

INTERNET PROTOCOL TELEVISION (IPTV)

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Introduction

Internet Protocol Television (IPTV) is a rapidly growing technology for the delivery of digital television service and other media services over a secure, end-to-end operator managed broadband IP data network. IPTV broadly encompasses a rich functionality that ranges from the acquisition, encoding and decoding, access control and management of video content, to the delivery of digital TV, movies on demand, viewing of stored programming, personalized program guides, and a host of interactive and multimedia services. IPTV technology, integrated with the higher speed digital subscriber line (DSL) access technologies such as ADSL2 (Asynchronous DSL), ADSL2+ and VDSL (Very high speed DSL), offers attractive revenue-generating opportunities for the telecom service providers, enabling them to compete effectively in the "triple play" market space with the delivery of voice, data and video services to residential and business customers.

What is IPTV?

IPTV (Internet Protocol Television) describes a system where a digital television service is delivered using the Internet Protocol (IP) over a network infrastructure, which may include delivery by a broadband connection. IPTV enables the broadcaster to deliver high-quality video in conjunction with many advanced features like VoD (Video on Demand), games, Interactivity and Personalized services. Following are example of IPTV

- Competitive TV services over managed IP networks with two way connection
- Broadcast Television
- Video on Demand

What is Not IPTV?

IPTV is distinctly different from "Internet Video" that simply allows users to watch videos, like movie previews and web-cams, over the Internet in a "best effort" fashion with no end-to-end service management and quality of service considerations.

Following are not IPTV

- Video streaming over internet
- Watching TV on your PC(Personal Computer)
- Best Efforts video services
- Unproven Business models for media and TV services

Why IPTV?

Consumers always want more and higher quality. Nowadays most of TV is analog with one way data transmission and limited channel. IPTV provides all digital, two-way connected, unlimited channels, integrated (HDTV – High definition TV, PIP – Picture in picture and VoD) and personalized TV. IPTV enhances the TV offer and delivers in a new way to provide better experience to watch TV in a simple, personalized and in an advanced way.

Simple:-

EPG (Electronic Program Guide) that allows easy navigation, quick program information, PIP (Picture in Picture) and PPV (Pay Per view) capabilities.

Personalized:-

IPTV enables you to personalize your view, profile and events. You can attach your TV with other devices such as Digital cameras to view personal pictures or photos on your TV. You can also personalize your profile, parental controls, television and account settings.

Advanced:-

With the help of EPG your DVR (Digital video recorder) or PVR (Personal video recorder) can be scheduled to make recordings of your programs either once or on a recurring basis. Get live TV notifications such as Caller ID, SMS and e-mail notification while you watch TV. It also provides program search capabilities. To enhance the quality IPTV provides following advanced features

- Advanced Multimedia Program Guide
- Integrated Broadcast, VOD and DVR
- Fast scrolling & navigation
- Live picture-in- picture.
- Channel slide show
- Software-based tuning
- Advanced Video Applications with multiple PIP(Picture-In-Picture)
- Instant channel changing with richer navigation
- Quick and Responsive EPG for HDTV and SDTV (Standard definition TV)
- Integrate Web based services
- Cross device applications and services

IPTV: Headend equipments/technology

IPTV Headend infrastructure is very similar to Digital TV Headend. It is composed of MPEG (Motion picture experts group) Encoder, Streamer, CAS (Conditional access system) Headend, VoD (Video on Demand) Server, EMS, EPG Server and so on. TV Headend provides MPEG2 or MPEG4 Live TV contents to STB (Set-top-box). IPTV Headend receives, decode and decrypts video, audio and data content from a variety of sources, such as satellites, terrestrial, studio and storage media and convert it through compression techniques into IP multicast encapsulated MPEG streams. Encoder, the core part of Headend, implements real-time encoding and transcoding of MPEG2 and MPEG4 through the hardware or software component based on business model. Basic components of IPTV solutions are shown in diagram.

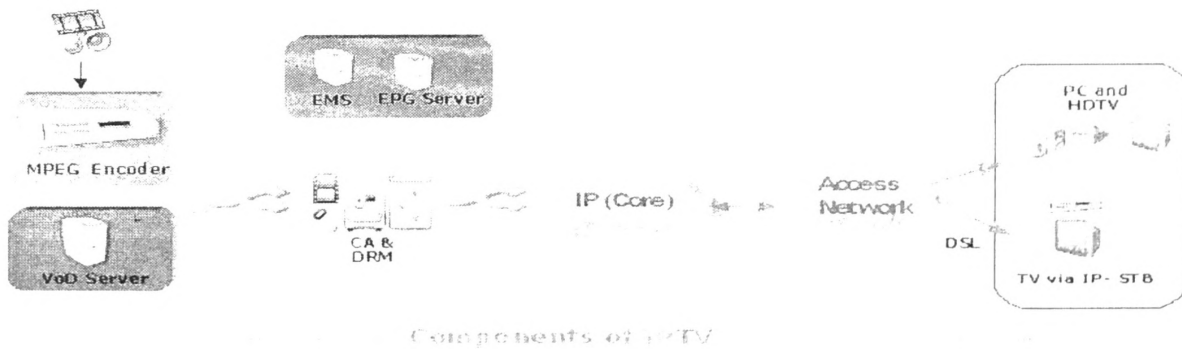


Fig. 1. Components of IPTV system

Content security

CAS - Conditional Access System:

CAS (Conditional Access System) is just for decision making when the stream should be play or not at the subscriber requested. So, CA decides all about just display or not the requested stream just after the subscriber changes channel

DRM - Digital Right Management:

DRM (Digital Right Management) is for the managing the life cycle of the given digital media. So, the DRM can manage the given media on conversion to other CODEC, edit of some or all part of the given media, re-distribute to other device or other users, playing time or duration of the given media, transfer the playing rights to other users, etc

CP - Copy Protection:

CP (Copy Protection) controls only when the user request copy to other storage, read and conversion via other CODEC, or re-transferring to other networked location. Sometimes it can protect even from the Analog Hole.

Service creation

Video on Demand (VOD)

Video on demand (VOD), enable you to watch video which you want to watch. Video-on-Demand is an ideal application for broadband IP networks. It provides entertainment-on-demand by taking advantage of the network's two-way communication capability. IP-based VOD systems are commonly distributed to make efficient use of broadband IP infrastructures such as DSL. In these environments it is important to reassure content owners that their content is protected, both while in transit over the backbone and while sitting on remote VOD server installations

Interactivity and T-commerce

Interactive television allows viewer to interact with television content i.e. there is two way connection with Content provider and viewer. Generally, it is known as iTV. T-commerce enables you to buy products from TV. T-commerce comprises TV shopping, direct response TV, Travel shopping and Interactive TV applications

Follow Me TV

IPTV enables user to have same experience anywhere as they have in home while watching TV. IPTV allows users to store their personal preferences at Service Provider end so that they can use anywhere. They can also share their personal preferences with others.

Collaborative/Shared Viewing

IPTV enables you to share viewing between digital home equipments. IPTV allows you to do Home Networking i.e. you can connect your any device like DVD player, STB, VCR, Digital Cams, PC or any other devices with your TV using IP to share or store content between them.

IPTV: Challenges

Most of the Television industry is based on analog or receive analog signals. Broadcasters have invested billions of dollars on analog infrastructures. Changing the infrastructure from Analog to IP based digital infrastructure is hard, expensive and time consuming but sure "Better TV " IPTV will come and dominate the entertainment market in coming years. IPTV will grow in coming future because of its powerful strengths, like personalized and two-way connectivity. IPTV managed by a Service Provider will dominate in the delivery of IP-based video consumption for at least the next decade due to quality, Integration and economic values. Eventually the boundaries will blur due to Bandwidth limitations and increases Improved Internet Quality of Services.

What is next? IPTV NGN

IPTV with NGN is a future of IPTV. A **Next-Generation Network (NGN)** can be described as a telecommunications packet-based network that handles heavy traffic (such as voice, data, and multimedia). NGN architecture enables content providers to deliver their heavy media content across the network. It allows them to move beyond IPTV/Multimedia to develop and deliver a various integrated media services to Multimedia Home Networks it also provide unparalleled linkages among the network, middleware and video/IPTV services.

Conclusion

IPTV enables broadband service providers provide the "triple play" to users, open opportunity to takeover TV market and earn money. On the other hand viewer will get advanced and on demand entertainment. An IPTV offers you an advanced multi channel high definition TV (HDTV) as well as on demand entertainment. IPTV technology promises to give better and more contents available, Because of two way connection between viewer and service provider will know the views personal preferences and entertain them accordingly. IPTV Middleware providers give focus on making more content available to viewers, easy to use and portable solutions.

References

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