

ANALYSIS AND IMPLEMENTATION OF MULTICAST VIDEO USING OPTICAL NETWORK BY STREAMING PROCESS

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ABSTRACT- The performance and analysis of Multicast groups using optical cable of 1KM distance network based on RTP(Real time Transfer Protocol) for the communication on real time connection oriented network Multimedia communication in internet need a large Bandwidth, Viewers or Peoples are more interested in watching live programs. Thus here we are using the RTP, During the transmission of the data from server to client systems redundant bit are introduced leading to buffering in order to overcome this streaming is adopted. Transmitting Multicast data from one point of server to the interested receiver or groups receiver systems, The main aim of this project is to improve the life time of network, Qos, communication system, Increases Bandwidth and Essential to avoid packet loss, delay than the unicast communication.

Keywords-Addresses of IP, Multicast, Optical cable, Streaming Process, Videos.

I. INTRODUCTION

The popular application in internet is a Multimedia communication. It needs to larger bandwidth a unicast is a point to point communication and acts a single direction or single host to overcome this here we taken Multicast group communication, Multicast environment consist of data is send server to multiple group of receiver is called multipoint communication or Multicast group, it gives packets are delivered high quality and The Qos(quality of service) is dependents on computer network. A Multicast address starts from 224.0.0.0 to the 239.255.255.255. the membership of hosts. Local area network of a the translation address between multicast traffic is sent over a switched Ethernet network. In this we used IGMP (Internet Group Management protocol) when TTL =1 then the IGMP is a joining the Multicast groups to hosts, and it is transmits the Membership Report Messages to the router system. For given multicast packets. IGMP messages are never forwarded by routers provides a path to receiver groups of Multicast computer systems.

A Multicast address is chosen for the receives in a multicast group. The membership of hosts can join and leaves at any time, A multicast group can be active for a long time network system are converters the routers systems, In multicast data communication the router system are used the IGMP. Multicast is delivery of High quality video, Bandwidth Efficiency more than unicast communication, During the transmission of the data from server to client systems redundant bit are introduced leading to buffering in order to overcome this streaming is adopted, the network is performed the live programs like cricket, audio and video conferences and also live radio programs ect.

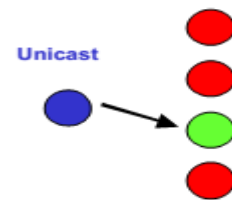


Fig1: unicast communication.

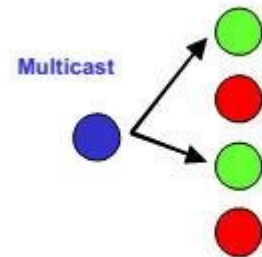


Fig 2: Multicast communication.

Fig 1 and fig 2 Comparison of unicast and multicast communication from server to client system a shown in above figs. Peoples are more want to watch live programs like audio, video conferences, cricket program, live News ect.. here Multicast results is more efficient than unicast.

II.SCOPE AND MOTIVATION

To maintain an unwanted flow of data also Quality of service(Qos), it is to avoid packet delay in the multicast data stream. Applying Qos and giving Multicast data packets priority over other packets. The multicast stream usually have some buffering built in so that losses are smoothed out than the unicast communication. The data is transfer from one point to point communication or single directions. A service. where data is delivery from a sender to a multiple receiver groups is called

multicast communication. Main aim of this project is it eliminates redundant bits and gives the High quality of results, The more important gives the long distances communication by using Optical cable.

III. IGMP MULTICAST COMMUNICATION

Internet group management protocol (IGMP) supports to multicast communication. It does not send messages to router system. IGMP is informs to router for receive multicast host or multicast packets from the given Multicast address of host.

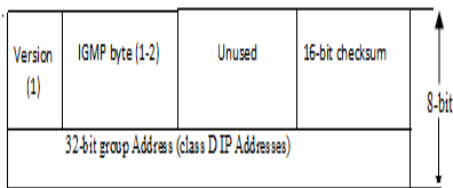


Fig 3: IGMP Packet.

IGMP consist of 32- bit as shown in the fig 3. it has the 32-bit group address of class D addresses. The class D is a higher – order four bits of 1110 and the range of IP Multicast group address is from 224.0.0.1 to address 239.255.255.255.

IV. IP MULTICAST GROUP

IP Multicast point to group of receiver points. IP multicast over ATM point to multipoint virtual circuits(VCs) as feature of dynamically. It creates the ATM point to multipoint is a switched virtual circuits gives the IP multicast traffic more efficient. Components required are in hardware are Computer network, switches, Ethernet cable, optical cable, and software are Linux based on Ubuntu OS (version 14.04), Wireshark analyser to analyses the real time results. VLC Player to streaming the video and audio of Multimedia files. Because of live program connection oriented network used (RTP) Real time transport protocol like audio and video of Live conferences. RTP is Monitor transmission statistics and quality of service(Qos) and synchronization of Multiple streams.

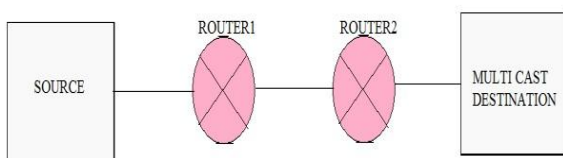


Fig 4: Block diagram of IP Multicast group.

The above fig 4 shows IP Multicast group of multimedia traffic. It consist of four network systems, first system is a server and two systems are act as a routers the last system has a client system or Multicast group. Router is used to forward the packets from the server(sources)to client(destination) network systems. For long distance communication I have used optical cable of 1Km for Multicast communication network. Multimedia is easy to watch and listen in the form of Text, audio, video. FM radio, this was shown by below fig 5 it has similar to the fig 4.

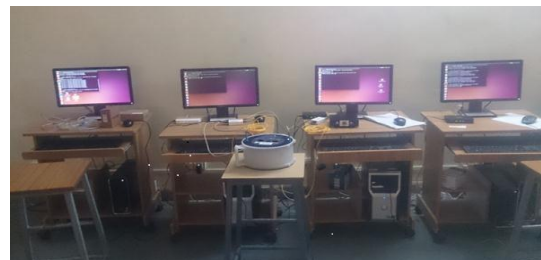


Fig 5: Multicast communication using 1KM distances of Optical cable.

V. ANALYSIS AND RESULTS OF REAL TIME APPLICATION

The above fig 5 Multicast communication of using Optical cable for 1KM distance. Connecting the system network using switches by the desired Topology, configure the sever systems using linux based commands and also configure client systems. Similar to routers, then analysis the real time results of Audio, video. Comparison between the unicast and Multicast. Stored data is 2-3 Mbps in one second.

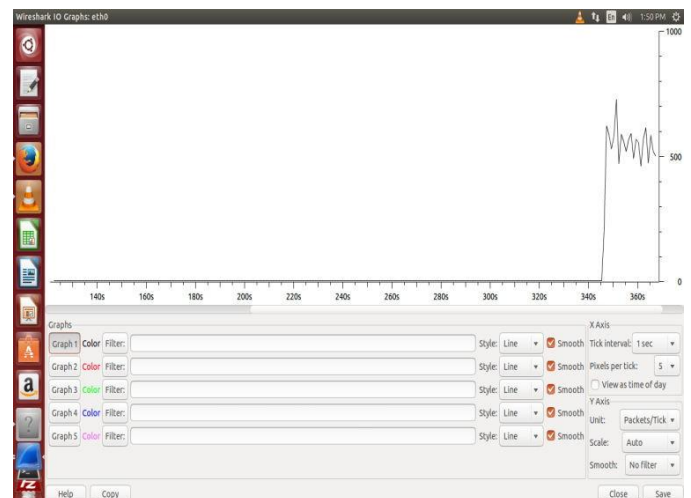


Fig 6: Multicast video file using 1km of optical cable.

The above graph of multicast video file consist along y-axis packets per interval and along x-axis time per second (.MP4).The videos are transmission of data from point to multipoint communication in computer network systems. it is one second of data is stored or frame of 2 Mbps.

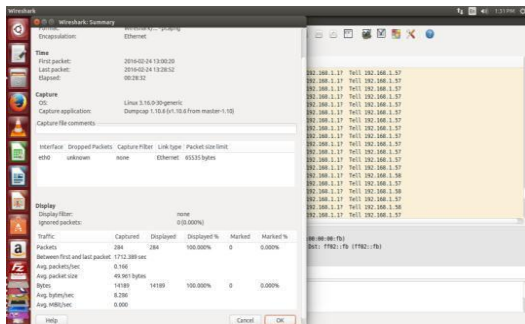


Fig 6: summary of Multicast video file via optical cable.

The above fig 6 shows the Multicast video via optical cable results in wirshark packets analyser.

Total number of packets are 284, first packet and last packet reached time is 1712.389 sec, average per sec 0.166, average packets size 49.916 bytes, packets in bytes 284 *64= 14189.

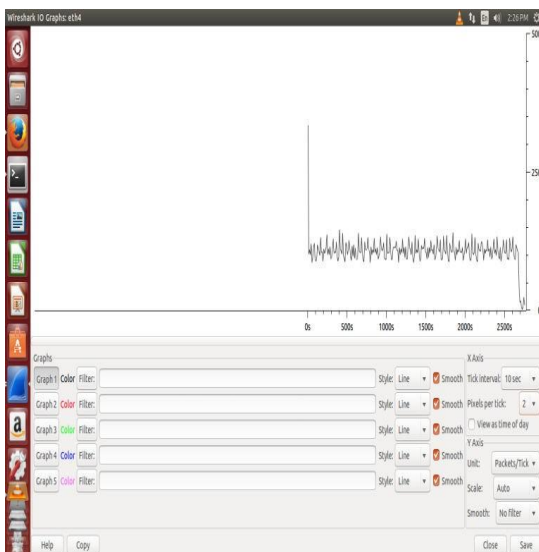


Fig 7: Multicast video streaming file using optical cable.

A service where the data is delivery from sender to Multiple receiver network systems or Multicast groups has shown in fig5. it consist of graph of long Y-axis Packets per interval and long X-axis time per seconds. By connected the eth0 and eth1(Ethernet 1). Video file denoted as .Mp3. one second of data is stored in rang of 2-3Mbps of quality of real time result.

1KM distance. Multicast of traffic is less than Unicast communication network. Video file configure by access of live programs by capture the frames from the web camera.

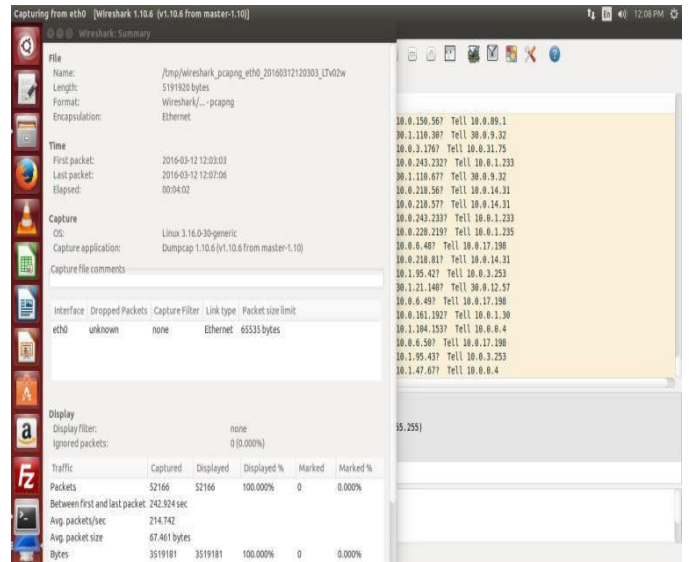


Fig 8. Summary of Multicast Packets for streaming process via fiber optics.

The summary of Multicast packets captured by 52166, Displayed 52166 and given packet displayed 100.00%, the average per sec is 241.742 average packet size 67.461bytes, Between first packet and last packet is 242.924 sec. Total number of packets in bytes written as 3519181.

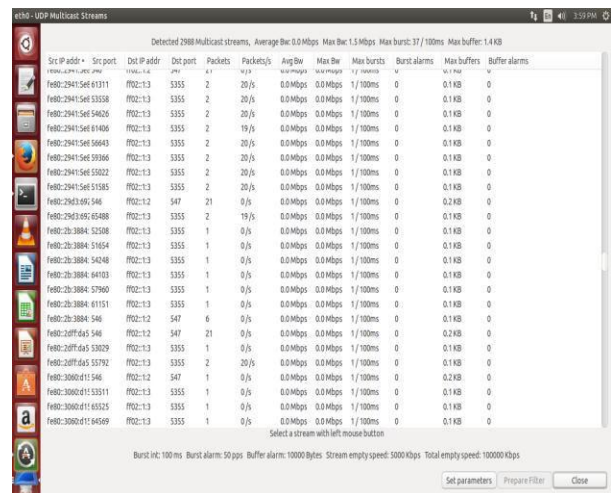


Fig 9.Multicast data streaming.

In this Multicast data streaming Eliminates the buffering while Transmission of live Audio or Video data from server to client bits Detected bits are 2988 Multicast streams. Max Bandwidth 1.5 Mbps and Max Buffer size is 1.4KB.

Multicast consist of IP address are IPV4 and IPV6 by given addresses.

The below table shows comparison of packets via fiber optics and streaming process.

Tab 1.1 The comparison of optical cable network and streaming of video.

Multicast video files(.Mp4)	To reach at the client system	
	Time(sec)	Packets
1.Video for optical cable	1712.389	284
2.Video for optical cable by streaming process	242.924	52166

V. CONCLUSION

The analysis and Implementation of a Multicast group communication using optical cable 1KM based on real time transfer protocol presented in this paper. The multicast network is used in Live program communications like a cricket, live News, Audio, Video conferences without buffering the data. The main aim of this project is increases the life time of Network bandwidth and Avoids the delay than the Unicast communication. Achieve Wavelength is 1550nm and Bandwidth is 1.5Mbps. Unicast traffic is more than the Multicast communication.

VI. FUTURE SCOPE

The analysis is carried out Multicast communication better than the Unicast. In order to Improve the Network system or network communication. Network system proposed work is Broadcast communication. The data transfer from sender to all Receiver systems or many Network computer.

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