strength of mind of cluster heads for every cluster. Clustering reduce message and control expenses due to pre decisive paths of communication from side to side cluster heads. It is very important for scalability of media right of entry protocols, routing protocols and the safety infrastructure [3]. Routing protocols which consider merely bidirectional links may have link irregularity due incompetent or irregular navigation. Unused network ability is representing by the undiscovered unidirectional links, which reduces the network connectivity.

One of the major drawbacks of clustering in MANETs is that a number of nodes eat more power when compare to others nodes of the similar cluster. As particular lump like a cluster-head or a cluster-gateway run and forward all mail of the local cluster their power use.

V. PROPOSED OVERVIEW ENHANCED ENERGY RECEIVER PRIORITY QUEUING ALGORITHM FOR VOIP (QOS) OVER MANET

The process of in the middle of the system into united substructures is called node movement and the unified substructures are called E²RPQ. The Priority Weight head (PH) of every cluster act as a manager within the base. Each PH acts as a provisional base place within its region or cluster. It also communicate with additional PHs [2].

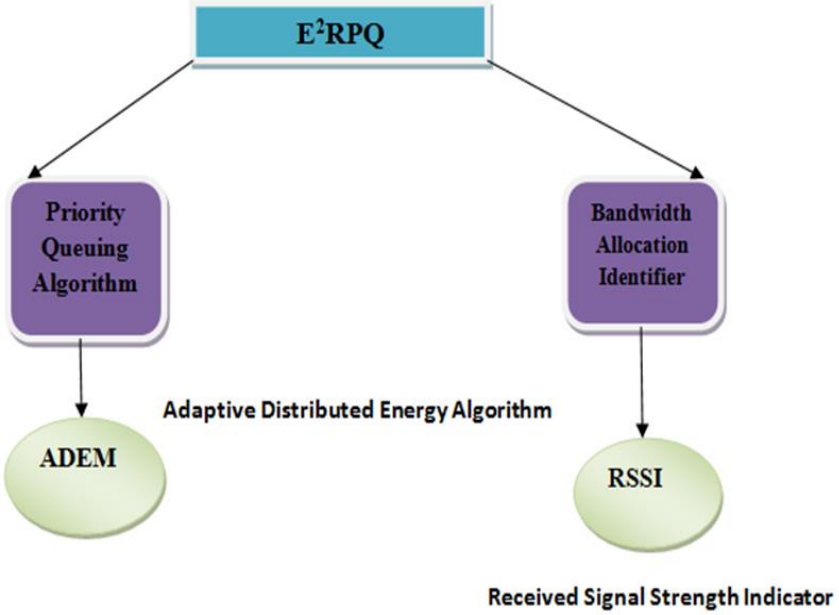


Fig. 1: Classification Diagram of Proposed Algorithm

Table 1: Frame Format

ST.B (1 Bit)	*NID (1 Byte)*	*H.C (1 Byte)*	*DIST (1 Byte)*	*A (1 Byte)*	*DID (1 Byte)*	*STOP (1 Bit)*

ST.B—Start Bit; NID-Node ID; H.C-Hop Count; DIST: Distance; A-Acknowledgement; DID-Destination ID; STOP-Stop Bit

A. Proposed Protocol Working Mechanism

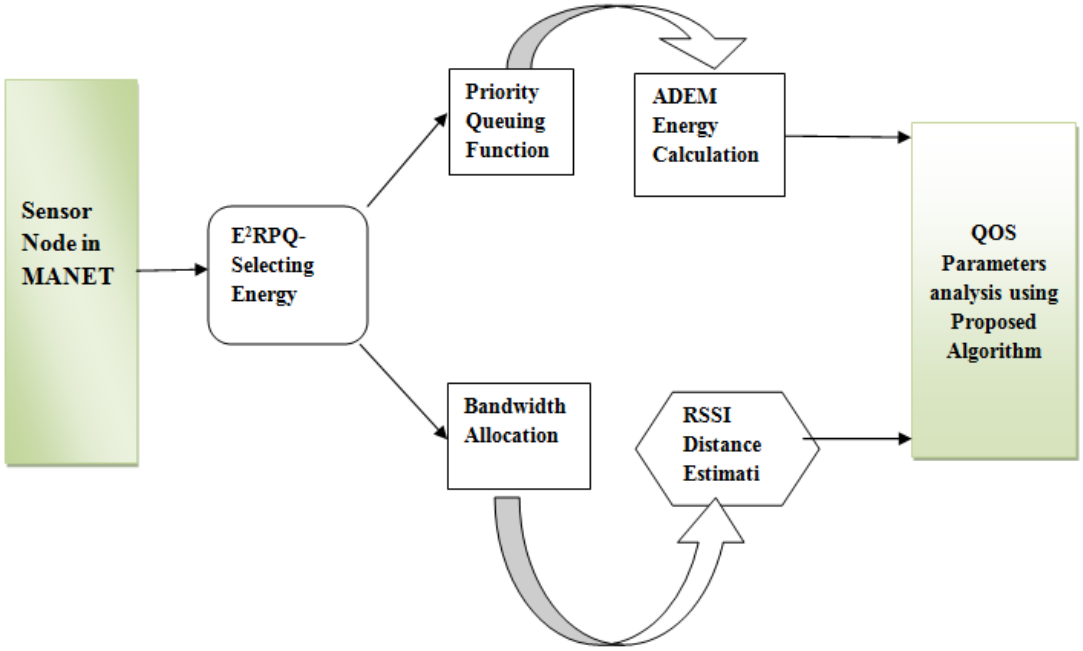


Fig. 2: Functional Diagram

1) E²RPQ- Enhanced Energy Receiver Priority queuing

Base Internet Protocol in Manet over IPv6 base direction-finding transfer running to therapy 128 bit format, the last aim is to provide study traffic organization in cluster base Mobile ad-hoc environs. To provide improved Quality of Services (QoS) in dissimilar parameter. [2]

2) Priority – Head (PH) Algorithm

It use place in order for node pattern. It selects the lump head as of the highest degree node inside an area. To analysis the node in little pack up flow in First comes First Out in main concern essential arrival machine in group of nodes in cluster backdrop.

3) Bandwidth-Identifier (BI) Algorithm

The node with the negligible quantity identifier (ID) is chosen as a cluster head. This cause bandwidth room bit in resultant a short lifetime distance of the scheme. The coldness view flank by nodes for allocates the traffic flow in exacting bandwidth Head assortment.

4) Adaptive Distributed Energy Mechanism (ADEM)

It is a customized clarification of the Energy Identifier algorithm. Each cluster chooses their cluster as of its adjoining nodes have the lowly ID. In this algorithm each lump can create a result its cluster and only one come together, and transmit only one communication.

5) Received Signal Strength Indicator Algorithm (RSSI)

RSSI-based site algorithm uses the standard of all intended site as position opinion of the unknown nodes, also exaggerated by ecological factors. This makes the algorithm correctness is not high in energy forced ecological change in wireless sensor network.

B. Message Format Proposed Algorithm

1) Adpt_Config_Request: The note is second-hand to create an Auto configuration armed forces request after in receipt of a Discovery message.
2) Node_ initialized in different routing mechanism
3) Sele_Priority _Head: selection of priority Head in Manet route Mechanism…

4) _Request: this message is used to request an On-line joint IP address and key options.
5) Security _ Alert: this communication enable new when a hateful node is exposed along the node.

C. Proposed Algorithm E²RPQ New Priority Queue Formation

1) Income Nodes Packet –Ni
2) Check Node Sequence – Ns-#
3) Check Selection head highest priority Seq-Ps #
4) if

Seq # --→ all the nodes

5) then

Check Black List
if
Black List is un-check
Then
Select high, low, medium head
Else
Reject

6) end if.

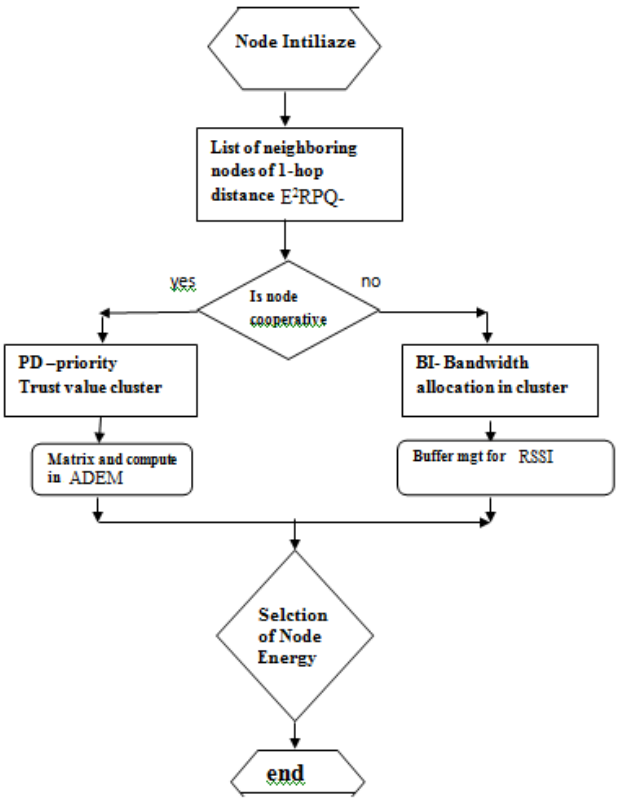
D. Formation Algorithm RSSI Mechanism

Contribution: Set of uni cast node
Output: Set of nearest node
Begin High Priority selection =1*/
Repeat
Select a priority node which belongs to cluster traffic which is 1 hop distance apart from other participating nodes with a small length.
Do
Compute a cluster the priority based head high selection.
While ni = nj
Node is formed with corresponding lying with in cluster.

E. Algorithm formation for Bandwidth

DBl-----→ Distance Bandwidth for long
DBs----→ Distance Bandwidth for Short
$Time_{arrival}$--→ loop counter for Distance Estimation
Evaluated RSSI distance estimation in Bandwidth separation
While
Time – arrival value at dis T A
/**********Remains….go while as Selection Head**********/
End while
If(Time < RSSI D1>D2>D3)
/*********The RSSI formation is true**********/
Else
{
Both D1 & D2
Bandwidth for long in estimation…
End

VI. FLOW CHART FOR E²RPQ



VII. SIMULATION AND RESULTS

The replication is done in NS2 simulator. To replicate and appraise the unit, it is helpful to use the unlock source network simulator, NS-2. NS-2 is a distinct event simulator written in C++ and Otcl for network study. It workings at small package level and schedule the actions such as small package and clock end. It provides large support for simulation of TCP, direction-finding, and multicast protocol over wired, wireless and satellite network. NS2 is not a real time simulator. In its place of treatment the proceedings at the similar time, the centric event scheduler handle proceedings one by
One. Though it is not a grave problem since the events are often transitory in most network simulations.

A. Real time Simulation Overview

Simulation in NS2 is which consists of generating the following input files to NS2.
A communication file that describes the traffic in the network.

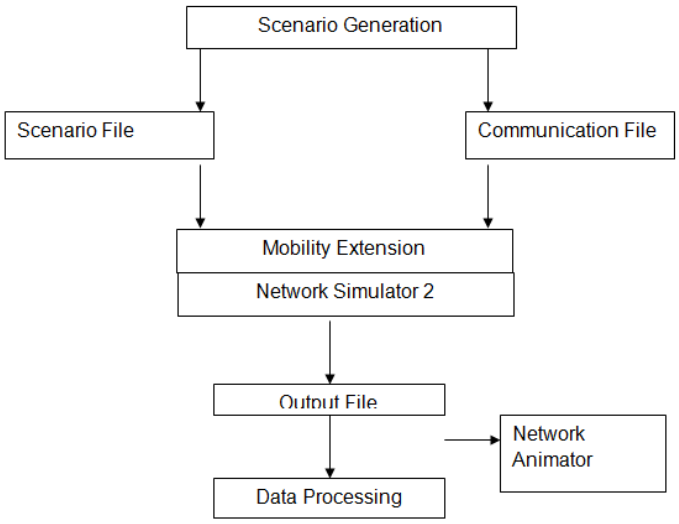


Fig. 3: Data Processing

These files can be generating by totally randomized movement and message pattern with a script. These files are then used for the simulation and as a result from this, a trace file is generating as output. Prior to the simulation, the parameter that is going to be traced during the simulation must be chosen. The trace file can then scans and analyze for the various parameters that can be calculated. This can be used as data for plots and to imagine the simulation run with NAM.[12]

B. Traffic Model

Incessant bit rate (CBR) transfer source are second-hand. The source-destination pair is adding to arbitrarily in surplus of the scheme. Only 512-byte data packet is used. The figure of source-destination pairs and the small package distribution rate in each pair is diverse to change the obtainable load in the system.

C. Mobility Model

The model uses the random waypoint replica in a rectangular field. Simulation is run for 30 second. The same mobility and transfer scenario are used crossways protocol to meet fair results. Mobility model were shaped for the simulation using 28 nodes, with pause times of 5.05 seconds, maximum speed of 20 m/s, topology boundary of 500m × 500m and simulation time of 30 sec. It be supposed to be noted that as the transmission range increases, the Cluster head covers more number of nodes that are within its transmission range. Therefore, the figure of Clusters decreases as the transmission range increases.

Table 2: Functions used for programming E²RPQ

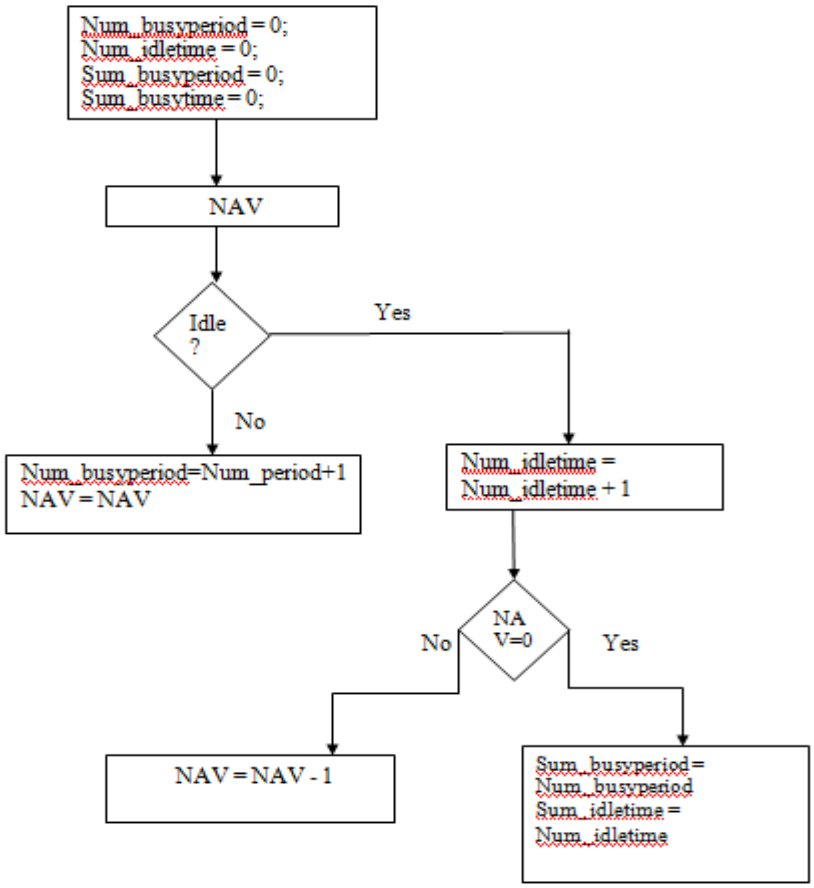
Function Name	*Functionalities*
Init_AODV( );	*Initial Routing mechanism*
Select _Node Priority( );	*Selecting Node using WSN module*
Power_Down_Mode( );	*Analysis Power and Energy module*
NH_P( );	*Node Head to Priority initialization*
BW ENC_Msg_Tx( );	*Bandwidth allocation*
E²RPQ _Init( );	*Initialization of Energy protocol*
Read_DIS( );	*Reading of Distance in node*
Compare ( );	*Look for RSSI and Bandwidth*
Decision( );	*Make a decision on transmission*
Reconfig_RSSI( );	*Reinitialize / Change the NHS commands*

The PH & BA algorithm was developed using the above functions using queuing and cluster logic. The life time of the network can be calculated depending on the energy consumption of the each node at each and every phase.

Table 2: Result performed in E²RPQ

No of nodes	*20*
No. of Flows	*20*
Propagation Model	*Two-ray Ground Reflection*
Area Size	*1000 m X 1000 m*
Radio Frequency	*2.4 GHz*
MAC	*IEEE 802.15.4*
Simulation Time	*600 sec*
Transmission Range	*250 m*
Routing Protocol	*AODV protocol*
Traffic Source	*CBR*
Packet Size	*512 Bytes*
Radio Transmitting Power	*7.88 dBm*
Radio Receiving Sensitivity	*-91 dBm*
Radio Receiving Threshold	*-81.0 dBm*
Initial Energy	*100 J*

D. Flow chart RSSI mechanism



E. Experimental Section

The better algorithm future in this paper is replicated by using Network Simulator 2. Simulation environment set the Manet network located within 1000 × 1000 area, mobile nodes and unknown nodes are randomly distributed in the

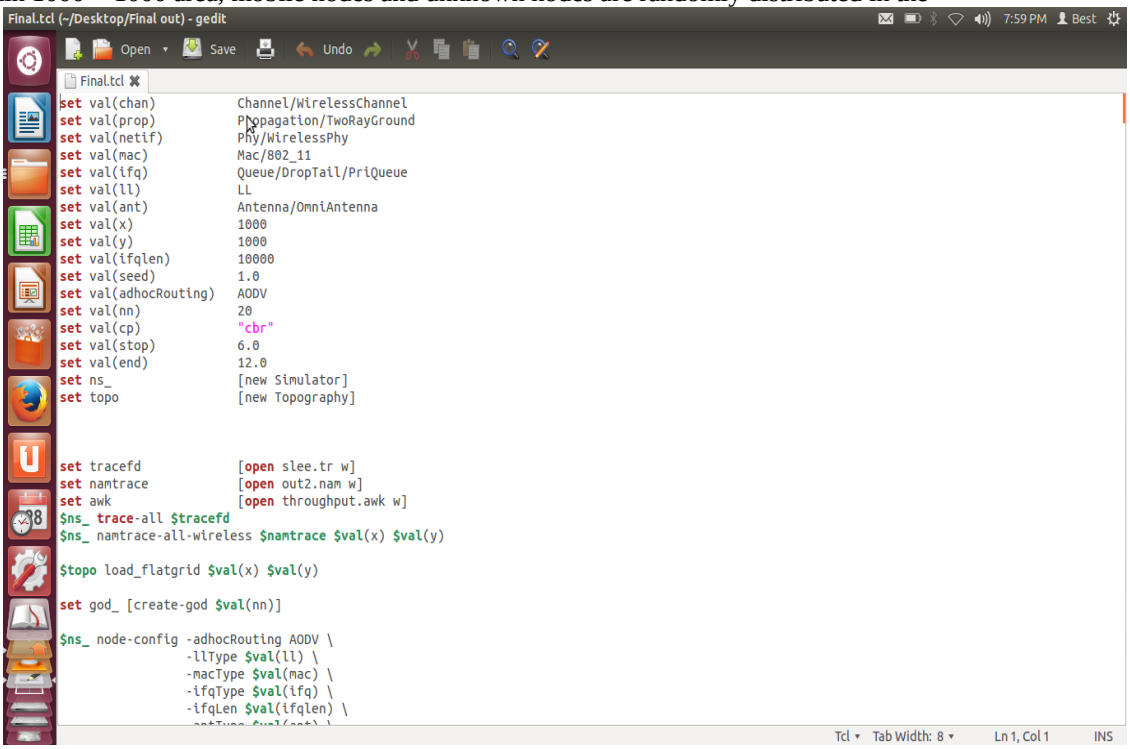


Fig. 4: Tool command Language script analysis

F. Results and Discussion

To authenticate the algorithm whether eliminate the effects of path loss and time factor for positioning, system simulation simulates the kinds of environment. In simulated environment 1, assuming Distance attenuation factor of the radio

Propagation model n = 2.2. In simulated environment 2, assuming path attenuation factor of the NAM (Network Animation Window) n = 4.8. Two kinds of the simulated environment in the above, the mobile nodes are taken sequentially as 20 the simulation results is illustrated in Figure.

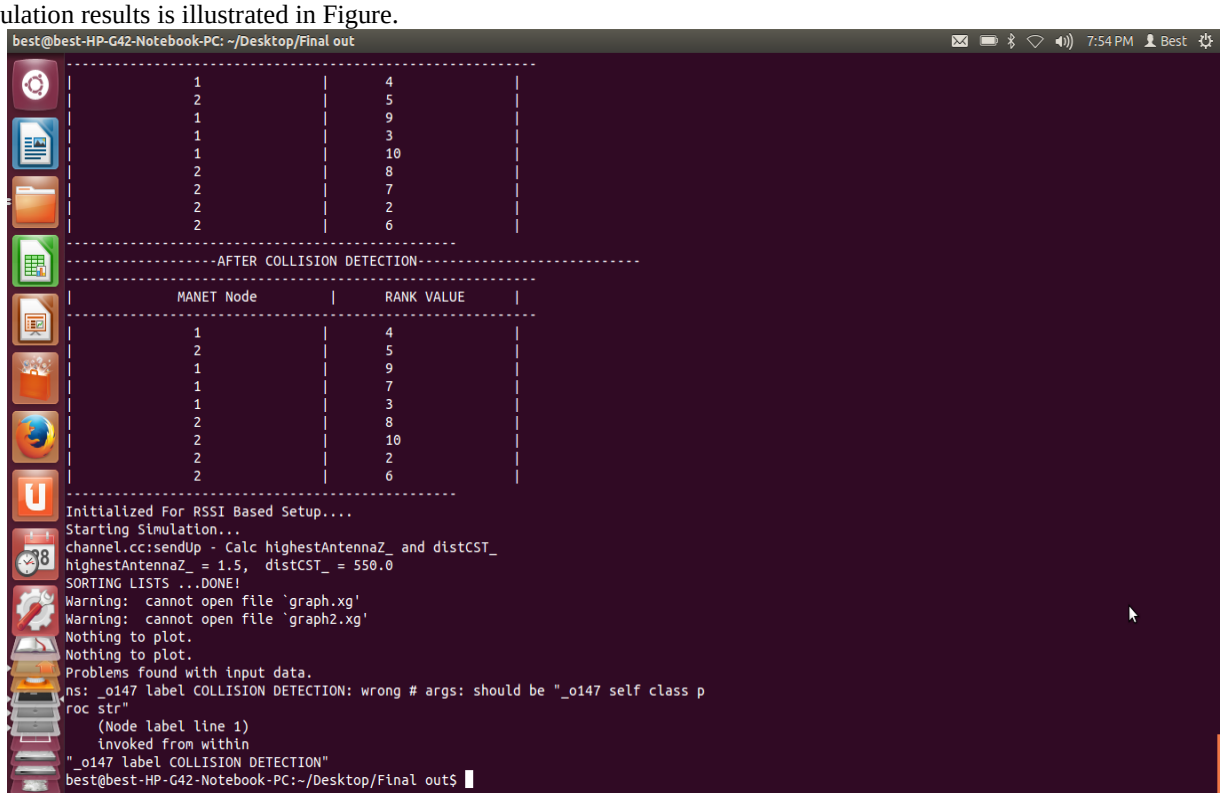


Fig. 5: RSSI Distance Calculation from sender node to receiver node.

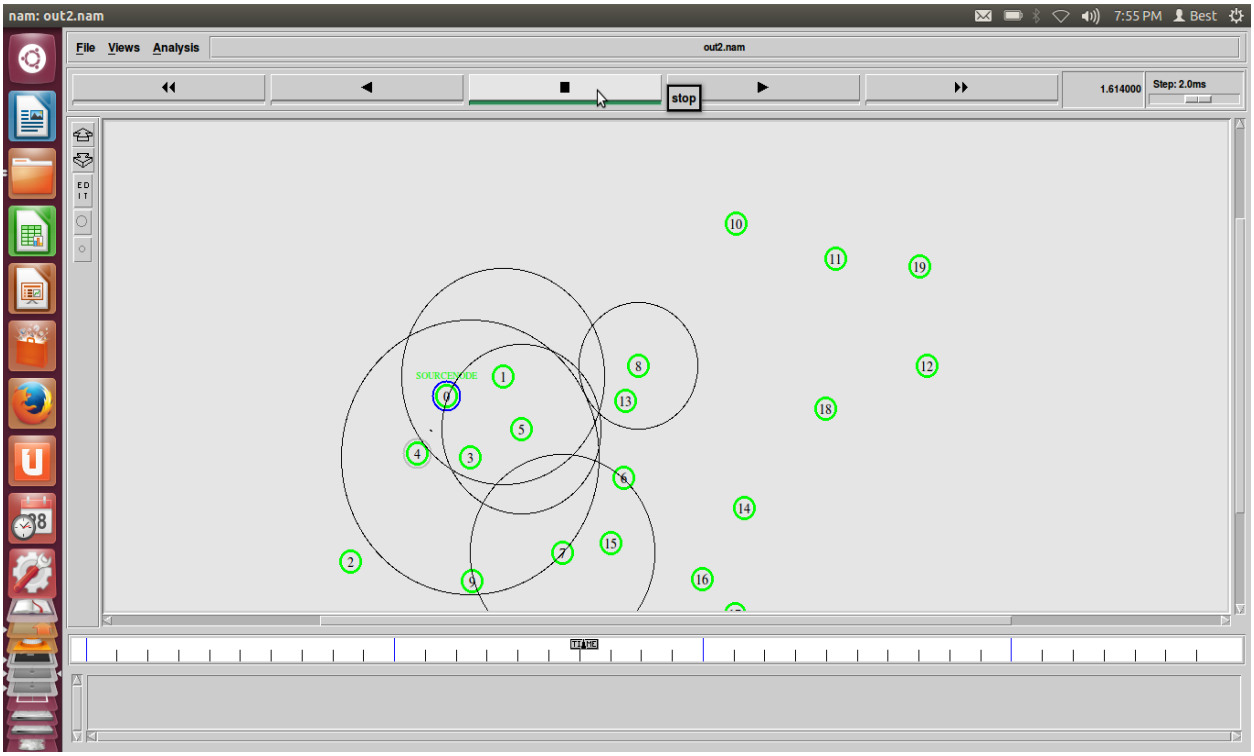


Fig. 6: To Calculate RSSI (Received Signal Strength Indicator) for node in MANET

Node increases power decreases constantly due to RSSI Methodology

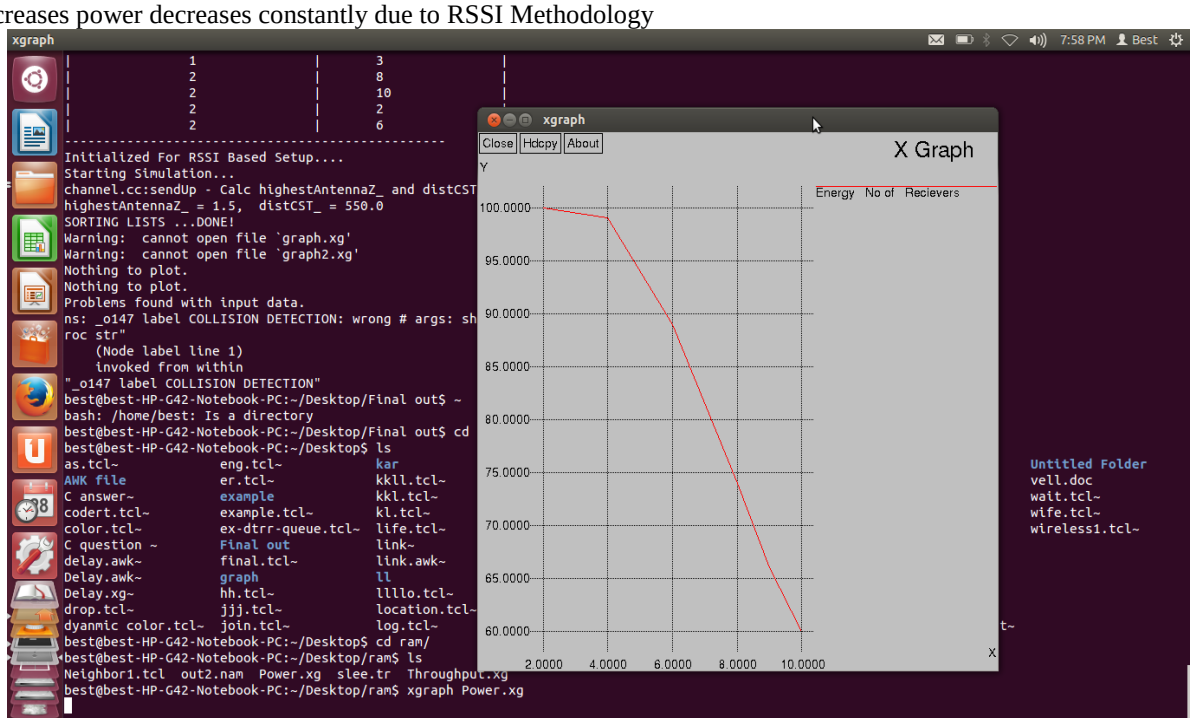


Fig. 7: for Energy analysis graph

VIII. CONCLUSION AND FUTURE WORK

This paper presents a new RSSI-based wireless sensor network node localization algorithm Reflection, multi-path propagation, non-line of sight, antenna gain, etc. produce significant changes on the propagation loss, whatever the positioning algorithm is used, located by RSSI measurements are obtain a better positioning results. RSSI measurements randomness is corrected by using median method to Suppress RSSI random fluctuations. By the relative relationship of distance between the nodes can calculate the distance between nodes and eliminate the effect of path loss factors. In order to better adapt Throughput, Power consumption the improved algorithm only selects qualified mobile nodes to locate unknown nodes. The algorithm is less demanding on the hardware. Simulation results demonstrate that range accuracy has been greatly improved than ordinary RSSI ranging, Future phase-II has been analysis QOS(Quality of Service) in new tool called APP(Automatic Post Processing) tool for Different Queue and routing mechanist to calculate the Energy in Manet environment. Increasing network traffic situation. It meets the localization ranging request of most wireless sensor network.

REFERENCES

[1] D. Niculescu and B. Nath, "Ad Hoc Positioning System (APS) using AOA," in Proceedings of IEEE International Conference on Computer Communication (INFOCOM), pp. 1734-1743, March, 2003.
[2] T.V. Srinath, "Localization in Resource Constrained Sensor Networks Using A Mobile Beacon with In-ranging" in Proc. IEEE WOCN, April 2006.
[3] J. Caffery, J. Heidemann, and D. Estrin, "GPS-less low cost outdoor localization for very small devices", IEEE Personal communications, vol.7, no.5,pp.28-34, October 2000.
[4] K. Sohrabi and G.J. Pottie, "Performance of a novel selforganization protocol for wireless ad hoc sensor networks," in Proc. IEEE 50th Vehicular Technology Conf., pp. 1222–1226,1999.
[5] K.F. Su, C.H. Ou and H.C. Jiau, "Localization with mobile anchor points in wireless sensor networks," IEEE Trans, vol. 54, no. 3, pp. 1187-1197, May 2005.
[6] G. Yu, F. Yu and L. Feng, "A Three Dimensional LocalizationAlgorithm Using a Mobile Anchor Node under Wireless Channel", WCCI 2008.
[7] B. Priyantha, C. Anit, and B. Hari, "The Cricket Location-Support System," in Proc. MobiCom 2000, pp. 32-43, August 2000.
[8] K.F. Ssu, C.H. Ou and H. C. Jiau, "Localization with mobile anchor points in wireless sensor networks," IEEE Trans, vol. 54,no. 3, pp. 1187-1197, May 2005.
[9] M. Boushaba, A. Hafid, and A. Benslimane, "High accuracy localizationmethod using AoA in sensor networks," Comput. Netw., vol. 53, no. 18,pp. 3076–3088, 2009.
[10] A. Savvides, C. Han, and M. B. Srivastava, "Dynamic fine-grained localization in ad hoc networks of sensors," in Proc. ACM MobiCom, Jul. 2001, pp. 166–179.
[11] P. Bahl and V. N. Padmanabhan, "RADAR: An in-building RF-based user location and tracking system," in Proc. IEEE 19th Annu. Joint Conf. IEEE omput. Commun. Soc., Jun. 2002, pp. 775–784.
[12] D. Niculescu and B. Nath, "Ad hoc positioning system (APS) using AOA," in Proc. IEEE 22nd Annu. Joint Conf. IEEE Comput. Commun. Soc., Mar.–Apr. 2003, pp. 1734–1743.
[13] J. Hightower, G. Borriello, and R. Want, "SpotON: An indoor 3D location sensing technology based on RF signal strength," Dept. Comput.Sci. Eng., Univ. Washington, Seattle, WA, USA, Tech. Rep. UW CSE 00-02-02, Feb. 2000.
[14] G. Zhou, T. He, S. Krishnamurthy, and J. A. Stankovic, "Models and solutions for radio irregularity in wireless sensor networks," ACM Trans. Sensor Netw., vol. 2, no. 2, pp. 221–262, May 2006.

[15] N. Bulusu, J. Heidemann, and D. Estrin, "GPS-less low cost outdoor localization for very small devices," IEEE Pers. Commun., vol. 7, no. 5, pp. 28–34, Oct. 2000.
[16] D. Niculescu and B. Nath, "DV based positioning in ad hoc networks,"Kluwer J. Telecommun. Syst., vol. 22, no. 1, pp. 267–280, Jan. 2003.
[17] C. Savarese, J. Rabaey, and K. Langendoen, "Robust positioning algorithmsfor distributed ad-hoc wireless sensor networks," in Proc. General Track Annu. Conf. USENIX Tech. Annu. Conf., 2002, pp. 317–327.80
[18] S. Tian, X. M. Zhang, P. X. Liu, P. Sun, and X. G. Wang, "A RSSI-based DV-hop algorithm for wireless sensor networks," in Proc. IEEE Int. Conf. Wireless Commun., Netw. Mobile Comput., Sep. 2007,pp. 2555–2558.
[19] T. He, C. Huang, B. M. Blum, J. A. Stankovic, and T. Abdelzaher,"Range-free localization schemes for large scale sensor networks," in Proc. ACM MobiCom, Sep. 2003, pp. 81–95.
[20] M. Sichitiu and V. Ramadurai, "Localization of wireless sensor networks with a mobile beacon," in Proc. IEEE Int. Conf. Mobile Ad-Hoc Sensor Syst., Oct. 2004, pp. 174–183.
[21] N. B. Priyantha, H. Balakrishnan, E. D. Demaine, and S. Teller, "Mobile-assisted localization in wireless sensor networks," in Proc.IEEE 24th Annu. Joint Conf. IEEE Comput. Commun. Soc., Mar. 2005,pp. 172–183.
[22] Muddenahalli, T.N., Takawira, F.: 'DRMACSN: new MAC protocol for wireless sensor networks'. Southern African Telecommunications and Network Access Conf., Royal Swazi Spa, Swaziland, August 2009
[23] Haapola, J., Shelby, Z., Pomalaza-Raes, C., Mahone, P.: 'Multihop medium access control for WSNs: an energy analysis model', EURASIP J. Wirel. Commun.Netw., 2005, 2005, (4), pp. 523–540
[24] Muddenahalli, T.N., Takawira, F.: 'Queuing analysis of distributed and receiver-oriented sensor networks: distributed DS-CDMA-based medium access control protocol for wireless sensor networks', IET Wirel. Sens. Syst., 2013, 3,(1), pp. 69–4 Zhai, C., Luu, J., Zheng, L., Xu, H.: 'Lifetime maximization via a new cooperative MAC protocol in WSNs'. IEEE GLOBECOM, 2009
[25] Liu, P., Tao, Z., Narayanan, S., Korakis, T., Panwar, S.S.: 'CoopMAC: acooperative MAC for wireless LANs', IEEE J. Sel. Areas Commun., 2007, 25,(2), pp. 340–354
[26] Mainaud, B., Affifi, H., Gauthier, V.: 'Cooperative communication for wirelesssensor networks: a MAC protocol solution' (Wireless Networks and MultimediaServices Department, Institute Telecom, Sud-Paris, 2011), ISBN:978-1-4244-2829-8
[27] Fotouhi Ghazvnii, M.H., Vahabi, M., Rasid, M.F.A., Raja Abdullah, R.S.A.:'Energy efficiency in MAC 802.15.4 for wireless sensor networks'. Proc. Of IEEE 2008 Sixth National Conf. on Telecommunication Technologies and IEEEFig. 11 & The Institution of Engineering and Technology 20152008 Second Malaysia Conf. on Photonics, Putrajya, Malaysia, 26–27 August2008, ISBN: 978-1-4244-2215-9
[28] Biswas, S., Datta, S.: 'Reducing overhearing energy in 802.11 networks bylow-power interface idling'. IEEE Int. Conf., 2004 9 Proakis, J.G.: 'Digital communications' (McGraw-Hill, 1995)
[29] Shan, H., Zhuang, W., Wang, Z.: 'Distributed cooperative MAC for multihopwireless networks', IEEE Commun. Mag. Cooperative Relay Netw., 2009, 47(2), pp. 126–133, ISBN:0163-6804
[30] Ramakrishnan, M., Vanaja Ranjan, P.: 'Optimal power control with overhearingavoidance for wireless sensor networks' (Department of Electrical and Electronics Engineering, College of Engineering, Guindy, Anna University, Chennai, India, 2009)
[31] 'Chipcon AS SmartRF® CC2420'. Preliminary Datasheet. (rev 1.2), 2004-06-9
[32] IEEE 802.15.4 Standard group web site. Available athttp://www.ieee802.org/15