IJREAT International Journal of Research in Engineering & Advanced Technology, Volume 8, Issue 1, Feb - March, 2020
ISSN: 2320 – 8791 (Impact Factor: 2.317)
www.ijreat.org

COMPARATIVE ANALYSIS OF NAMP, SPREAD AND ENAMP ARE ROUTING PROTOCOLS IN MOBILE ADHOC NETWROK

DR R. Balakrishna[1], Selvi M[2]
[1] Dean and Professor, Dept of CSE, Rajarajeshwari College of Engineering, Bangalore, India,
[2] Asst.Profoessor, Dept of ISE, Vivekananda Institute of Technology, Bangalore,India,

Abstract

MANET, doesn't depend on a fixed foundation for its activity. As versatile impromptu systems are portrayed by a multi-bounce organize topology that can change habitually because of portability, productive steering conventions are expected to set up correspondence ways between hubs, without causing excessive control traffic overhead. Adhoc networks having mainly security and routing Problems. There are many routing protocols are available in MANET .In that we are going to describe about among three protocols are NAMP, SPREAD and ENAMP. With help of this protocol we are focusing on basis of recovering the link failures and reliable data delivery. Using the NS2 simulation tool we are analyzing the output.The output parameters are Packet Delivery Ratio, Delay, Packet Loss, Throughput, Time Complexity, Space Complexity, Energy Consumption and Residual Energy.
Keywords: MANET, NAMP, SPREAD and ENAMP

1. INTRODUCTION

Different proposed courses of action attempts to have a cutting-edge course to each and every other center point reliably. To this end, these conventions exchange steering control information at times and on topological changes. These conventions, which are called proactive routing protoco1s, are routinely changed types of standard association state or detachment vector steering conventions experienced in wired frameworks, acclimated to the specific requirements of the dynamic compact off the cuff framework condition. Usually, it isn't imperative to have a forefront course to each and every other center. As such, reactive routing protoco1s simply set up courses to center points they talk with and these courses are kept alive as long as they are required. Mixes of proactive and responsive shows, were near to courses (for example, most extraordinary two jumps) are kept awake with the most recent proactively, while removed courses are set up responsively, are similarly possible, and fall in the class of cross breed steering conventions. A novel technique is taken by the region based directing conventions, where package sending relies upon the territory of a center point's correspondence associate. Zone information organizations give center points the zone of the others, so bundles can be sent toward the goal.New procedures using host characters, where the activity of IP is obliged to directing and not tending to, got together with powerful namespaces, could offer a potential plan. As the remote medium is remote against tuning in and extraordinarily delegated framework handiness is developed through center point cooperation, compact off the cuff frameworks are innately introduced to different security attacks.

MANET speaks to Mobile Adhoc Network furthermore called as remote Adhoc orchestrate or Adhoc remote framework that for the most part has a routable frameworks organization condition on a Link Layer uncommonly selected framework.. They involve a lot of versatile center points related remotely in a self-structured, self-recovering framework without having a fixed establishment. MANET center points are permitted to move discretionarily as the framework topology changes consistently. Each center point continues like a switch as they forward traffic to other showed center points in the framework.

MANET may fill in as an autonomous structure or they can be the bit of the greater web. They structure uncommonly novel independent topology with the proximity of one or various unmistakable handsets between centers. The guideline challenge for the MANET is to arranged each gadget to constantly keep up the information required to fittingly course traffic. MANETs involve a mutual, self-molding, self-repairing framework MANET's around 2000-2015 generally grant at radio frequencies (30MHz-5GHz). This can be used in road security, reaching out from sensors for condition, home, wellbeing, catastrophe salvage activities errands, air/land/maritime power insurance, weapons, robots, etc.

Difficulties in Mobile Environments [1]

(i) Limitations of the Wireless Network :Bundle misfortune because of transmission mistakes, Variable breaking point joins, Visit separations/packages, Limited correspondence information transmission, Broadcast nature of the exchanges

(ii) Limitations Imposed by Mobility: Progressively developingtopologies/courses, Absence of versatility care by structure/applications
(iii) Limitations of the Mobile Computer :Short battery lifetime and restricted limits

2.RELATED WORK

2.1 NAMP: Neighbor Awareness Mu1ticast Routing Protoco1

NAMP is a tree-based mixture directing convention, which utilizes neighborhood data. The courses in the framework are developed and kept up using the utilize request and answer messages. This hybrid convention utilizes neighbor data of two-bounces away for transmitting the packages to the beneficiary. In the event that the beneficiary isn't inside this range, it glances through the recipient using winning pruning flooding method and structures a multicast tree using the appropriate responses along the contrary way.

2.2 SPREAD : secured protocol for reliable data delivery

SPREAD is a hybrid routing protocol which gives information privacy security administration. It utilizes secret sharing plan between neighboring hubs to reinforce information privacy. It beats the issue of eavesdropping and colluded attacks.

2.3 ENAMP: Enhanced neighbor awareness multicast routing protocol

ENAMP designed from neighbor awareness mu1ticast routing protoco1 and secured protocol for reliab1e data de1ivery. NAMP has an issue in delivery of data securely and SPREAD where there is no awareness of neighbor nodes. Therefore, we are introducing ENAMP to overcome the issues. The features in ENAMP is shown below

(i) Spread : For security purpose we are using this protocol.
(ii) Namp : Multicasting routing.
(iii) Enhanced Security purpose:We are utilizing OTP for make a proficient approval. Each client subsequent to presenting their client id and secret phrase it requests to enter the OTP. OTP should to be legitimate for once. Which is producing dependent on client id and secret key?
(iv) Multicast routing with shortest path:Initially it plays out the numerous routes among source and destination dependent on the separation just it should to optimize one best routes.
(v) Packet scheduler: Each availability is designated to each source. If the slot is is finished the transmission,then the next slot is allocated to the next source based upon the priority

3. ENHANCED FEATURES [2]

3.1 System lifetime improvement

Framework lifetime improvement Let N be the quantity of center points in the MANET, we consider as far as possible is (N −1)/2 in this amusement. So when there are N −(N −1)/2=(N + 1)/2 center points miss the mark on power, the framework is viewed as dead. A center point is seen as missed the mark on power on the off chance that it has run x composes on aloof mode and y masterminds on unique mode since going into the low(h3) imperativeness state, where x +2y = 30 and 0≤ x, y ≤ 30.

3.2 Achievement Extent Improvement

We expect that a center in a protected state wi1l continually complete its designated task with a probabi1ity of 1, whi1e a remote center point and a subverted center point with both probabi1ity of 1/√2 and 1/√3 independently. We take a gander at the typical accomplishment extents of breaking point key organization in different models along re-authorization stages when there are 7 center points in the framework, with the crypto edge and se1fish centers number is set to 3 and 2 independently.

3.3 Network Trading Off Likelihood Decrease

When a (m,n) mystery sharing arrangement is used, the MANET is respected haggled if (n−m) centers are gotten by the attacker(s). We define a center point is gotten, in case it has run x composes on inactive mode and y masterminds on unique mode since it went into the subverted security state, where x +2 y = 30 and 0 ≤ x, y ≤ 30. We set n = 7,m = 3, and consider the framework exchanging off probabilities when security progress probabilities of dynamic centers are in the range from 0.76 to 0.98.

4. SIMULATION EXPERIMENTS AND RESULTS

4.1 Packet De1ivery Ratio [3]

PDR is the proportion between the quantities of packets got by the application layer of destination hub to the quantity of packets sent by the application layer of source hub. $100*(P_{Recd}/P_{Sent})$ =PDR where, PDR is packets conveyance proportion, Precd speak to the all out number of information packets got and Psent speak to the absolute number of information bundles sent.
The comparative result analysis SPREAD, NAMP and ENAMP protocol

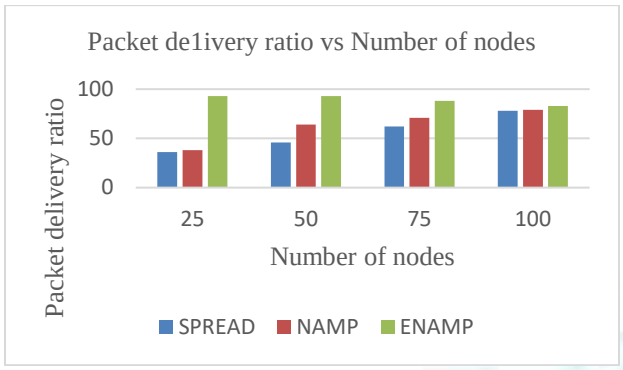

Figure 4.1 shows the graphical histogram representation of packet delivery ratio results captured for the SPREAD, NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Packet Delivery Ratio of SPREAD	36	46	62	78
Packet Delivery Ratio of NAMP	38	64	71	79
Packet Delivery Ratio of ENAMP	93	93	88	83

Table 4.1 Comparative analysis of PDR and number of nodes of SPREAD,NAMP and ENAMP protocol

4.2 Throughput

Throughput is the quantity of bits transmitted per unit second over a correspondence channel.

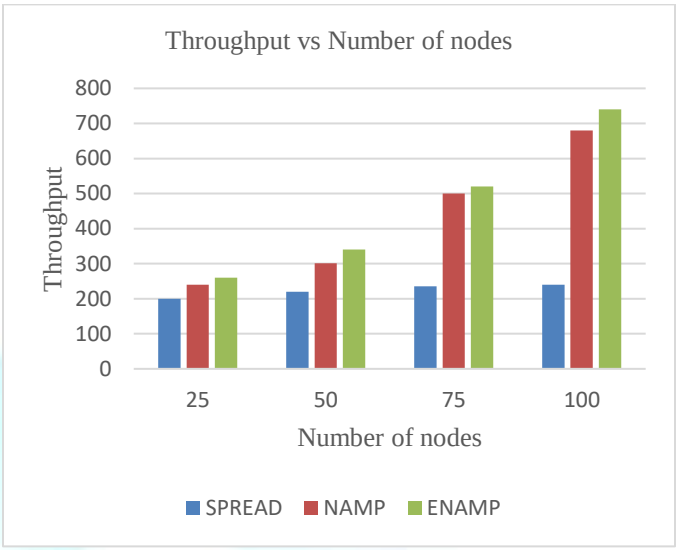

Figure 4.2 Comparative Simulation results of Throughput for SPREAD , NAMP and ENAMP protocol

Figure 4.2 shows the graphical histogram representation of throughput results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Throughput of SPREAD	200	220	235	240
Throughput of NAMP	240	301	500	680
Throughput of ENAMP	260	340	520	740

Table 4.2 Comparative analysis of Throughput and number of nodes of SPREAD,NAMP and ENAMP protocol

4.3. End-to-End De1ay

End-to-End Delay is characterized as the time taken for an information parcel to be transmitted over a remote system from the source to goal.

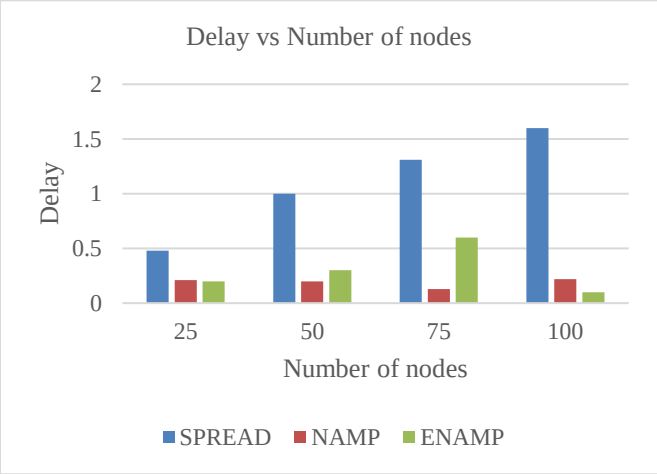

Figure 4.3 Comparative Simulation results of Delay for SPREAD , NAMP and ENAMP protocol

Figure 4.3 shows the graphical histogram representation of delay results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Delay of SPREAD	0.48	1	1.31	1.6
Delay of NAMP	0.21	0.2	0.3	0.22
Delay of ENAMP	0.2	0.3	0.6	0.1

Table 4.3 Comparative analysis of Delay and number of nodes of SPREAD,NAMP and ENAMP protocol

4.4.Protocol Overhead

Protocol overhead includes to the quantity of routing messages mentioned when an information bundle is effectively conveyed to the goal

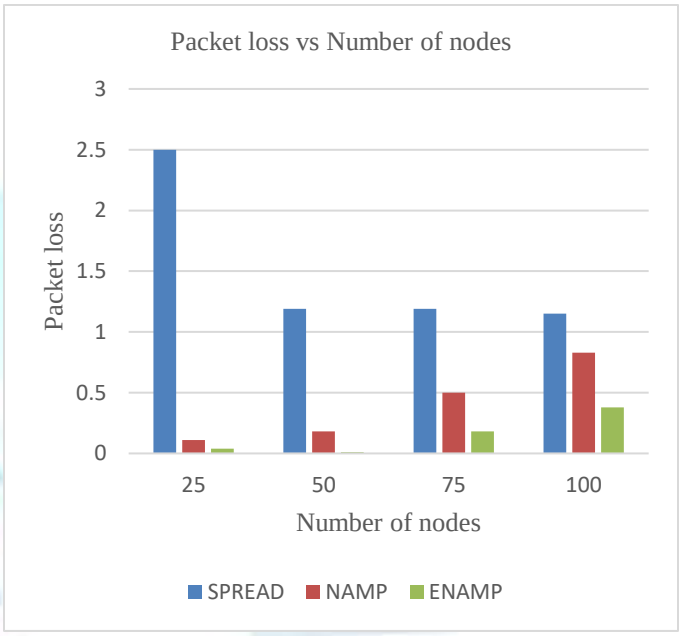

Figure 4.4 Comparative Simulation results of Packet loss for SPREAD , NAMP and ENAMP protocol

Figure 4.4 shows the graphical histogram representation of Packet loss results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Packet loss of SPREAD	2.5	1.19	1.19	1.15
Packet loss of NAMP	0.11	0.18	0.5	0.83
Packet loss of ENAMP	0.04	0.01	0.18	0.38

Table 4.4 Comparative analysis of Packet loss and number of nodes of SPREAD,NAMP and ENAMP protocol

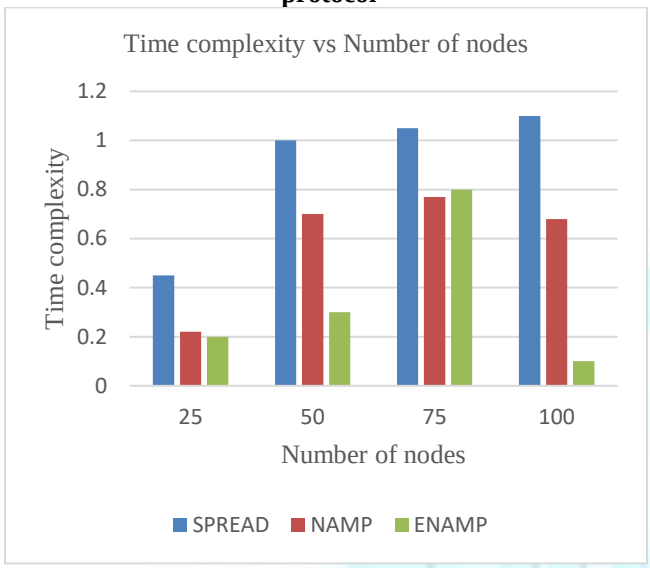

Fig 4.5 Comparative Simulation results of Time complexity for SPREAD , NAMP and ENAMP protocol

Figure 6.58 shows the graphical histogram representation of time complexity results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Time Complexity of SPREAD	0.45	1	1.05	1.1
Time Complexity of NAMP	0.22	0.7	0.77	0.68
Time Complexity of ENAMP	0.2	0.3	0.8	0.1

Table 4.5 Comparative analysis of time complexity and number of nodes of SPREAD,NAMP and ENAMP protocol

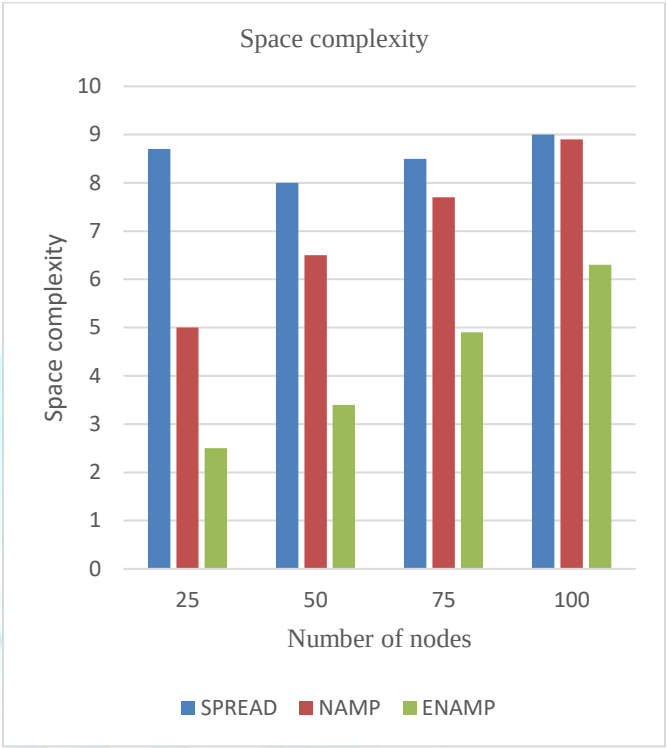

Figure 4.6 shows the graphical histogram representation of space complexity results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Space Complexity of SPREAD	8.7	8	8.5	9
Space Complexity of NAMP	5	6.5	7.7	8.9
Space Complexity of ENAMP	2.5	3.4	4.9	6.3

Table 4.6 Comparative analysis of space complexity and number of nodes of SPREAD,NAMP and ENAMP protocol

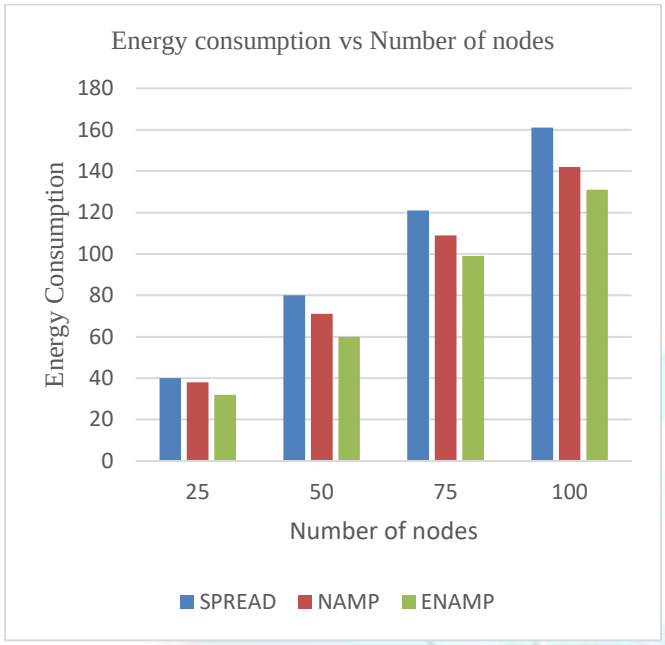

Figure 4.7 Comparative Simulation results of Energy consumption forSPREAD, NAMP and ENAMP protocol

Figure 6.62 shows the graphical histogram representation of energy consumption results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Energy Consumption of SPREAD	40	80	121	161
Energy Consumption of NAMP	38	71	109	142
Energy Consumption of ENAMP	32	60	99	131

Table 4.7 Comparative analysis of Energy Consumption and number of nodes of SPREAD,NAMP and ENAMP protocol

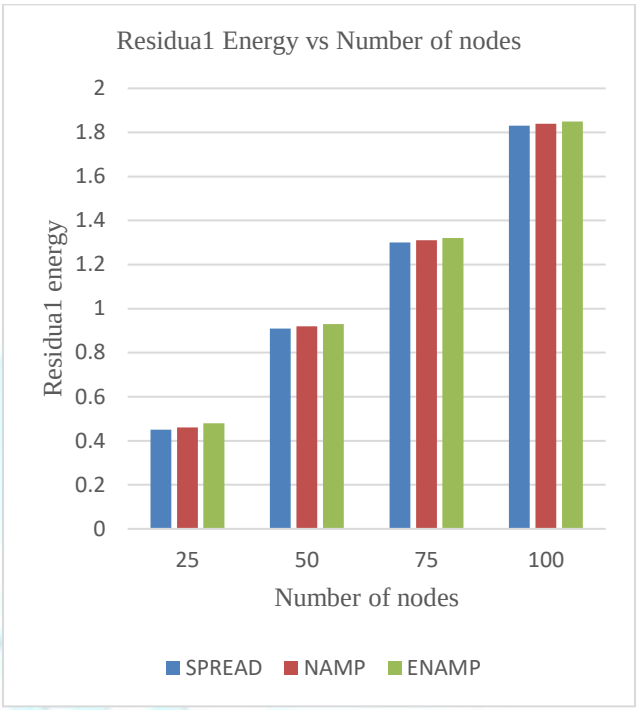

Figure 4.8 Comparative Simulation results of Residua1 Energy for SPREAD , NAMP and ENAMP protocol

Figure 6.64 shows the graphical histogram representation of residual energy results captured for the SPREAD,NAMP and ENAMP protocol.

Number of nodes	25	50	75	100
Residual Energy of SPREAD	0.45	0.91	1	1.83
Residual Energy of NAMP	0.46	0.92	1.31	1.84
Residual Energy of ENAMP	0.48	0.93	1.32	1.85

Table 4.8 Comparative analysis of Residua1 Energy and number of nodes of SPREAD, NAMP and ENAMP protocol

S.No	Performance Metric	SPREAD	NAMP	ENAMP
1	Packet De1ivery Ratio	↓	↓	↑
2	Throughput	↓	↓	↑
3	De1ay			
4	Packet Loss	↑	↑	↓
5	Time complexity	↑	↑	↓
6	Space Complexity	↑	↑	↓
7	Energy Consumption	↑	↑	↓
8	Residual Energy	↑	↑	↓
		↑	↑	↓

Table 4.9 Comparative analysis of Performance metrics of SPREAD, NAMP and ENAMP protocol

V. Conclusion

The fast advancement in the field of portable figuring is driving another elective path for versatile correspondence, in which cell phones structure a self-making, self-sorting out and self-overseeing remote system, called a portable specially appointed networkIn this paper we detailed the dynamic hubs choice issue as a combinatorial streamlining issue firstly, with the goals of amplifying the achievement proportion of key administration and limiting the hubs' expense of security and vitality, and afterward proposed the motivating force good component to actualize the ideal hubs choice procedure in MANETs, to guarantee reality telling is the prevailing technique thus forestall the development of selfish hubs

References

[1].Drs. Baruch Awerbuch& Amitabh Mishra Department of Computer Science Johns Hopkins University © Amitabh Mishra & Baruch Awerbuch2008, Introduction to Ad hoc Networks CS-647: Advanced Topics in Wireless Networks

[2]. GUO Yuanbo, MA Jianfeng , WANG Chao and YANG Kuiwu, Chinese Journal of Electronics Vol.22, No.4, Oct. 2013Mechanism Design Based Nodes Selection Model for Threshold Key Management in MANETs∗

[3]. P.R. Jasmine Jeni, , A. Vimala Julie and A. Messiah Bose, SRM University, Chennai, Tamilnadu, India Journal of Computer Science 10 (8): AN ENHANCED ROUTE FAILURE RECOVERY MODEL FOR MOBILE AD HOC NETWORKS 1561-1568, 2014 ISSN: 1549-3636 © 2014 Science Publications doi:10.3844/jcssp.2014.1561.1568 Published Online 10 (8) 2014 (http://www.thescipub.com/jcs.toc)

[4]. P.R. Jasmine Jeni, , A. Vimala Julie and A. Messiah Bose ,International Journal of Engineering & Technology, 3 (2) (2014) 237-244 ©Science Publishing Corporation An efficient quantum based routing protocol with local link failure recovery algorithm for manet.

[5]. Wenjing Lou and Yu guang Fang Department of Electrical and Computer Engineering, Securing Data Delivery in Ad Hoc Networks .

[6] .S Murthy, “An Efficient Routing Protocol for Wireless Networks," October 1996.

[7] L. Zhou and Z. J. Haas, ``Securing ad hoc networks," *IEEE Network Magazine*, vol. 13, no. 6, November/December 1999

[8] W. Lou, Y. Fang, “A survey on wireless security in mobile ad hoc networks: challenges and available solutions”, book chapter in *AdHoc Wireless Networking*, to be published by Kluwer in May 2003

[9]Al-Sakibpathan,MuhammadMonowar,Md.Rabbi ,Muhammad Alam and ChoongHong.”NAMPNeighbor – Aware Multicast Routing Protocol for Mobile Ad hoc Networks”.The International Arab journal of Information Technology Vol 5,No.1,January 2008.

[10]G.VijayaKumar,Y.VasudevaReddy,Dr.M.Nagendra”Current research work on routing protocol for MANET: a

Literature survey" IJCSE IJCSE International Journal on Computer Science and Engineering vol 2,No.03,2010,706-713.

[11].C.Sreedhar,Dr.S.MadhusudhanaVerma,Prof.N.Kasiris wanath"A survey an security issues in wireless Ad hoc network routing protocol"in IJCSE International Journal on Computer Science and Engineering vol 2,No.02,2010,224-232.

[12].Sunil Taneja and AshwaniKush"A Survey of Routing Protocols in Mobile AdhocNetworks".International Journal Of Innovation ,Management and Technology,vol 1,No.3,August 2010,ISSn 2010-0248.