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Wimax Emulator to Enhance Media and Video Quality

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ABSTRACT

Worldwide interoperability for Microwave Access (WiMAX) is one amongst the forthcoming generations (4G) promising networks to cover a number of the consumers' desires. It's a promising technology that's supposed to deliver mounted and additional recently, mobile broadband connectivity. It's a forthcoming technology it's primarily supposed to overcome the drawbacks of previous version. It's developed primarily because of the coverage area is larger compare all different networks, high information rates, it's simply deployable and secure Quality of service. WiMax may be a new technology handling provision of information over long distance using wireless communication methodology in many alternative ways that supported. IEEE 802.16 WiMax is claimed as another broadband instead of cable and telephone circuits. Worldwide interoperability for Microwave Access (WiMAX) technology will concentrate on Quality of Service (QoS). Quality of Service is an important parameter to evaluate performance of any Network. During this article, Quality of video is improved using WiMAX emulator. Applications like video and audio streaming, on-line play, video conferencing, voice over IP (VoIP) and File Transfer Protocol (FTP) demand a large range of QOS necessities like bandwidth and delay. IEEE 802.16 normal referred to as WIMAX provides broadband wireless access with QOS requirements. These paper have designed a system using WiMAX and RTP to enhance quality of media and video transmitted over network. These paper are progressing to use NS2 emulator so it will use external packets for simulation. These papers are using Ns2 for showing the complete network completely.

I. INTRODUCTION

In today's rising computational era everyone needs a device that's computationally robust enough to satisfy individuals want. WiMAX is that the one. WiMAX has already been adopted worldwide by operators attracted by promises of enormous throughput and coverage for broadband wireless access. Broadband may be a generic term used to describe high-speed networking services, that's a collection of data communication technologies with the capability to transmit vital amounts of information at a high rate, Supporting the delivery of a variety of digital services some or all of which may occur at the same time. It's typically a symmetrical service permitting quick in and outbound knowledge capability. There are several devices use to provide broadband connection like Wi-Fi.

Wi-Fi is generally used to give a Wi-Fi enabled device like computer, cell phone or personal digital assistant an Internet/LAN connection when in proximity of access purpose. Wi-Fi can even be used to produce a mesh network. Wi-Fi additionally permits connectivity in peer-to-peer mode. That allows devices directly connected to every different. WiMAX on the opposite hand, with its higher bandwidth and longer reach is planned to be connecting Wi-Fi hotspot for every different and to alternative a part of the internet providing a wireless different to cable and provide high speed mobile information and telecommunication service. This paper is shown on improving media and video quality by using WiMAX emulator. Since this paper is functioning in wireless networking area, on Ns2 primarily based WiMAX emulator. Emulator is same like simulator it uses external packets for simulation so it's known as emulator. During this case, emulator uses real time video frames for simulation. This paper will generate emulator in Ns2. These papers have used Ns2 as a result of its fully developed and analysis on Ns3 continues to be going. Ns2 has 2 main components Otcl and C++. Otcl is at front end and C++ resides at back end. Otcl is scripting language. Object creation is completed in Otcl and object

invocation is completed in C++. These papers have preferred WiMAX technology for transmission of media and video because of its following advantages:

• WiMAX will handle up to speed of 70 Mbps.

• WiMAX typically blankets a radius of 30 miles (50 km).

• WiMAX has most frequency of 10-66 gigahertz frequency.

• In WiMAX, large numbers of individuals get access to tower at same time whereas Wi-Fi user need to kind of fight to remain connected with specified access purpose.

• WiMAX proposes the complete range of security

These papers have designed a system using WiMAX and RTP to enhance quality of video and media transmitted over network. This paper has used RTP because of its features like recovering lost segments and re-sequencing of packets at application layer. This method design implements features like multicasting facility in network and to cut back packet drop ratio using WiMAX technology and RTP protocol.

Objective of the paper

• The applications logical ensue one module to a different among the system.

• The application is functioning consistent with the necessity specifications.

• The application is reliable and strong and it will recover graciously from failures.

• The application is simple to use and maintain as this paper as secure.

1.1 Technology Preview

NS2

NS-2 is an event driven packet level network simulator developed as a part of the VINT project (Virtual net Tested). This was a collaboration of the many institutes as well as UC Berkeley, AT and T, XEROX PARC and ETH. Version one of NS was developed in 1995 and with version two released in 1996. Version two enclosed a scripting language referred to as Object orientating Tcl (OTcl). It's an open source software system package accessible for each Windows 32 and Linux platforms. NS-2 has several and increasing uses including:

• To assess the performance of existing network protocols.

• To assess new network protocols before use.

• To run massive scale experiments impossible in real experiments.

• To simulate kind of IP networks.

1.1.1 NS2 Features

NS-2: Network simulator version two

• Discrete event simulator.

• Open source, supported two languages.

• C++, for the object oriented simulator, quick to run, slower to alter.

• OTcl, Object Tool command language, interpreter accustomed execute user's command, scripts, slower to run however modified quickly.

1.1.2 Support

• Wired networks: P2P links, LAN.

• Wireless networks: (Ad-hoc, Mobile, WLAN, Bluetooth, Satellite).

• Support emulation.

II. LITERATURE SURVEY

[1] Mojtaba Seyedzadegan and Mohamed Othman proposed IEEE 802.16: WiMAX summary, WiMAX architecture that WiMAX may be a new technology handling provision of information over long distance using wireless communication methodology in many various ways in which. Supported IEEE 802.16 WiMAX is claimed as another broadband instead of cable and telephone circuit. It's a fast technical summary and covers: WiMAX overview (Fundamental Concept; Technology; standard update) and WiMAX architecture. WiMAX Technology is facing several hurdles in market whereas it's some great benefits that create it a technology of nowadays.

[2] Gyan Prakash, Sadhana Pal proposed WiMAX Technology and Its Applications presents the features of the worldwide interoperability for Microwave Access (WiMAX) technology and future applications of WiMAX. A discussion is given by comparison WIMAX with DSL (Digital subscriber line) & Cable and wireless local area network (Wi-Fi). WiMAX may be a global broadband wireless standard. Several developing countries merely don't have the infrastructure to support either cable or telephone circuit broadband technologies. In fact, several such countries are already wide using proprietary broadband wireless technologies. Even in such regions to this paper, it's impossible that either Cable or telephone circuit technologies would disappear. The basic infrastructure usually dictates that the most affordable solutions can predominate. In several areas in developing nations, it should be cheaper to deploy Cable and telephone circuit within the cities a minimum of for fixed applications, whereas WiMAX can dominate outside of major cities.

[3] Min Xing, Siyuan Xiang, Lin Cai, proposed a time period adaptive algorithmic rule for Media and video streaming over Multiple Wireless Access Networks that the way to with efficiency and cost-effectively utilizes multiple links to boost media and video streaming quality desires investigation. So as to take care of high media and video streaming quality whereas reducing the wireless service price. In this, first, they formulate the media and video streaming method over multiple links as an MDP drawback. To realize smooth and top quality media and video streaming, this paper outlines many actions and reward functions for every state. Second, this paper proposes a depth-first period of time search algorithmic rule. The proposed adaptation algorithmic rule can take many future steps into consideration to avoid playback interruption and accomplish higher smoothness and quality.

III. PROBLEM DEFINATION

The major limitation are Specialized instrumentation required for utilizing full practicality of wimax you wish specialized hardware with dedicated antennas. Interference might have an effect on connectivity because the wimax uses radio waves; it's susceptible to interference caused by different instrumentation. The major limitation with any wireless technology is that it's very exhausting to satisfy its security desires. Same is that the case with Wimax the hackers can even attack this connection and may steal some helpful info. The intruders are capable enough of repetition the Mac frames therefore they will break the safety codes. The hackers will even hijack the full network by creating use of denial of service attack. This security threat will devastate the complete connections. Another limitation that comes with the Wimax is that hackers have devised manner to masquerade because the base station during this way, the confidential information is accessed. The concerned departments like Wimax forum try exhausting to overcome this major limitation as this may cause the individuals to refrain from using this technology. Numerous software's present within the market alter the hackers and crackers to decipher the codes and exploit info. Therefore given that the range is low the Wimax technology operates considerably.The infrastructure demand for 802.16 technologies needs distributed network that is complicated and costly to make. The technology is therefore costly that solely massive names like Intel are able to manufacture silicone chips that are integrated with the PCs to extend the efficiency of the system. The marketplace for Wimax continues to be not terribly attractive as there are not enough hardware devices that support this technology. Immense investment is needed to produce equipments that may correspond with this technology. But during this time of recession who would invest such amount quantity in new technology like Wimax. Moreover people are a lot of familiar with use Wi-Fi and that they notice it a lot of users friendly. Thus it's not possible for them to change to the current new technology.

The IT experience required to take care of its security is additionally rare. In different words we will say that individuals don't seem to be attentive to handling the pros and cons related to this technology. This technology has didn't prove it as an independent technology. Individuals take into account it as a 3G technology and also the one exchange broadband wired DSL. The Wimax claims to figure well with the mobile technologies, however still they're not adopted. This is often due to the restricted devices that add accordance with WiMax. The antennas that enhance the efficiency of network are extremely tiny and their electricity power demand is more.

Generally for transmitting videos and something Wi-Fi technology is employed. It's not reliable due to its speed. This paper are coming up with our system to get rid of issues with videos like slow streaming, and slow transmission rate of packets. This paper is transmitting our packets through Network emulator. These papers are getting to use WiMAX technology and RTP for it. WiMAX technology is employed over Wi-Fi. There are several drawbacks of Wi-Fi over WiMAX.

- Wi-Fi is slower than WiMAX. Wi-Fi will transmit up to 54 mbps only. WiMAX will transmit up to 70 Mbps.
- Wi-Fi range is minimum i.e. 30m only as compared to WiMAX (50 km).
- Wi-Fi frequency is extremely low i.e. 5 gigahertz as compared to WiMAX.

These papers are progressing to use NS2 emulator so it will use external packets for simulation. These papers are using Ns2 for showing the complete network nearly. To implement WiMAX physically isn't cheap to us; therefore this paper is using NS2.

IV. PROPOSED METHODOLOGY

4.1 System Architecture

The proposed network architecture is shown in Fig.3. 1. During this design, one computer is employed as a media server and several other Clients are used as video clients. One pc running ns-2 is employed as a WiMAX network emulator that mimics the impairments introduced by the wireless channel in time period. The media and video streaming packets generated by the media server are fed within the WiMAX emulator then multicast to clients. Every client will then show the received video stream severally. The network simulator ns-2 could be a distinct event simulator targeted at networking analysis.

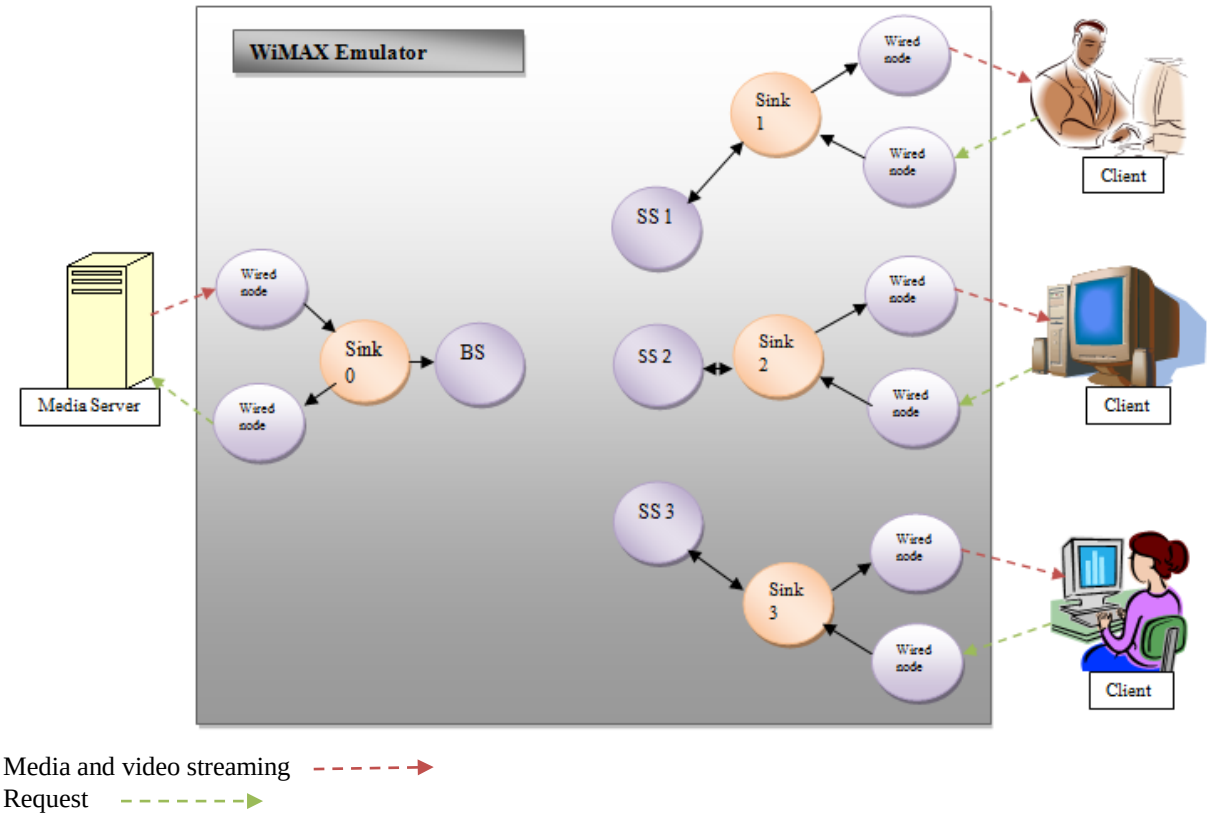

Figure 4.1: System architecture

Ns-2 provides modules for simulation of communication protocol, routing, and multicast protocols over wired and wireless (local and satellite) networks. A similar ns-2 WiMAX module utilized in the system level simulator of WiMAX Forum is additionally utilized in this emulator.

4.1.1. System Feature

1. WiMAX Transmission

• Description and Priority

The media and video streaming aren't quick. They continuously take more time to load. Particularly for multimedia system information, dependability isn't as necessary as timely transmission. Therefore this paper is using WiMAX technology for quick transmission. Ultimately quality of media and video gets improved because of WiMAX.

• Response Sequences

User means that client request for media and Video packets then Packets are transmitted through Ns2 emulator using this feature i.e. WiMAX. Ultimately transmission rate raised.

2. Functional necessities

• Clients should be within the range of WiMAX i.e. 50 km. It needs massive power for transmission.
• It is needed to put in a further WiMAX card to extend the efficiency and strength of the signals.
• The antennas that enhance the efficiency of network are extremely tiny and their electricity power demand is additional.

4.2 Data Flow Diagram

The Data flow diagram (DFD) is that the graphical illustration of the processes and also the flow of information among them. An information flow diagram illustrates the processes, information stores, external entities and therefore the connecting information flows in an exceedingly system. it's a typical observe to draw a context- level information flow diagram initial which shows the interaction between the system and outdoors entities. This context- level DFD is then "exploded" into a close DFD.

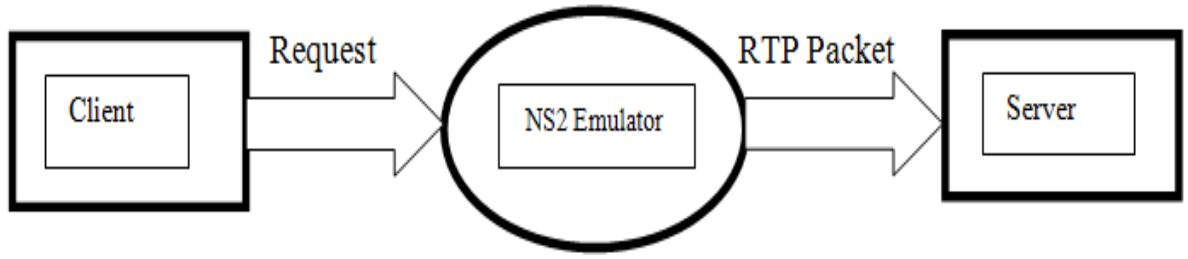

Figure 4.2.1 Data flow diagram1

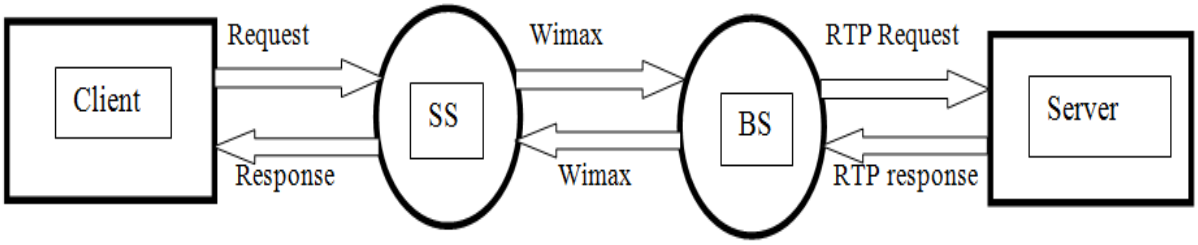

Figure 4.2.2 Data flow diagram2

V.CONCLUSION

Thus this paper presented an NS-2 based mostly IEEE 802.16 network emulator for supporting media and video streaming services. The proposed emulator will emulate completely different channels and real propagation conditions. The video is displayed on client aspect and permits for analysis of application-level media and video streaming metrics. The performance of the proposed emulator was evaluated once time period services are taken under consideration. Wi-Fi and WiMAX transmission are compared through this overall transmission of media and video from server. Finally this paper have Shown that if WiMAX technology is employed instead of Wi-Fi. This paper got additional responsibility and sensible network performance overall.

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