# Internet protocol television

Media, Television

Internet Protocol television (IPTV) is a system through which Internet television services are delivered using the architecture and networking methods of the Internet Protocol Suite over a packet-switched network infrastructure, e. g., the Internet and broadband Internet access networks, instead of being delivered through traditional radio frequency broadcast, satellite signal, and cable television (CATV) formats.

IPTV services may be classified into three main groups: live television, time-shifted programming, and video on demand(VOD). It is distinguished from general Internet-based or web-based multimedia services by its on-going standardization process (e. g., European Telecommunications Standards Institute) and preferential deployment scenarios in subscriber-based telecommunications networks with high-speed access channels into end-user premises via set-top boxes or other customer-premises equipment.

Definition

Historically, many different definitions of IPTV have appeared, including elementary streams over IP networks, transport streams over IP networks and a number of proprietary systems.

The official definition approved by the International Telecommunication Union focus group on IPTV (ITU-T FG IPTV) is as follows:

" IPTV is defined as multimedia services such as television/video/audio/text/graphics/data delivered over IP based networks managed to provide the required level of quality of service and experience, security, interactivity and reliability."

Another official and more detailed definition of IPTV is the one given by Alliance for Telecommunications Industry Solutions (ATIS) IPTV Exploratory Group on 2005:

" IPTV is defined as the secure and reliable delivery to subscribers of entertainment video and related services. These services may include, for example, Live TV, Video On Demand (VOD) and Interactive TV (iTV). These services are delivered across an access agnostic, packet switched network that employs the IP protocol to transport the audio, video and control signals. In contrast to video over the public Internet, with IPTV deployments, network security and performance are tightly managed to ensure a superior entertainment experience, resulting in a compelling business environment for content providers, advertisers and customers alike."

One definition for consumer IPTV is for single or multiple program transport streams (MPTS) which are sourced by the same network operator that owns or directly controls the " last mile" to the consumer's premises[citation needed]. This control over delivery enables a guaranteed quality of service (QoS), and also allows the service provider to offer an enhanced user experience such as better program guide, interactive services etc.

In commercial environments IPTV is widely deployed for distribution of live TV, video playout channels and Video on Demand (VOD) material across LAN or WAN IP network infrastructures, with a controlled QoS.

History

In 1994, ABC's World News Now was the first television show to be broadcast over the Internet, using the CU-SeeMevideoconferencing software.

The term IPTV first appeared in 1995 with the founding of Precept Software by Judith Estrin and Bill Carrico. Precept designed and built an Internet video product named IP/TV. IP/TV was an MBONE compatible Windows and Unix-based application that moved single and multi-source audio/video traffic, ranging from low to DVD quality, using both unicast and IP multicast Real-time Transport Protocol (RTP) and Real time control protocol (RTCP). The software was written primarily by Steve Casner, Karl Auerbach, and Cha Chee Kuan. Precept was acquired by Cisco Systems in 1998. Cisco retains the IP/TV trademark.

Internet radio company AudioNet started the first continuous live webcasts with content from WFAA-TV in January, 1998 and KCTU-LP on January 10, 1998.

Kingston Communications, a regional telecommunications operator in UK, launched KIT (Kingston Interactive Television), an IPTV over DSL broadband interactive TV service in September 1999 after conducting various TV and VoD trials. The operator added additional VoD service in October 2001 with Yes TV, a VoD content provider. Kingston was one of the first companies in the world to introduce IPTV and IP VoD over ADSL. [6]

In 1999, NBTel (now known as Bell Aliant) was the first to commercially deploy Internet Protocol Television over digital subscriber line (DSL) in Canada using the Alcatel 7350 DSLAM and middleware created by iMagic TV

(owned by NBTel's parent company Bruncor[9]). The service was marketed under the brand VibeVision in New Brunswick, and later expanded into Nova Scotia in early 2000 after the formation of Aliant. iMagic TV was later sold to Alcatel

In 2002, Sasktel was the second in Canada to commercially deploy Internet Protocol (IP) video over digital subscriber line (DSL), using the Lucent Stinger(R) DSL platform.[12] In 2006, it was the first North American company to offer HDTV channels over an IPTV service[13]

In 2003, Total Access Networks Inc launched its IPTV service, comprising of 100 free IPTV stations world wide. The service has been used in over 100 countries world wide, and has channels in 26 languages.

In 2005, Bredbandsbolaget launched its IPTV service as the first service provider in Sweden. As of January 2009, they are not the biggest supplier any longer; TeliaSonera who launched their service later has now more customers.

In 2006, AT&T launched its U-Verse IPTV service in the United States, comprising a national head end and regional video-serving offices. AT&T offered over 300 channels in 11 cities with more to be added in 2007 and beyond. In March 2009, AT&T announced that U-verse had expanded to 100 or more High Definition channels in every U-Verse TV market. While using IP protocols, AT&T has built a private IP network exclusively for video transport.

Future

In the past, this technology has been restricted by low broadband penetration and by the relatively high cost of installing wiring capable of transporting IPTV content reliably in the customer's home. In the coming years, however, residential IPTV is expected to grow at a brisk pace as broadband was available to more than 200 million households worldwide in the year 2005, projected to grow to 400 million by the year 2010. Many of the world's major telecommunications providers are exploring IPTV as a new revenue opportunity from their existing markets and as a defensive measure against encroachment from more conventional Cable Television services.

Also, there is a growing number of IPTV installations within schools, universities, corporations and local institutions.

In December 2009, the FCC began looking into using set-top boxes to make TVs with cable or similar services into broadband video players. FCC Media Bureau Chief Bill Lake had said earlier that TV and the Internet would soon be the same, but only 75 percent of homes had computers, while 99 percent had TV. A Nielsen survey said 99 percent of video viewing was done on TV.

Markets

Map of IPTV countries of the world. Countries where IPTV is available in at least some parts of the country The number of global IPTV subscribers is expected to grow from 28 million in 2009 to 83 million in 2013. Europe and Asia are the leading territories in terms of the over-all number of subscribers. But in terms of service revenues, Europe and North America generate a larger share of global revenue, due to very low average revenue per user

(ARPU) in China and India, the fastest growing (and ultimately, the biggest markets) in Asia. The global IPTV market revenues are forecasted to grow from US$12 billion in 2009 to US$38 billion in 2013.

While all major western countries and most developed economies have IPTV deployments, the world's leading markets for IPTV for now are Germany (by Deutsche Telekom) France (led by Free, then Orange, then Neuf Cegetel; total of over 4 million subscriptions), South Korea (1. 8 million subscriptions), United States (by AT&T), Hong Kong, Japan, Italy, Spain, Belgium, Luxembourg, Austria, China, Singapore, Taiwan, Switzerland and Portugal (with meo, Optimus Clix andVodafone Casa). Services have also launched in Bosnia and Herzegovina, Canada, Croatia, Republic of Moldova, Macedonia, Montenegro, Poland, Romania, Serbia, Slovenia, the Netherlands, Greece, Denmark, Finland, Estonia, Slovakia, Hungary, Norway, Sweden and Iceland.

The United Kingdom launched IPTV early and after a slow initial growth, in February 2009 BT announced that it had reached 398, 000 subscribers to its BT Vision service. Claro has launched their own IPTV service called " Claro TV". This service is available in several countries in which they operate, such as Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua. IPTV is just beginning to grow in Central and Eastern Europe and Latin America, and now it is growing in South Asian countries such as Sri Lanka, Pakistan and especially India. but significant plans exist in countries such as Russia. Kazakhstan introducedits own IPTV services by the national provider Kazakhtelecom JSC[27] and cable-operator Alacast under the " iD TV" brand

in two major cities Astana and Almaty in 2009 and is about to go nationwide starting 2010. Australian ISP iiNet launched Australia's first IPTV with fetchtv.

The first IPTV service to launch on the Chinese mainland sells under the " BesTV" brand and is currently available in the cities of Shanghai and Harbin. In India IPTV was launched by Airtel and the government service provider MTNL and BSNL and is available in most of the major cities of the country . In Pakistan IPTV was launched by PTCL, brand nameSmart TV which is available in most of the major cities of Pakistan.

In Malaysia, various companies have attempted to launch IPTV services since 2005. Failed PayTV provider MiTVattempted to use a IPTV-over-UHF service but the service failed to take off. Hypp. TV was supposed to use an IPTV-based system, but is not true IPTV as it does not provide a set top box and requires users to view channels using a computer. True IPTV providers available in the country at the moment are Fine TV and DETV. Telekom Malaysia is also coming up with a true IPTV service, but at the moment the service is in testing and it will only be made available to High Speed Broadband subscribers.

In Turkey, Superonline is providing IPTV under a different name WebTV. And in late 2007 Türk Telekom has started so bulid fiber optic substructure for IPTV.

Discussion of IPTV

A telco IPTV service is usually delivered over a investment heavy walled garden network, which is carefully engineered to ensure bandwidth efficient

delivery of vast amounts of multicast video traffic. The higher network quality also enables easy delivery of high quality SD or HD TV content to subscribers' homes. This makes IPTV by default the preferred delivery platform for premium content. However, the investment for a telco to build an end-to-end telco IPTV service can be substantial.

Broadcast IPTV has two major architecture forms: free and fee based. As of June 2006, there are over 1, 300 free IPTV sources available. This sector is growing rapidly and major television broadcasters worldwide are transmitting their broadcast signal over the Internet. These free IPTV sources require only an Internet connection and an Internet enabled device such as a personal computer, HDTV connected to a computer or even a 3G cell/mobile phone to watch the IPTV content. Various Web portals offer access to these free IPTV sources. Some cite the ad-sponsored availability of TV series such as Lost as indicators that IPTV will become more prevalent.

Because IPTV uses standard networking protocols, it promises lower costs for operators and lower prices for users. Using set-top-boxes with broadband Internet connections, video can be streamed to households more efficiently than current coaxial cable. Home networks currently use technology from the Multimedia over Coax Alliance, HomePlug Powerline Alliance or Home Phoneline Networking Alliance to deliver IPTV content to any set-top-box in a home, without having to install new Ethernet wires and without relying on technologies like 802. 11, which are not optimized for reliable delivery of video streams. ISPs are upgrading their networks to bring higher speeds and to allow multiple High Definition TV channels.

IPTV uses a two-way digital broadcast signal sent through a switched telephone or cable network by way of a broadband connection and a set-top-box programmed with software (much like a cable or satellite TV box) that can handle viewer requests to access to many available media sources.