



Forbes.com Ad Measurement Process Description of Methodology

- 1. Summary**
- 2. Counting Methodology**
 - a. Client-Initiated Counting*
 - b. Methodology Implementation*
 - c. Methodology Limitations*
- 3. Filtration Methodology**
 - a. Robots, Spiders and Crawlers*
 - b. Internal Traffic*
 - c. Caching*
- 4. Additional Limitations**
 - a. Abandonment*
 - b. User-Side Barriers*
 - c. Creative Formats*
 - d. Mobile Devices*
- 5. Procedural Details**
 - a. Pre-Issuance Inspection Procedures*
 - b. Data Processing*
 - c. Data Retention*
 - d. Change Control and Quality Assurance*

1. Summary

Forbes.com advertising measurement process is based on an accumulation of all advertising impression traffic recorded in the ad impression measurement log files related to the following Forbes' properties: www.forbes.com, www.forbesautos.com, www.forbestraveler.com, and www.forbes.pl. As this is not a sample-based measure, there are no universal estimates or statistical projections of the data. Forbes.com is currently undergoing MRC accreditation on the above properties for the advertising impression delivery and measurement processes as administered by Forbes' ad delivery system, OAS Enterprise, version 5.6 using the 'Count on Download' beacon-based measurement methodology, and advertising impression reporting processes as administered by Forbes' internally developed application. Additional metrics, such as, clicks and click-through-rates are measured and reported by Forbes.com but are not undergoing MRC accreditation at this time.

Ad impression reporting is on the basis of a particular advertiser order; specifically at the campaign line level and the specific creative (i.e., the actual advertising content/image served) within the campaign line. Reporting is updated daily and provides impression and clickthrough counts by day or summarized over a range of dates as specified by the system user. Timezone used to produce measurement reports are EST/EDT.

2. Counting Methodology

a. Client-Initiated Counting

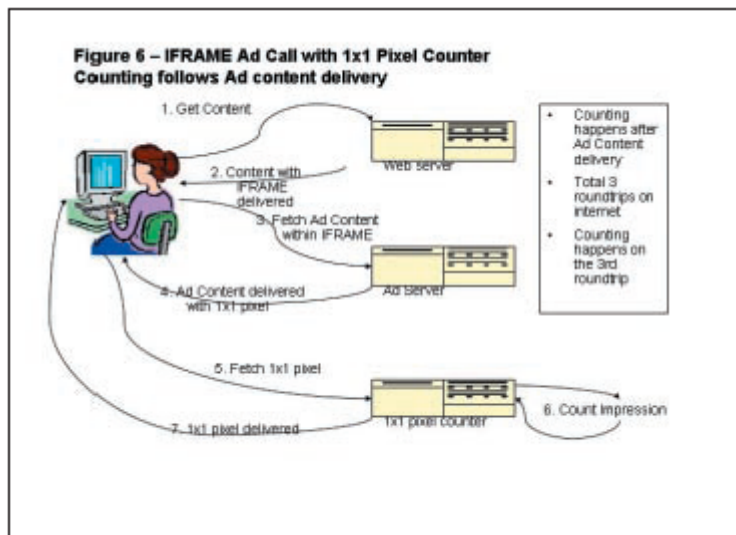
There are several different accepted methods for performing client-initiated counting specified in the *IAB Guidelines*. Forbes utilizes an OAS javascript tag (<SCRIPT SRC>) for implementing the ad calls. Specifically, Forbes utilizes the OAS MJX ad call as the default implementation, which is utilized in the majority of all ad placements. The primary exception is the "Welcome Ad", similar to an interstitial page, which utilizes the OAS LX tag; however, this OAS LX tag is an alternate OAS javascript tag (<SCRIPT SRC>) implementation.

With MJX ad tags, the browser makes a single, page-level ad call for all the ad positions included in the MJX ad tag. The ad server then makes the specific ad selections and returns the ad content along with a beacon for each ad position. Within the page, javascript functions exist for each ad position that will be rendered and act upon the ad content returned by the ad server,

including the measurement beacon. In the LX implementation, there is a single request made by the browser to the ad server for the individual ad placement (a one-to-one relationship between the ad call and the ad content). As with the MJX ad call, the ad server then makes the specific ad selection and returns the ad content along with a beacon for the ad position.

b. Methodology Implementation

In this implementation, measurement is occurring based on the browser requesting the measurement beacon returned by the ad server with the ad content. This implementation is most analogous to Figure 6 within the *IAB Guidelines "Appendix A: Different but Valid Implementation Options for Ad-Impressions"*:



Although this implementation does not utilize iframes, it is similar to an iframe implementation in that the initial page content is delivered to the browser, a javascript ad call is then made to the ad server (in place of an iframe ad call depicted), ad content and the beacon are then returned to the browser, and once the browser makes the beacon call, the impression is counted.

c. Methodology Limitations

Because the MJX ad call and the ad position javascript functions contained within the page code are discretely separate functions, it is possible for there to be a mismatch between the MJX ad call and the ad position javascript functions. If additional positions are included in the MJX ad call for where there is no corresponding ad position function on the page, the ad server will still act upon the MJX ad call, select ad content and return both the selected ad content and the respective beacon, however, without a corresponding ad position function, the ad will not be

rendered, nor will the beacon be triggered. Therefore, this ad content will neither be displayed, nor counted in this 'Count of Download' implementation utilizing measurement beacons.

3. Filtration Methodology

a. Robots, Spiders and Crawlers

Forbes.com employs techniques based on identifiers, activity and patterns based on data in the log files in an attempt to identify and filter (exclude) invalid activity, including but not limited to known and suspected non-human activity and suspected invalid human activity. However, because user identification and intention cannot always be known or discerned by the publisher, advertiser or their respective agents, it is unlikely that all invalid activity can be identified and excluded from the reports results.

The method is based on two "blacklists": 1) the "IAB ABCe International Spiders and Robots" list of known spiders and robots. This list is reviewed and updated by the IAB MTF Spider & Robot Policy Board and made available to IAB members such as Forbes for download each month; 2) a blacklist provided by the ad server vendor (24/7 RealMedia) of their known spiders and robots, combined with a Forbes maintained list of IP addresses and IP address masks comprising of known company and affiliate network addresses.

IP and user agent values in the HTTP headers of requests to the ad server delivery engines are compared at request-time to the blacklists described above and any that include a matching IP or user agent string are flagged in the log entries as "robots" and filtered from count processing.

Forbes.com does not exclude activity from user agents that do not match an include list (a.k.a. whitelist, e.g., the user agent strings in the *IAB Industry Valid Browser List*). An analysis of sample data shows that the omission of the whitelist procedure does not have a material impact on ad impression counting.

Forbes also performs daily activity-based filtration procedures during our nightly processing to identify new robot-suspected activity. Specifically, Forbes identifies unique visitors based on a "signature" within the HTTP headers composed of a cookie string + IP address + user agent values. Any uniques that have generated more than a reasonable number of ad transactions that day are filtered from count processing.

b. Internal Traffic

Forbes excludes all traffic from internal IP addresses from reported data by including all internal IP addresses in the Forbes blacklist used in filtering and described above.

c. Caching

To minimize undercounting due to browser caching, Forbes utilizes JavaScript to append a random number in the URLs of each ad beacon. This process is designed to create a unique URL for the ad beacon that the browser would not already have downloaded, and therefore would have to request each time from the server. In addition, HTTP header controls are present within each ad server HTTP response to minimize caching.

4. Additional Limitations

Forbes' methodology records ad impressions after the advertiser's creative tag has been delivered to the requesting visitor. This is a valid implementation under the *IAB Guidelines* as the counting occurs after delivery of the ad content, and requires at least a second round-trip between the user's browser and Forbes. This methodology, however, has several limitations.

a. Abandonment

If the user abandons the web page after the counting beacon was requested, but prior to delivery of the ad creative, this might result in overcounting of the impressions. This might be caused by large creative content size and/or an impaired response from the advertiser's 3rd party ad system.

b. User-Side Barriers

Users who configure their browsers to disable the requesting and rendering of images might result in undercounting of ad impressions for content that is in rich-media format, not considered by browsers to be images, and which will be rendered. In these situations, however, the tracking beacon, which is an image file, may not be requested and therefore not counted.

Ad-blocking software could cause both overcounting and undercounting of advertising delivery. If the software recognizes the advertising creative as such, but does not suppress the beacon this may result in overcounting. This decision might be based on the domain from which the ad creative is requested or the dimensions of the creative (which would conform to standard IAB

defined ad sizes). The opposite scenario would cause undercounting if the ad-blocking software is suppressing user requests to the Forbes ad beacon server, but not the creative.

c. Creative Formats

With respect to ad formats, Forbes campaign management policy is to obtain from advertiser agencies an alternate traditional ad impression file type (e.g., .jpg or .gif image file) to be specified as a secondary creative whenever a rich-media file type (e.g., Flash) is specified as the primary ad creative.

d. Mobile Devices

Requests to Forbes.com from non-PC devices such as Blackberry handheld devices are re-routed to a special mobile site based on the user agent of the device. This applies only to Forbes.com; all other Forbes properties will respond to the request and if the device is capable of rendering the content, including ad impressions and measurement beacons, it will do so. Provided that both ad impressions and beacons are either rendered or not rendered, there is no impact to the measurement process.

5. Procedural Details

a. Pre-Issuance Inspection Procedures

Forbes' periodic verification procedures include the use of a campaign reporting system for the comparison of actual delivery statistics to target goals, and the use and monitoring of web analytics and site statistics including page view traffic trends to assist in forecasting models. Revised Impression metrics will be reported when significant excluded or invalid activity is detected for a campaign after initial reporting but within 30 days.

b. Data Processing

Forbes utilizes a commercial ad serving technology as the core of the ad impression delivery, measurement and reporting process. Forbes has also built campaign management functionality in-house to handle order entry and advanced campaign reporting.

c. Data Retention

All ad server log files and databases are routinely backed up and retained for at least two years.

d. Change Control and Quality Assurance

Forbes' change management process utilizes several tools to track all changes to production systems, and includes requirements for testing and approvals of new functionality added to the production environment. Forbes also maintains documented physical and logical access controls which are approved by the Forbes.com General Manager of Operations.