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June 2, 2017

To: Digital Measurement Vendors Subject to MRC Audit

From: George Ivie, David Gunzerath and Ron Pinelli

Re: Mobile In-Application Sophisticated Invalid Traffic (SIVT)

Abstract: Incremental and differential consideration should be given to mobile in-application (in-app) environments and traffic when assessing Sophisticated Invalid Traffic (SIVT) risk, detection techniques and filtration. Such consideration should be focused on meaningful differences within mobile applications regarding initial and ongoing risk assessments, business partner qualification procedures, heuristics and signals used to determine the validity of traffic and ongoing data analysis/benchmarking.

Background:

On October 27, 2015 the Media Rating Council (MRC) issued the final *Invalid Traffic (IVT) Detection and Filtration Guidelines, Version 1.0*. The IVT Guidelines can be found here:

http://mediaratingcouncil.org/101515_IVT%20Addendum%20FINAL%20(Version%201.0).pdf

These IVT Guidelines apply to mobile in-app environments and the MRC believes the provisions for General Invalid Traffic (GIVT) are equally sufficient in these environments (with a note below) as they are in desktop and mobile web environments. However, the MRC also believes the risks and techniques perpetuated in mobile in-app environments related to Sophisticated Invalid Traffic (SIVT) exhibit differential characteristics when compared to those employed in desktop or mobile web environments. Moreover, IVT detection assets utilized in desktop or mobile web environments (such as JavaScript, cookies or Flash) may not be available or function within mobile applications. As such, measurement vendors performing SIVT measurement and filtration in mobile in-app environments must consider supplemental guidance contained within this document in the following specific areas:

Risk Assessments:

Section 2 of the IVT Guidelines states:

A periodic risk assessment (at least annually for both General and Sophisticated Invalid Traffic as applicable) for the measurement organization should be performed in conjunction with assessing the sufficiency of the internal control objectives and resulting internal controls. This should include assessments of the continued relevance and effectiveness of IVT procedures, in addition to ongoing analyses of accuracy and the identification/internal reporting of false positives and negatives discussed below.

Measurement vendors applying SIVT detection and filtration techniques must consider mobile applications discretely in risk assessments should they represent a material portion of measured and filtered traffic. Such consideration should not only be with the intent of assessing differential mobile in-app risks, but also to determine whether corresponding in-app specific controls are relevant including mobile in-app specific analyses, applied thresholds, detection techniques and filtration processes.

Mobile in-app specific SIVT considerations should include (but not be limited to):

- Detection measures and capabilities at various mobile application stages (downloaded, open, initialized, in-use online or offline).

- Fraud types, models, risks or incentives not covered in the existing SIVT framework or TAG taxonomy (or different from those in desktop and mobile web environments).

- Whether specific types of mobile in-app inventory are priced at a premium and may draw more focus or risk for potential IVT generation.

- Relative sophistication of potential IVT schemes required in certain in-app environments; while such sophistication may decrease the incidence of IVT schemes or those perpetuating them, it might also involve techniques that are more difficult to detect.

- Susceptibility of apps to transmission interception; mobile applications may be configured to transmit data externally and the encryption and security protocols of these transmissions (or lack thereof) may drive increased risk that warrants consideration by measurement vendors.

- App store policies and protections; while a measurement organization should be aware of and consider/leverage any vetting or security policies applied by application stores, these policies should not be relied on in place of direct measurement controls as they often do not consider invalid traffic aspects of applications.

- To the extent that IVT and measurement detection assets (such as JavaScript, Flash or cookies) or other techniques deployed in desktop/mobile web environments do not function within applications, measurement organizations should consider additional assets or telemetry to serve as compensating controls and to cover detection gaps.

- Presence of proxy traffic or routing artifacts that may obfuscate origination information or limit the granularity of data collected for purposes of IVT determination.

Business Partner Qualification:

Section 3.4 of the IVT Guidelines states:

Each measurement organization that interacts with business partners should have policies and procedures to ensure they are working with legitimate business partners and a general understanding of the invalid traffic processes employed by each business partner. These functions should include … Initial Qualification of the Business Partner (executed prior to doing

business), ... Ongoing Evaluation of Business Partners, Linked with IVT results and ... Periodic [3]
Auditing and/or Gathering Evidence of Partner Certifications.

Measurement vendors applying SIVT detection and filtration techniques should consider mobile applications discretely in business partner qualification procedures where applicable. Such consideration should include initial, ongoing and periodic qualification processes specific to mobile application use and traffic as well as IVT processes applied to it by business partners. These processes may involve determining application properties, configuration and communication protocol (whether an app routes, directs or receives traffic/communications to/from other apps or properties) as well as determining mobile application specific traffic sourcing or extension arrangements.

Additional Parameters and Heuristics

The IVT guidelines include requirements for certain data analysis and discovery functions as well as specific techniques and parameters to be collected for SIVT detection and filtration. Measurement vendors applying SIVT detection and filtration techniques must consider mobile applications discretely in setting parameters or determining heuristics used should they represent a material portion of measured and filtered traffic. Mobile in-app SIVT specific considerations should include (but not be limited to):

- Different/additional benchmarks or thresholds for sophisticated activity-based considerations for mobile application traffic.
- Consideration of known app behaviors that may be indicative of SIVT.
- Environments where IVT and measurement detection assets (such as JavaScript, Flash or cookies) or other techniques deployed in desktop/mobile web environments do not function as discussed above and alternative assets and data points that may be utilized.
- Presence of proxy traffic or routing artifacts that may obfuscate origination information or limit the granularity of data collected for purposes of IVT determination as discussed above and means to collect originating and more granular data (such as X-Forwarded-For data).
- Differentiation of parameters or heuristics by device such as:
  - Device type/operating system
  - Device status (stock/jail-broken)
- Differentiation of parameters or heuristics by app type/properties such as:
  - App communication protocols (whether an app routes, directs or receives traffic/communications to/from other apps or properties as discussed above).
  - Presence of multiple re-directs
  - App permissions
- Differentiation of parameters or heuristics by user such as:
  - Population or content of collected user information, or lack thereof
  - Inconsistent user parameters

A Note on GIVT:

While the purpose of this interim guidance relates to SIVT applied to mobile in-application traffic, certain list-based and parameter-based detection (included within GIVT) may utilize or rely on industry lists or assets (such as those published by the Trustworthy Accountability Group; TAG). Some of these lists or assets may not fully contemplate, cover or be relevant to

mobile in-application traffic. As a result, measurement vendors are encouraged to evaluate any industry lists or assets used in GIVT detection and filtration for mobile in-app coverage and to apply incremental procedures that consider mobile applications discretely should they represent a material portion of measured and filtered traffic. The MRC intends to continue to work with TAG and other applicable industry bodies to ensure mobile in-application traffic is considered in ongoing efforts and tools.

The MRC has produced this interim guidance considering input from an IVT Update working group as well as additional research. Until such time as there is a formal standards update that incorporates it, this interim guidance is considered authoritative and should be applied by measurement services in the MRC accreditation process.

Please contact Ron Pinelli at MRC (rpinelli@mediaratingcouncil.org) with any questions.