



White Paper

Quality Control for Video Ad Serving Template (VAST) Protocol

Interra Systems, Inc.
1601 S. De Anza Boulevard, Suite 212
Cupertino, CA 95014
USA

1. INTRODUCTION

The IAB's Video Ad Serving Template (VAST) specification is a universal XML schema for serving digital video advertisements to video players for in-stream digital video advertising and it describes expected video player behavior when playing those ads. It has become a de-facto standard to serve video ads by all industry players. The ads are hosted on http servers and when the players place request for an ad, XML response (VAST response) is returned containing the references to advertisement (ad) media and all the required information to display and track them. The XML can contain a single ad or a set/pod of ads and each ad can be a single media file or adaptive bitrate content.

2. GENESIS OF VIDEO AD SERVING TEMPLATE (VAST)

Video has an unbeatable power to capture viewer's attention, engaging them in creating brand awareness and this distinct characteristic has led to continuous growth of digital video advertising. The introduction of internet technologies to the TV market has done away the dichotomies of linear TV and digital video and introduced more data with subsequent accountability, and cross-platform capabilities as content can be viewed on an internet-aware TV set at home or a mobile device on the go, on a streaming device at the gym or railway stations, or on a desktop at work. Proliferation of mobile devices in every household has also led to more growth and new opportunities for digital video and the same has been corroborated by the latest industry data – 22 percent annual digital ad revenue growth between 2015-16, and a shift towards mobile revenue.

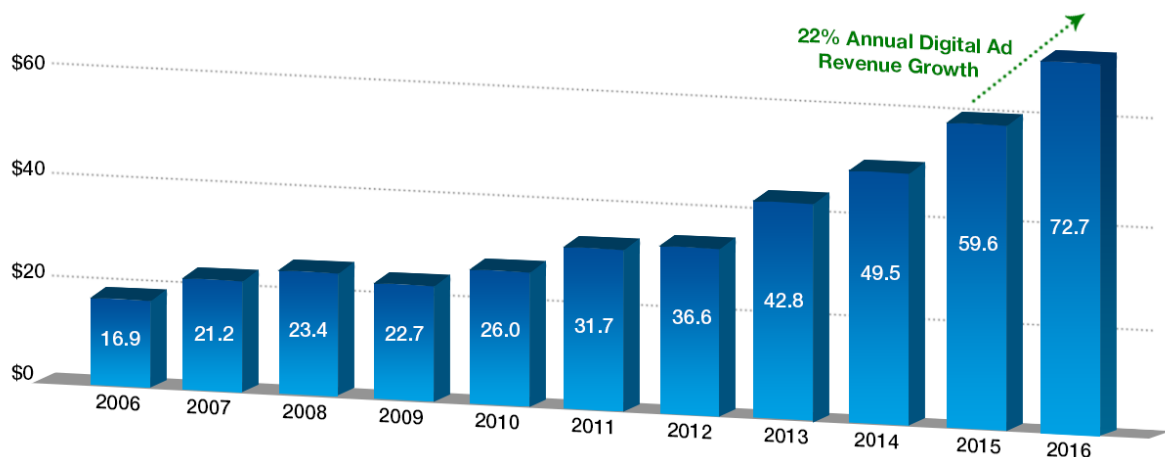


Figure 1: Annual Internet Advertising Revenue in the U.S. – IAB Ad revenue report 2016

This massive growth of mobile device usage and their variety, combined with new content consumption channels and platforms, including social media and unlimited streaming opportunities, have created unique challenges and opportunities for the stakeholders involved. Various methods have evolved to serve video ads to meet the diverse need of this fragmented landscape and so

have evolved diverse ways to measure the performance of digital video ads through metrics like click-through rate (CTR), video completion rate, video view-through rate (VTR), quartile analysis, video play-pause events, average view rate, average view time, conversion rate etc. The initial custom implementations for serving ads to different players and measurement couldn't scale well creating an industry wide need for a "create once, run everywhere" solution. In response to this situation, IAB developed VAST for video players with protocols describing ad response and expected video player behavior. To establish a communication protocol between an interactive ad and the video player that is rendering it, IAB has also developed Video Player Ad Interface Definition (VPAID) specification. VPAID allows for more interactivity and more advanced tracking capabilities. However, VAST ads have larger acceptance in the industry and with VAST 4.0, VPAID ads can also be served within VAST ads.

3. VAST – THE NUANCES

VAST, is a protocol or set of XML codes used by advertisers to instruct their ads how to work with any VAST-compliant video player independent of any technology. VAST supports video ad serving to any video player that can request and parse an XML document to extract relevant information and can act upon it. It works well in all the below scenarios and more:

- Video players in web pages
- Video players in mobile-optimized web pages
- Video players in mobile applications
- Video players in Internet-connected TVs
- Video playback through IPTV or other set-top-box environments

In general, the ad serving process supported by VAST involves the video player requesting a video ad, displaying the VAST response in the player and sending the tracking information for ad impressions and other events, back to the ad server(s). This can be done directly between the video player and one ad server (usually the publisher's) or between the video player and multiple ad servers.

The video player makes a call to the ad server for a VAST response. The ad server responds with a VAST Inline response that contains all the media file references



Figure 2: VAST Inline Response

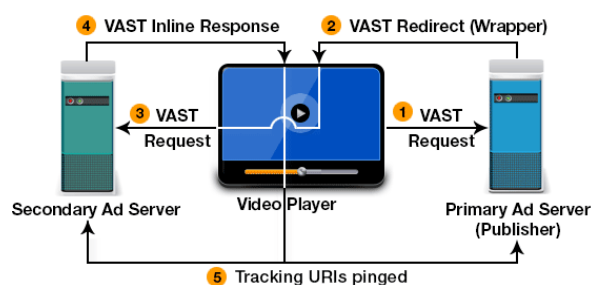


Figure 3: VAST Wrapper and Inline Response

and tracking URIs required to display and track the ad. It is also possible that the advertising party (possibly an agency or a network) sends a VAST Wrapper response identifying resources from a secondary ad server. There can be any number of chaining of the VAST Wrapper response, eventually ending with a VAST Inline response containing all the necessary details for the ad to be displayed. The video player requests tracking resources from the tracking URIs provided by each of the ad server in the chain when associated events occur in the ad and thus facilitates the case when multiple parties are interested in ad tracking.

Broadly speaking, VAST compatible ads can be classified into the following five formats:

- Linear Ads - Ads which plays before, after or at a break in the middle of the publisher's content video for a fixed duration of time. The content video starts once the linear ad finishes.
- Non-Linear Ads - These are image ads that overlay content video while the content video is in progress. They cover a small portion of content video and last for about 10-20 seconds.
- Skippable Linear Ads – These are linear ads with an option to allow skipping the ad after some fixed duration like 5 seconds. They provide a better user experience by reducing content abandonment rates and provide the opportunity to insert longer ads with an option to skip if desired by viewers.
- Companions Ads – These are served along with linear or non-linear ads but are displayed outside the video player. It can be a banner, skin surrounding the player or a leave behind on the page once the ad has been played.
- Ad Pods – These are a group of ads which are played sequentially along the content timeline.



Figure 4: Different formats of ads in VAST

Video players can declare which ad formats they support. Some video players choose to only support certain VAST ad formats in accordance with their publishing business model.

Tracking an ad served in VAST format is done using a collection of VAST tracking elements at various levels in the VAST response. There are several types of tracking events like error, click through, click tracking, video view, start, firstQuartile, mid, thirdQuartile, complete, mute, unmute, pause, resume, skip, progress etc. The video player is responsible for requesting tracking pixels/URLs at appropriate times during the execution of a VAST ad response.

The ad media in a VAST response is known as a creative. Multiple creatives may be provided in the form of Linear, NonLinear, or Companion ads. Multiple creatives of the same kind may also be provided in different technical formats so that the file most suited to the user's device can be displayed (only the creative best suited to the technology/device would be used in this case).

The following diagram represents the structure of a VAST response with four sequential ads considered part of an Ad Pod and one stand-alone Ad. The diagram also illustrates the use of a Companion creative in the first ad represented as Ad1 and NonLinear creative in the last ad represented as Ad5, in addition to the Linear creative.

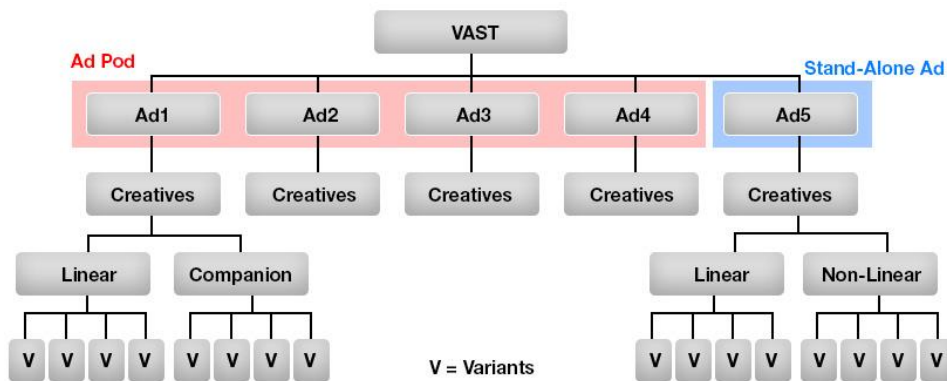


Figure 5: Structure of VAST response

4. VAST FORMATTED ADS - NEEDS AND USER EXPECTATIONS

Today's consumers are accustomed to high quality content, and they expect that experience to extend to advertising slots. Any impairment in quality of advertisements can impact the content provider's brand negatively and cause customer attrition. Therefore, the success of any ad campaign requires extensive quality control, right from the correctness of VAST response to the quality of ad assets:

- VAST allows for dynamic ad insertion into video content. Previously, VOD content included ads baked into the video stream, which many a time

were not relevant, or were out of date. VAST allows for dynamic ad insertion to present relevant, demographically targeted ads within on-demand content, expanding monetization opportunities. The ads can be inserted into the VOD asset in pre-roll, mid-roll and post-roll formats. However, it presents the risk of including un-reachable ad content leading to loss of potential revenue. So, the availability of VAST content at the ad server must be ensured for proper monetization.

- The dynamic ad insertion capability allows for introducing rotating creatives, i.e., creatives change in subsequent VAST response and rotates with a pre-defined frequency. The ad server must ensure that the ads are served with expected frequency and with the expected coverage.
- Video players choose to only support certain VAST ad formats in accordance with their publishing business model. Delivery of unsupported VAST ad formats to the players also lead to loss of potential revenue. VAST response should ensure it is supported by the intended players.
- In today's consumer-experience driven world, to attract more views and shares, video ad must be shot from the outset in different aspect ratios (9:16 and 16:9) to better match the ad with every platform on which it will be viewed. It should have content with multiple bit-rates to match different channel capabilities and ensure smooth transition between content video and ad video. For this purpose, VAST allows for having variants of the same ad and any VAST-aware player can select the right creative matching the device and channel capabilities. Besides, some platforms mandates presence of both HD and SD version of the ads. Hence the VAST response and actual ad media must ensure this requirement is met.
- There are several other constraints that the digital ad must meet, including superior quality artefacts-free audio and video, inclusion of complete and correct metadata information, compliance to the VAST standard and many more.

Ensuring all these manually for every ad creative is tedious and prone to errors. And in case of rotating creative, it is overwhelmingly tedious in any ad workflow where the entire focus is on automation and programming and real-time bidding. To make every penny from the ad campaign and run it successfully, a good QC solution must be put in place with comprehensive audio/video quality checks, adaptive bit-rate and VAST specific checks. Since VAST specification leverages the concept of centralized "ad clouds" whereby creative assets are accessed via the ad tag and then streamed to the device in the same way that content is streamed to end users, the QC solution must be cloud aware. It should support DRM encryption as well, since ads are premium proprietary content and are mostly encrypted to prevent ad frauds.

5. THE INTERRA SYSTEMS SOLUTION – THE BATON® QC SYSTEM

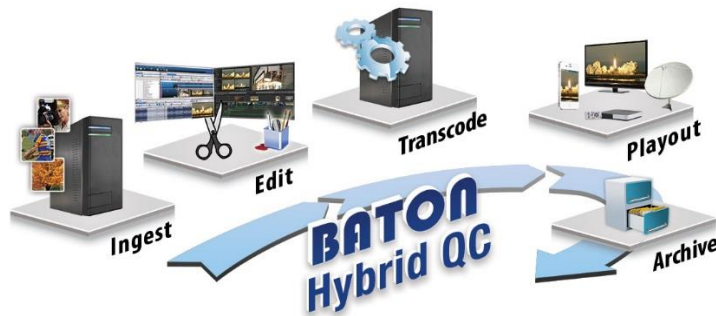


Figure 6: BATON – Next Generation Hybrid QC for File-based Workflow

BATON is a next-generation hybrid QC solution that delivers comprehensive capabilities way beyond standard automated QC. BATON verifies file-based media content for formats conformance, audio/video quality, play-out specification compliance and more. As the file-based content evolves across various stages of workflow, the content is represented by various formats, metadata and requires relevant quality checks. In each workflow, BATON applies appropriate QC measures to check the format, quality & playout specs compliance of the content. It supports QC of all industry supported audio-video media formats.

BATON is a VAST-aware solution and can check quality of content hosted at an http server with the same ease as any other content on a file server. BATON covers all the rotating creatives of a VAST formatted ad. All the unique instances are thoroughly checked for quality and a consolidated report is created, ensuring complete success and monetization of ad campaign.

BATON provides vendor-wise stats of successes and failurer of ads, enabling quick decision-making.

BATON has all required VAST specific checks and an extensive list of conformance checks to ensure validity of VAST response.

BATON provides a detailed error report in HTML, PDF, and XML format, enabling quick actions on the defects found. The report has an easy to navigate structure, replicating the hierarchy as present in the VAST response.

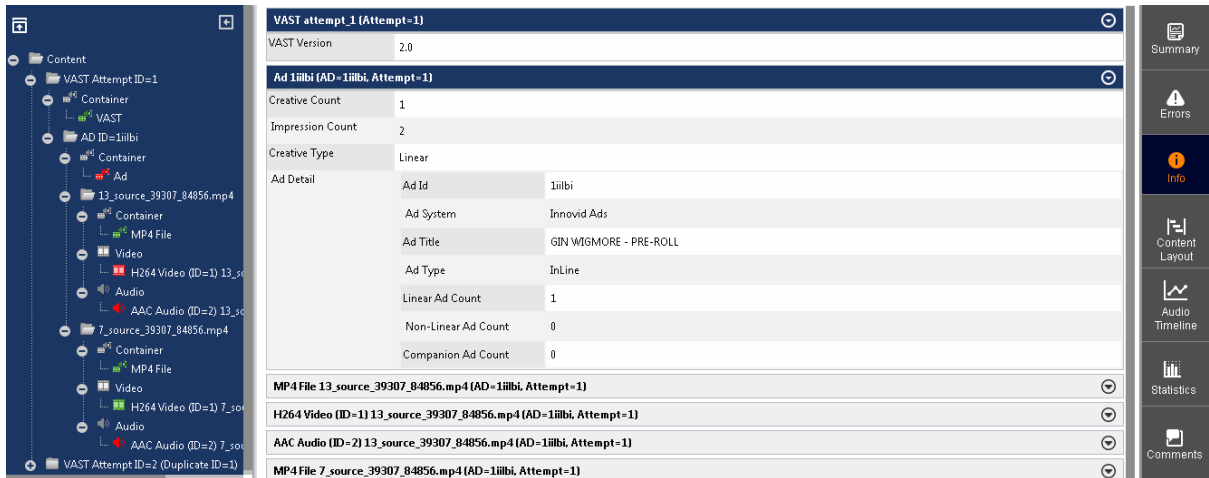


Figure 7: A sample QC report for VAST content

BATON has a full DRM support which means that it can QC encrypted and proprietary ad content without any additional efforts. BATON supports Apple's Fairplay, Microsoft's PlayReady and Google's Widevine DRM. It is cloud aware solution and support a variety of content locations seamlessly. BATON can be easily plugged into any existing ad workflow through its exhaustive list of APIs enabling automation at every step. It has support for content-aware smart folders and various automated pre- and post-QC actions.

6. CONCLUSION

The early days of digital video consisted mostly of user-generated content, and a digital video marketplace was almost non-existent. However, as the media industry gained success in monetizing this content with ads, a huge digital video marketplace has evolved and so have the resources to facilitate this. Initially launched in 2008, VAST has also evolved with the industry needs and has played a key role in the growth of the digital video marketplace. However, it has also created unique challenges for quality control of this new format, requiring a good QC solution. A good QC solution like BATON which has comprehensive quality checks and extensive feature support for VAST, can certainly enable advertisers and publishers to ensure a successful ad campaign and ad monetization.