ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

A Controlled Overhead and Throughput Using Hybrid Wireless Networks in a Distributive Approach

Muthukumarasamy.S[1], Bhanu Rekha.S[2], Thanigaivelu.K[3]

Assistant Professor, Dept. of CSE, S.A. Engineering College, Chennai, India[1]

Student of M.E. (CSE), Dept. of CSE, S.A. Engineering College, Chennai, India[2]

Professor, Dept. of ECE, S.A. Engineering College, Chennai, India[3]

ABSTRACT: QoS oriented Distributed routing protocol (QOD) for hybrid networks to provide QoS services in a highly dynamic scenario. In the highly dynamic environment, the link between the nodes changes frequently. So, the route failure will occur in the network which leads to packet loss during transmission. To avoid this, we can propose link aware opportunistic relay node selection algorithm. In this algorithm, all the nodes not going to maintain the routing table. At the time of transmission, the source node builds the route to reach the destination by using the parameter link residual life time. The Link residual life is defined as “How long the link between the wireless nodes exists and capability of that link to provide efficient communication without fails. The link residual life is used to avoid poor link connectivity and reduce the possibility of retransmissions. As Hybrid wireless networks picks up fame, critical examination has been committed to supporting continuous transmission with stringent Quality of Service (QoS) necessities for remote applications. In the meantime, a remote half and half system that coordinates a portable remote specially appointed system (MANET) and a remote foundation system has been ended up being a superior option for the cutting edge remote systems. By specifically embracing asset reservation-based QoS directing for MANETs, half and halves systems acquire invalid reservation and race condition issues in MANETs. Step by step instructions to ensure the QoS in mixture systems remain an open issue. In this paper, we propose a QoS-Oriented Distributed directing convention (QOD) to upgrade the QoS bolster capacity of crossover systems. Exploiting less transmission jumps and any cast transmission elements of the mixture systems, QOD changes the parcel steering issue to an asset planning issue.

KEYWORDS**:** Multihop cellular networks, routing protocols, Hybrid wireless networks, routing algorithms, Service quality, wireless channels, scheduling.

I. INTRODUCTION

Hybrid wireless networks that coordinate MANETs and foundation remote systems have turned out to be a superior system structure for the cutting edge systems. Be that as it may, little exertion has been dedicated to supporting QoS directing in half and half systems. Direct appropriation of the QoS steering systems in MANETs into half and half systems acquires their disadvantages. In this paper, we propose a QoS Oriented conveyed Directing convention (QOD) for half breed systems to give QoS administrations in a very dynamic situation. Exploiting the one of kind components of half and half systems, i.e., any cast transmission and short transmission bounces, QOD changes the parcel directing issue to a bundle booking issue. In QOD, a source code straightforwardly transmits parcels to an AP if the immediate transmission can promise the QoS of the activity. In hybrid network the nodes are multi-interfaced that transmit packet through multiple channels generate much less interference than a hybrid network where nodes are equipped with a single Wi-Fi interface, a assumption is made that each node is equipped with single Wi-Fi interface in order to deal with a more difficult problem. Therefore, in this paper base stations are considered as Access Points (APs).

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

II. RELATED WORK

A. Infrastructure Networks: Existing methodologies for giving ensured administrations in the base systems depend on two models: incorporated administrations (IntServ) and separated administration (DiffServ)]. IntServ is a stateful model that utilizations asset booking for individual stream, and uses affirmation control and a scheduler to keep up the QoS of movement streams. Conversely, DiffServ is a stateless model which utilizes coarse grained class-based component for activity administration. Various lining booking calculations have been proposed for DiffServ to promote minimize parcel droppings what's more, data transfer capacity consumption]. Stoicaetal. proposed a Dynamic Parcel Service (DPS) model to give unicast IntServ-ensured administration and Diffservlike versatility.

B. Hybrid Wireless Networks: Not very many techniques have been proposed to give QoS guaranteed steering to half breed systems. The greater part of the steering conventions just attempt to enhance the system limit and dependability to by implication give QoS benefit yet sidestep the limitations in QoS directing that require the conventions to give ensured administration. Jiang et al proposed an asset procurement technique in half and half systems demonstrated by versatile WiMax to give benefit high unwavering quality. Ibrahim et al and Bletasa et al additionally attempted to choose best transfer that has the most extreme momentary estimation of a metric which can accomplish higher data transmission productivity for information transmission. Ng and Yu considered agreeable systems that utilization physical layer handing-off procedures, which exploit the show way of remote channels and permit the destination to helpfully consolidate signals sent by both the source and the hand-off to restore the first flag. Cai et al. proposed a semi distributed transferring calculation to mutually enhance hand-off choice and force allotment of the framework.Wireless Mobile Network (WSN) is to provide the users with access to the information of interest from data gathered by spatially distributed mobiles.

Users need certain aggregate function of this data that is distributed. End-to-end to data flow paradigm is used for computation of this aggregate data communication to a central collector node which may be inefficient solution. The following are the queries that may be raised, what is the optimal way to compute an aggregate function from storage of different values for different nodes what is the security of such aggregation because as the results sent by a compromised or faulty node in the network can adversely affect the accuracy of the computed result. In this paper, we have presented an energy-efficient aggregation algorithm for WSNs that is secure and robust against malicious insider attack by any compromised or faulty node within the network. In contrast to the traditional snapshot aggregation approach in WSNs, a node in the proposed system instead of unicasting its sensed information to its parent node, broadcasts its estimate to any or all its neighbours. Therefore the system becomes more fault-tolerant and increases the information availability within the network. The simulations conducted on the proposed algorithm have produced results that demonstrate its effectiveness.

III. LITERATURE SURVEY

In the paper [5] issues of QoS multicast routing in wireless ad hoc networks was investigated. Due to limited bandwidth of a wireless node, a QoS multicast call could often be blocked if there does not exist a single multicast tree that has the requested bandwidth, even though there is enough bandwidth in the system to support the call. This paper proposed a new multicast routing scheme by using multiple paths or multiple trees to meet the bandwidth requirement of a call.

In the paper [11] third-generation (3G) wireless data networks, mobile users experiencing poor channel quality typically have low data-rate connections with the base-station. Providing service to low data-rate users is needed for maintaining fairness, however the cost of reducing the cells aggregate throughput. This paper proposed the Unified Cellular and Ad-Hoc Network (UCAN) architecture for enhancing cell throughput, while maintaining fairness. In UCAN, a mobile client has both 3G cellular link and IEEE 802.11-based peer-to-peer links.

In this paper [15] great challenges of designing of routing protocols along with type and mobility degree was discussed. The proposed idea was to handle a quantity that can predict link status and also quantity used by link caching scheme in

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

Dynamic Source Routing that provides adaptability. This DSR was adapted to dynamic environments also the impact of network on topological changes on routing performance was reduced.

In this paper [2] A quality-of-service (QoS) routing protocol is developed for mobile ad hoc networks. It established QoS routes with reserved bandwidth on a per flow basis in a network employing TDMA. An efficient algorithm for calculating the end-to-end bandwidth on a path is developed and used together with the route discovery mechanism of AODV to setup QoS routes. In simulations the QoS routing protocol produces higher throughput and lower delay than its best-effort counterpart.

IV. EXISTING SYSTEM

Hybrid wireless networks (i.e., multi-hop cellular networks) have been turned out to be a superior system structure for the leading edge remote systems and can handle the rigorous end-to-end QoS prerequisites of various applications. Half and half systems synergistically join base systems and MANETs to influence each other. In particular, framework systems enhance the adaptability of MANETs, while MANETs naturally build up self-arranging systems, amplifying the scope of the base systems. In a vehicle shrewd access arrange (an occurrence of half and half systems), individuals in vehicles need to transfer or download recordings from remote web servers through access focuses (APs) (i.e., base stations) spreading out in a city. Since it is impossible that the base stations cover the whole city to keep up adequately solid flag all over to bolster an application requiring high connection rates, the vehicles themselves will form a MANET to augment the scope of the base stations, giving consistent system associations.

The Disadvantages Of Existing System was difficult to guarantee QoS in MANETs due to their unique features including user mobility, channel variance errors, and limited bandwidth. Although these protocols can increase the QoS of the MANETs to a certain extent, they suffer from invalid reservation and race condition problems.

V. PROPOSED SYSTEM

The goal is to improve the QoS bolster ability of half breed systems, the proposal of QoS-Oriented Distributed directing convention (QOD). The information transmission in mixture systems has two components. Initial, an AP can be a source or a destination to any portable hub. Second, the quantity of transmission jumps between a versatile hub and an AP is little. The principal highlight permits a stream to have any thrown transmission along numerous transmission ways to itsdestination through base stations, and the second component empowers a source hub to interface with an AP through a middle hub.

The Advantages of Proposed System are the source node schedules the packet streams to neighbors supported on their queuing condition, channel condition, and mobility, aiming to reduce transmission time and increase network capacity. Taking full advantage of the two features, QOD transforms the packet routing problem into a dynamic resource scheduling problem.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

VI. SYSTEM ARCHITECTURE

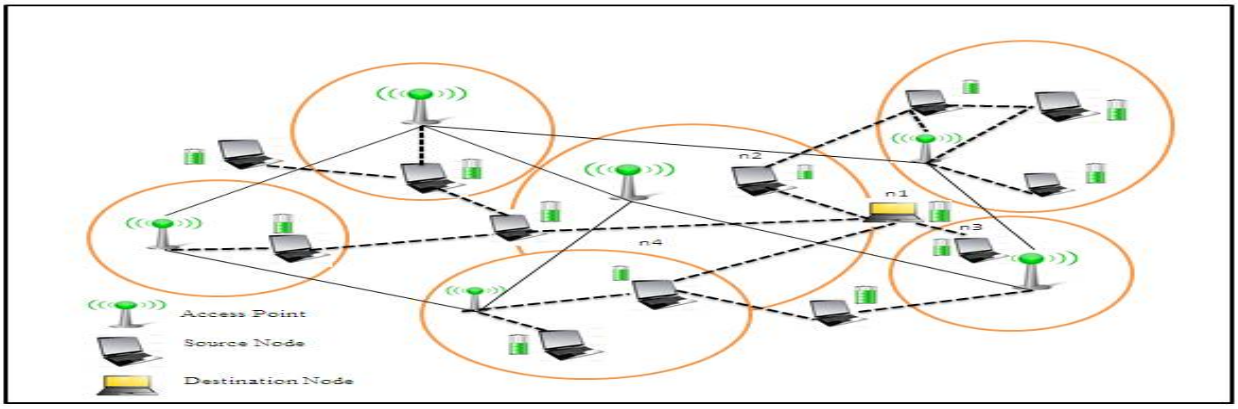

Fig 1. System Architecture

End-to-end delay bound is included as main QoS requirements which is very important for real-time application, throughput guarantee is automatically guaranteed by bounding the transmission delay for a certain amount of packets. The source node conducts admission control for example when source node n1 wants to upload any file through AP, it can choose to send packets to the APs directly or requires it neighbor nodes n2, n3 or n4 to guide the transmission of packets.

When mobile node generates the packets it first tries to transmit to the neighbor APs that guarantee QoS, if it fails, for example out of the transmission range of APs in a hot spot or dead spot, it relies on neighbors the QoS requirements for the relaying packets to the AP. Relaying for the packet stream is modeled as a process where the source node gets traversed in which QoS routing is guaranteed this in turn achieves scheduling feasibility. In detail it is explained below in the proposed system.

VII. THEORY OF IMPLEMENTATION

A.QOD Distributed Routing Algorithm: The QOD disseminated steering calculation is produced taking into account the presumption that the neighbouring hubs in the system have distinctive channel utilities and workloads utilizing IEEE 802.11 convention. Something else, there is no requirement for parcel booking in directing, since all neighbors produce relative deferral for bundle sending. Along these lines, we investigate the distinction in hub direct utilities and workloads in a system with IEEE 802.11 convention so as to see whether the supposition remains constant by.

B.Packet Scheduling: In this module, we further reduce the stream transmission time, a distributed packet scheduling algorithm is proposed for packet routing. This algorithmic rule assigns earlier generated packets to forwarders with higher queuing delays and scheduling feasibility, whereas assigns a lot of recently generated packets to forwarders with lower queuing delays and scheduling feasibility, in order that the transmission delay of a complete packet stream can be reduced. We tend to use *t* to denote the time once a packet is generated, and use TQoS to denote the delay QoS requirement. Let WS and WI denote the bandwidth of a source node and an intermediate node respectively, we use TSI - Sp /WS to denote the transmission delay between a source node and an intermediate node, and TID - Sp/WI to denote the transmission delay between an intermediate node and an AP. Let Tw denote the packet queuing time and Tw(i) denote the packet queuing time of ni. The source node needs to calculate Tw of each intermediate node to select intermediate nodes that can send its packets by the deadline.

C. Mobility-Based Packet Resizing Algorithm In a profoundly dynamic portable remote system, the transmission join between two hubs is every now and again separated. The deferral produced in the bundle retransmission corrupts the QoS of the transmission of a parcel stream. Then again, a hub in an exceptionally dynamic system has higher likelihood to meet diverse versatile hubs and APs, which is gainful to asset planning.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

As (2) demonstrates, the space utility of a middle of the road hub that is utilized for sending . That is, lessening bundle size can build the booking plausibility of a middle of the road hub and decreases parcel dropping likelihood. Be that as it may, we can't make the span of the parcel too little since it creates more bundles to be transmitted, delivering higher parcel overhead.

In view of this justification and exploiting the advantages of hub portability, we propose a versatility based parcel resizing calculation for QOD in this segment. The fundamental thought is that the bigger size parcels are relegated to lower versatility middle of the road hubs and littler size bundles are appointed to higher portability transitional hubs, which builds the QoS-ensured parcel transmissions.

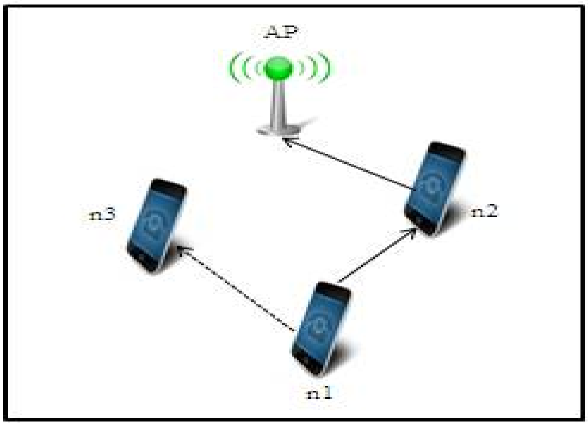

Fig 2. Packet Overhearing

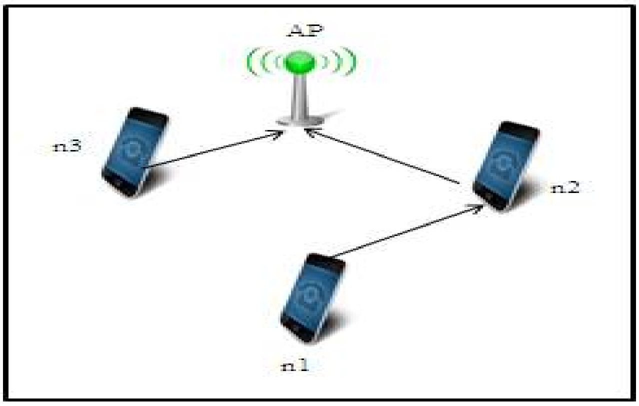

Fig 3. Redundant Elimination

VIII. SIMULATION RESULTS

In the reproduction, the setup was an equivalent as Section 6. Six APs with IEEE 802.11 MAC convention are consistently appropriated within the territory. We arbitrarily chose two source hubs to send bundles to APs in each 10 s. A hub's activity is produced with steady piece rate (CBR) sources. The era rate of the CBR activity is 100 kb/s. Unless generally determined, the paces of the hubs were haphazardly chosen from [1-40]m/s. Since the quantity of effectively conveyed bundles inside of a specific postponement is basic to the QoS of video spilling applications, we characterize another metric, specifically QoS ensured throughput (QoS throughput in short), that measures the throughput sent from a source hub to a destination hub fulfilling a QoS delay prerequisite as 1 s. This metric can all the while reflect postponement, throughput, and jitter elements of bundle transmission. We specifically utilize the edge parameter in RED line as our space utility limit. We run every trial for 10 times.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 4, April 2016

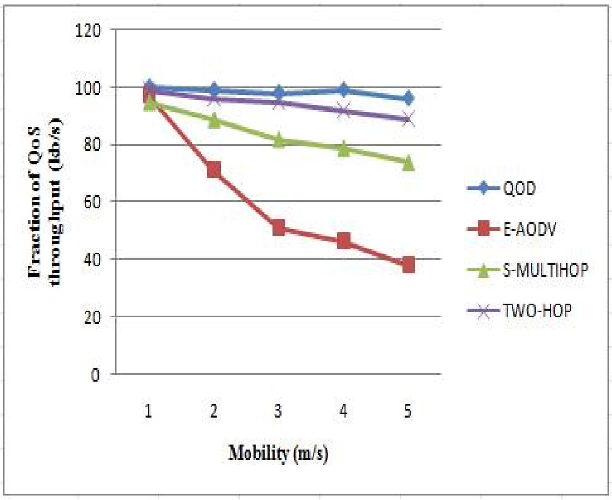

Fig 4. Fraction of QoS throughput versus Mobility

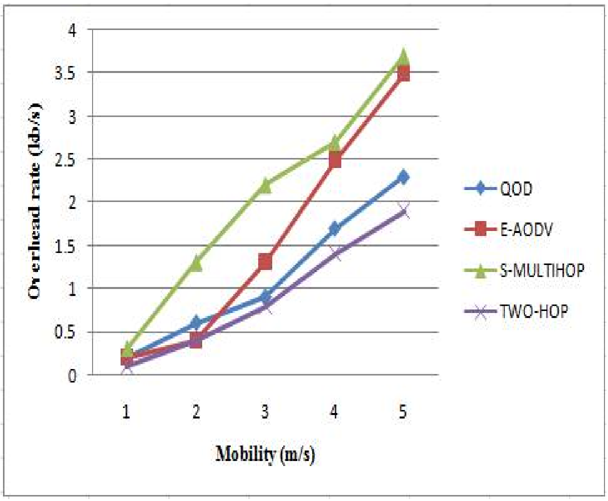

Fig 5. Overhead versus Mobility

IX. CONCLUSION

Hybrid wireless networks that coordinate MANETs and framework remote systems have turned out to be a superior system structure for the cutting edge systems. In any case, little exertion has been given to supporting QoS steering in half and half systems. Direct selection of the QoS steering strategies in MANETs into cross breed systems acquires their disadvantages. In this paper, we propose a QoSoriented conveyed steering convention (QOD) for half and half systems to give QoS administrations in a very dynamic situation. Exploiting the one of kind elements of half and half systems, i.e., anycast transmission and short transmission jumps, QOD changes the bundle directing issue to a parcel booking issue. In QOD, a source hub specifically transmits parcels to an AP if the immediate transmission can promise the QoS of the activity. Something else, the source hub plans the parcels to various qualified neighbor hubs. In particular, QOD fuses five calculations. The QoS-ensured neighbor choice calculationpicks qualified neighbors for parcel sending. The conveyed bundle booking calculation plans the parcel transmission to assist diminish the bundle transmission time. The portability based bundle resizing calculation resizes parcels and relegates littler bundles to hubs with quicker versatility to ensure the steering QoS in a profoundly portable environment. The activity repetitive disposal based transmission calculation can encourage expand the transmission throughput. The delicate due date based sending planning accomplishes decency in parcel sending booking when a few bundles are not planning achievable. Trial results demonstrate that QOD can accomplish high portability strength, adaptability, and conflict diminishment. Later on, we plan to assess the execution of QOD in view of the genuine tested.

REFERENCES

[1] Ze Li Member IEEE et al., “A QoS-Oriented Distributed Routing Protocol for Hybrid Wireless Networks”, IEEE TRANSACTIONS ON MOBILE COMPUTING, VOL. 13, NO. 3, MARCH 2014.
[2] I. Jawhar et al., “Quality of Service Routing in Mobile Ad Hoc Networks,” Network Theory and Applications, Springer, 2004.
[3] C. Toh, Wireless ATM and Ad-Hoc Networks: Protocols and Architectures. New York: Kluwer, 1996.
[4] C. Perkins et al., “Highly dynamic destination sequenced distance vector routing(dsdv) for mobile computers,” in Proc. ACM SIGCOMM’ 94, 1994, pp. 234–244.
[5] H. Wu et al., “QoS Multicast Routing by Using Multiple Paths/Trees in Wireless Ad Hoc Networks,” Ad Hoc Networks,vol. 5, pp. 600-612, 2009.
[6] V. Park et al., “A highly adaptive distributed routing algorithm for mobile wireless networks,” in Proc. IEEE INFOCOM’97, 1997, pp. 1405–1413.
[7] D. Johnson et al., “Dynamic source routing in ad hoc wireless networks,” Mobile Computing, vol. 5, pp. 153–181, 1996.
[8] S. Murthy et al., “An efficient routing protocol for wireless networks,” ACM/Baltzer Mobile Networks Applicat., vol. 1, no. 2, pp. 183–197, 1996.
[9] Iwata et al., “Scalable routing strategies for ad-hoc wireless networks,” IEEE J. Select. Areas Commun., vol. 17, pp. 1369–1379, 1999.
[10] S. Basagni et al., “A distance routing effect algorithm for mobility (dream),” X. Xiang and X. Wang, “A Scalable Geographic Service Provision Framework for Mobile Ad Hoc Networks” Proc. IEEE Int’l Conf. Pervasive Computing and Comm., Mar. 2007.

[11] H. Luo et al.,"UCAN: A Unified Cell and Ad-Hoc Network Architecture," Proc. ACM MobiCom, 2003.
[12] P. Ghosh et al., "Mobility-Aware Efficient Job Scheduling in Mobile Grids," Proc. IEEE Int'l Symp. Cluster Computing and the Grid, pp. 701-706, May 2007.
[13] P. Bose et al., "Routing with Guaranteed Delivery in Ad Hoc Wireless Networks," Wireless Networks, vol. 7, no. 6, pp. 1572-8196, Nov. 2001.
[14] B. Karp et al., "Greedy Perimeter Stateless Routing for Wireless Networks," Proc. ACM MobiCom, pp. 243-254, Aug. 2000.
[15] S. Jiang et al., "Provisioning of Adaptability to Variable Topologies for Routing Schemes in MANETs," IEEE J. Selected Areas in Comm., vol. 22, no. 7,pp. 1347-1356, Sept. 2004.
[16] F. Kuhn et al., "An Algorithmic Approach to Geographic Routing in Ad Hoc and Sensor Networks," IEEE/ACM Trans. Networking, vol. 16, no. 1, pp. 51-62, Feb. 2008.
[17] Y. Li et al., "Routing Metric Designs for Greedy, Face and Combined-Greedy-Face Routing," Proc. IEEE INFOCOM, pp. 64-72, Apr. 2009.
[18] M. Heissenb et al., "BLR: Beacon- Less Routing Algorithm for Mobile Ad-Hoc Networks," Elsevier's Computer Comm. J., vol. 27, no. 11, pp. 1076-1086, July 2003. "A Majority of U.S. Mobile Users Are Now Smartphone Users," http://adage.com/article/digital/a-majority-u-s-mobile-userssmartphone- users/241717, 2013
[19] P.K. Mckinley et al., "Unicast-Based Multicast Communication in Wormhole-Routed Direct Networks," IEEE Trans. Parallel Data and Distributed Systems, vol. 5,no. 12, pp. 1252-1265, Dec. 1992.
[20] Flixwagon, http://www.flixwagon.com, 2013.

BIOGRAPHY

[1]**MUTHUKUMARASAMY.S** is a PhD scholar in Department of Computer Science and Engineering at Anna University, Chennai, India. He received his M.E.(CSE) degree in 2011 at Sri Krishna Engineering college, Chennai, India and B.E.(CSE) degree in 2005 at E.G.S Pillay Engineering College, Chennai, India. His area of interest includes Mobile Computing, Wireless Sensor Networks, Networks and Information Security

[2]**BHANU REKHA.S** is a M.E student in Department of Computer Science and Engineering at S.A. Engineering College, affiliated to Anna University, Chennai, India. She received her B.E. in Computer Science and Engineering in P.B.College of Engineering, affiliated to Anna University in 2014, Chennai, India. Her area of interests includes Wireless Communication, Computer Networks and Distributed Systems

[3]**THANIGAIVELU.K** is a Professor in Department of ECE at S.A.Engineering College, Chennai, India. He completed his PhD in Information Communication and Engineering at Anna University and completed M.Tech in Laser & Optical Engineering in 1999 at Anna University, Chennai, India and B.tech in Electronics in 1995 at Madras University. His areas of interests include Antennas, Wireless Sensor Networks, Network Security, Grid Computing