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Bandwidth Maps Over Transmission Range in Vehicle Applications

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Abstract-*Wireless Wide Area Networks (WWANs) is expected to provide actual bandwidth at change of location for vehicles which frequently varies its location by travelling from place to place; it is difficult for network providers to eliminate bandwidth changes over a large service area on the road network. In this paper, we proposed earlier problem over bandwidth maps in a heterogeneous network .We show the bandwidth mapping concept of delivering an Internet services from on-board mobile routers to the user with an adaptive multimedia servers for the emerging vehicular system for communications. Using the simulation we detect the data, to improve in Quality of Service (QoS) that can be achieved by taking advantage of the geographical knowledge of bandwidth provided by the bandwidth maps and merging the 3G based technologies with Vehicular (VANET). We find that our approach improves / improved the frequency of disruptions in perceived QoS for multimedia applications in high-speed vehicular mobility*

Keywords *: Wireless Wide Area Network, VANET, bandwidth mapping, quality of service.*

1. INTRODUCTION

WLAN and WWAN both connect to the Internet wirelessly, but they use different technology to do it. WLAN is intended for "local" use [1]. It is also referred as Wi-Fi, probably the most common way to wirelessly connect to the Internet. WWAN is a mobile broadband3 option that covers a "wide" area. Commonly it is called as "3G" or in some areas a "4G" network. Figure 1, WWAN AND WLAN connections are normally found in homes, offices, hotels, and airports are somewhere else, free to users [2].

WLAN keeps constantly connected to the network as it is used to move in and around house or network area. WLAN is easy for small businesses to grow and connect more users without adding wires. WLAN is typically faster than WWAN [3]. The area covered with WLAN is fixed and typically small. Because WLAN uses radio waves, signal strength can sometimes be compromised. WWAN provides regional, nationwide and global wireless coverage. WWAN provides better security than WLAN and built-in with 128-bit encryption. It utilizes cellular technology to securely transfer data or connect to the Internet. Ideal for users away from home needing to connect virtually anywhere in their coverage area [4] .ISP contract may cost more than WLAN for those who rarely need or use wireless Internet access.

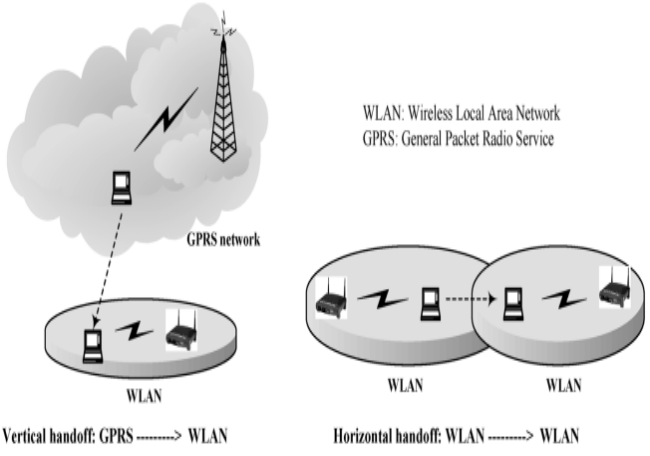

Figure 1: Structure for LAN Network

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2. BANDWIDTH

High Speed Packet Access (HSPA) is an amalgamation of two mobile telephony protocols, High Speed Downlink Packet Access (HSDPA) and High Speed Uplink Packet Access (HSUPA) that extends and improves the performance of existing 3rdgeneration mobile telecommunication networks utilizing the WCDMA protocols [5]. A further improved 3GPP standard, Evolved HSPA (also known as HSPA+), was released late in 2008 with subsequent worldwide adoption beginning in 2010. The newer standard allows bit-rates to reach as high as168 Mbit/s in the downlink and 22 Mbit/s in the uplink. Evolved HSPA (HSPA+) is a wireless broadband standard defined in 3GPP for WCDMA specification [6]. It provides extensions to the existing HSPA definitions and is therefore backwards compatible all the way to the original Release 99 WCDMA network releases [7]. Evolved HSPA provides data rates up to 84 Mbit/ses in the downlink and 10.8 Mbit/s in the uplink (per 5 MHz carrier) with multiple input, multiple output (2x2 MIMO) technologies and higher order modulation (64 QAM). With Dual Cell technology, these can be doubled [8]. Trends show explosive bandwidth growth of the Internet at large and for mobile broadband networks in particular [9].

3. VIDEO STREAMING

Streaming media are multimedia that is constantly received by and presented to an end-user while being delivered by a streaming provider. This refers to the delivery method of the medium rather than to the medium itself. Data applications require varying bandwidth to deliver the required end user experience [10]. Mobile data applications can require anything from a couple of kilobits for text messaging too many hundreds of kilobits for high quality video streaming. In On Demand Streaming the streaming media are available on the server at all times. The Media are delivered to the user upon requests. IPTV offers such services on TV's and Personal computers. There are also a lot of websites providing for Demand Streaming and one of the biggest examples is that of YouTube. The important thing with On Demand Streaming is that the server has to store the media at all times and a considerable amount of space on the server is required at all times. Live Streaming with Live streaming we first have to capture the media using an A/V input device. The captured media then have to be encoded using an encoder and then transmitted on the fly. Live streaming does not require as much storage space as On Demand Streaming but requires a large amount of computing resources and extra hardware. Adaptive Streaming adapts to the varying network conditions. It ensures that the user receives the best quality video under the present network conditions experienced by the user. A user with an Internet connection of fixed bandwidth does not get the guaranteed bandwidth at all times, instead this bandwidth can change depending on the traffic from other users. If there were no adaptive streaming the user would experience interruptions and buffering periods , when there is no video available to the user . But when using Adaptive Streaming instead of this pause and interruption, can switch to a lower quality video that is available at the server. This helps to avoid interruption in playing video at the user, and the user always gets the best quality video under its available network conditions.

$$TFRC_{rate} = \frac{s}{R\sqrt{\frac{2p}{3}} + t_{RTO}\sqrt{\frac{27p}{8}}p(1+32p^2)}.$$

In the above equation, p denotes the loss event rate, which is received as feedback from the receiver, t_{RTO} refers to the TCP retransmission time-out, and s is the packet size.

4. MULTIHOMING TRAFFIC SCHEDULING

The Second application of bandwidth maps enhances the QOS On board Network communication network connected to the Internet via multiple WWAN links. The average bandwidth enhances load balanced of different locations from the past observation.

5. SIMULATION AND RESULTS

This report examined the qualitative and quantitative properties of quality of service requirements exhibited by advanced IP-based applications. The QoS needs of advanced applications can be studied from the viewpoint of the quality characteristics and requirements of their individual elementary data and media flows should be measured.

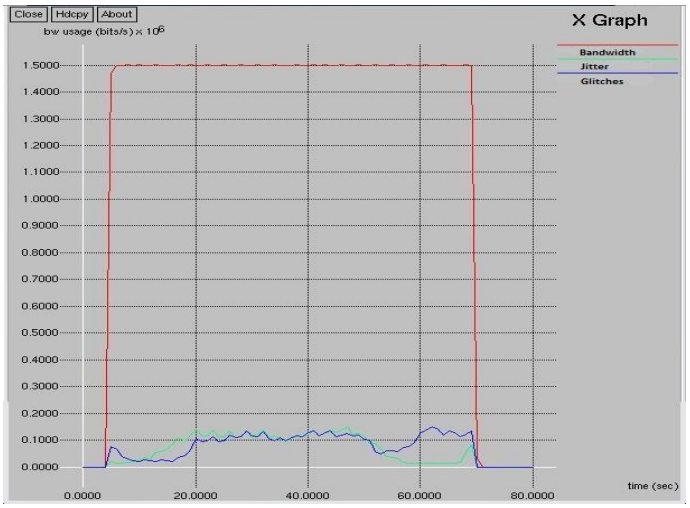

Figure 2. Bandwidth with Glitches

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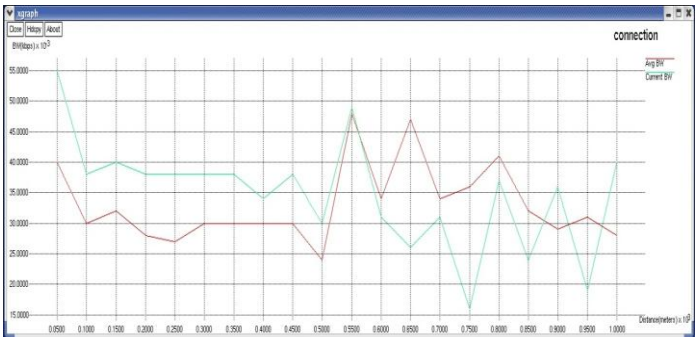

Figure 3. Bandwidth covered in distance by a Vehicle

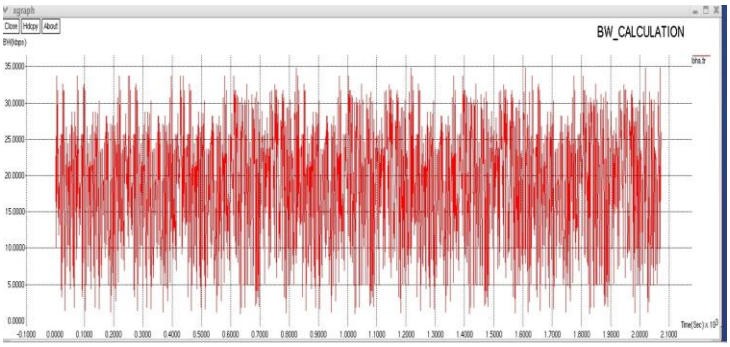

Figure 4. Bandwidth reading over transmission from Base Station

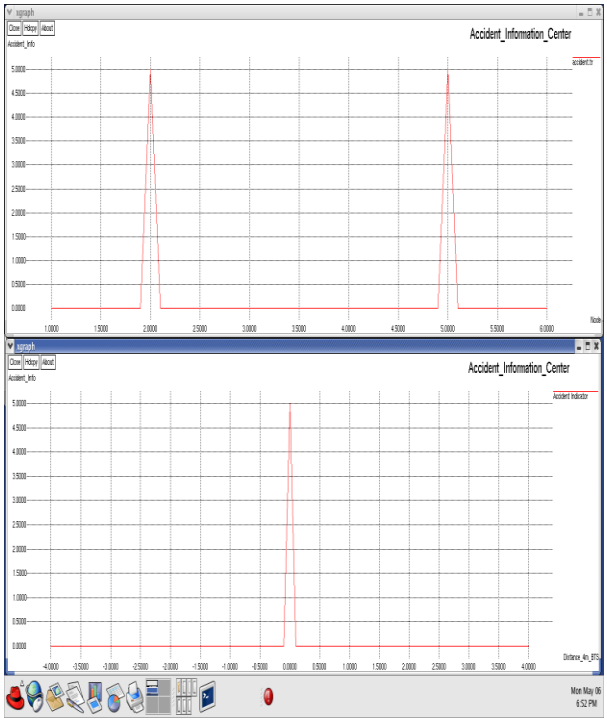

Figure 5. Accidental zone information

The VANET and the systems of communications between vehicles look for to guarantee the security and efficiency of transport systems, supplying, for example, acknowledgments of the warnings environmental hazards (fog, fire, etc.) of the conditions of the road traffic (emergency, congestion, or places of construction). Under the point of view of the net, we are vehicles, equipped with processor on-board and the modules wireless, and the road infrastructures are the points of accesses installed in the edges of the roads of form to allow to communication the global scale.

6. CONCLUSION

To the long one of this work the Vehicles Ad-hoc Networks (VANET) had been analysed inherent the critical factors. Then the considered security mechanisms in literature had been presented. A new based method is distinguished enters the mechanisms in hierarchic levels reliable, that that allows a bigger degree of security is gotten through the evaluation of the behaviour of neighbouring. The objective of to make flexible the connections in the Inter-Vehicle Communications Systems it was considered the integration of the networks protocols Ad-hoc and mobile IPv6.The fast growth of the mobile networks ad hoc in the last years, endowing satisfactory solutions for the problems technician the one that if considered, leads to believe that inside five year they will be available in the market vehicles equipped with devices on-board that they integrate the defined technologies of communication.

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