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L-AOMDV- An Efficient Proposed Approach in MANETs

Gurpreet Kaur
Computer Science & Engineering
Beant College of Engineering and Technology
Gurdaspur, India

Arpinder Singh
HOD, CSE Deptt
Beant College of Engineering and Technology
Gurdaspur, India

Mohit Marwaha
Computer Science & Engineering
Beant College of Engineering and Technology
Gurdaspur, India

Abstract— The Ad hoc mobile network (MANET) is a collection of mobile devices and is automatically configured, dynamically changes, the multi-hop wireless network that forms a communication network through the multi-hop wireless network connection, is a self-organized network, without any central control. Nodes in the network communicate with another node only if it is within its transmission range. Each node acts as a source and router in the network. MANET is one of the most challenging and growing research fields due to their demand and the challenges in service delivery due to their dynamic nature. Load balancing is one of the key problems in MANET because load balancing in the network is essential for a better network life, Qos, congestion control. The approach proposed in the research emphasizes the stability of the routes and the distribution of traffic in the network based on the energy of the nodes.

Keywords- *Qos, PDR, MANET etc*

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I. INTRODUCTION

Since 2010, the use of wireless networks is growing day by day in all fields. Few cases of use contain mobile phones that are part of daily wireless networks, which allows for easy personal communication. There are other instances as well that use radio satellites to learn about intercontinental network systems around a globe. In urgent situation, the police utilize wireless networks so as to converse well. To send and share data immediately, people & businesses employ wireless kind of network. In general, wireless networks suggest a wide variety of uses that are transmitted through different forms of media generally used by the company and by the home network. Some of the uses of wireless networks are:

Space: In the section mentioned, space is important for wireless networks. There are many advantages of wireless networks. It is difficult to wire the areas that try to communicate through a road or a river, the accessories or the corporal buildings are separated as a warehouse, on the other hand, but they work like one. To allocate a certain space, users can communicate with other devices through Space's wireless network. This technology replaces the installation of a physical network approach such as TP, coax, optical fibers, etc., which can also be extremely exorbitant for large companies.

Business: Continue to integrate wireless LANs into the corporate information system to support the organizational purpose of users through a broader base of applications. Wireless networks use more practices and lower costs for companies to compete in a global market. All sectors, especially those that emphasize instant processing, are appropriate for wireless technologies. as doctors, nurses, warehouse employees, inspectors, claims liquidators, real estate agents, etc. They are finding creative and innovative ways to position laptops in industrial jobs that are practical. Using wireless technology, which in turn meets mobility needs, companies can pair portable devices with a database and specific applications. In today's economic climate, paperwork basically ends, errors are reduced, process costs are reduced and efficiency improved, all of which are advantages.

Home: Nowadays everyone prefers to use wireless technology as wireless allows sharing printer, scanner and internet in quite effective manner. Moreover, it is very budget friendly as physical installation for wireless media is easy and less time consuming. Overall a modem or router allows multiple devices to get connection via them. It also allows users to access internet within its radius range.

Standards

Wireless Networks has basically 3 main principles as below: IEEE 802.11 Family, HiperLAN & Bluetooth.

IEEE 802.11

There are 3 non-interoperable techniques as per the physical layer definition and these three layers are

1. Freequency Loss Diffusion Spectrum
2. Direct Sequence Propagation Spectrum

These two use 2.4 Gigahertz of radio medium like IR. Through this 1-2 Mbps of data rate is achieved. With these

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descriptions many new family of other standards have comeup.

Wi-Fi 5 also known as IEEE 802.11a works in the U-NII band on Five Gigahertz with OFDM multiplexing transmission technology & contains a utmost data broadcast speed of fifty four Megabits per second. On contrary, Wi-Fi also called IEEE 802.11b is the effective set of wireless networks as well as it runs in the 2.4 Gigahertz.

II. Literature Survey

Mahesh K. Marinew described a multi-path distance vector protocol on request AOMDV that extends the AODV protocol from a single route to calculate multiple paths. There are two main contributions of this work: 1. The advertised jump count is used to keep multiple paths without loops in each node. 2. They also defined how the path discovery mechanism in the AODV protocol can be modified to obtain access paths to multiple junctions to others from the origin to the destination. They notice that AOMDV offers a reduction of the delay. AOMDV is considered more efficient when the number of routes in any source and destination is directly proportional to the number of nodes in the entire network. In thick and heavy networks, it works more easily. AOMDV does not consider the provision of support for the security and management of QoS energy.

Zhenqiang Ye et. The multidirectional routing of the ad hoc distance vector on proposed request (AODVM) is an extension of AODV to find disjoint paths of multiple nodes. Instead of discarding replica route request packages, centralized nodes are needed in order to save information. On behalf of each copy got from n route request message, the gathering node saves the sender which was formed, whose end point is route request, the neighbor that transmitted the RREQ, and some additional information in the RREQ table. In addition, intermediate relay nodes can not send an RREP message directly to the source. Update its sequence number and generate an RREP packet if 1st packet is reached to the end point which is the destination. The route reply package consists of an extra field known as "Last hop ID" to point to the nearby nodes. Therefore further a route reply packet is traversed back towards the starting point with the help of route request. If the end point gets replicas of the route request package from another source neighbours; then its serial or sequence number is updated & route reply packet is formed for each of them. As that of 1st route reply package, such RREP packages also consist of the respective node Identifications of the last hop. If in case an intermediate node gets route reply packet from one of its nearby node, it removes the consequent entrance for this neighbor from its route request table & adds a path entry to its routing table to specify the route exposed to the route reply packet. So the node therefore identifies the neighbor, the route towards the origin is the shortest & ahead the route reply message to its nearby nodes. The nearby nodes voice is eliminated from the table of path request. Therefore to make sure that nodes doesnot gets implicated in multiple path the entry is eluded similar to the communication node of its path request tables. In order to make sure that a node never participates in multiple paths, elude the entry to the communication node of its route request tables. So the decision of the intermediate nodes to ahead the route reply messages & the destination, that in fact is the start of these messages, hardly know regarding the no. of path reply mesaages it has generated to the originalpoint. Moreover, the origin must check every route reply message got through path authentication message that is also known as RRCM & this RRCM also consists of information related to the next neighbor.

Fubao Yang et. gave a proposal on a multi-path routing vector protocol on MANET with entropy of route choice. The basic thought of the AODVM-PSE algorithm is to make the innovative metric-entropy with the assistance of the entropy metric to minimize the no. of route rebuilding so as to give routing packages in the MANET.

Mohamed Tekaya et. shows an innovative Quality of service multipath routing among load balancing. Moreover 2 major contributions are there in this paper. The very first contribution is the technique of load balancing for distributing traffic on various active paths; second technique corresponds to the path detection technique based on quality of service parameters. In first part, they gave a proposal on an innovative multi-path routing protocol known as Load Balancing-AOMDV that is the size of buffer & the less congested routes. Further they also added quality of service to their proposal of Load Balanced-AOMDV protocol which consists of latency as well as performance parameters. Advantage Benefits of route request message for exchanging vital information is to get quality of service needs.

Stephen Mueller et. al. (2005) made an extensive edition of AODVM called AODVM/PD which could look for routes with lesser association factors. Authors also presented that AODVM/PD to attain lesser end-to-end latency in comparison to AODVM.

III. Problem Statement

According to the literature, the problem is that real-time communication or transmission of audio and video in MANET is rather difficult due to mobility or node congestion in the network or limited battery resources. Existing current routing protocols can not achieve proper load balancing without increasing node overload. Our goal is to provide a load-balancing approach with AOMDV as a routing protocol that can provide load balancing to routing protocols to eliminate network distortion and use network resources better. In normal scenarios, nodes that are in the middle of networks are consumed more than nodes in the less dense part of the

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network, which causes a rapid depletion of the energy of the nodes that are in the middle of the networks.

3.1 Objectives

To provide stability and load balancing of energy in the AOMDV for Mobile Ad Hoc Networks, We define the following objectives.

1. Identify performance matrices for stable multipath routing.
2. Propose an extension in AOMDV for stable multipath routing.
3. Design an appropriate framework scenario to evaluate the extent of AOMDV.
4. Validate the proposed extension using an NS2 test bench.

3.2 Assumptions

1. If node A can hear node B that implies that B can also hear node A.
2. Hello interval is appropriate in order to update the dynamics of the networks
3. Initial Route discovery latency is tolerable.

3.3 Proposed Algorithm

AOMDV stores multiple paths for data transmission in the networks, it uses on path for data transmission and keeps the other as backup in case of breakage of paths, but AOMDV does not considers the stability and energy of the nodes in the path.

Calculate_Node_Energy(Node_id) //for calculation of node energy
{return this->Node_energy}
If (Route is available towards reach point also called destination)
{Spread data along various routes}
else
{start path discovery}
Path-discovery procedure
Send Route Req ();
Packet reception routine
If (Type of packet is route request && strength of signal for link > Threshold)
{
If (I am the reach point)
{
// existing AOMDV
{Send Route Reply()}
}
If (I am middle node)
{
If(Calculate_Node_Energy() > Threshold)
{
If (Contains a new Path)
{ // existing AOMDV CODE
Send route reply()
}
Else
{
Forward route req()}
}
}
If(Route Reply is type of packet){//existing AOMDV code}

The node forwards the Route request packet in case it is compulsory to transfer data to another node. The node which gets the request packet then looks for the signal strength of the packet received, if the signal strength exceeds a threshold, it is further processed. In this way, we guarantee the stability of the connection, which can support the mobility of the nodes. In the further processing of the request packet, in case the request is established in the destination node, the reply is transferred back to the origin & the communication happens. However incase an intermediate node receives the request packet, it calculates its energy level, if the energy level exceeds a threshold, then it will contain only a new request, otherwise it will discard the request. In this way, we can distribute traffic to the nodes with more power so we can maintain network connectivity.

CONCLUSION

The Adhoc mobile network (MANET) is a set of mobile devices. MANET is quite difficult due to node mobility or congestion in the network or limited battery resources. The current existing routing protocols are not able to achieve the appropriate load balancing without increasing the overhead on the nodes. So our objective was to provide a load balancing approach with AOMDV as a routing protocol which can provide load balancing to the routing protocols so that the biasness in the network can be removed & the resources of the network can be well-utilized in a better manner. We have proposed an Algorithm which is quite efficient and will definitely work well if implemented.

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