

ScreenPlays

January 2009

STRATEGIC INFORMATION FOR THE BROADBAND MARKETPLACE

New IPTV Advertising Platforms Could Put Telcos at Cutting Edge

Technologies Provide Means To Leverage IP to Enable Next-Gen Strategies

BY FRED DAWSON

Now that telcos have established a firm footing in IPTV their suppliers are introducing the means by which carriers can leverage their IP advantage to become significant players in next-generation advertising.

As previously reported (October, p. 35), Microsoft has taken a leading role in creating a business operations framework for advanced advertising in IPTV. Now the race is on among network systems suppliers to provide the hardware platforms essential to realizing the potential.

In most cases the new strategies revolve around extending dynamic ad placement capabilities into the MPEG-4 H. 264 domain while following architectural approaches to how all the components work that have been worked out in the MPEG-2 cable world. But there's another approach, championed by Alcatel-Lucent, that raises the question of whether telcos' move into advertising will be better served with a revolutionary approach to ad insertion architecture that leverages the power of intelligent IP processing right in the network.

Following the traditional and certainly most immediate route for telcos into advanced advertising, RGB Networks, partnered with Ericsson's Tandberg Television, has brought the advanced processing capabilities of its Modular Video Processor (MVP) to IPTV, enabling frame-accurate ad splicing into MPEG-4 streams encoded by Tandberg's EN8090 encoders.

And Tandberg arch rival Harmonic, Inc., leveraging the dynamic ad placement capabilities of its ProStream 2000 platform, has made H.264 splicing into IPTV services a

focus of its advanced advertising support efforts as well.

Both of these approaches bode well to move telcos into advertising at the cutting edge, which won't happen overnight, given how new they are to the field. Demos of advanced advertising such as RGB and Tandberg staged at the TelcoTV show in the fall are part of the education process, says RGB CEO Jef Graham.

"People are still finding their way," he says. "But as they gain an understanding from vendors like ourselves about what they need to do and what the limitations are, the knowledge level is increasing rapidly."

Splicing MPEG-4 H.264-encoded transport streams is more difficult than splicing MPEG-2 streams owing to the more complex encoding structure of H.264, Graham notes. The process requires intelligent video processing by the encoder and the splicer working in tandem to support seamless frame-accurate ad insertion at the splicer.

Working as an integrated solution the Tandberg EN8090 encoder adds the SCTE-35 cue tones to the MPEG-4 programs, which are then detected by the RGB MVP splicer. The MVP can be deployed modularly or it can be combined into a single chassis that also applies RGB processing capabilities to groom and transrate aggregated content streams in real time for maximum bandwidth efficiency without diminishing quality, Graham notes. "As the cable industry moves to H.264 we'll bring these MPEG-4 insertion capabilities into the BNP [Broadcast Network Processor]," he says. The BNP, RGB's flagship grooming and transrating platform, already supports digital ad insertion on MPEG-2 streams.

Harmonic's approach to bringing ad insertion capabilities to the telco space marries the ProStream 2000 as a modular component with the firm's H.264 Divicom Electra encoders for HD and SD. In the fall Harmonic announced the ProStream 2000 and



*Basil Alwan, President,
Alcatel-Lucent IP Division*

the attendant encoding platforms had successfully completed conformance testing for real-time splicing into national H.264 video streams delivered over the Microsoft Mediaroom IPTV platform.

Given that Harmonic powers the majority of headends in the Mediaroom ecosystem, the certification of conformance has important implications for the impact telcos could have on advanced advertising, notes Thierry Fautier, director of telco solutions at Harmonic. "Microsoft controls one quarter of the IP deployments in the world," Fautier says. "The IP network will enable a lot of creative business models that aren't possible with cable."

That said, however, Thierry readily acknowledges there are many hurdles ahead for telcos to successfully engage advertisers in those business models. "The problem is there's a lot of inertia to overcome in the advertising community," he says. "They have to do a lot of work to incorporate targeting of ads to different groups into their processes. They have to be able to think in terms of a

complete ecosystem, which is the reason I'm optimistic about where we are now. Microsoft understands the ecosystem problem."

Interestingly, though, it remains to be seen whether telcos will pursue a model based on splicing in the network or at the set-top, Thierry adds. "This is a hot topic under discussion among IPTV service providers," he says. "Cable doesn't have the option to look at the set-top insertion model, because of bandwidth constraints."

The set-top insertion model envisions the transmission of multiple streams of ads in conjunction with any given program a viewer switches to, allowing the intelligence in the set-top to match the user demographics with the appropriate ad for placement in a given ad slot. In some ways this approach simplifies the addressable advertising process, Thierry says, but it adds legal complications and requires a uniform approach to user profiling based on information stored at the set-top. However it works out, the ball is rolling with Microsoft well positioned to initiate advanced advertising in the IPTV space, he says. "These aren't just discussion about ideas; it's about real business," he adds.

Whether the preferred architectural model turns out to be network or set-top based, the approach to advanced advertising promoted by Alcatel-Lucent, another company closely partnered with Microsoft, represents a significant departure from other approaches, says Basil Alwan, president of Alcatel-Lucent's IP Division. "We believe it's much more efficient to leverage intelligence in the distributed routing architecture to support a broad variety of applications, including ad insertions, than to rely on an ever expanding range of applications-specific servers to perform these functions," he says.

The company is touting the just-released version 2.0 of its router-based Triple Play Services Delivery Architecture as a platform for making targeted ad placements as integral to IPTV as any other IP-based application. While it will take an immense amount of work at the outset to integrate ad management systems and servers into the routing infrastructure, the end result could be a streamlined placement and performance tracking process that affords telcos important advantages over non-IP based rivals, Alwan says.

In this architecture support for advertising is relatively low cost because the costs of the intelligence and functionalities are spread across many other applications as well. "The enhancements we've introduced with TPSDA 2.0 add application layer intelligence to the TPSDA network elements enabling them to cache, store, stream and splice video content as well as to characterize application layer content," Alwan says. "TPSDA is implement-

ing the kinds of things that previously could only be implemented in servers."

Instant channel changing is an example. "Instant channel change is a big bandwidth eater," Alwan notes.

While IPTV uses IGMP (Internet Group Management Protocol) Multicast to save bandwidth by allowing multiple users to join a single stream, instant channel change requires unicast transmission of MPEG I frames, which convey the complete picture information that must be acquired by the set-top in order to run the decoding process across a given sequence of frames. When a subscriber switches to a multicast stream, the unicast I frame associated with the frame sequence in the stream the user has switched to is instantly added to the sequence to avoid what might otherwise be a two-second wait for the I frame to show up in the multicast sequence.

The caching intelligence associated with each router in the TPSD architecture provides a way to support instant channel change without incessantly unicasting I frames from central distribution points. "Why not acquire the information [that allows the set-top to access the video stream] from the nearest node, rather than requiring it to transit the entire network?" Alwan says.

Similarly, recovery of dropped packets in the multicast connection can be more efficiently accommodated through access to cached content at the nearest node. And, when it comes to distribution of high bandwidth-consuming content much thought is being given to use of caching to minimize bandwidth consumption across the entire network.

"Solid state cache is getting interesting for video at HD rates," Alwan says. "Maybe the top 20 titles are cached and positioned in the network as caching space is available. Management algorithms allow the whole system to balance distribution between the central vaults and the distributed intelligence. You're trading bandwidth capacity for cache capacity much as CDNs (content delivery networks) do for Internet distribution."

The distributed memory and intelligence approach to managing IPTV content and applications will become ever more compelling as the volume of unicast streams increases. "Network PVR is the ultimate bandwidth hog," Alwan states. "It's all unicast. IPTV guys are well situated to support a high volume of unicast content from the access side, but the bandwidth implications on the backbone side are immense."

Given the compelling case for the caching capabilities associated with all these applications, using the same infrastructure to support advanced advertising makes a lot of sense, he adds.

"If you have the mechanisms in place

to cache video, why not do ad insertion?" Alwan says. "Intelligence is the key."

He continues: "When you cache you hold up video long enough to do ad insertion, which you can do simply by watching the markers in the stream and using the platform intelligence to activate insertion of the right ad. We can go from broadcast to zone-based to targeted advertising down to the individual set-top level, all in the network. In the IP context it's easier to do in the network because there's no requantization and grooming of the MPEG stream as is the case when you operate at the edge QAM (quadrature amplitude modulator) in cable. IP offers a different approach, where our routers can support advanced advertising insertions on thousands of channels at once."

Alcatel-Lucent is bringing to bear a variety of capabilities to make all this possible, including deep packet inspection and an internally designed chipset, the Network Processing Unit, that is comprised of 112 cores that can simultaneously process up to 50 gigabits of traffic in either direction. "We're performing packet processing as packets are forwarded, determining which are to be cached, which are not and what applications should be applied," Alwan says. "All aspects of the process have to be programmable, because everything is changing constantly."

Whether the ad splicing occurs in the network or at the set-top the distributed intelligent routing architecture will be essential to efficient execution of advanced advertising, he adds. "You can splice the ads in as unicast ad streams or send out multiple options for each placement at the set-top," he says. "Either way you need the flexibility to efficiently manage bandwidth and memory to create the most compelling advertising opportunities."

Every instance where advanced advertising is put into play over the Alcatel-Lucent architecture will require hands-on implementation, Alwan says. "We bring a full suite of management tools for the network functions, but there's also the specific application management requirements that have to be accommodated," he says. "We have to work with third parties – ad decision servers and ad servers and many other pieces – to put it altogether. And the requirements are different for every customer."

Nonetheless, once the TPSDA-based advertising framework is in place, telcos will be positioned to support whatever business models programmers and advertisers are looking for as they move into next-gen advertising, Alwan says. "We're getting interesting traction with this idea around the world," he adds. "We're seeing a lot of trials where customers are putting their strategies to work in the labs to determine what they can do to build this business." ■