

The Vital Role of Unified Distribution To Ongoing Success in the TV Business

Part 2 of 3

The New Broadcaster Perspective On Monetization & Cutting Costs

HTTP-Based Architecture Unleashes Power of Addressable Advertising with Big Reductions in CapEx and OpEx

Introduction

As TV broadcast networks respond to audience fragmentation by extending their reach across all available outlets they have an unprecedented opportunity to drive new revenue while cutting operations costs through adoption of an IP streaming-based Unified Distribution architecture.

Broadcasters everywhere are leveraging IP transformation to overcome the encumbrances of a legacy production and channel origination environment populated by islands of proprietary hardware systems. But as broadcasters employ these measures to respond to ever-changing consumer demand for compelling content at national and global scales there's another major step that needs to be taken if broadcasters are to realize the full potential of IP technology.

That step, as discussed at length in Part 1, entails implementation of a Unified Distribution

architecture based on HTTP to stream content to distributors in the legacy and OTT premium video domains as well as directly to consumers through broadcasters' own Web outlets. For broadcasters perhaps the greatest benefit to be realized from shifting to terrestrial distribution across HTTP-based networks using fragmented content delivery as opposed to the traditional streaming mode is the opportunity to fully exploit the revenue-generating power of dynamic advertising.

Despite widespread demand across the advertising industry for the higher ROI on TV ads that comes with addressability, the long-discussed benefits have only been implemented in fits and starts with limited reach in the legacy pay TV domain. This has left the traditional TV business at a disadvantage against the surging Internet ad business, where dynamic advertising is the norm. Broadcasters' use of fragmented content infrastructure to support addressable advertising everywhere would not only drive higher CPMs in the legacy domains; it would give them an interstitial dynamic video placement advantage over traditional Internet banner and tangential video advertising modes in the OTT domain.

With fragmented media content delivered across their terrestrial backbones broadcasters can exploit the capabilities of an advanced Unified Distribution infrastructure at any location, from their own and OTT providers' core points of origin to local broadcast and MVPD facilities. These advanced capabilities, now in commercial use worldwide, leverage the fact that the manifest files containing data that HTTP clients use to sequentially select the bitrate for each fragment of content sent from a streamer can be augmented with additional information in a process known as manifest manipulation.

Clients referencing the altered manifest files pull alternative content, which is inserted on the fly into the streaming sessions of individual users or clusters of users. Ads are inserted with absolute precision based on viewers' locations or demographic profiles. The same processes can be applied to replace locally blacked-out content or to support regionally or individually targeted content enhancements.

Where advertising is concerned, when these advanced platform functions are implemented at broadcasters' core facilities with playout of linear content, they enable regionalization of TV advertising at the national level. When implemented at points closer to end users, they facilitate more granular addressability in linear and on-demand distribution, including legacy TV distribution when the HTTP-to-UDP conversion processes embodied in the previously discussed Imagine Communications Selenio Video Delivery Edge (VDE) software module are present.

In the discussion that follows we'll look first at current trends in video consumption and advertising that underscore the monetization opportunities enabled by this architecture. We'll also examine cost-saving and other benefits that broadcasters can derive from an infrastructure that fully exploits advanced ABR technology.

Then we'll look at all the ways broadcasters can capitalize on these opportunities as illustrated by the capabilities of the manifest manipulation, VDE and other components of Imagine's ABR portfolio. For greater detail on the fundamentals of ABR streaming and the Unified Distribution architecture anchored by ABR we refer readers to Part 1.

Broadcasters' Strengths & Vulnerabilities Amid Market Upheaval

The disruption of the traditional TV business is accelerating, as evidenced by the historic landmark reached last year when, for the first time, the percentage of free or paid streaming video subscribers in the U.S., representing 68 percent of households, passed the paid TV subscriber count at 67 percent,

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as measured by the Consumer Technology Association.¹ CTA also found that the average percentage of time consumers spent viewing video content on TV sets had dropped to 51 percent, down from 62 percent in 2012, while viewing of video on personal devices, including laptops, tablets and smartphones, totaled 49 percent of viewing time.

Broadcasters have made great strides in their adjustments to the impact of consumers' reliance on an ever expanding array of premium video sources for viewing on devices outside the traditional TV infrastructure. They've adopted licensing models that allow them to enter into online distribution agreements with MVPDs (multichannel video programming distributors) and OTT bundlers alike. And they are taking advantage of IP technology to develop and deliver traditional and new online-only programming directly to consumers over the Internet.

While traditional TV viewing has slipped a little according to Nielsen, the numbers are surprisingly strong in light of the surge in online video viewing. But, of course, it's the younger population that is driving the break with traditional viewing, prompting the outpouring of efforts to reach them with TV programming on their connected devices.

Traditional TV viewing, meaning via broadcast and pay TV services, among all U.S. adults fell by less than one percent between 2015 and 2016, but the drop off among Millennials was over seven percent, according to Nielsen's numbers.² Since 2011, the Millennial decline adds up to 40 percent.

But these numbers don't capture how much TV program viewing occurs online via streaming. The good news for broadcasters is that a significant share of consumers' online viewing is devoted to streaming traditional TV programming to personal devices and Internet-connected TV sets. In a 2015 survey of 5,600 U.S. consumers, researcher GfK MRI found that adults of all ages on average spend 28 percent of their TV viewing time streaming programs.³ For Millennials the proportion is about 35 percent, according to a Deloitte study conducted the same year.⁴

Such numbers justify broadcasters' efforts to ensure maximum online exposure for their programming. They also underscore the importance of utilizing Unified Distribution architecture to maximize distribution efficiency across legacy and online outlets.

Transitioning to HTTP-based distribution is also a key step toward realizing the advertising benefits that should be intrinsic to expanding the reach of broadcast content. Judging from current trends, finding a better way to reach

this potential is essential to long-term prosperity. For example, PriceWaterhouseCoopers in its latest Global Entertainment and Outlook report projects that by 2020 only \$5.4 billion of the \$81.7 billion in U.S. TV advertising revenue will come from online exposure.⁵ In fact, PWC measured a drop in year-to-year CAGR for online TV advertising revenue from 14.4 percent in 2015 to 8.9 percent in 2016.

No doubt this picture will improve as the TV industry does a better job of tracking TV program viewing wherever it occurs. For several years the industry has been able to capture ratings points from programs viewed in legacy VOD utilizing the Nielsen C3 and C7 metrics, and there is now growing reliance on the Total Audience Measurement methods devised by Nielsen and the industry to help monetize TV ad exposure from online viewing, notwithstanding some unsettled issues.

Addressable Advertising: Proven Demand, Limited Reach

But there's a much bigger opportunity in the offing that comes with use of addressability in TV advertising, especially if it can be applied to both online and traditional audiences. Indeed, the rise of online advertising attests to the appeal of a venue that can track users' behavior to help get advertisers' messages in front of more narrowly defined audiences.

The demand for better targeting of TV advertising is undeniable, as evidenced by a long history of innovative efforts to overcome the barriers to addressable advertising imposed by the legacy distribution infrastructure. While buyers make clear they greatly value the mass audience exposure broadcast advertising provides for meeting some campaign goals, the search for ways to target advertising has become a dominant theme in the Internet era.

One major trend attesting to this demand can be found in TV networks' success at adding some degree of addressability just in the way their programs are selected for ad delivery in pure broadcast mode. Campaign planners are increasingly relying on big data analytics platforms developed by TV networks to choose programs with audience profiles that match up with the types of people who buy their products.

According to one recent report, the 2016 upfront TV ad buy season was marked by an unprecedented range of big data-based purchasing options from Discovery Communications, NBC Universal, Fox, Turner, Viacom and other networks that went beyond reliance on the broad age and gender categories used with Nielsen ratings-based purchases.⁶ While

such buys still represent just a fraction of the deals cut by these networks, the momentum in this direction is clear. For example, the report said that by 2020 Turner expects to be selling half its inventory against guarantees enabled by its data platform.

These network data platforms are also meant to drive greater use of fully addressable modes of advertising. But moves in this direction have been stalled by the proprietary barriers to efficient planning and buying.

OpenAP, a new consortium spearheaded by Fox, Turner and Viacom, aims to help remedy this problem with a platform that uses industry-standard measurement sources and data with a uniform approach to defining audience segments, which buyers can use in the development of cross-publisher media plans while continuing to utilize individual networks' proprietary data platforms to whatever extent they choose. The consortium, which hopes to add other networks, was generally well received on its announcement with a commitment of data contributions from

Figure 1

Trends in Addressable TV Advertising

US HH WITH ADDRESSABLE CAPABLE STBs SUPPORTING	
Linear TV Addressability	VOD/TVE Addressability
38.9 million	50.8 million
PERCENTAGE OF US ADVERTISERS: Running or Planning to Run Addressable Ads in Next Year	
60%	
Willing to Pay Higher CPMs	
71%	

Source: Video Advertising Bureau

SKY MEDIA ADSMART PROGRAM	
No. of Advertisers	500
No. of Campaigns	3,500
Reduction in Channel Switching During Commercials	35%
% of AdSmart Advertisers New to TV or Sky	70%

Source: Sky Media

Nielsen and plans to begin beta testing the platform in mid-2017.⁷

If successful, OpenAP will help streamline the purchasing process in addressable as well as traditional TV advertising. But when it comes to true addressability, the primary mode of execution in the legacy TV realm remains limited to use of set-top boxes (STBs) as storage centers for ads that can be inserted into the broadcast stream based on the demographics of a particular household (see Figure 1).

While far from optimal, growing use of this method has served to confirm the benefits of addressable advertising. In 2015, for example, U.K.-based Sky's ad sales division Sky Media reported that STB-based addressability offered through its AdSmart program had cut channel switching during commercials by 35 percent compared to traditional broadcast advertising.⁸

With over 500 advertisers running more than 3,500 campaigns the results attested not only to the effectiveness of addressable advertising but also to the role such capabilities play in drawing new advertisers. Regional targeting, one of many approaches AdSmart customers can take to carving out audiences for their ads, has been an especially powerful inducement to new advertisers, Sky said, noting that 70 percent of advertisers using AdSmart were either new to TV or new to Sky.

Another testament to the power of addressability comes from Starcom Mediavest

Group, which as of late 2016 was supporting 100 addressable campaigns for more than 50 clients through its four agencies.⁹ In one test of results cited as representative of many such findings, SVG found that 32.4 percent of the audience exposed to a targeted ad for a new TV show tuned into the program premier compared to a 4.6 percent tune-in rate among viewers who didn't see the ad.

In the U.S., as of mid-2016 42 percent of households were equipped with STBs supporting addressable advertising, including 38.9 million through linear TV and 11.9 million more through VOD and TV Everywhere apps, according to a recent survey conducted by the Video Advertising Bureau.¹⁰ VAB said 60 percent of advertisers surveyed were currently using addressable TV or plan to run addressable ads within the next year, and 71 percent said they would be willing to pay higher CPMs with targeted placements.

While addressable TV ad CPMs can run two or three times higher than the norm, the reason buyers are willing to pay more for addressability is the higher returns on results. As noted by AT&T AdWorks president Rick Welay in a recent Ad Week article, the real measure of comparison should be the effective (eCPM) cost.¹¹ For example, he wrote, if 25 percent of the viewers reached by a typical spot are within the advertiser's target, the eCPM for an ad with a \$10 CPM price tag is \$40, which

makes a \$30 CPM for the same ad delivered in addressable mode a bargain.

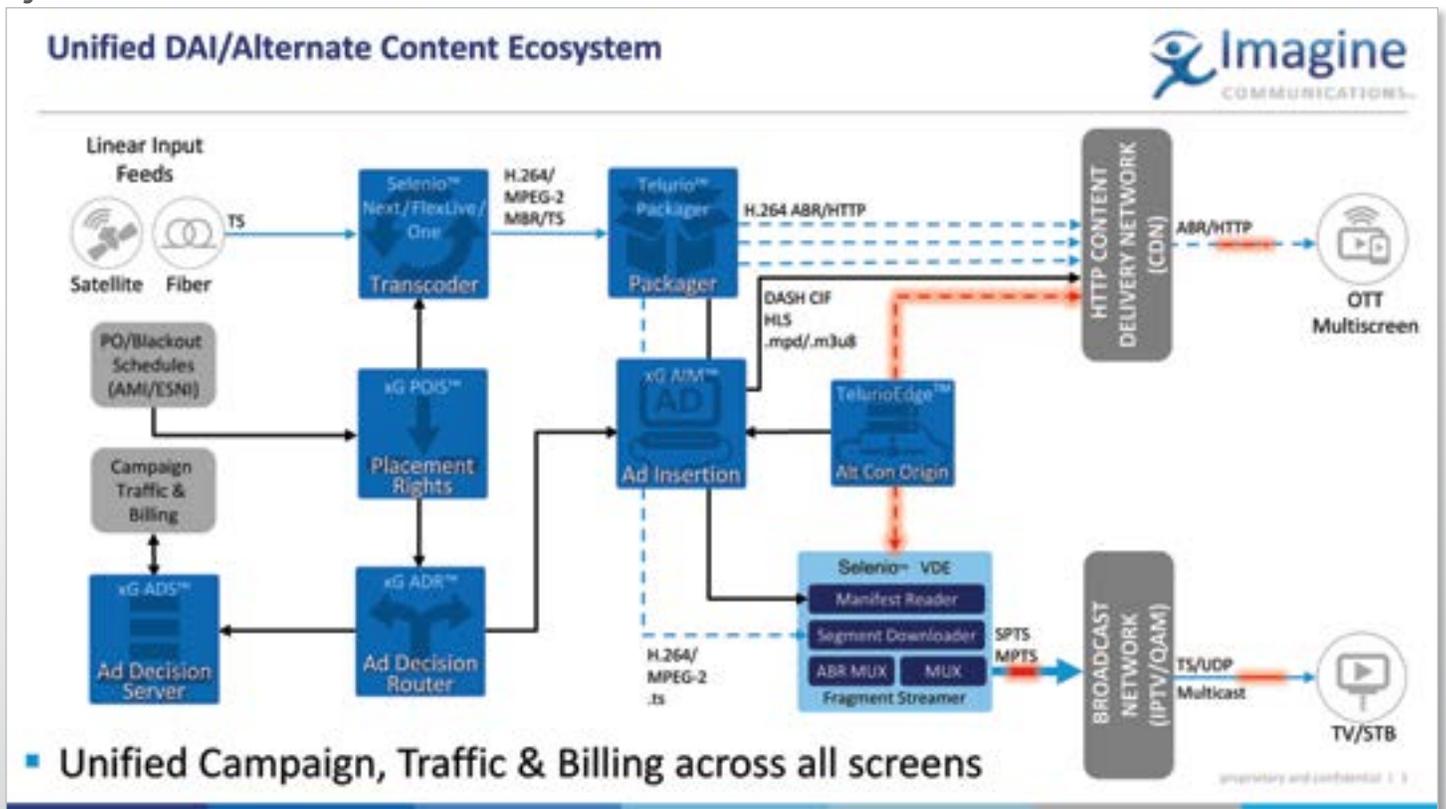
VAB, based on its survey results, predicted the industry's addressable TV ad spend would double by 2018. But at a projected \$2.17 billion that would still represent only a small fraction of total TV advertising dollars.

Realizing the Full Potential of Addressable Advertising

Clearly, while advertisers' demand for addressability is strong, the current support system with its reliance on STB mechanisms is woefully inadequate to meeting the need for a truly scalable, uniform approach that can move addressable ad buying into the mainstream across all screens. By far, the most cost-effective, scalable way to achieve this goal is through use of the dynamic ad placement mechanisms that would be readily available to broadcasters with a shift to a streaming-based Unified Distribution architecture.

As explained in Part 1, by fragmenting all content for HTTP distribution over terrestrial backbones, broadcasters can create the ideal conditions for inserting regionally or personally targeted ads wherever the enabling software mechanisms are positioned in their own or affiliates' facilities (see Figure 2). Because all processes underlying the Unified Distribution infrastructure, from transcoding to encryption, packaging

Figure 2



and manifest manipulation, are performed in software, the scalability, flexibility, virtualization and other benefits of SDN (software-defined networking) technology are intrinsic to addressable ad operations end to end.

The dynamic advertising and other on-the-fly content substitution capabilities are enabled by per-stream adjustments in the manifest files that list the URL locations for the fragments of video to be streamed. When a targeted ad is to replace a generic ad, the manifest manipulator replaces the URLs in the manifest for the generic ad with the URLs for the location of the targeted ad. The decision about which targeted ad should be used to replace the generic ad is made by an ad decision server (ADS), which tells the manifest manipulator the location of the targeted ad.

The state-of-the-art in manifest manipulation is reflected in Imagine's widely deployed xG AIM™ manifest manipulator, which supports the three major fragmented formats, HLS, Smooth Streaming and MPEG DASH. xG AIM enables open, standards-based dynamic ad insertion management in complex live and on-demand multiscreen distribution environments through use of VAST and SCTE-130 interfaces to communicate with the ADS, POIS (placement opportunity information service) and ADR (ad decision router) components of the dynamic advertising infrastructure.

As a first step the incoming video stream will have SCTE-35 as markers for ads or alternate content, and the POIS validates or conditions these markers by communicating with the transcoder. The POIS can also drive markers into the stream based on an external schedule. The packager then generates a manifest of the URLs for the stream and includes markup for the SCTE-35 cues which designate ad locations. If ad replacement was not being utilized, the client would obtain the playlist directly from the packager. However, for content with ad replacement, the client is directed to receive the playlist manifest from the manifest manipulator, or xG AIM.

xG AIM, reading the original playlist manifest from the packager for a given session, responds to ad markers in the manifest by retrieving instructions from the ADS, updating the manifest with the appropriate URLs for the targeted ad. If a deployment utilizes multiple ADSs for, say, different content sources, an ADR is invoked instead to route the ad decision request to the appropriate ADS. xG AIM manages all aspects of ensuring ads are precisely placed in the content streams, including adjustments to fit unencrypted ads in encrypted content and fragmentation to match the

streaming mode and network conditions.

All of this occurs in real time with no interruption in the content flow to the end user. xG AIM can be integrated with third-party components via standard APIs or as part of the complete Imagine dynamic ABR advertising portfolio, which includes xG ADS™, xG POIS™, xG ADR™ and the Telurio Packager™.

In addition to ad replacement, the DAI ecosystem can also provide alternative content replacement or 'blackout' content, since, technically, alternative long form content can be treated as a long ad. Through interactions with other types of policy and content servers prompted by triggers in the original ABR stream, the manifest manipulator can perform content substitutions to replace programs subject to local blackout rules or to obtain augmentations to the basic content that can be used to enhance consumer experience.

In addition to manipulating the manifest for replacement of ads and content, xG AIM also collects playback information from clients and provides that data back to the ad decision server – providing data, for instance, regarding what percentage of a particular ad was played by certain clients.

The revenue-generating and QoE potential of the consolidated ABR-based operations environment is made even greater through the power of advanced analytics. With utilization of a data mining and analytics system like Imagine's Landmark Analytics, broadcasters can aggregate actionable information from data collected by xG AIM and other sources to support valuable direct ad performance monitoring, detection of individual and household usage patterns, e-commerce applications and much else.

Multiple Approaches To Achieving Strategic Goals

All these tools, used in conjunction with broadcasters' adoption of an ABR-based Unified Distribution architecture, can be employed in a variety of approaches to exploiting the benefits of addressable advertising and other regionally or personally targeted applications. Broadly, the opportunities fall into four areas of strategic importance to broadcasters:

Direct control over regionally targeted advertising and content from core facilities

– By virtue of the comparatively low costs of fiber transport capacity compared to satellite, broadcasters can create multiple HTTP feeds of fragmented content over MPEG-TS. This allows them to use the manifest manipulation and packaging process at their core facilities to support regionalized ad placements and

blackout content replacements.

In this scenario, where individual TV stations are targeted, each one gets the stream suited to its market. If the distributor is an MVPD, the operator receives multiple content streams, which are passed through over the backbone network to their intended localities.

Support for personalized advertising and applications in broadcasters' direct-to-consumer OTT operations

– Broadcasters can perform the dynamic ad insertions and other adjustments to their content on a per-stream basis at their cores or in regionally dispersed CDN facilities with installation of the requisite manifest manipulation and packaging software modules in either their own or third-party CDNs.

Close cooperation with MVPDs in support of more personalized targeting of advertising and content enhancements across all screens

– MVPDs who implement the edge functionalities embodied in the Selenio VDE, xG AIM and other components of the Imagine addressability platform will make it possible for national broadcasters to exploit the full benefits of addressable advertising in national ad avails while equipping themselves to apply addressability in their own spot inventories. In fact, OTT distribution rights often carry exactly such stipulations: operators may distribute the content in exchange for allowing targeted insertion for opportunities belonging to the content owners and then can leverage the same ad insertion ecosystem to insert targeted ads in their allocated opportunities.

In the case of MVPDs' TV Everywhere streams delivered to multiscreen devices, the personalization can be extremely granular by applying targeting on a per-session basis. With the HTTP-to-UDP conversion enabled by VDE, that same level of granularity can be applied with unicast distribution of VOD content. For linear broadcasts with VDE the granularity is limited to the zone or service-group level, utilizing QAM and legacy IPTV transport. The implications of this deployment architecture for MVPDs as well as broadcasters will be explored at greater depth in Part 3.

Diminished reliance on playout over satellite

– Broadcasters transitioning affiliates who rely on terrestrial UDP-based feeds to the next-generation architecture may need to continue relying on traditional satellite transport or expensive dedicated networks to reach some of their market. But reliance on expensive satellite links will dissipate as content owners shift to cost-saving and more flexible HTTP-based terrestrial distribution..

The CapEx/OpEx Savings Potential of the Unified Distribution Architecture

There are many other benefits for broadcasters beyond the gains in advertising revenue and consumer experience that accrue with implementation of the HTTP-based Unified Distribution architecture. These revolve around the cost and operational efficiencies that result from reliance on technology designed for the IP streaming environment. Everything related to workflow management, content processing, addressable advertising and data aggregation and analysis as well as distribution contributes to these benefits.

With reliance on a single HTTP-based architecture, all transcoding can be implemented in software on a single platform, all storage can be orchestrated under a single workflow for optimal use of disc- and tape-based resources and all ad operations can be controlled by a unified, dynamic ad insertion ecosystem that spans OTT and legacy services.

Where advertising is concerned, there's no need for separate systems for linear and ABR-based systems. This means broadcasters can do away with proprietary ad insertion hardware where identifying splicing points in the bit stream, cutting into the content file and placing the ad has to be carried out in processing-intensive steps managed by dedicated hardware. Instead, everything is done automatically by the packaging system in response to changes in the manifest.

Moreover, all the ADS, ADR and POIS func-

tions can be performed under control of a single workflow utilizing ABR-related solutions like the Imagine xG series of components. And the broadcaster needs just one traffic management and billing system.

Conclusion

Broadcasters, by responding aggressively to rapidly changing market conditions, have positioned themselves with adjustments in their business models to ensure their content reaches the broadest possible audience. And through IP transformation of their production and postproduction processes they're implementing the means to creatively respond to consumer interests in ways that weren't possible in the traditional channel-limited pay TV and broadcast arenas.

But they have farther to go when it comes to capitalizing on opportunities to monetize these endeavors. And there's still much to be accomplished with use of IP technology to drive down capital and operations costs.

By converting to a Unified Distribution architecture broadcasters can achieve the full potential of IP transformation. They can satisfy the market demand for addressable advertising at a scale that can't be reached with reliance on traditional distribution architectures, thanks to the dynamic ad placement capabilities of HTTP technology.

With consolidation of operations onto the Unified Distribution architecture broadcasters can convert to a software-based infrastructure that eliminates the need for costly purpose-built hardware. And they can eliminate the costs that grow ever greater with maintenance of two video processing silos.

Clearly, given the revenue-generating potential and cost savings intrinsic to conversion to the Unified Distribution architecture, the costs of taking this step are well justified. In fact, with the costs of lost opportunity that will accumulate over time, the justification for doing so will never be greater than it is now. <

Footnotes

- 1 CTA, [Number of Steaming Video Viewers Now Equal to Paid TV Subscribers](#), March 2017
- 2 MarketingCharts, [The State of Traditional TV](#), January 2017
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