

Removal of the Load Traffic in Cellular Network and Data Availability to Maintain Load Balancing

M. Mahto^{1*}, A.K. Shrivastava²

¹Govt. Polytechnic, Korba, India

²Department of Information Technology, Dr. C.V. Raman University, Kota, Bilaspur, India

Corresponding Author: msmahto@yahoo.co.in, Tel.: +91-70009 53002

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Abstract— In mobile network several user causing data packet from a network one user to different user, unremarkably user send data in any direction. In mobile Ad hoc network user send data request frequently within the network the provision loss and enormous quantity of power. During the paper, we have a tendency to discuss multiple chunk (part of information segment) throughout the information process mistreatment buffer refreshment to boost data accessibility and data accessibility for durable within the network. Ad hoc network is a server consumer primarily depend network, host user acts as server to satisfy different user request. Each mobile user to carry temporary storage information chunk and request send Multi node, at that point initial request is ask for distributed to its (requester) the nearest point, the user initial coordinate demand information section with holded copy of information section, if it's match the request ask are response by the closest user otherwise request resend to mobile server.

Keywords— *Ad hoc networks, mobile node, replication, routing protocols, mobile server, buffer*

I. INTRODUCTION

Node specially appointed systems are accumulations of node hubs, That impart specifically finished a typical node channel. The hubs are furnished with node handset. They don't require any extra framework, for example, base station or wired access point, and so on. Along these lines, every hub doesn't as it were assumes the part of an end framework, yet in addition goes about as a switch, that sends parcels to wanted hubs. The specially appointed are relied upon to do assignments, which the foundation can't do. Specially appointed systems are generally utilized by military, safeguard mission group, cab driver. Their works can't depend on a foundation's system. As an illustrative case, envision firefighters put out unsafe fire in major woods. They need to convey each other, however setting up a foundation or cabling in such zone is incomprehensible or as well costly. Once joined along these node offer transmission radio coverage area a large geographical area. permit an oversized range of moveable transceivers to speak with each other and with affixed handsets and phones wherever inside the system via base stations, not withstanding a number of the cellular area unit moving through over one cell node throughout large location area, meaning once it leaves vary (fixed area) of one base station, it interfaces with new base station and begins act through it. This can be known as handoff. [1].

II. WIRELESS CELLULAR AD HOC NETWORK

MANET is additionally referred to as wireless ad-hoc network. It's additionally referred to as self-configuring, infrastructure-less network. MANET is absolving to move severally in any direction, and can thus amend its link to different devices oftentimes. Ad-Hoc means that it doesn't depend upon a predefined organize structure or topology, similar to get to focuses access point (AP) over in (framework) cellular networks. Instead, each cell node takes in routing by sending data for various cell nodes, so the assurance of that cell node forward data is shared dynamically supported the cellular network property. Ad-Hoc network systems require no centralized organization or mounted network system foundation like base stations [5].

III. DIRECTING IN MOBILE AD-HOC NETWORKS

All cellular node inside couple of cellular node of every cell node sending information at a consistent rate. Protocol are evaluated support base on packet transmission rate and total packet lost rate other measurement the type of routing protocol are three categories. Proactive, reactive and hybrid protocol. In over paper we discuss reactive (AODV protocol) are use [3]. Every node receives and transmit information forward node to node network. Each node acts as router send information the nearest

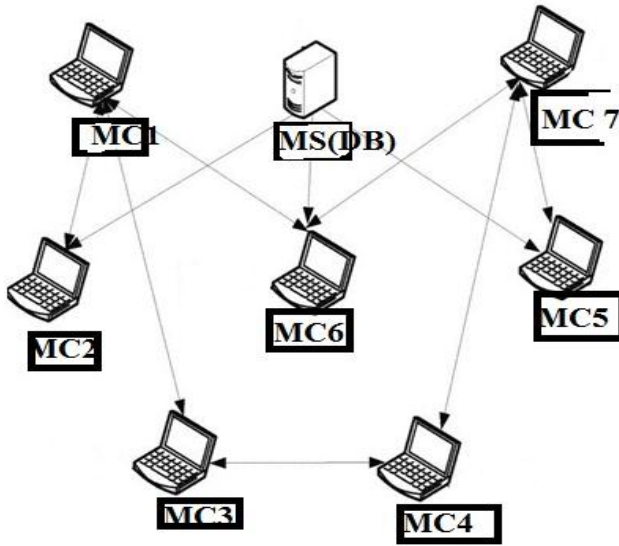


Figure 1. Data Transmission

node in network [4]. In Ad- Hoc network without any centralized server. Each node is interconnected if any nodes are failing the nearest node send packet to destination node. Routing protocol act as path to achieve the destination node.

IV. ISSUES IN MOBILE AD-HOC NETWORK

In wireless network without any centralize server. A cell node, move freely in anywhere. Loss power (mobile batter) and data security are major concern of mobile ad hoc network, during this paper centered on information maintaining and data accessibility. Data accessibility means that data obtainable unequaled. In cellule network appointed system versatile node consume additional control power through information transmission. Mobile batter down side in ad-hoc network [2]. The network manage the simply data accessibility become cut back power consumption and build maintainability.

V. DATA SEGMENTATION METHOD

The data segmentation could be amethodology to divide knowledge into a number of block known as segments [11 12]. A segmentisdefined as a logical grouping of data, likesoftware package, array or dataspace. Segmentation is variable size. A logical address usingsegmentation consists of twocomponents a segment rangeand an offset. In mobile ad-hoc network information transmission supply node to destination node usingdata segmentation method .the time consumption of the network and enhance the infoavailability and reduce the information traffic

VI. DATA REPLICATION METHOD

If the same data item access in the system. In cellular network is a server client network client wants data packet

to Communicate to server [7, 9]. If the server fulfills the consumer request if a similardata packet request the closest node this method is decision replication method. The data replication is used to remain off from data misfortunes simply if there ought to be a happening of erratic disengagements of moveable hubs by increasing framework wide information accessibility. Information replication expands the strength by decreasing the number of bounces that associate data issue is transmitted from supply to goal. A painter data replication topic could be a handle the ensuing confinements: the information replication subject ought to have the capability to figure while not a worldwide hub situating. this can be often as a result of the work of such frameworks expands the workplace utilization of the versatile has within the system. The nonattendance of movement parameters of versatile hosts like speed and bearing should not cause the information replication topic to fall through. it's not sensible to just accept that data regarding the event of shoppers is frequently eminent before time, particularly in painter applications like safeguard operations. Versatile has in a run of the mill painter applications have an area in teams bolstered the capacities they perform within the applications. Since every single versatile host in a particularly assembles play out a comparable arrangement of operations, they get to a comparative arrangement of knowledge things. People from every gathering are unfurling over the system, and play out their capacities in their areas. This will decrease the execution time of exchanges, and afterward, can induce a hyperbolic level of winning exchanges.

VII. LOAD BALANCING STRATEGY IN CELLULAR NETWORK

The path wise algorithms for the transmission of information's are classified into I) single path algorithm II)multi path algorithm In a comparative manner, multi path routing algorithm is said to be a better load balancing algorithm than the single path routing algorithm [13]. Multi-path routing is done by initially identifying all the possible routes from the source to the destination before the packet transmission being initiated. Once the possible paths are identified then the same process will be repeated when the all routes which ever got identified are failed in a complete manner. In this manner the traffic is distributed to the set of disjoint paths. The main concept of this multipath routing is which all the paths are not used in a simultaneous manner. Once the elected path is congested then the alternate path is selected for the process of transmitting data from the source node to the destination node.

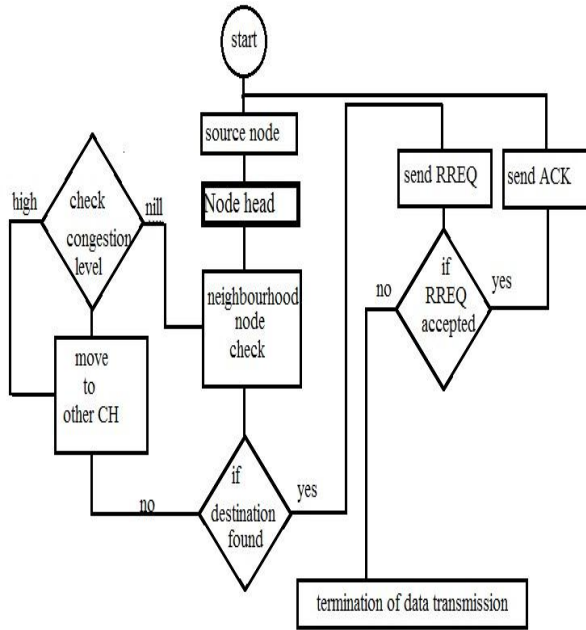


Figure 2. Load Balancing Algorithm

methodologies likewise exist. Not very many literary works utilize line estimate, bounce check, and transfer speed measurements for stack adjusting in portable systems. In any case, for MANET, there are two research difficulties, for example, QoS change and vitality effectiveness. These two focuses were not productively tended to by existing techniques. Along these lines, it turns into an inspiration for this examination paper to introduce novel cross breed approach for stack adjusting in MANET with objective of enhancing QoS execution and vitality productivity execution.

VIII. ALGORITHM

A Algorithm for Server

Step 1:

SM Receives request from mobile clients

Step 2:

If ((k)) If it is first request then send all information of all segments to the requested client

Else

(Reskork+1) → CMi Server sends the requested data to the requested client

Step 3:

Wait for the new request

B. Algorithm for Client

Assumptions:

CMi = Mobile client i where i is any mobile node

CMjN = Neighboring mobile client j

Dk = Data Segment k (k = 1, 2... n)

Dk+1 = Data Segment k+1

Step 1:

CMi Sends a request to the next hope for specific service (Dreq(Dk)) → Next hope for response (Service)

Step 2:

If don't get requested service (data), host unreachable go to step 1

Step 3:

SM Responses for requested service

(Dres(Dk)) → CMi Received requested data (service) with all information of the whole data (service)

Step 4:

CMi = Reassemble data packets and buffered for other nodes and go to step 1 for (Dk+1)

C. Algorithm for Neighbour Client

Assumptions

CMjN = Neighboring mobile client j

B = Buffer at each mobile node

Step 1:

CMjN = Received a request from CMi for Dk or Dk+1

Step 2:

If (B) empty then

(Req(Dk orDk+1)) → Next hope //CMjN Sends this Req(Dk orDk+1) request to the next hope

Else

If (B (D) ==Req(Dk orDk+1))

If (Data Valid)

(D) → CMi // Data sent to the requested client CMi

Else

(Req(Dk orDk+1)) → SM

Step 3:

Wait for next request or do its own task.

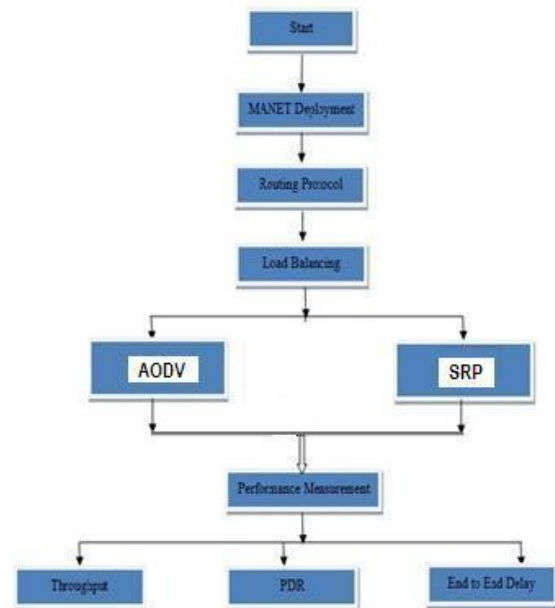


Figure 3. Flow Chart

Table 1. Simulation Configuration

Maximums number of host	70
Movement Patterns	Constant Bit Rate
System Size (X * Y)	1000 x 1000
Reproduction Time	100s
communication Packet Rate	20 m/s
Interruption Time	1.0s
Directing Protocol	AODV/EAODV/EELAR
MAC Protocol	802.11
Channel Data Rate	11 Mbps
Versatility Speed	10 m/s to 50 m/s

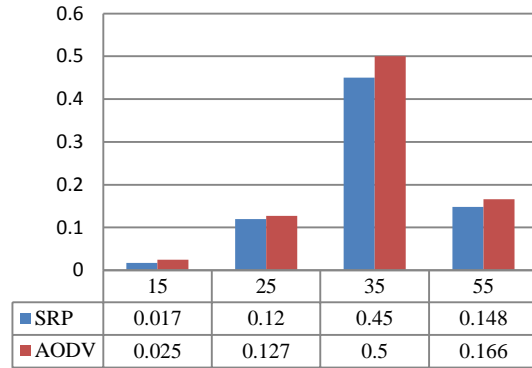


Figure 4. Average end-to-end delay

IX. PERFORMANCE MEASURES

• **Average end-to-end delay:**

The delay of a packet is the time it takes the packet to achieve the destination after it leaves the source [9]. The average packet delay for a network is obtained by averaging over all packets and all source destination pairs. The average end-to-end delay T_{AVG} is calculated as showing in equation (1)

$$T_{AVG} = \frac{\sum_{i=1}^{N_r} (H_r^i - H_t^i)}{N_r} \tag{1}$$

H_t is the instant of package i, H_r is the instant of package i, N_r is the total number of packets received.

• **Throughput:**

The ratio of successfully transmitted data per second.

$$T = \frac{L-c}{L} Rf(\gamma) \tag{2}$$

Where $\frac{L-c}{L} Rf(\gamma)$ is the payload transmission rate, (L) b/s

Binary transmission rate, (L) Packet size, and f(γ) is the packet success rate defined as the probability of receiving a packet correctly. This probability is a function of the signal-to-noise ratio (γ).

• **Packet Delivery Ratio:**

The ratio of the data packets successfully delivered to the destination.

$$\text{PacketDeliverRatio} = \frac{\text{Total Data Packet Recieved}}{\text{Total data Packet Sent}}$$



Figure 5. Client Load

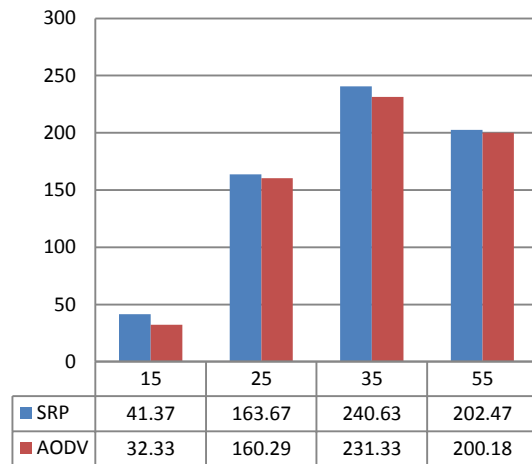


Figure 6. Client Side Throughput

This result shows the client load, it means how many request sent by the client, which are sent by the different clients on the behalf of server.

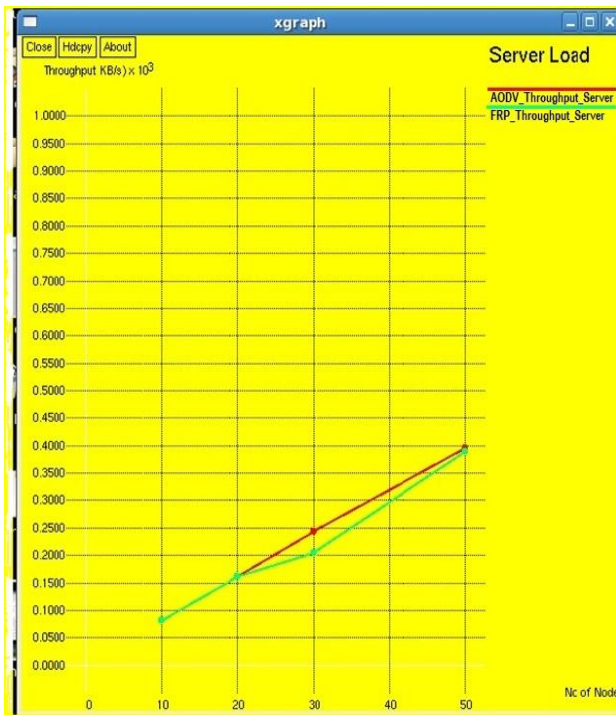


Figure 7. Server Load

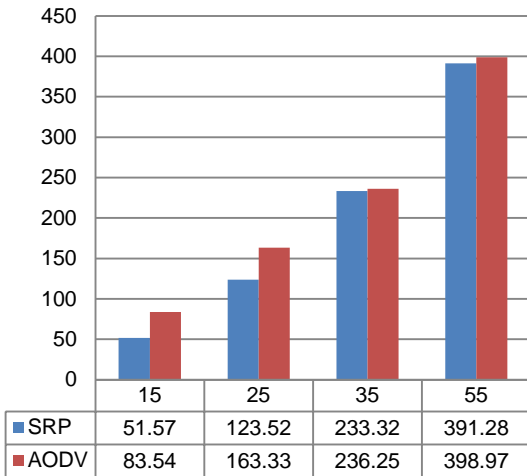


Figure 8. Server Side Throughput

This result shows the server load, it means how many request received by the server, which are sent by the different clients.

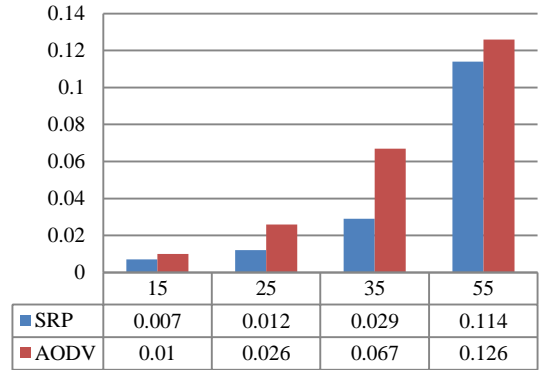


Figure 9. Packet Delivery Ratio



Figure 10. Routig Overhead

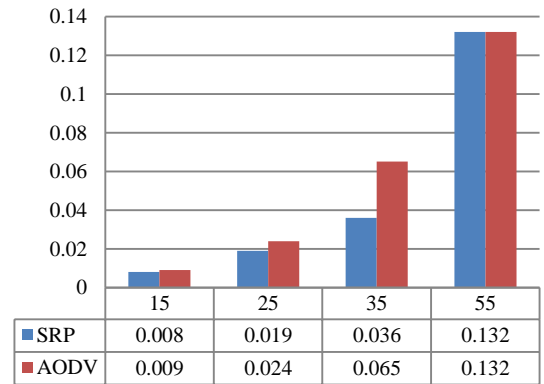


Figure 11. Routig Overhead

This results shows the total overhead of finding path between client and server. First client finds the path and

make a routing table based on server location. This routing table is used for further communication.

X. CONCLUSION

For MANET, Traffic levelling technique plays a really very important role so as to attain the QoS solutions. The normal MANET routing protocols full of additional routing overhead and decreased packet delivery magnitude relation because of not addressing the load levelling in MANET communications, During this paper, we tend to 1st given the issues in MANET, then presented different solutions for load balancing techniques and data availability techniques given up to now. We tend to designed new load levelling and data availability technique for achieving the enhanced QoS execution when contrasted with existing EAODV and AODV steering conventions. The outcomes segment demonstrating that we have reproduced conventions AODV and anticipated SRP with two totally different network conditions. The result outcome area unit thought about by considering two fundamental execution measurements of any directing convention like. Complete to complete delay and packet delivery magnitude relation. All cases, projected load levelling and data availability approach shows improved performance compared to existing strategies.

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Authors Profile

Mr. M. Mahto pursued Bachelor of Science from Guru Gasidas University Bilaspur (C.G.), 1989 and Master of Computer Application from Govt. Engineering College Raipur in year 1994. He is currently pursuing Ph.D from Dr. C.V. Raman University Kota Bilaspur (C.G.) and currently working as Programmer in Govt. Polytechnic Korba under Department of Technical Education Chhattisgarh Raipur, since 1999. He has 19 years of teaching experience and 4 years of other working experience.

