Metadata for Addressable Advertising

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Executive Summary

This paper is intended for the technology groups that support broadcaster/cable network ad sales teams and advertising agencies, as well as ad tech/ad platform providers in the linear streaming space. It discusses how metadata provided by Ad-ID and Crystal can be used to replace individual scheduled broadcast ads with addressable advertising when delivered to second screen devices over the internet or connected TVs via a regular settop box.

An end-to-end ecosystem is presented which enables the vast majority of any broadcast/cable network's existing distribution infrastructure (CDN, "Apps", traditional distribution etc.) to be reused to deliver incremental revenue to the content provider.

Abstract

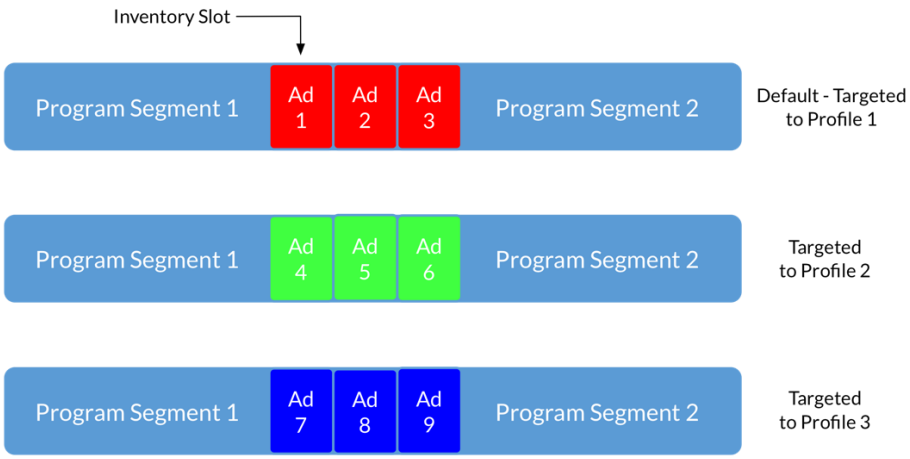
Addressable advertising will be an important source of new revenue for broadcasters in the coming years. Not only is addressable advertising more efficient in terms of reaching the advertiser's intended audience, the advertisements ("ads") are more likely to be watched because of their relevance to consumers. Obviously, the Ad Decision System needs information about the audience (e.g., demographics, location, device) to determine what ad to present for any given opportunity, and it needs this information in advance. The "advance" requirement is a critical difference to dynamic advertising insertion for on-demand content, where only a few seconds notice is typically required and the total duration of the ads displayed to each viewer can vary. There is other information that is required to execute addressable advertising in linear TV. The Ad Decision System needs to know the length of all ad breaks as well as the currently scheduled ads and their individual durations.

This short paper will discuss the benefits of Ad-ID, a unique identification system for advertising assets across all media, and a mechanism for its use in conjunction with other metadata to deliver value to broadcasters, advertisers, and consumers alike.

Introduction

Addressable advertising enables an ad in a given "inventory slot" to be targeted so that only viewers who meet certain criteria see that particular ad. The same inventory slot can be used to deliver different ads to different groups of viewers while they watch the same program — see diagram below.

The targeting criteria can be anything that is available to the Ad Decision System (the system that decides which ads which viewers will watch). The criteria could be, for example: all those viewers in a particular zip code with a household income above $100,000, or males aged 25-40, or all those viewers using an iPhone in a particular locale.



Addressing or targeting advertising in this manner is more efficient because the ads are delivered only to the audience groups meeting advertiser-specified criteria, so advertisers don't end up paying to deliver ads to viewers who are unlikely to be interested (which is much more likely to be the case in traditional broadcast delivery). There is little point advertising dog food to a household that doesn't have a dog, and there is no point advertising BMWs to households with an income that means they are unlikely to be able to afford one. By breaking up the audience into mutually exclusive groups for each advertising inventory slot, the inventory owner (i.e., a broadcaster or cable TV network) can sell the same slot multiple times. This translates into more revenue because they can charge a higher cost per thousand (CPM) for ads that are targeted. Everybody wins: the advertiser gets more "bang-for-the-buck," the broadcaster earns more revenue, and consumers get more relevant ads.

Fundamentals of Addressable Advertising

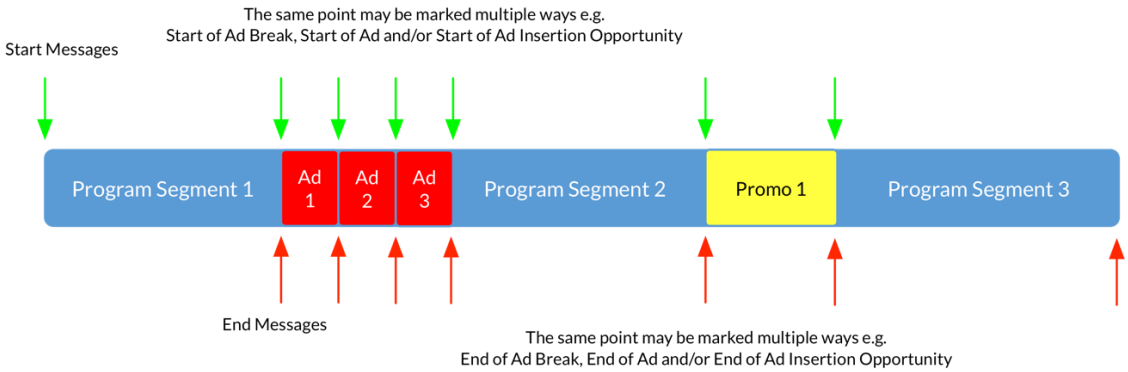
What's needed for ad insertion?

In order for addressable advertising in linear or broadcast TV to reach its full potential, there are three key components that will each be discussed in turn below:

1. **Metadata and Signal Conditioning:** There must be a mechanism to identify and signal to the Ad Decision System what inventory slots are available, when they occur, how much time is available, and, importantly, what rules exist regarding what can and cannot be placed in those slots. Fortunately, there are several standards available that define how this vital metadata can be delivered to the Ad Decision System. Companies like **Crystal** specialize in extracting the necessary metadata from the broadcaster's existing systems (e.g., broadcast origination, traffic, and scheduling) and then formatting it for delivery using standards such as SCTE 35 and SCTE 224.

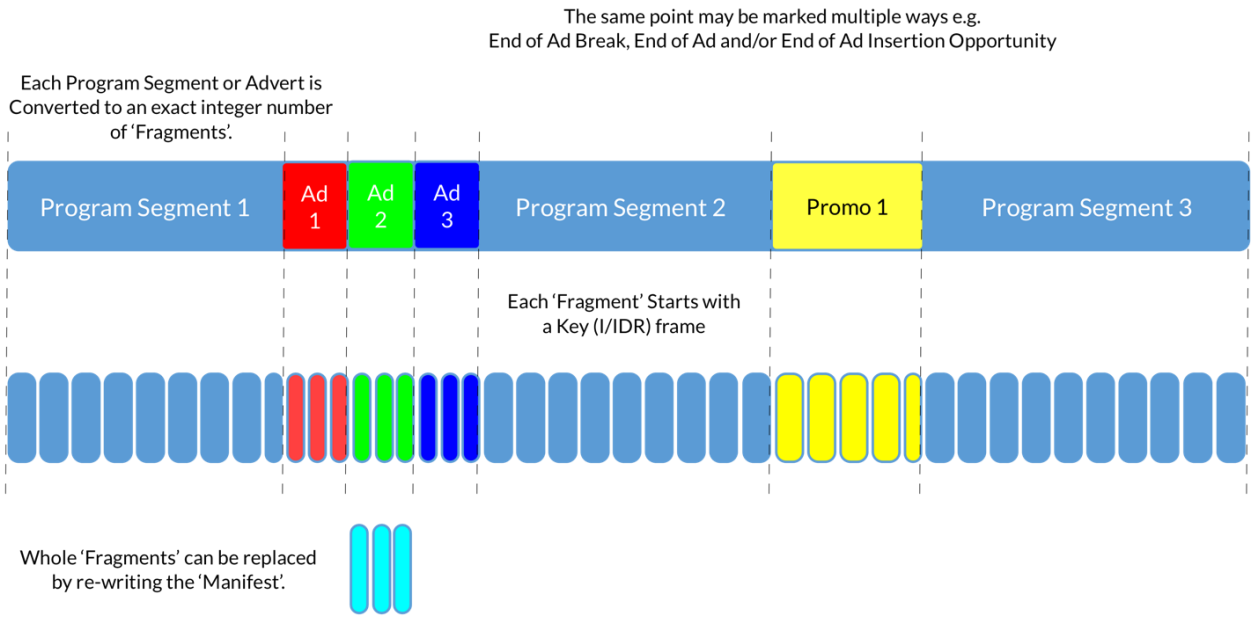
   An important part of this component is signal conditioning. This is where the broadcaster's video signal is "conditioned" in a manner that facilitates seamless

downstream ad insertion. The video signal is first “marked” with messages (e.g., those defined in SCTE 35) at key points in the linear video timeline – program start and end, chapter start and end, ad break start and end, individual ad start and end, insertion opportunity start and end, etc. The messages can (and should) be configured to carry the duration as well as an identifier (e.g., EIDR and Ad-ID).



Information about the schedule of the linear program into which addressable advertising is to be inserted needs to be communicated in advance so that the Ad Decision System has time to determine which existing ads should be replaced and which should be retained. Information similar to that found in an electronic program guide (EPG), such as identifiers (IDs), approximate start time, duration, and ratings, can be provided many hours or even days in advance in SCTE 224 format. This will also enable rights restrictions for each program in the schedule to be communicated (e.g., games that need to be blacked out on smartphones). This is particularly important for ads, as the campaign contracts will often stipulate positioning within an ad break as well as restrictions on advertising similar products within the same ad break (e.g., no Coca-Cola ads in the same break as Pepsi). The same IDs that are provided in this advance SCTE 224 feed should also be signaled (e.g., using SCTE 35) at the actual time of broadcast, thereby enabling the system that actually inserts/replaces ads to know exactly when to execute the switch so that it appears seamless to viewers.

Depending upon the exact configuration, the linear TV signal can further be prepared (or “conditioned”) for replacing ads, promos, or other content with targeted ads to ensure that the replacement is seamless. For baseband video, it is sufficient to mark the frame of video at which a switch should take place (e.g., using SCTE 104). For compressed video, it is necessary to ensure that the frame at which the video is to be switched is a special type of frame known as a “key frame.” Finally, for OTT, the fragments (e.g., HLS – HTTP Live Streaming protocol) need to be aligned to the frame boundaries as shown below.



2. **Ad-ID:** There must be a mechanism to determine what ads are (or "demand" is) available to fill the available inventory slots (or "supply"). Being able to uniquely identify ads across multiple providers and throughout the supply chain is obviously vital. **Ad-ID** provides this capability by providing a centralized lookup database for each ad that identifies the advertiser and information regarding the product/service/company being promoted. Ad-ID provides information about the product categorization, language, and the length of the ad. This, together with the inventory metadata from the **Signal Conditioning** component above, enables the Ad Decision System to match an ad with an "inventory slot" targeted to an audience with a particular demographic profile, thereby ensuring the best experience possible for the consumer and a more efficient marketing spend for the advertiser. With common unique identifiers such as the Entertainment Identification Registry ("EIDR") and Ad-ID added as part of the **Signal Conditioning,** it is possible for the Ad Decision System to also place ads in contextually relevant inventory slots – that is, ads that are highly correlated with the content that the viewer has just watched, which further drives engagement for the advertiser when targeted to the right demographic profile.

   Historically all ads inserted downstream of the broadcast are inserted over filler promos (Promo 1 in the diagrams) which are almost always one minute in duration. This greatly simplifies the execution because the duration is both fixed and known, there are no Coca-Cola vs. Pepsi-type restrictions, and the promos are designed so that if the timing is slightly off it will be less noticeable to the viewer than with other programming. However, a couple of minutes an hour represents a tiny proportion of the total inventory for a typical broadcaster, so opening up more of the inventory for conversion to addressable inventory represents a significant revenue opportunity for the industry. The flip side is that the broadcast inventory is variable in length (and for sports events, the start time of each break is unpredictable), and each ad in every break must be examined

to determine whether it needs to be replaced (because of contract restrictions) or should be replaced (because a higher value ad can be substituted).

The mechanism to signal the duration and start timing data has already been described above in the **Signal Conditioning** section. If **Ad-ID** is used to identify the ads, all of the contractual restrictions can also be analyzed in advance. The importance of getting as much information as possible to the Ad Decision System in advance cannot be overstated. Today, "ad decisioning" is performed in near-real time – a "pre-roll" is signaled a few seconds before the break and a request for every viewer currently watching is made to the Ad Decision System. This is barely enough time to fill a fixed one-minute break with no restrictions. For the added complexities of variable length breaks with contractual restrictions, the decisioning needs to be done in advance – minutes rather than seconds. In addition, rather than making a request for every viewer (which is not possible anyway, if done minutes rather than seconds in advance), a request for every one of a predefined set of demographic profiles should be made instead. This is a much more efficient mechanism and ***is critical because it enables broadcast inventory to be turned into addressable inventory without having to slate over unfilled inventory.***

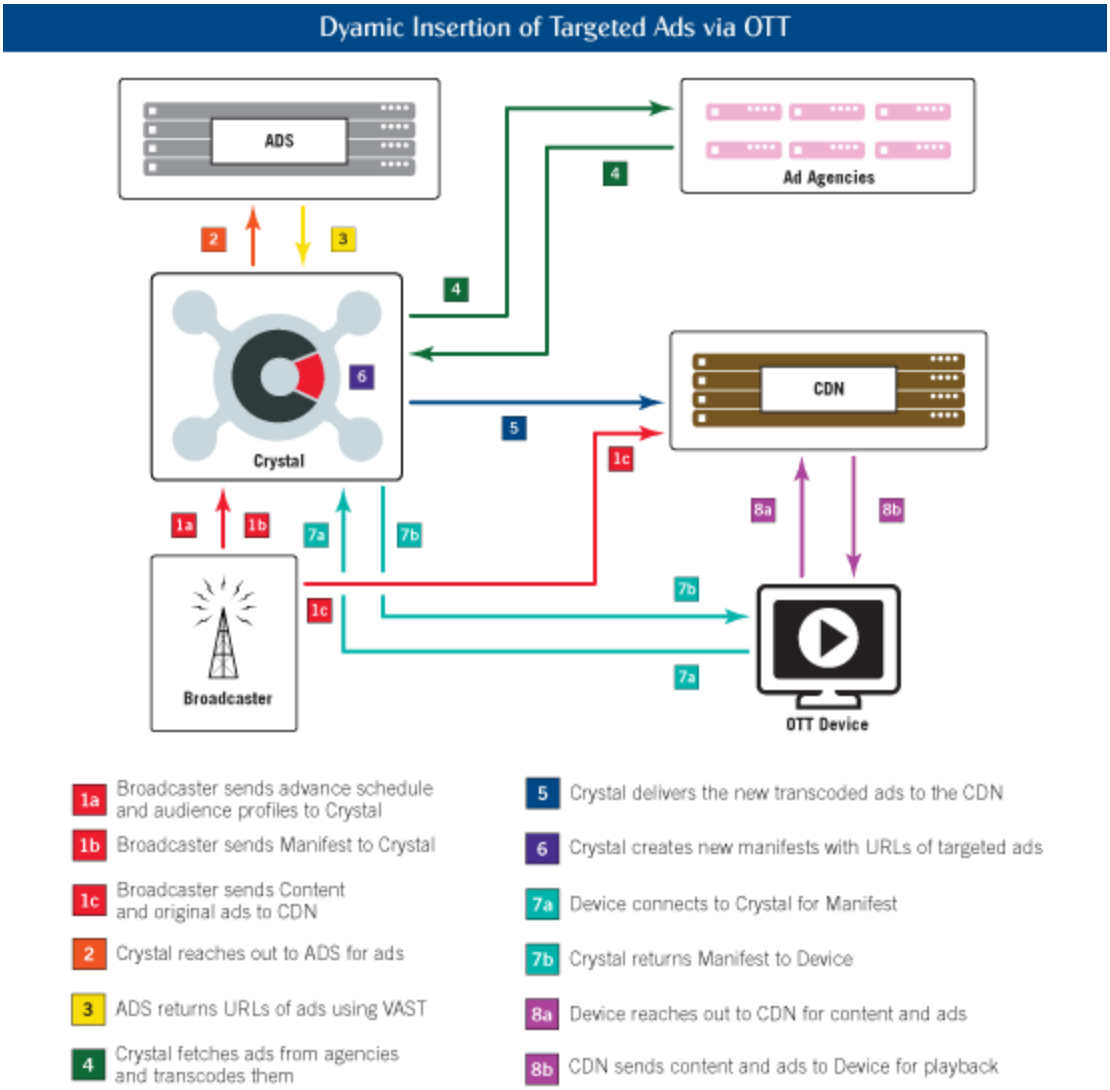
3. **Ad Insertion and Delivery.** Lastly, there must be a way for the broadcaster/content provider to deliver specific ads to specific viewers. The internet has an advantage, of course, because each viewer gets a unique stream, so it is relatively straightforward to insert the ads at the time each viewer requests the stream. However, in more traditional broadcast environments addressable ads must be inserted after the signal reaches a viewer's equipment as every viewer gets the same broadcast content. This is where the detailed metadata regarding the timing of the events in the video signal, which Crystal provides, is useful. Crystal can deliver this metadata synchronized to the video and in a format that enables addressable ads to be inserted directly on the viewer's connected TV thereby bypassing the entire end-to-end distribution.

   In OTT environments where the linear content has been converted into a series of discrete files in accordance with one of the streaming protocols (e.g., HLS, DASH) and conditioned as described in the **Metadata and Signal Conditioning** section above, a technique called **Manifest Manipulation** can be applied (also referred to as "server-side ad insertion"). HLS and DASH (as well as all other similar protocols) break up the linear television program into a series of fragments (files), each with their own URL. At the same time a manifest, which is essentially a text file with a playlist of the file URLs, is created. The player fetches the files specified in the manifest and concatenates them to recreate a linear stream. By rewriting this playlist dynamically (i.e., manipulating the manifest), any components of the original stream can be substituted. If a separate manifest is supplied to each viewer, each viewer can get different content – depending on what's in their individual manifest. It can now be clearly seen that **conditioning** the content at point of origination makes it straightforward to replace any single ad seamlessly by rewriting a text file.

Manifest Manipulation can also be used to introduce interactivity into advertising. By writing metadata into the manifest specific to each ad, it is possible for the device/player to bring up a clickable graphic over the ad (the positioning, timing, size, URL, and all other aspects could be stored for each **Ad-ID** and device). This would allow any existing ad to be made interactive – which adds more value. The same State Farm ad, for example, could be used with a customized graphic and URL so each viewer receives details about their local agent.

Conclusion

It can be seen that, with the right metadata from **Ad-ID**, together with the precise timing provided by **Crystal,** addressable advertising can be executed on any existing linear broadcast television channel. The diagram below shows a 12-step process that uses the components described in this paper to create a single flexible ecosystem for ad insertion into OTT streams. (A similar process can be applied for OTA, Cable, and DTH Channels, too.)



About Crystal

Crystal provides advanced monitoring and control software for video distribution over satellite, cable or the Internet. It makes any combination of hardware and software, from practically any manufacturer, operate reliably as a single seamless system. Its software is also on the leading edge of new OTT applications, with frame-accurate precision that enables everything from dynamic ad insertion and content replacement to live-to-VOD and live clipping without adding infrastructure or manual processing. That is why, over the past 30 years, the world's leading broadcast and cable networks have trusted Crystal to support hundreds of billions in revenue. Founded in 1986, Crystal is headquartered in Greater Atlanta, GA. For more information, visit www.crystalcc.com.

About Ad-ID

Ad-ID is the industry standard for identifying advertising assets across all media platforms. The Web-based system is a central, secure source for the industry's asset identification information and ensures that all assets are delivered correctly to media and consumers. Ad-ID is a joint venture of the American Association of Advertising Agencies (4A's) and the Association of National Advertisers (ANA) and serves more than 3,000 advertisers of all sizes and most advertising agencies in the United States. For more information visit Ad-ID.org or follow Ad-ID on Twitter @Adidentify.