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Research Paper

Study of IPTV Services and Issues

Computer Science

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ABSTRACT

In the current era everyone wants an access to the media anywhere, any time and on any electronic device. To fulfil such demands, one needs a MediaNet: a network optimized for rich media - not only voice and video, but the mixing together of videos and documents, web pages, text, and many other forms of media. It provides an IPTV platform that is network-aware, media-aware and device-aware to deliver more personal, social and interactive media experiences.

Introduction

So many persons are always searching an ever-illusive killer application for the broadband networks that telcos and multiple-system operators (MSOs) are deploying around the world. For such type of applications, it must be based on Internet protocol (IP), must give the end user total control, and must be of high entertainment value. IP television (IPTV) fits into the slot. Most telecom broadband network operators are planning to offer IPTV. While IPTV is at different stages of product definition, field trials, or early deployments, it is becoming apparent that it is poised to become the framework of incremental revenues for fiber-to-the-x (FTTx, where x stands for curb, node, premises, etc.) deployments.

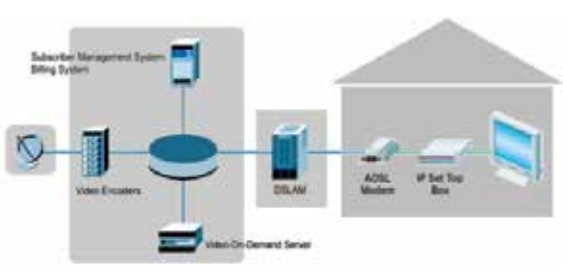
What is IPTV?

IPTV (**I**nternet **P**rotocol **T**ele**V**ision) is a method of distributing television content over IP that enables a more customized and interactive user experience. Basically it is a system which is used to deliver digital quality service to the registered subscribers in a closed network. The delivery of digital Television here is made possible using Internet Protocol (IP) over broadband. This service can be provided along with services like Voice Over Internet Protocol (VoIP) and Internet Access.

IPTV Architecture

The IPTV architecture is shown in the figure below. This figure can be divided into four components corresponding to the four steps involved in the transmission of video signals from broadcasters end to the homes in IPTV scenario.

1. **Dish** which is installed at the IPTV service provider's head-end, receives the video content from the broadcasters and other sources like ZEE, STAR, SONY etc. Known as Content Sources.
2. **Video Encoders, Video-on-Demand server, billing system** which can be known as IPTV Network Operation Centre (NOC) when taken together as a component.



The content sources receives the content in different formats video encoders present in NOC encodes it into IP streams. The main source of Interactivity, video-on-demand server is there in NOC centre, the encoded IP Streams and VOD content is then sent to the customer premise using distribution network.

3. The third component; Distribution Network consist of MPLS core, T1 T2 layers, DSLAM network. These components together help in the timely distribution of IPTV streams to the customer end.
4. ADSL Modem, Set Top Box and TV are present in the Customer premises. Modem receives the IPTV streams from distribution network sends it to Set Top Box and this Set Top Box again decodes the data according to the TV requirement. This way you watch your TV through IPTV technique.

Features of IPTV

IPTV has number of features out of which some are discussed below:

- **Support for Interactive TV:** The Two-way capabilities of IPTV systems allow service providers to deliver a whole raft of interactive TV applications such as standard live TV, high definition TV (HDTV), interactive games and high speed internet browsing.
- **Time shifting:** IPTV is a combination with a digital video recorder permits the time shifting of programming content.
- **Personalization:** An end-to-end IPTV system supports bi-directional communications and allows end users personalize their TV viewing habits by allowing them to decide what and when they want to watch.
- **Low bandwidth requirements:** Instead of delivering every channel to every end user, IPTV technologies allow service providers to only stream the channel that the end user has requested. This attractive feature allows network operators to conserve bandwidth on their networks.
- **Accessible on Multiple Devices:** Viewing of IPTV content is not limited to televisions. Consumers often use their PCs and mobile devices to access IPTV services.

Advantages of IPTV

- Information access on-the-go
- Emergency Information Dissemination
- Interactivity
- Wide variety of real time content at much better quality
- Doesn't requires wires; the latest Set-Top-boxes works on wireless signals

Issues with IPTV

- **Encoding and Compression**

The quality of video is being distributed across the network can be affected right at the source. The encoding and compression usually deal between the quality of the video and the desired compression level.

- **Jitter**

This is the variation in the packet arrival time caused by the networks congestion. If the Ethernet frames arrive at the STB at a rate that is slower or faster; as determined by the network conditions, buffering is required to help smooth out the variations. Based on the size of the buffer, there are delivery conditions that can make the buffer overflow or underflow, which results in a degradation of the perceived video.

- **Limited Bandwidth and Packet Loss**

Bandwidth limitation and the total amount of video-stream data that can be sent are limited mostly by the access network or the customer's home network supported rate. When traffic levels hit the maximum bandwidth available, packets are discarded, leading to video quality degradation. The packet loss can also

occur due to network congestion, failed links and transmission errors.

Conclusion

This article discusses on the IPTV services. It is a system through which internet television are delivered using an architecture and networking methods of the internet protocol suite over a packet-switched network infrastructure. These services may be classified in 3 sections: live television, time-shifted programming and video on demand. It works on the TV with a set-top-box that accesses channel, subscription services, on demand and other interactive multimedia services over a secure; end-to-end operator managed broadband internet connection.

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