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# NEWS

## Going All Digital

### IPTV – What It Is and What It Is Not

By Gerhard Franz

With the introduction of digital TV a new way of video delivery has emerged, Internet Protocol Television, or short, IPTV. This technical term has increasingly been used as a marketing tool for separating new, advanced services from traditional cable TV creating confusion.

IPTV stands for delivery of digital television using the Internet Protocol. The digital transport stream (as described in the January 2009 column) is received at the TV set using the same technologies as in computer networks. In comparison a traditional cable network uses RF modulated channels of a fixed bandwidth (6 MHz in North America) to deliver TV programs and services.

In IPTV systems digital transport streams are sent from a central office over private, secure IP networks to Digital Subscriber Line Access Multiplexers (DSLAMs), which reside at the edge of the network. A DSLAM then connects individual digital subscriber lines (DSLs) to the high-speed Internet backbone. It

sends selected programs or services to the subscriber's DSL modem over twisted pair copper wires or (in newer implementations) fiber lines.

Protocols and data rates for DSL service are standardized (ITU-T G.992 and G.993): up to 12 Mbit/s (ADSL2) or 50Mbit/s (VDSL2) to the customer at distances of up to 1km (3280 ft.). Bandwidth is significantly reduced for greater distances.

At the subscriber site an IP set-top box (STB) extracts the encrypted digital video transport stream from the IP data and outputs audio and video signals to the TV set. The IP STB does not have a tuner and acts like a DSL modem.

IPTV is a technology that in principle provides one service or program to the subscriber at a time. By selecting a specific program on the STB the DSLAM is commanded to extract this program from the IP data stream that is coming to the DSLAM over the IP backbone network. This is radically different than the traditional cable networks which deliver all available services at the same time to the subscriber STB using frequency division (multiple 6 MHz channels) and time division (multiple services within each channel) multiplexing.

More and more cable systems are using IP networks to deliver video to the edge of the network in very much the same way IPTV does. There, however, the implementation diverges from IPTV: EdgeQAM modulators extract all the services from the IP data stream, modulate them onto the standard 6MHz channels and send them to the subscriber STB over the HFC networks.

#### Examples

The best-known example of IPTV is AT&T's U-Verse service. U-Verse utilizes fiber technology to obtain speeds up to 25 Mbit/s to the user's home. Other IPTV based services are provided by Avail Media and IP Prime although the latter is no longer being offered. Notably not an IPTV service is Verizon's FIOS which uses fiber-optic networks to distribute a standard RF-based multichannel bouquet of programs and services and requires standard RF set-top boxes. □

#### About the Author

*Dr. Gerhard Franz, CEO of Blankom USA, has over 25 years of global experience in the telecommunications, aerospace and electronics industries. He received his PhD in Electrical Engineering from the Technical University of Vienna, Austria, and his Executive MBA from Rutgers University. He is a senior member of the Institute of Electrical and Electronics Engineers (IEEE) and a member of the Society of Cable Telecommunications Engineers (SCTE). Dr. Franz is the author of several technical papers and business articles and holds two patents.*

