Overview of IPTV

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Abstract- IPTV is a system where a digital television service is delivered over a network infrastructure using Internet Protocol, which may be through delivery by a broadband connection. A general definition of IPTV is content of television, instead of being delivered via traditional broadcast and cable formats, is received by the subscriber through the computer networks technologies.

For residential subscribers, IPTV is often offered in conjunction with Video on Demand and   bundled with various Internet services such as Web access. The bundling of IPTV, VoIP and Internet access is referred to as "Triple Play" service (when these three are offered with mobility, the service is referred to as "Quadruple Play"). IPTV is typically supplied by a service provider using a network infrastructure. This network approach is in competition with the delivery of TV content over the public Internet, called Internet Television. In businesses, IPTV can be used to deliver television content over corporate LANs. In this paper the revolution of the IPTV is discussed and also we have compared the working of conventional TV infrastructure and new evolved technology called IPTV.

Keywords- IPTV, VOD, QOS, VOIP

I.   INTRODUCTION

In the 21st century, the access with internet and data rates of   several Megabit per second (Mbit/s) is making a good progress. Due increasing in number of households are getting used to video streaming and download, use of the Internet Protocol (IP) enable an interactive retrieval of video content from the Web. This type of IP based television service is called as WebTV [1]. However WebTV does not provide a guaranteed and good quality of service (QoS). Therefore now the telecommunication companies are making an attempt to overcome the deficiencies of WebTV and launched the IPTV.

1.1 What is IPTV

Internet Protocol Television (IPTV) is a system where a digital television service is delivered using Internet Protocol network [2]. Werner describes that IPTV is not a well-defined term and it may be a source or ambiguity and sometimes may led to confusion. IPTV works on the TV using a set-top box that accesses channels, subscription services on demand and other interactive multimedia services over a secure, end-to-end operator managed broadband IP data network with desired QoS to the public with a broadband Internet connection.[1] IPTV system also include Internet services such as Web access and VOIP where it can be called Triple Play and is typically supplied by a operator of a broadband using the same infrastructure. IPTV is not the Internet Video that simply allows users to watch videos, like movie previews and web-cams, over the Internet in a best effort fashion   .IPTV.
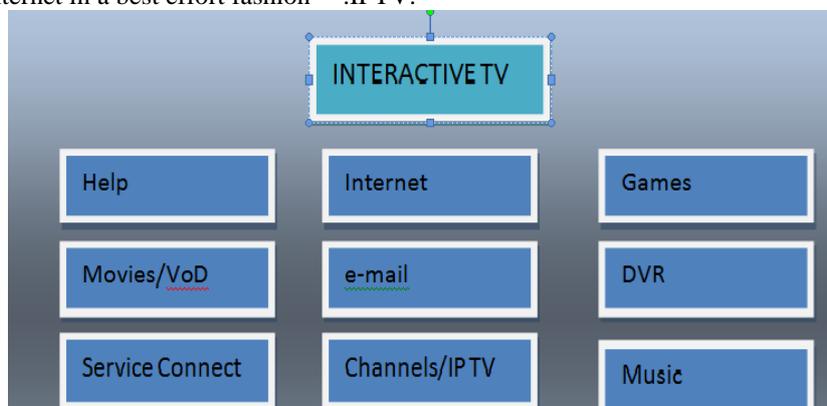

Fig 1. : IPTV infrastructure and power technology bring digital TV, VoD, Internet access, Media serving and many other service together for easy access throughout the home

Technology offers revenue-generating opportunities for the telecom and cable service providers. For traditional telephone service providers, Triple Play is delivered using a combination of optical fiber and digital subscriber line (DSL) technologies to its residential base. Cable television operators use a similar architecture called hybrid fibre coaxial

(HFC) to provide subscriber homes with broadband, but the use of available coaxial cable rather than a twisted pair for the last mile transmission standard. Subscriber homes can be in a residential environment, or even in business offices. From the service provider's perspective, IPTV encompasses the acquisition, processing, and secure delivery of video content over an IP based networking infrastructure. The type of service providers involved in deploying IPTV services range from cable and satellite TV carriers have. the large telephone companies and private network operators in different parts of the world.

1.2 IPTV Features
IPTV has number of features. According to O'Driscoll,[4] these features are:

1)*Interactive TV:* IPTV systems provides various services such as standard live TV, interactive games, high speed Internet browsing and high definition TV (HDTV).

2)*Time shifting:* IPTV permits the time shifting of programming content i.e, subcribers can watch any media at any time whenever they wishes for it.

3)*Low bandwidth requirements:* Instead of delivering each and every channel to every consumer, this technology allows service providers to only stream the channel that the end subscriber has requested. Due to this attractive feature the network operators can conserve bandwidth on their networks.

4)*Accessible on multiple devices:* The IPTV content is not limited to televisions. Consumers can also use their mobile devices and PCs to access IPTV services.

1.3 Triple Play
Triple play in the sense is to delivered a multiple services using single service provider, such as television services, internet services and telephony. Triple play services offer the combined cash flow, from the service provider from three separate services i. e, to pay for a common network which is capable of delivering all of them. Thus the Service providers usually offer discounts to customers who buy more than one service, and this market policy has been proven to be best. Triple play focus on a combined business model instead of solving technical issues.

1.4 Video on Demand
W Simpson states that it is use to watch any show they wish whenever they want to watch .(VOD) service is to service providers. The concept of VOD is that video programming is already stored and then appropriate video is delivered to a subscriber whenever it is required. This storage is nothing but a form of a centralised server that is used to send videos to a hundreds of viewers, simultaneously or it can be implemented as the more distributed storage throughout the network. In the individual STB individual storage device for each viewer is located.

Unicast connection is set up between the customers' the delivering client server and STB. The play functionalities like play, pause, and rewind is assured by Real Time Streaming Protocol (RTSP). The most common codecs MPEG-2 and MPEG-4 are the most common codecs used for VOD.

1.5 Conventional TV transmission VS IPTV
IPTV has created a new mindset about the television transmission. Whereas current broadcast television has the same content being sent to all subscriber's homes, The fixed television schedule is not followed by IPTV. Same as how information on the Internet can be downloaded as well as viewed at any time, IPTV provides television programming to be available whenever each individual subscriber wishes for it. So, the each household can create its own custom content as well as viewing schedule.
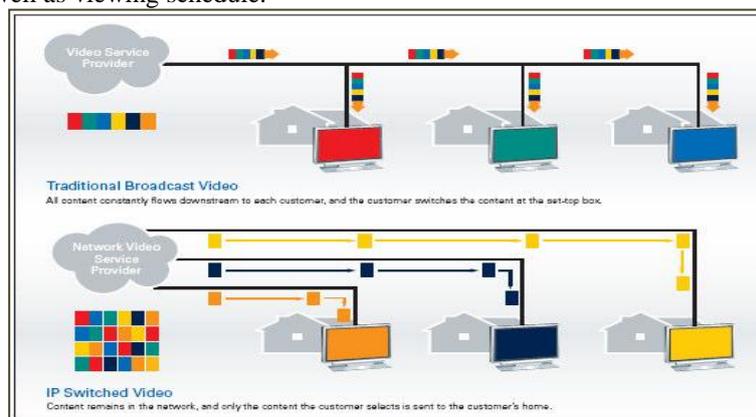

Fig 3 : Conventional TV vs IPTV Transmission Technique

1) Comparison of IPTV and cable television network architectures :
The figure below shows the infrastructures of IPTV's using DSL implementation and the cable television architecture, which follows the same principle. In the architecture, the transmission centre and reception centre is same for IPTV and cable television based on equipment it converts the cable television signal to an IP transmission signal. Cable television's existing infrastructures can be therefore utilize in the implementation of the IPTV service.
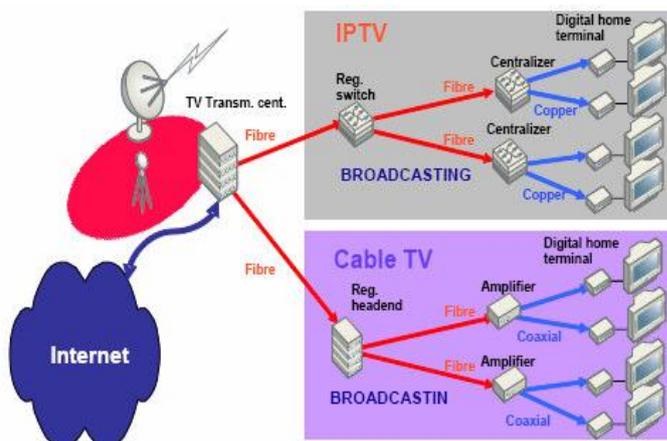
Fig 4: IPTV and Cable TV implementation architecture

II.   LITERATURE REVIEW

Thomas Edison introduced the motion picture technology in the 1890s which was was the beginning of a revolution and that continues even today. In the past century, the
growth of the motion picture industry provided ordinary people with access to high quality entertainment, which was professionally produced but at the expense of other forms of amusement such as Vaudeville Theater and circuses. The television was introduced in the 50's profoundly changed the way movies were shown. In the 1990's cable and satellite TV were adopted power was away from the traditionally broadcast networks and toward more narrowly targeted specialty networks such as Nickelodeon and ESPN.

We are now seeing the opening of the next phase of the revolution. The key driver for this next phase is nothing but widespread availability of high-speed data pipes into the residence, and also the key business driver is the opening of new channels of video distribution over these pipes. Video distribution, is provided by the cable companies.(revol)

Isekes-Barnes examines that peoples are adopting and participating information technologies. The concerning issues that are raised are due to the the impact of globalisation, the struggle for power and control over representation of tremendous people within these technologies[8].

Bettig's describes the issues on the technology like videocassette recorders and , the invention of cable television and the first challenge to the filmed entertainment copyright systems[6].

Evans, tells about the development as well as application of information technologies which has resulted in privatisation of domestic and family lives contributing to the process of individualisation.[7] Many of the commercial Information Technology companies, states that information technology and globalisation is to cross borders, involve as well as interect.

However, Evans says that there are gains to be made by individuals and organizations using information technologies but it is important for people for communication which is the only way forward in the future of communication. Evan's research also states that technology itself may not have any inherent qualities, but the various social circumstances are the key barriers in information and computer technologies to be accepted as well as adopted by communities.

Now comes the development of IPTV technology and its future broadcasting , Cooper and Lovelace provide a comprehensive study. IPTV represents the convergence of broadcasting, telecommunications and information technology.

According to Cooper and Lovelace, IPTV is one where Broadband and Broadcast meets and thus is considered as the revolution of global network television.[9] Now as the growth in adoption of broadband and the increasing speed of connections, has improved the performance of processors and also increases the storage capacity, distribution of online videos and audio has become a practical proposition globally for broadcasting businesses, television production, telecommunication companies, for viewers.

Internet transmission arise due to the communications phenomenon in the late 20th century as a result of connecting computers together with the help of a set of common standards, based on developments in digital networks. The computer networks communicates via transmitting bursts of data or packets and such networks are called as packet-switched networks .

The Internet was created by making communication between devices connected to a different networks, using a common transmission standard known as Internet protocol(IP). This protocol is the platform of Internet television. Internet search engines, and other online services can rapidly reach a critical mass. And become more useful and popular as many people use them and according to Cooper and Lovelace internet can achieve market dominance in a couple of months. The network effect become more powerful with services that employ social networks in which users invest their own time and resources. For instance, the growth of social networking sites like Facebook and Youtube have become very popular in a short time.

Prior to the rapid growth of Internet transmission, television broadcasting was achieved through analogue broadcasting networks. Analogue broadcasting already provides a highly efficient means of delivering the same signal to

an unlimited number of simple receivers or viewers. The audience or subscribers tuned it like a radio to a particular channel to listen as well as watch a programme.

The programmes were organised into a relatively rest. From analogue broadcasting transmission came broadcast transmission through a digital platforms, came in to exixtance which was largely driven to fulfill the need to create more channels, to provide special interest in programming. As the analogn signals are converted into digital form, it can be encode and compress efficiently, providing more services to be distributed. However the basic structure of radio and television as discrete linear channels remains the same.

Now there is limitations in the speed and quality in which IPTV can be viewed and because of the limited speed to access the faster broadband services. Tuans strategy came in to existence in which the provision of fibre optic cable to provide broad band connetion is used . Tuanz suggested that politicians need to go further than the Telecom and thus spilts into the three divisions to improve services and in development of the telecoms based economies. This had an immense impact on the growth of IPTV and the delivery of video and audio services through the Internet. And thus term IPTV become successfull as well possible.

III.   CONCLUSION

Industry watchers suggested that the way people receive video programming can be changed. With the expansion of broadband access as well as the Growth of computing and video production equipment, IPTV has realized its potential as a programming platform which can be compete with satellite, cable and other traditional mediums.

Consumers are enjoying greater benefit and flexibility in their video experiences by IPTV services. With on-demand IPTV services, the content comes to the subscribers with on demand IPTV services. Also there is an interactive applications for the subscriber use the online video as an entertainment as well as e learning tool. It also provides road maps on the screens in the fire trucks, ambulance and police cars enabling them to judge a situation before arriving on the scene.

IPTV is still in its early stages, the growth in the number of providers and Users has made the technology now an important factor in the video marketplace. It is important how IPTV Providers offer new services and also attract subscribers and continued realization of online videos potential will be of great interest to the people even though it might now be on a computer.

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