



**Interactive Advertising Bureau Technology Laboratory
Media Rating Council**

Digital Video Impression Measurement Guidelines

Formerly titled Broadband Video Commercial Measurement Guidelines

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This document was originally published in May 2006 by the Interactive Advertising Bureau and its members in collaboration with the Media Rating Council (MRC). The Auto-Play Addendum in Section IX was developed by the IAB's Digital Video Committee and the MRC and released in December 2009 to address growing concerns over digital video advertisements that played automatically (auto-play) upon a webpage load.

These guidelines, including the Auto-Play Addendum are meant to be applied in conjunction with the existing IAB *Desktop Display Impression Measurement Guidelines* and other IAB measurement guidance where applicable.

Modernizing Measurement Task Force

The IAB formed the MMTF (Modernizing Measurement Task Force) in 2015 to serve as an advisory body that is responsible for recommending prioritization and modernization of the MRC digital measurement guidelines. This group focuses on updating and maintaining guidelines that are led by the MRC with facilitation by the IAB Tech Lab and pertains to measurement guidelines that require third party and industry oversight such as this one.

All recommended updates will be presented to and reviewed by the MMTF as well as approved by the MRC.

MMTF Participants

4INFO	Flipboard	NYIAX, Inc.
Adform	FORTVISION	OpenX
AdGear	Foursquare	Oracle's Moat
ADLOOX	FOX News Channel	OwnerIQ
Admiral Adblock Publisher Solutions	Google	Pandora
Alliance for Audited Media (AAM)	Grabit Interactive Media	Parsec Media
Amino Payments	GroupM	Pixalate
AnchorFree	Hanley Wood	Placed
Blis	Homes.com	Premion
BPA Worldwide	IAB	PubMatic
BrightRoll	IAB Tech Lab	Roku
Burt	IBM Watson Advertising	Sabio Mobile
BuzzFeed	Index Exchange	Shazam
CBS Interactive	Innovid	SpotX
Celtra	Integral Ad Science	StartApp
Chocolate	Jukin Media	Tapjoy
comScore	Jumpstart Automotive Media	Tech Mpire
Condé Nast	Jun Group	Unruly
Conversant Media	Madhiv	Verve
Cuebiq	Media Japan Network	Viacom
Dentsu Aegis	Media Rating Council	ViralGains
DoubleVerify	Merkle	Visto
Ernst & Young	mPlatform	WebMD
ESPN.com	National Public Media	Yieldmo
Extreme Reach	NBCUniversal	Zefr
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1.0 Background

This document represents a subset of measurement guidelines for digital video ads online, specifically, on-line browser or Internet activity, mobile (web and application) activity and Over The Top (OTT) activity that involves digital video and audio advertising content. The term “browser” is used throughout this document generically to refer to Internet activity on any platform within the scope of this document these Guidelines.

These guidelines are principally applicable to Internet media companies, ad-serving organizations and measurement vendors. Additionally, planners and buyers can use these Guidelines to assist in determining the quality of digital video ad measurements. The purpose of this set of guidelines is to lend efficiency to the online ad creation and media buying communities and to foster an environment of open dialogue on outstanding issues and concerns.

2.0 Scope and Applicability

Many names have been used to describe the TV-like digital “video ad” units in the marketplace. Some of the many names that have been used for this ad placement include: in-stream ads, in-video ads, streaming ads, video ads, multimedia adjacencies, and many others. So as to have a standard term for these ad units, the IAB Digital Video Committee recommended using the name “Digital Video Ad.” The Digital Video Committee chose this term because “**Digital Video Ads**” may appear before (pre-roll), during (mid-roll) and after (post-roll) content.

These recommendations apply to linear video ad units associated with video content, typically in pre-roll, mid-roll or post-roll implementations and include out-stream implementations. Rich Media creatives and standalone (require no external player and not associated with video content) sight, sound and motion ads that can run natively, such as HTML5 creatives, are covered by the display requirements (*IAB Desktop Display Impression Measurement Guidelines*). These guidelines do not address streaming audio only ads, which are the subject of a separate MRC-led Guidelines process.

“Digital Video Ads” may appear before, during, and after a variety of content including, but not limited to, streaming video, animation, gaming, and music video content in a player environment. This definition includes Digital Video Ads that appear in live streaming, archived, and downloadable content. Whenever a companion ad is served along with the Digital Video Ad, the publisher should provide a mechanism for tracking all the ads, whether separately or combined, and also fully disclose the methodology of the tracking.

3.0 Measurement Definitions (General)

The following presents the guidance for general Ad Impression counting:

“A measurement of responses from an ad delivery system to an ad request from the user's browser, which is filtered for invalid traffic and is recorded at a point as late as possible in the

process of delivery of the creative material to the user's browser. The ad must be loaded and at minimum begin to render in order to count it as a valid ad impression."

In the context of the guidance above, "loaded" means the logical creative file has been transmitted and received at the client-side (user device) and "render" refers to the process of painting the creative file or adding it to any portion of the Document Object Model. Measurement of begin to render should include logical components necessary to display the ad, but does not necessarily include logical elements that are not essential (such as other tracking elements). See further discussion below related to progressive download and adaptive bitrate streaming environments as they pertain to the aforementioned "loaded" requirements.

The original intent was to set impression requirements closest to actual opportunity to see by the user (see specifics below). However, since the original publication of these guidelines, the emergence of the viewable impression (as defined in the *MRC Viewable Impression Measurement Guidelines*) as a separate metric has satisfied this intent.

Ad impression measurement remains relevant at minimum as an input into viewability metrics (such as in the Measured Rate denominator) as well as a mechanism to quantify activity measured by organizations that might not be part of the advertising chain (such as non-ad-serving third-party measurement vendors).

Two methods are used to deliver ad content to the user --- server-initiated and client-initiated. Server initiated ad-counting uses the site's web content server for making requests, formatting and re-directing content. Client-initiated ad counting relies on the user's browser to perform these activities (in this case the term "client" refers to an Internet user's browser).

The Measurement Guidelines require ad counting to use a client-initiated approach; server-initiated ad counting methods (the configuration in which impressions are counted at the same time the underlying page content is served) are not acceptable for counting ad impressions because they are the furthest away from the user actually seeing the ad. Measurement counting may happen at the server side as long as it is initiated based on client-side events and measurement assets. However, pass-through methods (where client-initiated measurement is passed to server-side collection) of signaling interactions detected on the client side from server infrastructure are acceptable.

The following details are key components of the Measurement Guidelines (these components apply to all digital ad measurement; video has additional requirements as outlined in Section IV):

1. A valid ad impression may only be counted when an ad counter receives and responds to an HTTP (or other protocol) request for a tracking asset from a client. The count must happen after the initiation of retrieval of underlying page content and only when ad content has been loaded and at minimum begins to render (see note on Tracked Ads below). Permissible implementation techniques include (but are not limited to) HTTP (or other protocol) requests generated by , <IFRAME>, or <SCRIPT SRC>. Other implementation techniques (such as within a network) are acceptable if they maintain the client-initiated approach. For client-side ad serving, the ad content itself could be treated as the tracking asset and the ad server itself could do the ad counting as long as counting does not occur until ad content has been loaded and at minimum begins to render.

Note: There will necessarily be some slight differences among measurers in the precise moment when rendering is measured as a qualification for ad impressions. The requirements above mean that the ad content must have been loaded at the client-side and at minimum begins to render into the user interface or browser (also referred to as ad injection or execution). It does not require any portion of the ad to be visible or displayed on screen. While technical limitations may preclude requiring measurement only after an ad has fully rendered, vendors not measuring fully rendered impressions are encouraged to periodically study and monitor differences between render initialization and completion.

2. The response by the ad counter includes but is not limited to:
 - a. Delivery of a “beacon,” which may be defined as any piece of content designated as a tracking asset. Beacons will commonly be in the form of a 1x1 pixel image, but the Guideline does not apply any restrictions to the actual media-type or content-type employed by a beacon response;
 - b. Delivery of a “302” redirect or HTML/JavaScript (which doubles as a tracking asset) to any location; and
 - c. Delivery of ad content.
3. Measurement of any ad delivery may be accomplished by measuring the delivery of a tracking asset associated with the ad as long as counting does not occur until ad content has been loaded and at minimum begins to render.
4. The ad counter must employ techniques to minimize the potential of caching impacting impression counting. See section IV B of this document entitled Buffering and Caching for further information.

As a recommendation, sites should ensure that every measured ad call is unique to the browser. There are many valid techniques available to do this, (including the generation of random strings directly by the server, or by using JavaScript statements to generate random values in beacon calls).

Tracked Ads

A measurement vendor may elect to measure and report the number of ads where measurement was initiated. These ads (referred to herein as Tracked Ads; alternate labeling may apply) must adhere to the requirements above (including client-initiated counting and cache controls) except that they can be counted when a vendor's measurement assets have fully downloaded and initiated, but prior to ad content loading and rendering. This metric should not be labeled as an Impression without qualification, but will assist both buyers and sellers in addressing rendering issues (by providing a means to ascertain ads that do not render) and support the transparency needed by organizations that track ads whether they render or not such as organizations that might not be part of the advertising chain (e.g., non-ad-serving third-party measurement vendors). Such measurement and reporting is allowable under these guidelines with proper disclosure and reporting in conjunction with qualified Ad Impressions.

To foster consistency in measurement and among all the parties in the transaction stream (and similar to guidance in the *IAB Click Measurement Guidelines*), the development of periodic and detailed reporting using a unique identifier, a unique numeric or alphanumeric string associated with the transaction, is encouraged (although not required at this time). This unique identifier is intended to assist in investigation or auditing, and is not necessarily intended for use beyond these internal purposes. A unique identifier should be considered when measuring and reporting Tracked Ads alongside Ad Impressions as well as other metrics outside this scope of this document (such as Ad Requests and Viewable Impressions) in order to foster a one-to-one relationship between these metrics.

See Section IV below (Digital Video Impression Measurement) for further requirements of impression measurement specific to digital video.

4.0 Digital Video Impression Measurement

4.1 Impression Counting

A Digital Video Ad Impression is the measurement of response from a video ad delivery system to an ad request from the digital video content host (facilitated through the user's browser), which is filtered for invalid traffic and is recorded at a point as late as possible in the process of delivery of the creative advertising material to the user's browser.

A valid digital video Ad impression may only be counted when an ad counter (logging server) receives and responds to an HTTP (or other protocol) request for a tracking asset from a client. The count must happen after the initiation of the ad stream, post-buffering, as opposed to the linked digital video content itself. Specifically, measurement should not occur when the buffer is initiated, rather measurement should occur when the ad itself begins to appear on the user's browser (begins to play), satisfying the requirement for the ad content to have been loaded and at minimum begin to render.

Video delivered to a player using a progressive download technique delivers the digital video in a series of downloads that are stored locally on the Client User device. Video delivered to a player using adaptive bitrate streaming detects a user's bandwidth and CPU capacity, and adjusts the quality of a video stream accordingly. In either of these environments, a persistent connection may not be maintained, and instead groups of content/ads may be sent to the user's browser/player through a periodic (not persistent) online connection. These groups of content/ads can be variable in length (depending on the sensed connection speed and other communication environment attributes such as quality of connection) so as to enable a user experience that appears to be a continuous connection, but may not contain ads in full. As such, Video Ad Impressions are counted when the ad begins to appear and do not require the ad to be fully loaded in cache in these environments.

Measurement of any digital video ad delivery may be accomplished by measuring the delivery of a tracking asset associated with the digital video ad. As a recommendation, digital video ad content providers should ensure that every measured digital video ad call is unique to the browser. There are many valid techniques available to do this, (including the generation of random strings directly by the

server, or by using JavaScript statements to generate random values in beacon calls).

Presence of Audio

As current technological limitations make it difficult or impossible for a measurer to detect the presence of unmuted audio in all situations (while player audio may be more readily detectable, device or hardware muting detection may present challenges), detection of audio is not currently a requirement for video impression measurement. However, we encourage the development of a technological or other solution to device or hardware limitations so that audio may be considered in the future. Also, we strongly encourage, but do not currently require, that the presence of audio be a consideration in measuring duration (discussed below) in those situations where it is feasible to do so today and further encourage measurement and reporting of other audio-based metrics (such as average audible duration or audible completion).

Measurement organizations are encouraged to separately report duration that is audible (non-mute or non-zero) for device/hardware volume. Measurement organizations should separately report and consider duration that is audible for player volume where known. As part of the consideration of audio in digital video measurement, vendors are encouraged to study the further development of technology or methodology to better determine device audio state and incorporate this into measurement. The MRC intends to promulgate stricter requirements in both viewability and digital audience guidance related to considering, measuring and disclosing audio when possible.

Server-Side Ad Stitching and Server-to-Server Measurement

Server-Side Ad Stitching (can include Stream Stitching, Video Pre-Loading or Ad Stitching) is defined as the use of an intermediary server to insert ads dynamically into video streams on the server side or directly embedding ads into video content prior to content delivery. This infrastructure is common today to certain OTT environments (discussed in further detail below), but also is becoming increasingly prevalent in digital video ad serving.

In server-side ad stitching, the player may not be able to process ad tracking, and the ad-stitching service cannot access cookies used in traditional client-side tracking. Instead, the ad-stitching service must identify devices where ads play by utilizing a combination of other methods.

When an ad-stitching service is involved, the ad-stitching server may send tracking on the player's behalf, but this tracking may be limited and not fully able to satisfy client-initiated measurement requirements. This server-to-server tracking process may also be problematic because all the tracking is coming from one IP address and therefore may be susceptible to IVT filtration techniques. Certain measurers may use custom integrations or leverage aspects of the IAB's Video Ad Serving Template (VAST) and Video Player-Ad Interface Definition (VPAID), which allow header identification of IPs. Custom solutions should be clearly disclosed as part of methodological documents and should also comply with the client-initiated and rendered counting requirements within this document. To the extent that measurers are not able to effectively measure in these environments, they should be included and dimensioned within limitation disclosures.

Measurement that does not meet the client-initiated counting requirements discussed above or does not account for post-buffer and play requirements for a valid Digital Video Ad Impression

should be segregated in reporting and disclaimed as non-compliant. Further, traffic that cannot be fully measured for invalid traffic should be treated as unknown unless known to be invalid.

Measurement that includes signals outside of the vendor's direct control (such as in server-to-server architecture or in publisher signaling such as VAST and other APIs) is permissible when it meets client-initiated and render requirements. However, this should be subjected to robust initial and ongoing quality control as well data analytics exercised by the measurement vendor to ensure compliant measurement and to monitor for potential changes and errors. Measurement vendors are required to conduct quality control procedures to onboard, vet and periodically review the use of indirect or third party inputs into measurement. Such quality control procedures should include (but not be limited to) executing scripts in third party environments to verify appropriate and accurate implementation both during onboarding and periodically on an ongoing basis. Use of code libraries and a process for validating the analysis of data collected by publishers or vendors using standard agreed upon signaling is strongly encouraged. Third party or publisher providers of measurement inputs may choose to have their functionality and inputs centrally validated/examined to provide assurance to their measurement users. This approach could significantly reduce (but not eliminate) the testing required by measurement users.

Measurement vendors using third party or indirect signals for measurement should take steps to ensure their solution adequately covers any scenarios that may inhibit complete measurement. Any resultant limitations should be adequately disclosed in conjunction with the disclosure requirements below.

4.2 Buffering and Caching

In some cases an ad can be rendered from a device's cache, and there is a risk that the client or server will not record the Ad Impression. Advertising instances should be counted across all ad request activity, regardless of whether the advertising or application functionality has been stored in cache. Accordingly, if cache techniques can impact Ad Impression counting, cache-busting techniques should be employed and are required for all sites and ad-serving organizations. The following techniques are required:

1. The ad counter should employ standard (HTTP) headers on the response, in order to minimize the potential of caching a time-sensitive advertisement. These standard headers must include:
 - a. Expiry
 - b. Cache-Control
2. Unique String assignment techniques (such as random number or date/timestamp append with sufficient granularity) to identify unique serving occurrences of pages/ads.

Publishers and ad serving organizations should fully disclose their cache busting techniques to buyers and other users of their data.

Digital Video Ads are frequently associated with significant buffering or caching functions to facilitate the effective delivery and viewing of content on the user's browser. In these cases ad-measurement should maintain the concept of loading and rendering. To reiterate, measurement should not occur

when the buffer is initiated, rather measurement should occur when the ad itself begins to appear on the user's browser (begins to play), satisfying the requirement for the ad content to have been loaded and at minimum begins to render. Not all media players are currently capable of "exposing" the end of the buffering action, but it is a critical component of the guidelines. Therefore third party technology vendors are encouraged to develop this function as soon as possible.

Measurement of other buffering and caching situations should be evaluated using the loading and rendering requirement.

4.3 Filtration

Filtration of site or ad-serving transactions to remove invalid traffic is highly critical to accurate, consistent counting. All metrics subject to audit by MRC will be expected to comply with the *MRC's Invalid Traffic and Filtration Guidelines Addendum*. This includes impression metrics, which should be filtered for known General Invalid Traffic (GVIT) as required by those guidelines. Furthermore, application of Sophisticated Invalid Traffic (SIVT) detection processes is strongly encouraged for monetized traffic.

4.4 Duration Measurement

Time spent is the amount of elapsed time from the initiation of a visit to the last audience activity associated with that visit. As required by the *IAB Audience Reach Guidelines*, all time spent (duration) that is included in measurement should occur within the defined reporting period. Duration which occurs in whole or in part outside the reporting period should be excluded from the calculation; however, if a Session overlaps between a reportable and a non-reportable period, the portion of time associated with that Session that occurs within the reportable period may be included.

Records evidencing longitudinal consumption of ads (duration) during the measured time period should be based on active user affirmation, or at minimum periodic confirmation with the device that ads continue to be delivered. Such periodic confirmation may also be accomplished via the use of periodic beacons or "heartbeat" pings.

Measurement organizations should institute specific "inactivity rules," by which a user visit is terminated and thus excluded from additional contributions to duration after a pre-determined level of consecutive inactivity. These inactivity criteria should be fully disclosed, and it is expected they may be modified in the future based on evidence from empirical study of the evolution of users' browsing habits. See the *IAB Mobile Application Measurement Guidelines* for specific guidance related to inactivity rules in mobile applications.

Time spent or duration may be measured with regard to certain progress events such as completions, quartiles, deciles or some other segmentation of video ads. Duration measurement for ads should be based on at least second granularity. Further, duration should be considered with regard to viewability (as defined in the *MRC Viewable Impression Measurement Guidelines*) and presented as duration while viewable.

Progress events alone should not be used to accumulate time for purposes of duration. The use of progress events for completion of video content (and contribution to duration) requires continuous

measurement and second granularity confirming exposure to the entire segment measured before credit can be reported.

Certain organizations may have edit rules in place that bridge gaps in user activity within a session, if they occur within a certain time frame (including ascribing missing progress events). Such edit rules and data adjustment should be empirically supported and disclosed to users with appropriate quantification of impact on reported results.

4.5 Over The Top (OTT) Video Measurement

For purposes of this document (for measurement of digital video ads), Over the Top or OTT refers to delivery of digital video to televisions via internet-connected devices (or functionality within the television itself). This includes both IP set top boxes that receive signals from digital video ad servers (and widgets on them) as well as USB and HDMI multimedia devices, connected TVs and gaming consoles that do not require set top boxes or converters.

OTT digital video may be measured via JavaScript player integration or software development kit (SDK)/application programming Interface (API) integration. Certain OTT environments may not be able to be directly measured via conventional tracking means (tracking scripts or application measurement) or at all. Any such measurement limitations should be clearly disclosed and quantified to users of the measurement service.

To the extent it can be measured, OTT video Impression measurement is subject to the same guidelines applied to traditional online digital video measurement described throughout this document, including client initiation, filtration for invalid traffic and requirements for the ad to be loaded and at minimum begin to render (after the initiation of the stream, post-buffering, when the ad itself begins to appear or begins to play) in order to count it as a valid ad impression.

Latency

The infrastructure of OTT video ad serving environments may be more complex than traditional online video serving and involve the use of proxies or distributed networks. Such complexity might lead to latency in measurement (leading to inaccuracies or delays in collection of timestamps). While client-initiated and “begin to render” requirements help mitigate measurement discrepancies due to latency, measurement vendors should periodically study the impact of potential latency and its effects on measurement accuracy. Material measurement limitations due to latency should be disclosed and quantified to the extent known.

The above latency considerations should be applied to other measurement infrastructure that do not involve direct signaling to measurement vendors such as in server-to-server architecture discussed earlier in this guideline as well as pass-through techniques involving multiple collection points.

Continuous Play

Continuous Play (also referred to Post-Play and analogous to Auto-Play) refers to an OTT configuration that will play the next episode in a series or related content automatically after the end of previous content without user interaction. The implementation of Continuous Play may vary in terms of time between content, number of pieces of content that play automatically,

capping and user interaction prompts. Continuous play may also manifest in “play-list” environments where a series of video content (and ads) is automatically played without additional user interaction and this guidance should apply to those environments.

Section VII (the Auto-Play Addendum) of this document states that certain video content, such as television programs available on Internet, may contain structures similar to commercial pods interspersed within the content. Since the user is likely to have a reasonable expectation that such a commercial structure exists when they execute the video these ads do not constitute Auto-Play. These ads, however, should be counted as they are viewed, essentially not “pre-counted.”

However, to the extent that the video content itself (inclusive of advertising) is played without user interaction (Continuous Play) this should be disclosed to users of measurement data including disclosure of the parameters and settings to the extent known by measurement organizations. Further, for material levels of known Continuous Play, quantification and reporting of accompanying advertisements on a campaign basis within production reports directly is encouraged in conjunction with inactivity rules discussed throughout this document.

TV Off

Certain OTT devices may include dedicated power sources and as a result, may be independent of the power state of the TVs used to display their content. In such environments, OTT video content and advertising may be played while corresponding TV sets are off. Measurement vendors should consider this limitation as well as its effect on measurement of OTT video and clearly disclose it as a general limitation.

As current technological limitations make it difficult for a measurer using digital measurement assets to detect the power state of a TV in all situations, detection of TV Off is not currently a requirement for OTT video impression measurement. However, we encourage the development of a technological or other solution to this limitation so that it may be considered in the future.

Mobile Application Considerations

Many OTT video serving implementations utilize application environments that exhibit similar or identical attributes as mobile applications. To the extent OTT measurement utilizes application environments, measurement vendors should apply the guidelines and concepts included with the IAB Mobile Application Measurement Guidelines including, but not limited to:

- a. Inclusion of off-line activity where applicable
- b. Downloaded applications and versioning
- c. Application Pre-Loading
- d. Developmental controls and quality control over SDK/API integration

Additionally, related to the Continuous Play and TV Off considerations and as discussed above, measurement organizations should institute specific “inactivity rules,” by which a user visit is terminated and thus excluded from additional contributions to measurement after a pre-determined level of consecutive inactivity. These inactivity criteria should be fully disclosed, and it is expected they may be modified in the future based on evidence from empirical study of the evolution of users’ habits.

Inactivity rules may be based on application idle or time out, which is generally defined by the application developer (but can be user configurable) based on time since last interaction and can result in an application running in the background or being inactive. Device idle or power state should also be considered for inactivity rules and may be user configurable.

These inactivity rules may vary based on the type of application involved. For instance, some applications are designed for long periods of inactivity (such as long-form video, or scoreboards, to name two examples), in which case a longer inactivity threshold may be more appropriate than in another situation where longer periods of inactivity are not normally to be expected.

See the *IAB Mobile Application Measurement Guidelines* for further guidance related to inactivity in applications.

Invalid Traffic

As discussed in Section 4.3 of this document, filtration of site or ad-serving transactions to remove invalid traffic (IVT) is highly critical to accurate, consistent counting. All metrics subject to audit by MRC will be expected to comply with the *MRC's Invalid Traffic and Filtration Guidelines Addendum*. However, certain aspects of OTT traffic may require further consideration with regard to invalid traffic filtration. Specifically, the potential disproportionate presence of proxy or data center traffic in OTT traffic (due to the delivery models present) may not only lead to false positives (valid traffic filtered), but also inhibit the ability to collect certain parameters or originating information necessary to effectively evaluate traffic for validity. OTT measurement vendors should consider these aspects of OTT traffic when applying invalid traffic detection and filtration techniques to it and consider false positives as required (proxy and data center traffic must be known to be invalid in order to be filtered, otherwise it should be treated as unknown for purposes of IVT).

4.6 General Reporting Parameters

General reporting parameters (dayparts, weekparts, time zones, etc.) provide for consistency and comparability. These should be based on the logical application of information about the usage patterns of the medium.

In order to provide for more standardization in Internet Measurement reporting, the following general reporting parameters are recommended (although not explicitly required). Note that these are only several of the possible reporting parameters that may be used. If parameters in addition to these are reported, similar rules should be defined and applied

Day --- 12:00 midnight to 12:00 midnight

Time Zone --- Full disclosure of the time-zone used to produce the measurement report is required. It is preferable, although not a current compliance requirement, for certified publishers or ad-servers to have the ability to produce audience reports in a consistent time-zone so buyers can assess activity across measurement organizations. For US-based reports it is recommended that reports be available on the basis of the Eastern time-zone, for non US-based reports this is recommended to be GMT.

Week --- Monday through Sunday Weekparts --- M-F, M-Sun, Sat, Sun, Sat-Sun

Month --- Three reporting methods: (1) TV Broadcast month definition. In this definition, the Month begins on the Monday of the week containing the first full weekend of the month, (2) 4-week periods - --

(13 per year) consistent with media planning for other media, or (3) a calendar month. For financial reporting purposes, a month is defined as a calendar month.

Additional Recommendation: Dayparts --- Internet usage patterns need further analysis to determine effective and logical reporting day parts. We encourage standardization of this measurement parameter.

Location – If information about the geographic location of the users is collected and reported, any limitations to the methods used should be disclosed. Location measurement and disclosure should be consistent with MRC location-based advertising guidance where applicable.

Whenever possible, Digital Video Ad impressions arising from differing ad placements (e.g., pre-roll, mid-roll and post-roll content), banner sizes, bit-rates or other publisher-established parameters should be reported with disaggregated detail. If, due to ad-counting software limitations, an organization cannot report the disaggregated detail of these differing ad types, the ranges of ad types included in the reported total should be disclosed.

4.7 Disclosure Guidance

Media companies and ad serving organizations should fully disclose their ad impression recording process to buyers and other users of the ad impression count data via a description of methodology and other supplemental materials. An organization's methodology for accumulating advertising measurements should be fully described to users of the data. Specifically, the nature of measurements, methods of sampling used (if applicable), data collection methods employed, data editing procedures or other types of data adjustment or projection, calculation explanations, reporting standards (if applicable), reliability of results (if applicable) and limitations of the data should be included in the disclosure.

The following presents examples of the types of information disclosed.

Nature of Internet Measurements

- Name of Property, Domain, Site, Application (if applicable) Included in the Measurement
- Name of Measurement Report
- Type of Measurements Reported
 - Time Periods Included
 - Days Included
 - Basis for Measurement (including basis for determining ad rendering where applicable)
 - Geographic Areas
 - Significant Sub-Groupings of Data
 - Demographic Categories

-
- Formats of Reported Data
 - Special Promotions Impacting Measurements (where applicable)
 - Nature of Auditing Applied and Directions to Access to Audit Report
 - Sampling/Projections Used
 - Sampling Methods Used
 - Explanation of Projection Methods

Data Collection Methods Employed

- Method of Data Collection
 - Cache Busting Techniques Employed
 - Logging Method (including method(s) for determining ad is loaded and at minimum begins to render prior to counting, or method/basis for click measurement)
 - Logging Frequency (frequency and batching parameters)
 - Logging Capture Point (place in measurement transaction)
 - SDK and API details and functionality (where applicable)
- Types of Data Collected
 - Contents of Log Files
- Procedures to Detect and Report Pre-fetch/Pre-render as well as Auto-Play/Auto-Refresh (where applicable)
- Presence of audio or not (not a known muted state)
- Contacts with Users (if applicable)
- Research on Accuracy of Basic Data
 - Latency Estimates
- Rate of Response (if applicable)

Editing or Data Adjustment Procedures

- Checking Records for Completeness
- Consistency Checks
- Accuracy Checks
- Rules for Handling Inconsistencies
- Circumstances for Discarding Data
- Filtration Procedures (considering IVT Addendum controls over protecting IVT techniques)
- Handling of Partial Data Records
 - Ascription Procedures (if used or applicable)

Computation of Reported Results

- Description of How Estimates are Calculated
 - Illustrations are desirable
- Weighting Techniques (if applicable)
- Verification or Quality Control Checks in Data Processing Operations
- Pre-Release Quality Controls
- Reprocessing or Error Correction Rules

Reporting Standards (if applicable)

- Requirements for Inclusion in Reports, Based on Minimum Activity Levels

Reliability of Results

- Sampling Error (if applicable)

Data Retention Rules (to make customers aware of the data retained in case of reprocessing)

- Maintaining Sufficient Data or Processes That Allow for Audit Trail

Limitations on Data Use

- Non-sampling Error
- Errors or Unusual Conditions Noted in Reporting Period
- Limitations of Measurement

5.0 Guideline Overview

Guideline	Recommendation
Ad Counting	Client/Browser-initiated
Buffering & Caching	Measurement Standard = Loaded and at minimum begins to Render = After the initiation of the stream, post-buffering, when the ad itself begins to appear on the user's browser (begins to play).
Measurable Activity	Includes, but is not limited to: <ul style="list-style-type: none"> • Delivery of a beacon, defined as any piece of content designated as a tracking asset • Delivery of a "302 Redirect" or "HTML/JavaScript" • Delivery of digital video ad content
Reporting	Include disaggregated detail for placement, or range of ad types
Filtration	At minimum GIVT filtration required with SIVT strongly encouraged.
Auditing	<ul style="list-style-type: none"> • Counting methods • Processes/controls

6.0 Auditing & Certification**6.1 General**

Third-party independent auditing is encouraged for all ad-serving applications used in the buying and selling process. This auditing is recommended to include both counting methods and processing/controls as follows:

- a. **Counting Methods:** Independent verification of activity for a defined period. Counting method procedures generally include a basic process review and risk analysis to understand the measurement methods, analytical review, transaction authentication, validation of filtration procedures and measurement recalculations. Activity audits can be executed at the campaign level, verifying the activity associated with a specific ad creative being delivered for performance measurement purposes.
- b. **Processes/Controls:** Examination of the internal controls surrounding the ad delivery, recording and measurement process. Process auditing includes examination of the adequacy of site or ad-server applied filtration techniques.

Although audit reports can be issued as infrequently as once per year, some audit testing should extend to more than one period during the year to assure internal controls are maintained. Audit reports should clearly state the periods covered by the underlying audit testing and the period covered by the resulting certification.

6.2 US Certification Recommendation

All ad-serving applications used in the buying and selling process are recommended to be certified as compliant with these guidelines at minimum annually. This recommendation is strongly supported by the 4A's and other members of the buying community, for consideration of measurements as "currency."

- a. **Special Auditing Guidance for Outsourced Ad-Serving Software** Ad serving organizations that market ad-serving/delivery software to publishers for use on the publisher's IT infrastructure (i.e., "outsourced") should consider the following additional guidance:
 - i. The standardized ad-serving software should be certified on a one-time basis at the ad- serving organization, and this certification is applied to each customer. This centralized certification is required at minimum annually.
 - ii. Each customer's infrastructure (and any modifications that customer has made to the ad- serving software, if any) should be individually audited to assure continued functioning of the software and the presence of appropriate internal controls. Processes performed in the centralized certification applicable to the outsourced software are generally not re-performed. The assessment of customer internal controls (and modifications made to outsourced software, if any) is also recommended to be at minimum an annual procedure.

These certification procedures are only necessary for outsource clients who wish to present their measurements for use by buyers.

- b. **Special Auditing Guidance for Advertising Agencies or Other Buying Organizations** If buying organizations modify or otherwise manipulate measurements from certified publishers or ad- servers after receipt, auditing of these activities should be considered.

There are, in addition to MRC, a number of other certifiers and types and levels of certification are available to ad serving organizations.

For a complete copy of the U.S. Guidelines, frequently asked measurement and certification questions, and a list of IAB member companies who have completed or committed to certification, please visit:

http://www.iab.net/iab_products_and_industry_services/508676/guidelines/campaign_measurement_audit

6.3 International Certification Recommendation

The IAB Tech Lab, and MRC encourage non-U.S. measurers of activity to adopt the practices spelled out in these guidelines. While certification regimes may vary on a country-by-country basis, we encourage measurers to be audited for compliance annually by independent, third-party auditing organizations.

7.0 Auto-Play Addendum

7.1 Scope and Applicability

This addendum was promulgated for the purpose of providing guidance on the measurement and disclosure of Auto-Play video ads. It also covers the use of Auto-Refresh (site-initiated) and Forced Duration as all of these instances represent non-user initiated implementations that may impact video measurement. This guidance is intended to provide information for interactive publishers, ad serving organizations, rich-media ad- servers, syndicated measurement organizations (where applicable), advertising agencies and marketers for measuring and reporting Auto-Play video impressions, use of Auto-Refresh and Forced Duration as well as criteria for assessing the reasonableness of measurement techniques and disclosures.

This addendum is applicable to video advertising formats only --- including linear video advertising (pre, mid and post-roll) and non-linear video advertising (e.g., overlays, product placements and out-stream) video advertising. Pure display impressions and rich media based impressions that may auto-execute or load are covered in other guidance pertaining to Auto-Refresh and rich Internet applications. Additionally, in-banner and player-widget video advertising are covered by the Desktop Display Impression Measurement Guidelines (formerly IAB Rich Media Guidelines), which remain fully applicable; however, Auto-Play, Auto-Refresh and Forced Duration executions of in-banner and player-widget video advertising should consider the disclosure requirements specified below.

7.2 Glossary

Auto-Play Video Ad – A video ad or a video ad linked with video content that initiates “play” without user interaction or without a user actively starting the video (essentially automatically starting without a “play” button being clicked by the user). If a user has a reasonable expectation that he/she will be requesting a video when clicking on a link (for example, a small video icon appears next to the link),

this is not considered auto-play and is governed by standard video impression counting procedures.

Auto-Refresh – Auto-Refresh refers to the action of serving or changing advertising or content in an automatic manner. Auto-Refresh can be set directly by a user (user-initiated) or set by a site without user interaction (site-initiated).

Forced Duration – Refers to the portion or duration of video ads during which a user cannot skip the ad to begin content. Forced duration may be configured to span the entire duration of an ad or only a portion of it and contrasts with the portion or duration of video ads during which the user has the ability to skip the ad (generally referred to as “Organic Duration” for the purpose of this document).

7.3 Measurement Guidance

General

Website content owners generally directly control the use of Auto-Play, site-initiated Auto-Refresh and Forced Duration. External parties have significantly less ability to detect, measure and report on this accurately, especially when using ad centric measurement approaches. As such, content owners or media seller organizations are encouraged to disclose the use of Auto-Play, site-initiated Auto-Refresh and Forced Duration including parameters, settings and relative volumes or otherwise make this information available for use by measurement organizations (such as by being passed as part of data transmissions) consistent with the MRC Digital Advertising Measurement Technical and Transparency Best Practices (Appendix B).

Measurement organizations are required to collect and utilize such information when disclosed or passed by content owners or media seller organizations. Measurement organizations are encouraged to develop techniques to detect and estimate Auto-Play, site-initiated Auto-Refresh and Forced Duration if not otherwise disclosed or passed.

To the extent known by measurement organizations, the presence of Auto-Play, site-initiated Auto-Refresh and Forced Duration should be disclosed to users of measurement data including the parameters and settings.

Auto-Play

Auto-Play Video Ads should be measured using a client-initiated counting technique, similar to requirements for conventional display and video ads covered by existing IAB guidelines.

Auto-play parameters should be reasonable for the content type and presentation environment (site and content location, etc.).

If the user has a reasonable expectation that they are entering a video environment (based on site titling or video icons next to the link, etc.), this video content is considered standard video and therefore not subject to segregation rules above. Additionally, if a user is aware that a playlist of video is being executed (clearly disclosed on the site as a list) the follow-on advertising content will not be considered Auto-Play video. Measurement Organizations should refer to the IAB’s guidelines on Rich Internet Applications for guidance on the type of user-activity required for counting in environments where little user-interaction may be expected.

Certain video content, such as television programs available on Internet, may contain structures similar to commercial pods interspersed within the content. Since the user is likely to have a reasonable expectation that such a commercial structure exists when they execute the video these ads do not constitute Auto-Play. These ads, however, should be counted as they are viewed, essentially not “pre- counted.”

For material levels of known Auto-Play Video Ads, quantification and reporting on a campaign basis within production reports directly is required including the reporting of the portion of ad impressions or video resulting from Auto-Play, Click-to-Play and Unknown (assuming something is not Auto-Play just because it wasn't signaled as such is a false assumption).

Forced Duration

For material levels of known Forced Duration, quantification and reporting on a campaign basis within production reports directly is required including the reporting of the portion of ad impressions or video resulting from Forced Duration, Organic Duration and Unknown (assuming something is not Forced Duration just because it wasn't signaled as such is very likely to be a false assumption).

Auto-Refresh

IAB Desktop Display Impression Measurement Guidelines contain specific guidance around the concept of Auto-Refresh. Site initiated Auto-Refresh should utilize reasonable rates for the associated content type (sports site, news site, stock tickers, etc.) and include segregated disclosure of the Auto-Refresh counts if they are material to total impressions by campaign. User initiated Auto-Refresh is counted as a normal advertising impression. The guidelines for Video Ad Auto-Play are patterned after these existing Auto-Refresh guidelines.

Disclosure

To the extent known by measurement organizations, the presence of Auto-Play, site-initiated Auto-Refresh and Forced Duration should be disclosed to users of measurement data including disclosure of the parameters and settings.

For material levels of known Auto-Play Video Ads and known Forced Duration, quantification and reporting on a campaign basis within production reports directly is required including the reporting of the portion of ad impressions or video resulting from Auto-Play/Forced Duration, Click-to-Play/Organic Duration and Unknown (assuming something is not Auto-Play or Forced Duration just because it wasn't signaled as such is very likely to be a false assumption).

Auditing

The IAB Tech Lab and MRC support transparency and validation of key metrics and has recommended that measurement organizations have metrics audited by an appropriate third-party auditor. The prior guidance supplied by the IAB in this area is fully applicable to Auto-Play and Auto-Refresh video ad impressions as well as situations of Forces Duration and is incorporated herein.

8.0 Who We Are

Interactive Advertising Bureau (IAB)

The Interactive Advertising Bureau (IAB) empowers the media and marketing industries to thrive in the digital economy. Its membership is comprised of more than 650 leading media and technology companies that are responsible for selling, delivering, and optimizing digital advertising or marketing campaigns. The trade group fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. In affiliation with the IAB Tech Lab, it develops technical standards and best practices. IAB and the IAB Education Foundation are committed to professional development and elevating the knowledge, skills, expertise, and diversity of the workforce across the industry. Through the work of its public policy office in Washington, D.C., IAB advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. Founded in 1996, the IAB is headquartered in New York City and has a San Francisco office.

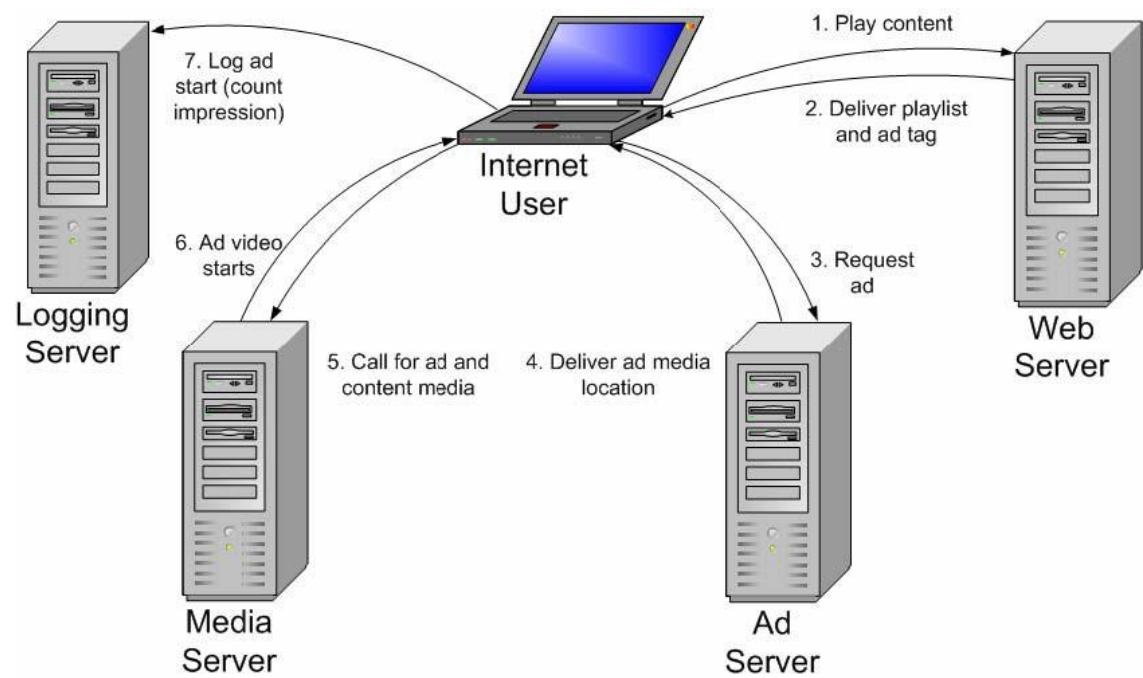
Interactive Advertising Bureau Technology Laboratory (IAB Tech Lab)

The IAB Technology Laboratory is an independent, international, nonprofit research and development consortium charged with producing and helping companies implement global industry technical standards. Comprised of digital publishers and ad technology firms, as well as marketers, agencies, and other companies with interests in the interactive marketing arena, the IAB Tech Lab's goal is to reduce friction associated with the digital advertising and marketing supply chain, while contributing to the safe and secure growth of the industry. The organization's governing member companies include AppNexus, Extreme Reach, Google, GroupM, Hearst Magazines Digital Media, Integral Ad Science, LinkedIn, Moat, Pandora, PubMatic, Sonobi, Tremor Video, and Yahoo! JAPAN. Established in 2014, the IAB Tech Lab is headquartered in New York City with an office in San Francisco.

Media Rating Council (MRC)

The Media Rating Council is a non-profit industry association established in 1963 comprised of leading television, radio, print and digital media companies, as well as advertisers, advertising agencies and trade associations, whose goal is to ensure measurement services that are valid, reliable and effective. Measurement services desiring MRC accreditation are required to disclose to their customers all methodological aspects of their service; comply with the MRC Minimum Standards for Media Rating Research as well as other applicable industry measurement guidelines; and submit to MRC-designed audits to authenticate and illuminate their procedures. In addition, the MRC membership actively pursues research issues they consider priorities in an effort to improve the quality of research in the marketplace. Currently approximately 110 research products are audited by the MRC. Additional information about MRC can be found at www.mediaratingcouncil.org.

APPENDIX A: Preferred Map of Digital Video Ad Measurement



APPENDIX B: MRC Digital Advertising Measurement Technical and Transparency Best Practices

Given some of the difficult measurement changes as well as the overall complexity of the advertising environment and the myriad of practices employed by participants in the digital advertising ecosystem, certain best practices should be followed to support valid, reliable and effective measurement.

Principles

- Participation is Voluntary
 - Applicable to Media Seller Organizations
 - Applicable to Measurement Vendors
 - Applicable to Media Buy-Side Organizations, See Specific Section
- Foster Accuracy and Transparency in Measurement
 - Exercise Professional Care in Discharging Measurement Related Activities
 - Continuous Improvement Mind-Set
- Seek to Accredited Measurement Functions that Impact Monetization, Use Accredited Products where Available
 - Comply with Applicable Industry Measurement Guidelines
 - If Accredited, also Comply with MRC Voluntary Code of Conduct (VCOC)
- Support IVT/Fraud Detection and Filtration Processes
 - MRC IVT Guidelines
 - TAG Activities
 - Fostering Centralized Tools and Communication about Fraud, IVT, Piracy, Misappropriated Content
 - Apply TAG Anti-Malware Principles

Measurement Interactions and Communication

- Transparency of Audience Extension Traffic Sourcing
 - Pass Information, Disclosure
- Transparency of Incentivized Browsing
 - Pass Information, Disclosure
- Collecting Measurement-Relevant Information
 - Pass Information, Disclosure
 - Auto-Play Video
 - Auto-Refresh
 - Origination Information in Proxy situations
 - Forced Duration Situations
 - Detection and Response Techniques Employed for Ad-Blocking
- Facilitate and Use Back-Up Creative, when Original Creative Cannot be Served
 - Segregate and Disclose Frequency
- Responsible Use of Browser/Application Tools
 - Page Visibility API
 - Flash Throttle (specific data elements)
 - Use of MRAID, VPAID and VAST and version
 - Protecting Security of Measurement Communication -- Encryption, etc.
 - Pre-fetch and Pre-render Considerations

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- Cache Busting Techniques (allowing random and timestamp append)
 - Facilitate Unique Session and Click Identifiers
 - Minimize Piggy-Back Tagging
 - Reduce/Minimize Tagging-Related Latency
 - Consideration of User Experience
 - Minimizing Intrusiveness
 - LEAN
 - Guard Rails Around Redirects, Page Takeover, Clutter
 - Adopt Industry Infrastructure Standards, as Appropriate -- MRAID, VAST, VPAID, SafeFrame
 - Adherence with Discrepancy Resolution and Communication Processes

Marketing with Best Digital Measurement Practices (applicable to media buy-side organizations)

- Encouraging Media Seller Partners and Measurement Vendors to Adhere to Best Practices
- Establishing Campaign Requirements that are Aligned with Best Practices

Compliance Representations

- Represent Compliance with this VCOC Accurately
- Escalation Process for Misrepresentation

Other Matters

- Responsibility for Updating of VCOC