Abdulssalam Abdulwhab A Alafi* et al.
(IJITR) INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND RESEARCH
Volume No.4, Issue No.6, October – November 2016, 4807-4810.

Mac –QoS Multimedia Congestions In Load Balancing Based Mesh Networks

ABDULSSALAM ABDULWHAB .A. ALAFI
Dept. of Electronics and Communication Engineering, SHIATS -DU, Allahabad, India

RAJEEV PAULUS
Dept. of Electronics and Communication Engineering, SHIATS - DU, Allahabad, India

Er.(Mrs.) PRIYANKA D. KUMAR
Dept. of Electronics and Communication Engineering, SHIATS - DU, Allahabad, India

OMAR MOHAMED A OMAR
Dept. of Electronics and Communication Engineering, SHIATS - DU, Allahabad, India

Abstract:- **Wireless mesh network (WMNs) is becoming familiarly mostly due to their deployment flexible. Major overhead of this network is to provide QoS to their servers. Lot of research work has been done to improve the efficiency of the QoS but it put extra overhead on WMNs resources. One among the major considerable characteristics is to enhance QoS in WMNs is end to end delay.**

In the proposed work focus is made to decreases the delay, thereby it is possible to enhance the throughput and also increasing QoS. As delay multimedia congestion needs to transmit in a fixed time otherwise quality of multimedia congestion degrades. Thus our work aims to degrade the delay to send the real time traffic like multimedia.

A hybrid simulation cum emulation- test-bed is built and used for addressing ViLBaS performance compared with analyzed A-TXOP is developed over Re_AP to further enhance the performance of video congestion. Re_AP with A-TXOP helps in decreasing the delay of real-time congestion by over 32% and further enhances the quality of real-time congestion compared with Re_AP without A-TXOP.

Finally, we have TXOP-accessible, whose goal is to reduce the delay of real time congestion. It includes using the TXOP to send to multiple receivers, for further analyzing the TXOP interval totally. This also decreases the multiple of contentions to the medium and hence decreases the delay of real-time congestion by over 14%. A-TXOP is developed over Re_AP to uphold improvement.

I. INTRODUCTION

Wireless mesh networks [1] is rapidly developing technology in recent era perform an important major role in our daily wireless usage. WMNs can easily integrated with other similar kinds of networks & thus used widely. But major challenging issue is providing QoS guarantee. A WMNs is a communicative network developed by remote radio nodes arranged in a typical mesh topology. It is also a form of wireless ad hoc network. Wireless mesh network often contains mesh resources like its clients, routers & gateways.

Characteristics of WMNs[2]

WMN‘s are subclass of ad hoc networking Routing nodes will be immobile

WMN‘s have properties which are listed below

1. Self-Healing
2. Self-Optimization
3. Self-Configuration
4. Self-Management

Best method for an improved better system implementation

High comprehensive capacity

- Spatial diversity
- Power management

Important constraints

- Shared bandwidth & interference
- Number and location of nodes

II. RELATED WORK

Different routing protocols developed to consider load balance in WMNs. Routing in WMNs is a method to select a particular route from sources to destinations. WMNs [3] need every wireless node to share routing information to remaining nodes. Routing algorithm is effective, when it is decreasing delay, substantially increasing throughput and consider packet loss. But it can be managed thoroughly by the routing algorithms. If the routing algorithms [4,5] do not consider about congestion load, some gateways might be overloaded while others might not. So load balance is crucial to exploit the underutilized paths in the network.

III. PROPOSED WORK

Our proposed work transfers a data from a source to destination via routers even when congestion exists. Our system works with reinforcement learning for routing process. It can reroute the flow when the congestion is increased.

Instead of client making one request for all video segments and the server deciding how and when to send the segments, smart streaming can be implemented based on the existing HTTP streaming protocol -having client side request for each segment. Based on this information, together with the knowledge of whether the requested segment belongs to the browsing or viewing phase, the server can implement BB. To be more precisely being accurate, it would also be helpful for client side to include the round-trip time (RTT) the request, so that the server can better take the delay into account

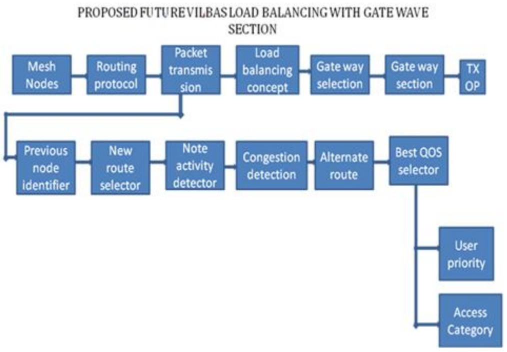
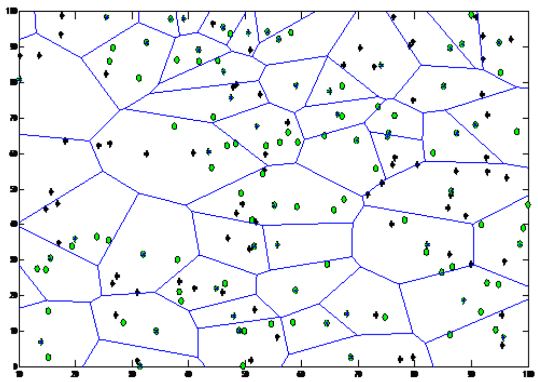


Figure1 proposed architecture

Proposed architecture consists of various blocks for packet delivery with less congestion for reducing delay hence improve throughput. The packet will move from mesh nodes and will adapt any one of the routing protocol available then goes to the transmission gate where its authentication is checked then given priority based on user available ,load balancing technique is applied to the received packet then sent to gate way section for transmission.

Topology creation:



Buffer state estimation During the media play out, the packets are discharged from the play out buffer and injected to the media player

for play back .As long as the play out buffer is non-empty, the continuous media play out is always guaranteed. The client buffer state is reflected by the client buffer remaining space. And the clients remaining space reflects the client receptivity.

On receiving the arrived packets; RTT is calculated with the help of data header. It evaluates the transmitting rate depends on the evaluated RTT. Detect the changes in buffer and calculate the bounds. If the condition matched, transmit the evaluation rate, &the warning bounds back to the real time server.

The real time video server control mechanism:

The real time video server after accepting the ACK messages from multi-client. It performs a periodical resource scheduling and multi-client balance. The server performs continues operations to detect the received ACK messages, after that it obtains the evaluated sending rates, buffer warnings in the feedback packets. It carries on the weighted processing to the calculated transmitting rates depends on the client buffers state.

Smart Streaming:

Smart streaming strategy that can significantly improve overall streaming service quality under given server bandwidth. The improvement is achieved by avoiding the waste based on predicted user departure behaviour. The streaming of multi videos with single server application is achieved by switching port number to corresponding system.

Performance Evaluation

Thus our aim is to degrade the delay to send the multimedia congestion. A hybrid simulation-emulation-based test-bed is built and used for addressing ViLBaS performance compared with analyzed A-TXOP is developed over ReAP to further enhance the performance of video congestion. ReAP with A-TXOP helps in decrease the delay of real time congestion by over 32% and further enhance the quality of multimedia compared with ReAP without A-TXOP. Finally, we have TXOP-accessible, whose ultimate goal is aimed at reducing the delay of audio congestion. It includes selecting TXOP to send to multiple receivers, for analyzing the TXOP interval fully. It decreases the number of contentions to the medium and hence reduces the delay of multimedia congestion by over 14%. A-TXOP is developed over Re_AP to uphold improvement. Which are given in below figures a,b,c.

Time vs PDR

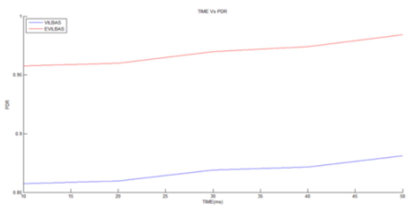


Figure a: Packet Delivery Ratio

X axis-> simulation time,
Y axis ->packet delivery ratio
Red color indicates Enhanced VILBAS graph
Blue color indicates VILBAS graph
Here the EVILBAS shows better performance than VILBAS

As the simulation are carried out we can observe the graphs shown in above figure where time is minimised and PDR is improved .

Time vs Throughput

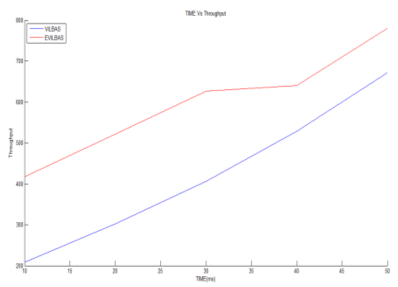


Figure b:Throughput

X axis-> simulation time
Y axis ->Throughput
Red color indicates Enhanced VILBAS graph
Blue color indicates VILBAS graph
Here the EVILBAS shows better performance than VILBAS

Above graph explains about the gradual improvement in throughput of the over all system when compared with respect to time ,these results are observed after simulation emulation test.

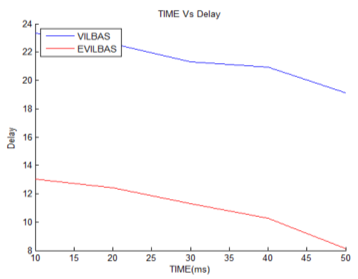


Figure c: End to End delay

X axis-> simulation time
Y axis ->Delay
Red color indicates Enhanced VILBAS graph
Blue color indicates VILBAS graph
Here the EVILBAS shows better performance than VILBAS
As seen the results in the graph it is clear evident that as the time passes on delay get minimum for the packet deliver.

IV. CONCLUSION

In this work software based simulations results were carried out for only constant ad hoc networks. When nodes are mobile, path breaks occur and then the performance very much dependent on the routing protocol employed. In the future, we plan to study the performance of multimedia congestion in mobile scenarios by employing DSR as the mechanism for routing protocol. Data packets should be sent by fragment by fragment AP assigns the transmission range and send the fragments. Finally destination recomputed the fragments and gets the complete output of video. Further, source coding techniques can be applied to sustain packet loss bursts due to mobility and detect the congested routes and find the best path.

V. REFERENCES

[1]. Acharya, Johnson, D.L. and Belding, E.M., 2009, November. Gateway-aware routing for wireless mesh networks. In *The 7th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (IEEE MASS 2010)* (pp. 564-569). IEEE.

[2]. Hava, A., Ghamri-Doudane, Y., Muntean, G.M. and Murphy, J., 2015. Increasing user perceived quality by selective load balancing of video congestion in wireless networks. *IEEE Transactions on Broadcasting*, *61*(2), pp.238-250.

[3]. Leung, R., Liu, J., Poon, E., Chan, A.L. and Li, B., 2001. MP-DSR: a QoS-aware multi-path dynamic source routing protocol for wireless ad-hoc networks. In *Local Computer Networks, 2001. Proceedings. LCN 2001. 26th Annual IEEE Conference on* (pp. 132-141). IEEE.

[4]. Algali, M.H. and xin Wang, J., 2008, September. APTLB: a practical approach for providing congestion load-balancing in wireless mesh networks. In *20085th International Conference about Wireless Communications, Networking and Mobile Computing* (pp. 1-4). IEEE.

[5]. Iata, A., Chiang, C.C., Pei, G., Berla, M. and Chen, T.W., 1996. Scalable routing strategies for ad hoc wireless networks. *IEEE journal on selected areas in communications*, *17*(8), pp.1369-1379.

AUTHOR's PROFILE

ABDULSSALAM ABDULWHAB .A. ALAFI M.Tech student in the Electronics and Communication Engineering from ShepherdSchool of Engineering and Technology, SHIATS. and he completed his Bachelor degree from the Higher Institute for comprehensive careers -Alshati of Libya in 2011.

Dr. Rajeev Paulus received his Doctorate degree in Electronic and Communication Engineering from SHIATS, Allahabad, and M.Tech. degree from the Department of Electrical Engineering, MNNIT, Allahabad. He received his Bachelor's degree in Electronic Engineering from theUniversity of Pune. He has been working in the Department of Electronic and Communication Engineering, as an Assistant Professor in Sam Higginbotom Institute of Agriculture, Technology and Sciences. He has published number of Research Paper in National, International Journals and Conferences. His specializations include Wireless Communication and Networks. His current research interests are Data Communication Networking, Optical Communication and Network, Network Management, 4G, IoT, M2M Communication Sensor and Adhoc-Network. He is Life member of ISTE and member of IEEE.

Er.(Mrs.) Priyanka D. Kumar She has been working in the Department of Electronic and Communication Engineering, as an Assistant Professor in Sam Higginbotom Institute of Agriculture, Technology and Sciences. He has published number of Research Paper in National, International Journals and Conferences. His specializations include Wireless Communication and Networks. His current research interests are Data Communication Networking, Optical Communication and Network, Network Management, 4G, IoT, M2M Communication Sensor and Adhoc-Network. He is Life member of ISTE and member of IEEE.

OMAR MOHAMED A OMAR M.Tech student in the Electronics and Communication Engineering from ShepherdSchool of Engineering and Technology, SHIATS. and he completed his Bachelor degree from the Higher Institute for comprehensive careers -Alshati of Libya in 2011.

