

POSTER: A Footprint of Third-Party Tracking on Mobile Web

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ABSTRACT

In this paper, we investigate the footprints of third-party tracking on the mobile web. The survey of 100 popular mobile versions of web applications indicates that third-party tracking is also prevalent on mobile web. The results show that 62 sites are tracking users' activities on mobile web and *Google Analytics* is the most widespread tracker on mobile web. We believe that this study will help raise awareness about the tracking situation on the mobile web side.

Categories and Subject Descriptors

K.4 [COMPUTERS AND SOCIETY]: Privacy

General Terms

Privacy, Mobile-web

Keywords

survey, mobile-web, third-party tracking

1. INTRODUCTION

Researchers have conducted several studies in order to see third-party tracking situation on desktop-based web applications [1, 2, 3] and this is often an agenda of *public/privacy* debate [4, 5]. The motivation for this work comes from the observation that the mobile-based web applications or mobile web still lacks research community's knowledge on third-party tracking. The URLs of mobile-based web applications start with the letter "m", or end in the words "mobi" or "mobile" e.g., <http://m.pinterest.com>. Sites typically present a simple and optimized version of web application on the mobile side.

This paper presents a survey of 100 popular mobile-based web applications. The goal of this survey is to see the prevalence of third-party tracking code on mobile web. The inspected sites includes names like Nokia, Pinterest, Vodafone,

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BBCNews, CNN, Twitter, Youtube, Intel, Answers, Dictionary and Etsy etc. We found third-party tracking code on 62 sites (see Section 3.2). We found 17 different trackers (see Section 3.3) on the considered mobile sites. *Google Analytics* [6] is the most widespread tracker having footprints on 41 mobile sites followed by *ScorecardResearch* [7] with its footing on 23 mobile versions of web applications.

2. RELATED WORK

To the best of our knowledge, all quantitative overviews [1, 2, 3] on third-party tracking we are aware of are related to desktop based web applications. Our study provides a first insight into the current prevalence of third-party tracking on the mobile versions of web applications.

3. SURVEY

3.1 General Approach

In this section, we discuss the approach used to gather data. We have surveyed 100 mobile versions of web applications and manually analyze the source code of *homepages* of mobile applications. The complete list of surveyed sites is available at <http://pastebin.com/jeEJp7GW>. On the mobile side, sites typically present a simple and optimized version of their corresponding web applications. Mobile sites have less features, less functionality and less contents as compare to their desktop variants. Though mobile sites are simple with less contents but the amount of third-party tracking code we found on mobile versions of web applications is surprisingly high and requires attention.

3.2 Prevalence of Third-Party Tracking

Our investigation of the 100 popular mobile sites indicates that 62 sites are using tracking code to monitor users' browsing activities on mobile web. It includes sites like SoundCloud, Pinterest, BBCNews, CNN, MySpace, Dictionary and Answers etc. The complete list of mobile sites that are tracking users' activities is available at <http://pastebin.com/qK4N0vbs>.

3.3 Trackers on Mobile Web

We found 17 unique third-party trackers during survey of 100 mobile versions of web applications. Table 1 shows the names of third-party trackers along with their footprints.

Third-Party Tracker	Footprint
Google Analytics	41
ScorecardResearch	23
Omniure[8]	7
Quantcast[9]	4
GoogleSyndication[10]	3
AddThis[11]	2
EffectiveMeasure[12]	2

Table 1: Third-party Tracker on Mobile web along with their footprints

There are other trackers like Statcounter¹, Admob², SeeVolution³, Moblama⁴, Adreactor⁵, MADS⁶, Mobilytics⁷, Kissmetrics⁸, Imrworldwide⁹ and Akamai¹⁰ etc. We found their footprints on one mobile application each.

3.4 Tracking Code

The majority of the trackers on mobile sites are using JavaScript code for tracking purpose. We also found that some of the trackers are using Web Beacons [13] alongside. Web Beacon or web bug or clear GIF is a 1*1 (height*width) image used for tracking purposes. According to Network Advertising Initiative [14]:

“Web beacons are a tool that can be used online to deliver a cookie in a third-party context. This allows companies to perform many important tasks—including unique visitor counts, web usage patterns, assessments of the efficacy of ad campaigns, delivery of more relevant offers, and tailoring of web site content.”

The following snippet we found on site <http://m.wund.com/>

```
<noscript></noscript>
```

In this case, the site places a web beacon in a `<noscript>` tag. The main reason is to keep tracking active even if user’s mobile browser does not support JavaScript or JavaScript is blocked. Now we discuss some miscellaneous findings that we consider worth mentioning:

- We found four (4) different trackers on *homepages* of the following mobile sites <http://m.wund.com/>, <http://m.fark.com/> and m.cricbuzz.com/info/contact.

¹<http://statcounter.com/>

²<http://www.google.com/ads/admob/>

³<https://www.seevolution.com/>

⁴<http://moblama.ru/>

⁵<http://www.adreactor.com/>

⁶<http://www.mads.com/>

⁷<http://www.mobilytics.net/>

⁸<https://www.kissmetrics.com/>

⁹<http://www.donottrackplus.com/trackers/imrworldwide.com.php>

¹⁰<http://www.akamai.com/>

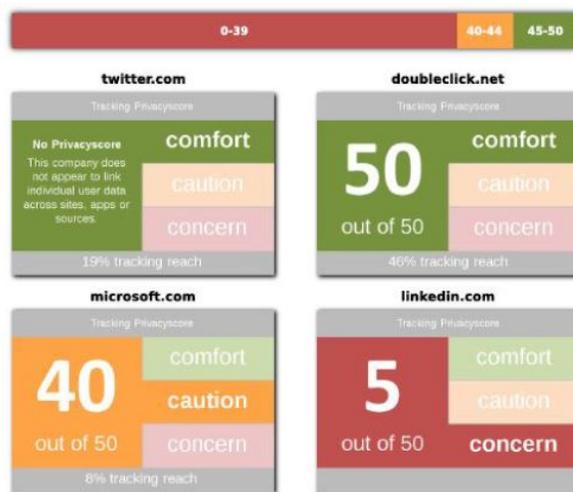


Figure 1: Rating system and examples from *privacychoice*

- We found three unique third-party trackers on homepages of nine (9) mobile versions of web applications.
- According to recent report by Ghostery, *Google Analytics* is the most widespread tracker on web [15]. Our survey has found that *Google Analytics* is also widespread tracker on mobile side.

3.5 Rating Trackers

We use *Privacychoice’s* *privacyscore* rating system [16] for the classifications of third-party trackers found on the mobile web. A *Privacyscore* is a way to assess the privacy risk of using a third-party tracker [16]. *Privacychoice’s* *privacyscore* rating system assigns values between zero to fifty and use different color schemes for marking “*comfort or caution or concern*” (see Fig. 1). For interested readers, we refer to [17] for detailed description on *Privacychoice’s* *privacyscore* rating system. The Table. 2 shows third-party tracker along with their *privacyscore* (if given). Unfortunately, we have found no information about some mobile trackers regarding their *privacyscore* reputation and some have a rating of “*concern*” according to their *privacyscore*.

4. CONCLUSION

In this paper, we have surveyed 100 mobile sites and found tracking code on 62. We also found 17 unique third-party trackers on 100 mobile versions of web applications. We hope this paper will raise awareness about the third-party tracking situation on mobile side.

5. ACKNOWLEDGEMENTS

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6. REFERENCES

- [1] Balachander Krishnamurthy and Craig Willis. Generating a Privacy Footprint on the Internet.: In IMC 2006

#	Tracker	Score (Total 50)	Description
1	<i>Google Analytics</i>	50	Comfort
2	<i>ScorecardResearch</i>	50	Comfort
3	<i>Omniure</i>	No privacyscore	Comfort
4	<i>Quantcast</i>	50	Comfort
5	<i>GoogleSyndication</i>	50	Comfort
6	<i>AddThis</i>	40	Caution
7	<i>EffectiveMeasure</i>	25	Concern
8	<i>StatCounter</i>	No Privacyscore	Comfort
9	<i>Admob</i>	0	Concern
10	<i>SeeVolution</i>	-	No Information
11	<i>Moblama</i>	-	No Information
12	<i>Adreacter</i>	-	No Information
13	<i>MADS</i>	0	Concern
14	<i>Mobilytics</i>	-	No Information
15	<i>Kissmetrics</i>	No Privacyscore	Comfort
16	<i>Imrworldwide</i>	25	Caution
17	<i>Akamai</i>	50	Comfort

Table 2: Third-party Tracker on Mobile web along with their PrivacyScore Rating

[2] Balachander Krishnamurthy and Craig Wills. Privacy Diffusion on the Web: A Longitudinal Perspective.: In WWW 2009

[3] Balachander Krishnamurthy. I know what you will do next summer.: In ACM SIGCOMM Computer Communication Review 2010

[4] Jonathan Mayer and John C. Mitchell. Third-Party Web Tracking: Policy and Technology. In IEEE S&P 2012

[5] The Very Public Privacy Debate Heats Up.: <http://www.itbusinessedge.com/cm/blogs/weinschenk/the-very-public-privacy-debate-heats-up/?cs=49798>

[6] Google Analytics.: <http://www.google.com/analytics/>

[7] Scorecard Research.: <http://www.scorecardresearch.com/Home.aspx?newLanguage=1>

[8] Omniure.: <http://www.omniure.com/en/products/online-business-optimisation>

[9] Quantcast.: <http://www.omniure.com/en/products/online-business-optimisation>

[10] GoogleSyndication.: <https://www.google.com/adsense/app?hl=en#home>

[11] AddThis.:<http://www.addthis.com/>

[12] EffectiveMeasure.:<http://www.effectivemeasure.com/>

[13] Web Beacon.: http://en.wikipedia.org/wiki/Web_bug

[14] Network Advertising Initiative.: <http://www.networkadvertising.org/>

[15] Knowyourelements.: <http://www.knowyourelements.com/#tab=list-view&date=2013-01-24>

[16] Privacy Choice.: <http://privacychoice.org/checkprivacyscores>

[17] Privacy Score.: <http://privacyscore.com/#>