The Transition From 20th-Century Broadcast TV to 21st-Century IPTV

The essence of TV is transforming from entrenched broadcasting methods like cable or satellite TV towards internet based streaming, and IPTV is a large part of this shift.

What is IPTV?

IPTV refers to Internet Protocol Television where the internet is used to transmit TV programming and video, either live or on demand, instead of over traditional cable or satellite. The television content is encrypted, compressed, put into IP packets, and delivered to the subscriber through a high-speed internet connection. With IPTV, viewers have the advantage and convenience of choosing programs to watch live TV wherever they want, including prime time network dramas, local and national news and sports.

IPTV is most often provided by operators who already deliver internet services to the subscribers and have control over the network from the headend or central office up to the customer premise. These same providers are now building separate networks that deliver IPTV to provide a replacement service that satisfies the wave of cord cutters and their desire for lower prices and increased flexibility in how they access television.

Is IPTV the Same as OTT?

Both IPTV and OTT TV (Over The Top) are similar, and the two are often confused. The main difference between IPTV and OTT is how the content is delivered over the Internet and who is providing it.

Even though both OTT and IPTV use the internet to deliver streaming content, IPTV delivers video and audio content over a closed and private network maintained by the operator, so it is like a traditional cable or satellite Pay TV service.

OTT video streaming is delivered through the open and public internet as a standalone product from a third party, such as what you would get from services like Hulu, YouTube TV, Netflix or Amazon Prime. Like IPTV, this delivery system transmits the video content via IP packets, but it is sent "over the top" of the broadband operator's network. The video data packets from an OTT service that traverse a broadband operator's network are not offered directly by the operator and are treated no differently than other data packets like web content or an email message.

The quality of the picture for OTT TV and IPTV can also be different. IPTV's advantage over OTT is that it streams directly from the source over a managed network that can be optimized for video, potentially resulting in a higher quality of service with fewer interruptions. Because OTT TV uses public internet for transport, the quality of the service can be impacted by the quality of the internet connection from the remote video source all the way to the subscriber.

How Does IPTV Work?

When we hear the word streaming, we imagine video content flowing smoothly from one place to another, but how IPTV content reaches your TV over the Internet is a little more involved.

All data transmitted via Internet uses a process known as packet switching. IPTV is the same. Using packet switching to encode video into small blocks of data, it then sends the blocks to the IP address of the computer or set-top box when content is requested. As a carrier-led platform, there is a physical carrier with pipes and framework that operators control. The subscriber is interacting directly with the operator/carrier. This end-to-end system is all within the operator's environment, and cannot be reached from the Internet as a whole. The distribution infrastructure, and sometimes the devices to access it, are controlled and managed by the IPTV operator. IPTV can offer essentially the same programming offered by cable and satellite providers including on-demand and pay-per-view content as well.

To access the content, the subscriber requests and receives TV shows and video content delivered to his or her streaming device or set-top box via the Internet Protocol network instead of via RF signals transmitted through cable or satellite. When the subscriber clicks on a TV program or requests a video, the content from different servers is partitioned into data packets and sent over the internet to the home via the subscriber's internet connection. IPTV can be like browsing the internet rather than the traditional channel surfing on a TV remote, although many IPTV services still offer a guide that is like a traditional, linear Pay TV offering. IPTV simply uses the Internet as the mechanism to deliver the video content to the viewer.

Architecture

At the head end, live TV programs are picked up from a satellite or a content aggregator, and it is decrypted. It then compresses the content into a digital format like MPEG-2 or MPEG-4, packs it into a single transport stream and then into packets to be multicast over the IP network. Sometimes, when the IP packets reach the home through the broadband connection, a splitter is used to separate out the TV from regular broadband service. In other cases, the IPTV service is simply accessed by the customer through a streaming device or an app on their phone or laptop. The difference in this second case from an OTT TV experience is that the video packets from broadband operator remain on their closed network and are not delivered via the public internet.

If the IPTV operator is providing Video on Demand, that content is stored in a server after encrypting it with content protection mechanisms. The servers can be centralized or geographically distributed and the subscriber accesses the content through a unicast stream, since it is on-demand, and catering to the individual subscriber. Content can be received by a device such as a traditional set-top box, a streaming device like a Roku, or an app running on a PC or mobile device. This provides the interface needed for the user to navigate different live channels, Video on Demand, movies, games, etc.

Features Unique to IPTV

Personalized Interactive TV

Traditional TV broadcasting is a one-way, one-to-many content delivery system, but when television and video are combined with the Internet, it opens the prospect of a better experience where information flows in both directions. Two-way transmission is one of the unique benefits of IPTV over cable, and while it has yet to be fully exploited, this interactivity is expected to be one of the key features of IPTV.

Because IPTV is sending information both upstream and downstream, it provides multiple means to track and document user choices and preferences. This creates an ideal platform for operators to include personalized options and targeted advertising to subscribers. Advertisers can present highly targeted ad content that's more relevant to the watchers and could evolve to consumers being responsible for choosing the commercials they want to see ("Only show me ads about fashion/sport"), similar to the way you can do online with Google, Facebook and others.

An IP network also allows for the delivery of more content and functionality. In a classic TV or satellite network that uses traditional multiplexed transmission, all the content constantly flows downstream to each subscriber, who switches the content at his or her set-top box. The subscriber selects from as many choices as the provider company can pack into the pipeline flowing into the home. But with an IP network the content remains in the operator's network, and as the subscriber makes a content choice, that content is delivered to the customer's home one channel or segment at a time.

IPTV Bandwidth Requirements

Delivering IPTV sounds smoother than it may be in practice. The major hurdle at the moment is that some homes do not have a sufficient broadband connection to support high-quality TV streaming, especially from simultaneous flows from multiple TVs, phones, tablets, etc. in the same home. The capacity needs are multiplying because of this growing number of devices in each

home, and while it now takes 8 and 10 Mbps to deliver streaming content, if the home becomes equipped with several IPTV devices, that rate is multiplied.

Before an operator looks at offering an IPTV service, they should take a close look at their overall bandwidth capacity and what is available to each subscriber. The good news is that IPTV is one more service the broadband operator can offer their subscribers to increase "stickiness" and gain additional revenue. This is not the case for customers who are subscribed to a third-party OTT TV service, which uses the operator's bandwidth to transmit the video stream with no direct source of revenue received. Therefore, many broadband operators have implemented usage tiers. As customers cut the Pay TV cord, they use more bandwidth over their broadband connection. Charging more to high-usage subscribers provides one way to recover lost revenue, or at least will help cover costs. In short, IPTV providers need to ensure they have enough bandwidth to deliver a quality of service on a par with a traditional Pay TV experience that is delivered through cable, satellite, or across the airwaves.

Looking Forward

As the price of Internet falls and more people gain access to high speed Internet, IPTV will continue to grow in popularity. High speed Internet access has been the major obstacle to the advance of IPTV, but as providers lower prices and some municipalities offer totally free Internet, people are shifting to the Internet for their television content instead of traditional cable tv.

Final Thoughts

For broadband providers, IPTV provides a way to reinvent the TV experience for their subscribers. The world's leading service providers recognize the demand to deliver a better TV solution in order to compete in today's market, and many now offer IPTV. Not that cable and satellite will go away. Cable may be the best choice for the heaviest of TV users, and areas served largely by satellite could wait years for the broadband speeds they need for internet streaming. Ultimately, quality, variety and price will determine what subscribers choose. Even as OTT services like Netflix and Hulu continue to grab larger shares of the TV market, it's likely that the cable and telecom companies will continue to present new IPTV options so they can stay in the game. But one thing is sure, the world is watching more TV on more devices than ever before.

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