MUDDY WATERS RESEARCH

# AppLovin:
# Persistent Lies About Persistent Identifiers

## APP CEO and CTO Blog Responses Lie About The Existence Of Persistent Identifiers And How It Breaks Data Privacy Rules

May 7, 2025

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# APP’s Persistent Lies, Denying Use of Persistent IDs

Muddy Waters is short AppLovin (APP). APP’s CEO and CTO responded to our initial report (dated Match 27, 2025) with demonstrably false statements. In contrast to its CEO and CTO’s claims, APP continues to use persistent identifiers that violate users’ privacy and partner platforms’ terms of service.

CEO Foroughi denied that APP creates or uses persistent identifiers in his March 31, 2025 blog post.[1] We show this denial is a lie. Throughout Foroughi’s blog post, he references CTO Shikin’s analysis. We show that Shikin’s explanation of how identifiers data are used and how APP creates and uses personal identifiers is misleading—a lie of omission.[2]

Included at the end of this presentation is a link to a video by a third-party investigations firm, Permanent Record Research Inc. (PRR), which we engaged to verify our thesis and assist with this project’s research.

This presentation introduces the video which provides new evidence, data, and visualizations that clearly demonstrate the existence and use of persistent identifiers to build Persistent Identify Graphs (PIGs) and retarget ads to mobile game users. In the video, the PRR technical expert explains in detail how Shikin’s response misleads, how the persistent identity graphs are created, how these persistent identifiers interact with APP’s tech stack and are called on in the ad auction (mediation) processes, and that they cross domains and applications.

[1] APP CEO Adam Foroughi, March 31, 2025: Performance Advertising: How we drive value and handle data, https://www.applovin.com/blog/how-we-drive-value-and-handle-data/

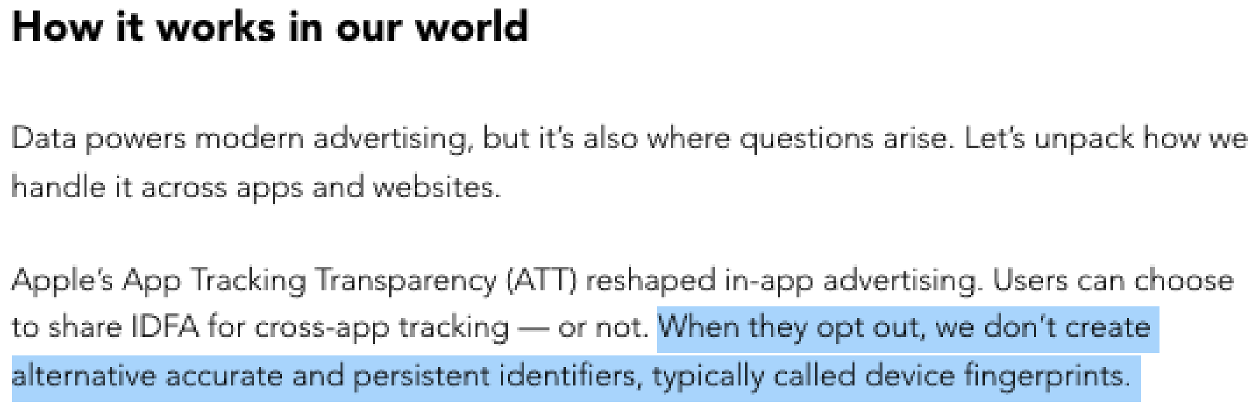
[2] APP CTO Basil Shirkin, March 31, 2025: Performance Advertising: Examination of e-commerce data practices, https://www.applovin.com/blog/examination-of-e-commerce-data-practices/

# CEO's Bald-Faced Lie About Its Creation of Persistent Identifiers Which Violate User Privacy

On March 31, Foroughi denied that APP creates or uses persistent identity graphs (PIGs) for users who decline IDFA cross-application tracking.[1] On May 1, APP re-upped Foroughi's lie by recycling his March 31 post in a newsletter to stakeholders entitled "Directly From Our CEO: Maximizing Value & Ensuring Data Safety."

This presentation and the accompanying video show records of web and application traffic that prove these claims to be utterly false. We show that persistent identifiers are created, disguised, and applied to track users across domains and applications.

Below: Foroughi denies APP creates or uses persistent identity trackers – i.e. fingerprinting



**How it works in our world**

Data powers modern advertising, but it's also where questions arise. Let's unpack how we handle it across apps and websites.

Apple's App Tracking Transparency (ATT) reshaped in-app advertising. Users can choose to share IDFA for cross-app tracking — or not. When they opt out, we don't create alternative accurate and persistent identifiers, typically called device fingerprints.

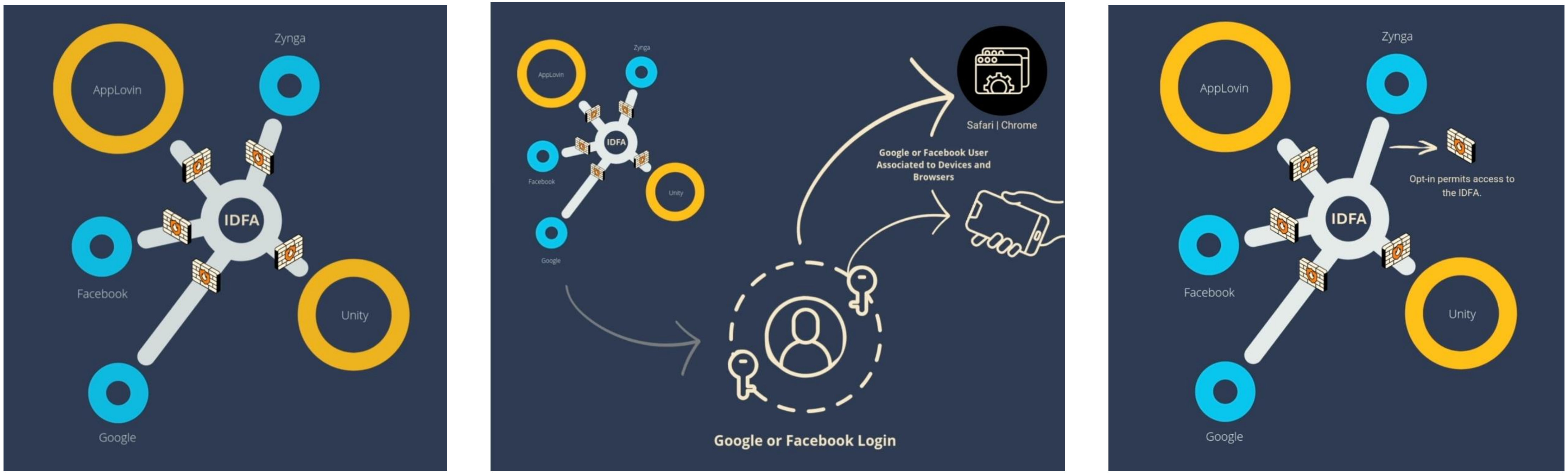
[1] APP CEO Adam Foroughi, March 31, 2025: Performance Advertising: How we drive value and handle data, https://www.applovin.com/blog/how-we-drive-value-and-handle-data/

# Refresher:  How Privacy Should Be Protected

Previously the Apple IDFA allowed advertisers to track users without consent. This changed in 2021 when APPL terminated or "sandboxed" IDFA access.[1] Unless users' opt-in, advertisers are prohibited from tracking users across environments. GOOG and FB users already login to use their applications. This gives GOOG and FB a major advantage, as they can track users' activities within their applications.

APP and most APP games do not require a login; therefore, users, platforms, and stakeholders (games, advertisers, etc.) have the expectation that the TOS and user privacy rules are being followed and the users' identities are NOT being tracked.

Below: Three excerpts from the video showing how the firewalling / sandboxing of Apple's IDFA



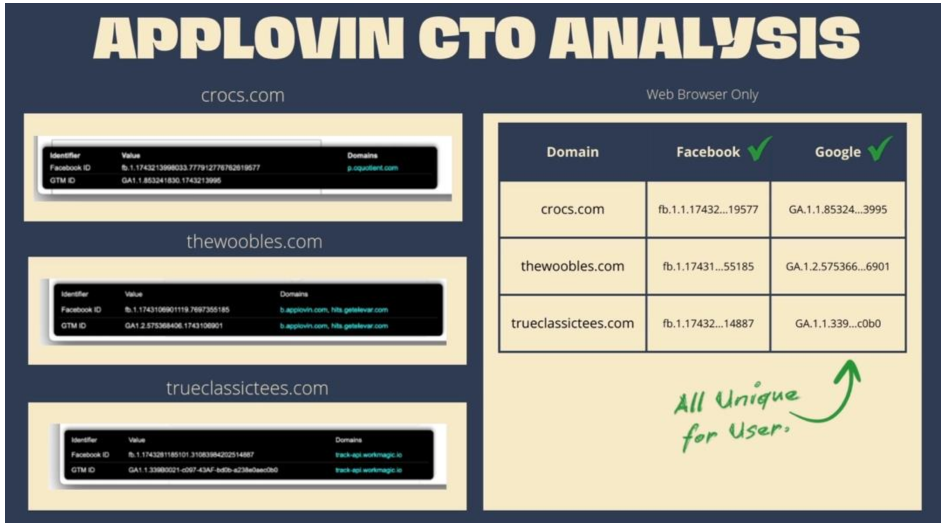
[1] APPL's IDFA was known as "Identifier for Advertisers." This was announced in June of 2020 and implemented with the release of iOS14.5 in April 2021.

# APP’s CTO’s Lie of Omission

On March 31, Shikin posted a blog in defense of APP’s practices.[1] We contend Shikin’s analysis is limited, looking only at the e-commerce side of the platform, and explaining only how prominent identifiers are supposed to be properly handled. The IDs he shows used by FB and GOOG are unique to each user in each domain as would be expected, i.e., the same ID is not re-used or persist to track the user on another domain.

Shikin does not look at how the applications interact; and unsurprisingly he omits the *how* and *what* of APP’s improper persistent identifiers. Specifically, when users visit different e-commerce domains (websites), APP generates and sustains the same persistent ID for the same user.

Below: Shikin’s examples show FB and GOOG using different, unique IDs.



APPLOVIN CTO ANALYSIS

crocs.com

| Identifier | Value | Domains |
|---|---|---|
| Facebook ID | fb.1.1743213998033.777912776762619577 | p.cquotient.com |
| GTM ID | GA1.1.853241830.1743213995 | |

thewoobles.com

| Identifier | Value | Domains |
|---|---|---|
| Facebook ID | fb.1.1743106901119.7697355185 | b.applovin.com, hits.getelevar.com |
| GTM ID | GA1.2.575368406.1743106901 | b.applovin.com, hits.getelevar.com |

trueclassictees.com

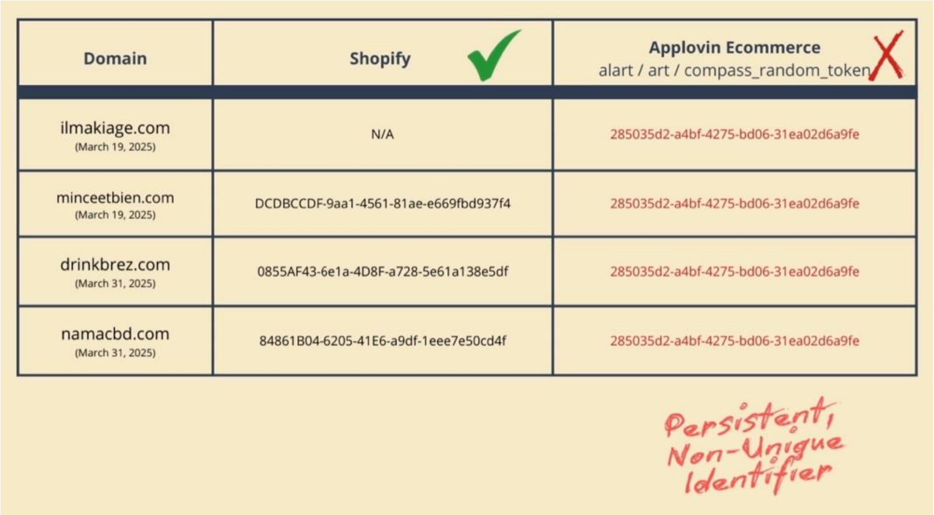
| Identifier | Value | Domains |
|---|---|---|
| Facebook ID | fb.1.1743281185101.31083984202514887 | track-api.workmagic.io |
| GTM ID | GA1.1.339B0021-c097-43AF-bd0b-a238e0aec0b0 | track-api.workmagic.io |

Web Browser Only

| Domain | Facebook ✓ | Google ✓ |
|---|---|---|
| crocs.com | fb.1.1.17432...19577 | GA.1.1.85324...3995 |
| thewoobles.com | fb.1.17431...55185 | GA.1.2.575366...6901 |
| trueclassictees.com | fb.1.17432...14887 | GA.1.1.339...c0b0 |

All Unique for User.

Below: Shopify correctly uses Unique IDs—but APP applies persistent ID’s (non-unique), sustaining them for weeks or longer.



| Domain | Shopify ✓ | Applovin Ecommerce<br>alart / art / compass_random_token ✗ |
|---|---|---|
| ilmakiage.com<br>(March 19, 2025) | N/A | 285035d2-a4bf-4275-bd06-31ea02d6a9fe |
| minceetbien.com<br>(March 19, 2025) | DCDBCCDF-9aa1-4561-81ae-e669fbd937f4 | 285035d2-a4bf-4275-bd06-31ea02d6a9fe |
| drinkbrez.com<br>(March 31, 2025) | 0855AF43-6e1a-4D8F-a728-5e61a138e5df | 285035d2-a4bf-4275-bd06-31ea02d6a9fe |
| namacbd.com<br>(March 31, 2025) | 84861B04-6205-41E6-a9df-1eee7e50cd4f | 285035d2-a4bf-4275-bd06-31ea02d6a9fe |

Persistent, Non-Unique Identifier

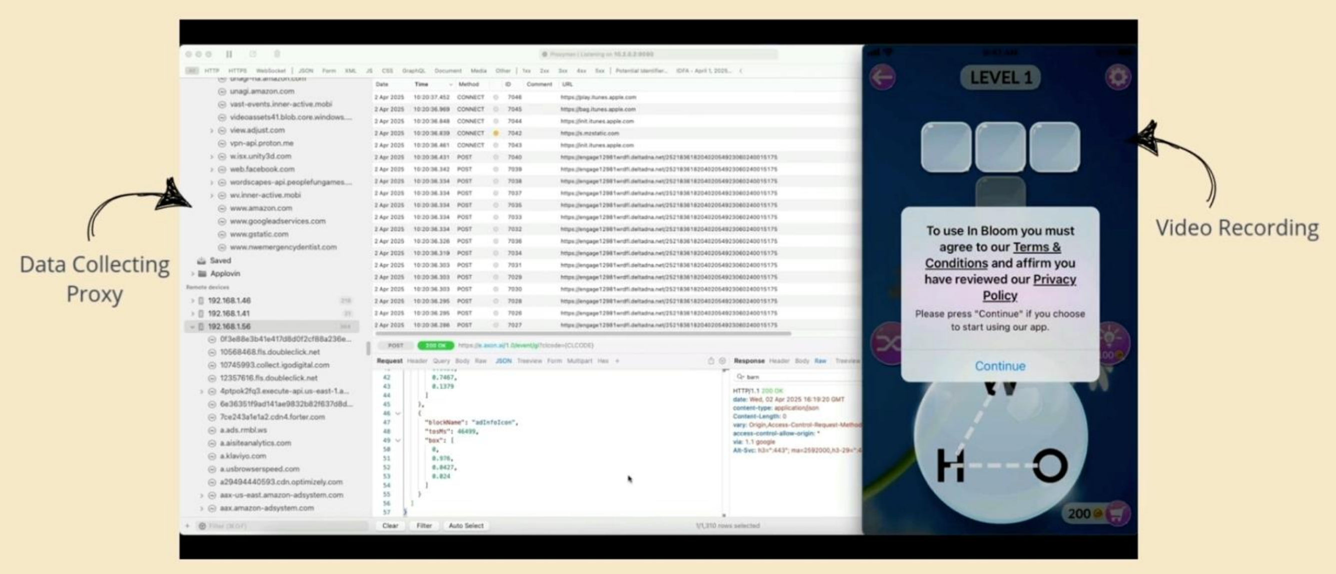
[1] APP CTO Basil Shirkin, March 31, 2025: Performance Advertising: Examination of e-commerce data practices, https://www.applovin.com/blog/examination-of-e-commerce-data-practices/

# Data Collection Methods

PRR’s technical expert video explains the research methods used to find persistent identifiers tracking users across apps and environments, some of which were for extended durations.[1] This included making video recordings of the applications running on screen, side-by-side with a data collecting proxy. The proxy captured the background data movements between the domains, applications, browsers and APP’s servers.

Left: Side-by-side view of the application running and its data flows between the applications and APP’s servers

Right: The collected data was exported and analyzed, Persistent identifiers are located.



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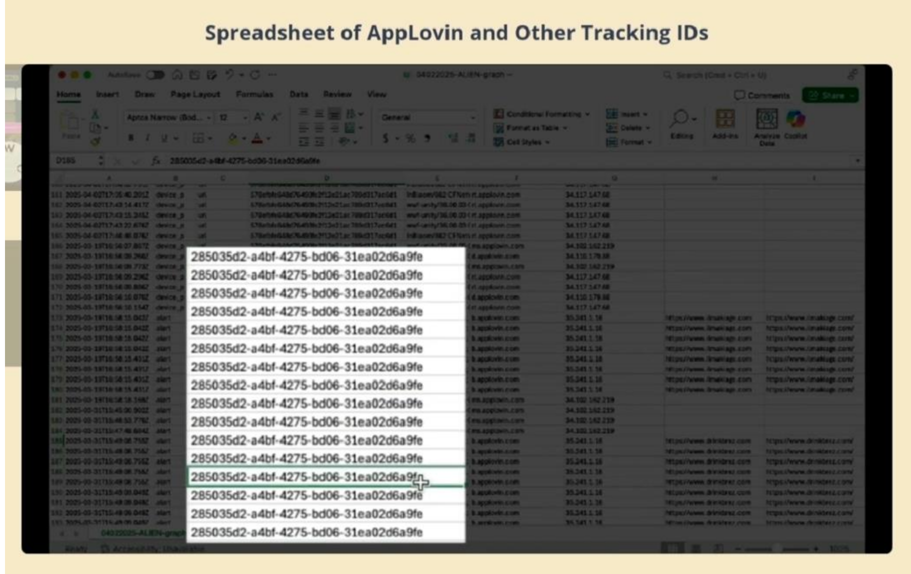

Spreadsheet of AppLovin and Other Tracking IDs

285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe
285035d2-a4bf-4275-bd06-31ea02d6a9fe

[1] Tests conducted collected tens of thousands of HTTP requests, using iOS and Android; Safari, Chrome & other browsers; VPN on & off, USA & Canada mobile hardware and networks.

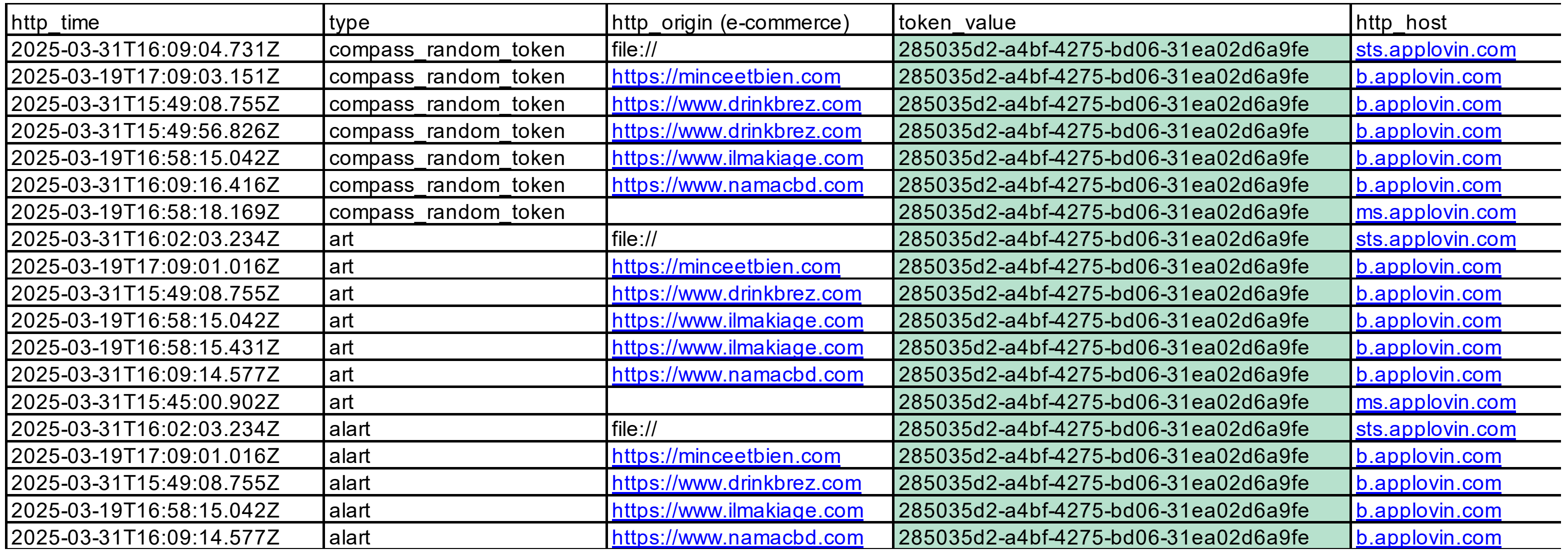
# APP Shares Persistent IDs Across Domains & Applications

After PRR collected the data, it organized and sorted the records to identify various IDs being used and re-used to track users across domains and applications.

PRR's expert analysis confirmed the existence and use of identifiers that persist across domains and applications sustained over an extended period. The value (green) of the three tokens (compass_random_token, art, alart) persist across e-commerce domains (in this case: drinkbrez.com, namacbd.com, minceetbien.com, ilmakiage.com) and three APP domains (sts.applovin, b.applovin, ms.applovin). These domains and APP services are for both mobile applications and web browsers viewing e-commerce sites.

**The value (in green) should not be the same—it should be unique to the user for each site visited.**

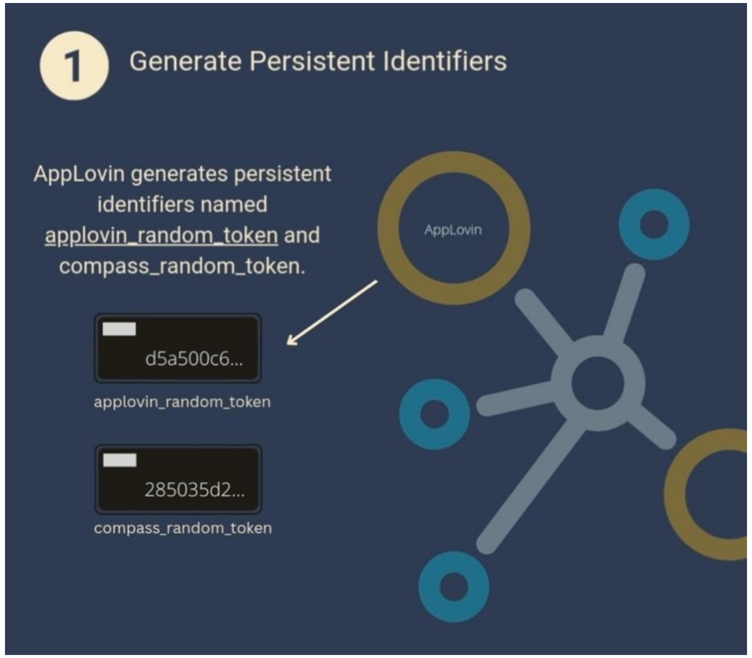
Below: The table depicts the same token value (green) persistently used by three types of tokens across four e-commerce site domains and three APP domains used for both mobile applications and web browser viewing.



| http_time | type | http_origin (e-commerce) | token_value | http_host |
|---|---|---|---|---|
| 2025-03-31T16:09:04.731Z | compass_random_token | file:// | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | sts.applovin.com |
| 2025-03-19T17:09:03.151Z | compass_random_token | https://minceetbien.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T15:49:08.755Z | compass_random_token | https://www.drinkbrez.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T15:49:56.826Z | compass_random_token | https://www.drinkbrez.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-19T16:58:15.042Z | compass_random_token | https://www.ilmakiage.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T16:09:16.416Z | compass_random_token | https://www.namacbd.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-19T16:58:18.169Z | compass_random_token | | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | ms.applovin.com |
| 2025-03-31T16:02:03.234Z | art | file:// | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | sts.applovin.com |
| 2025-03-19T17:09:01.016Z | art | https://minceetbien.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T15:49:08.755Z | art | https://www.drinkbrez.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-19T16:58:15.042Z | art | https://www.ilmakiage.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-19T16:58:15.431Z | art | https://www.ilmakiage.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T16:09:14.577Z | art | https://www.namacbd.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T15:45:00.902Z | art | | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | ms.applovin.com |
| 2025-03-31T16:02:03.234Z | alart | file:// | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | sts.applovin.com |
| 2025-03-19T17:09:01.016Z | alart | https://minceetbien.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T15:49:08.755Z | alart | https://www.drinkbrez.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-19T16:58:15.042Z | alart | https://www.ilmakiage.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |
| 2025-03-31T16:09:14.577Z | alart | https://www.namacbd.com | 285035d2-a4bf-4275-bd06-31ea02d6a9fe | b.applovin.com |

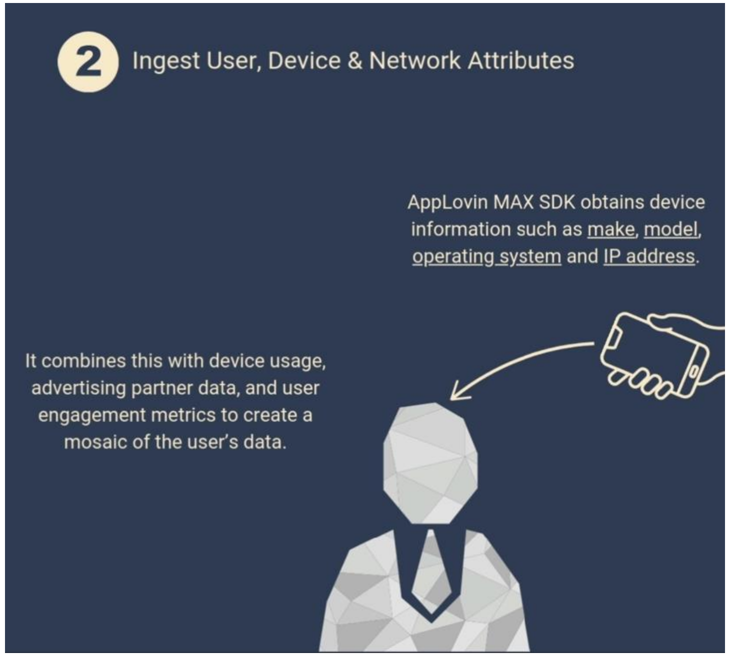
# How APP Circumvents the Privacy Firewall:
# Creating Persistent IDs and Persistent Identity Graphs

1. When APP's Max SDK is launched it generates two tokens: the applovin_random_token and the compass_random_token (CRT). The CRT becomes the main persistent identifier and is the focus of this analysis. The identifiers are stored locally on the device and are easily discoverable by most open source or commercially available mobile forensic tools.
2. APP reads and ingests various types of device and network attributes including the make, model, OS, IP address, user engagement data and other data returning from advertisers. APP adds the data to its growing user mosaic or synthetic identity graph.
3. The persistent identifiers are linked to the user and device data, enabling APP to call and lookup the associated information anytime an event comes into a mobile game, Shopify site, or especially when an ad auction (mediation) event occurs.



1 Generate Persistent Identifiers

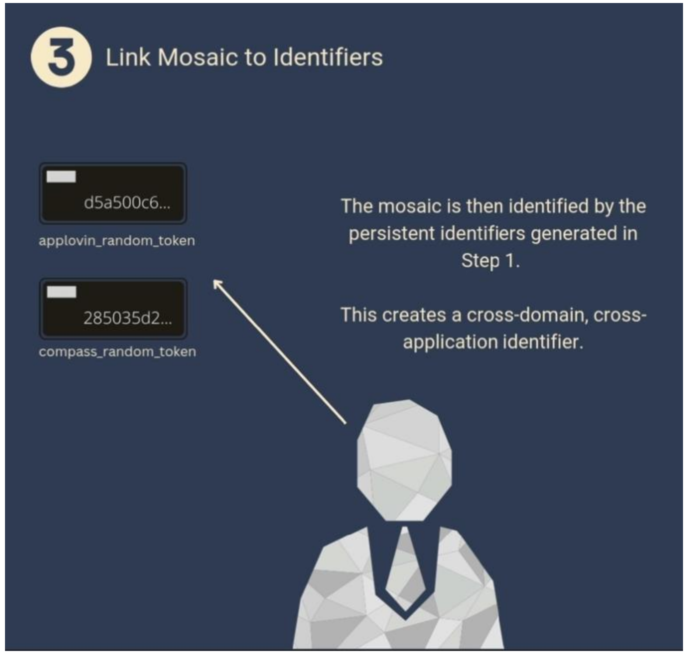
AppLovin generates persistent identifiers named applovin_random_token and compass_random_token.



2 Ingest User, Device & Network Attributes

AppLovin MAX SDK obtains device information such as make, model, operating system and IP address.

It combines this with device usage, advertising partner data, and user engagement metrics to create a mosaic of the user's data.



3 Link Mosaic to Identifiers

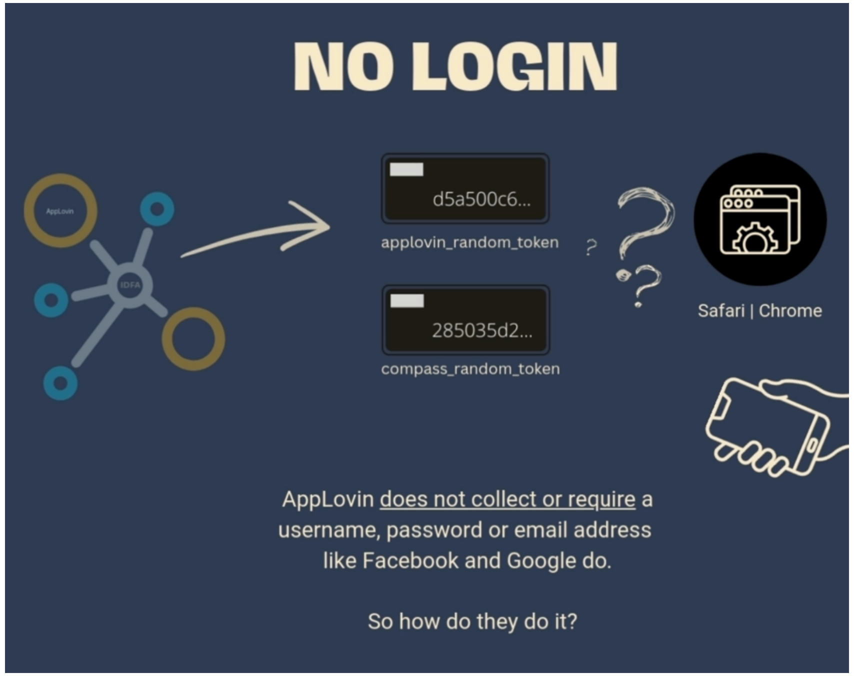
The mosaic is then identified by the persistent identifiers generated in Step 1.

This creates a cross-domain, cross-application identifier.

# How Does APP Break the Privacy Sandbox? Creating, Relabeling and Passing the Persistent ID

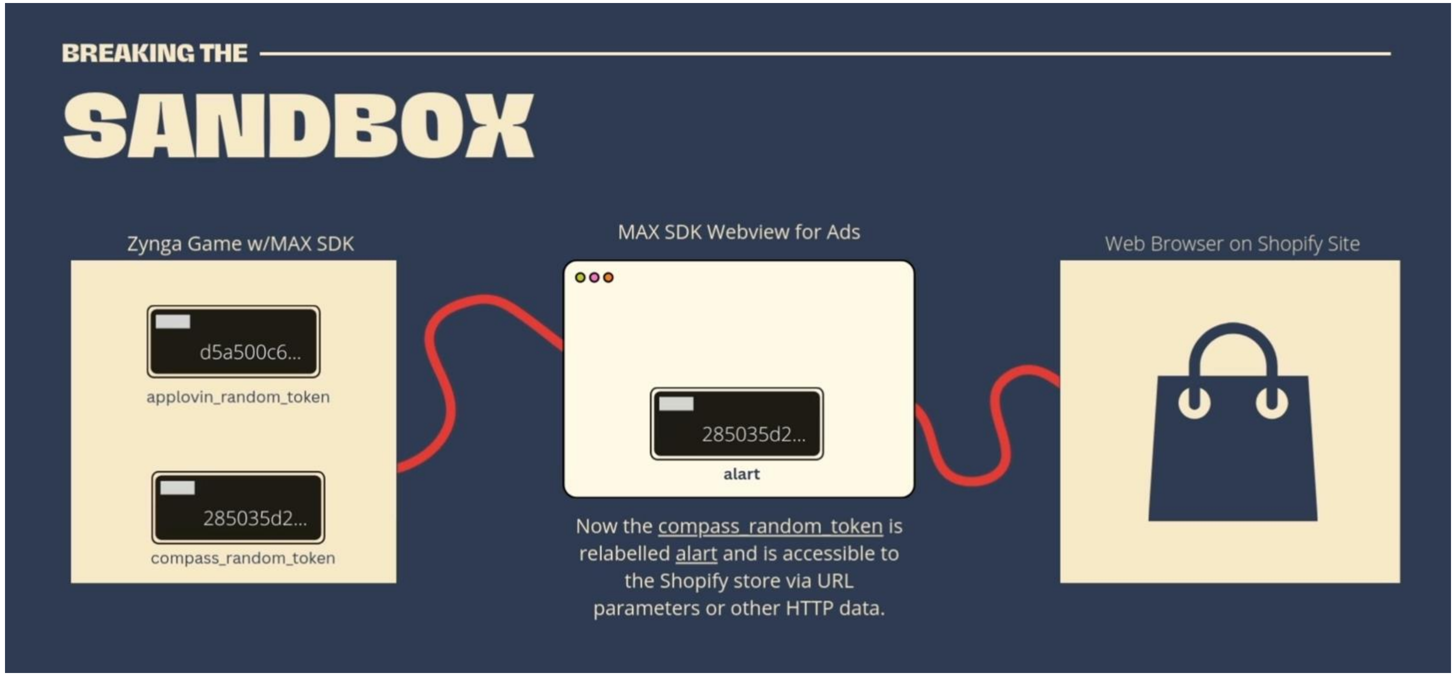
The Max SDK “webview” and the mobile web browser on the Shopify site run on the same mobile device. To ensure user privacy, Safari and Zynga are sandboxed away from each other. This is designed to prevent the sharing of information, cookies, or trackers.  To circumvent this sandbox, APP inserts the CRT into the “webview” where ads run. This makes the CRT available to user click events or other interactions which point to the Shopify site; thereby making the CRT accessible to the web browser.

PRR’s video provides views of the persistent identifiers being passed back and forth between the device and various mobile applications and e-commerce stores. For those technically inclined or technically curious, check out the video link at the end of this presentation.



AppLovin does not collect or require a username, password or email address like Facebook and Google do.

So how do they do it?

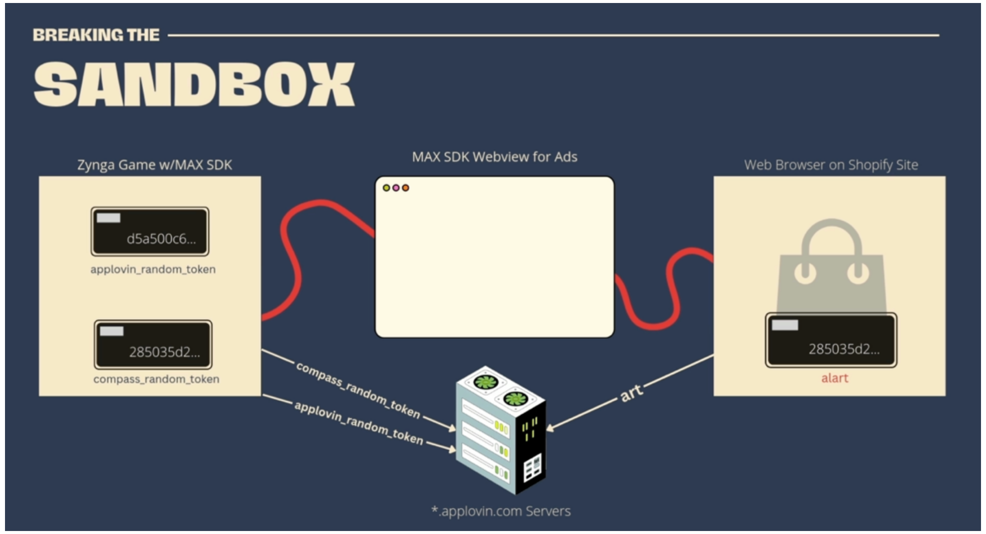


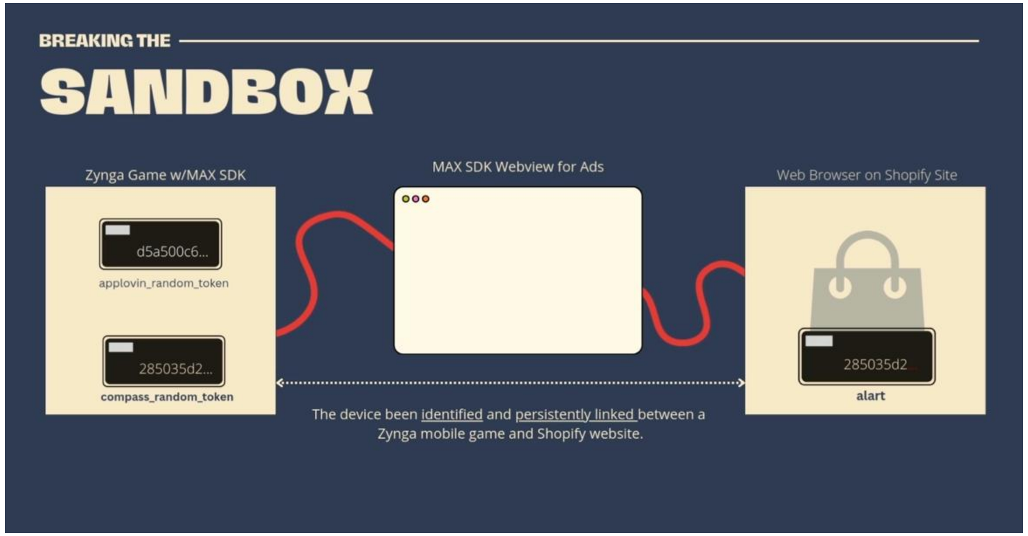
Now the compass_random_token is relabelled alart and is accessible to the Shopify store via URL parameters or other HTTP data.

# How APP Breaks the Privacy Sandbox, Cont.: Creating, Relabeling and Passing The Persistent ID

After the CRT is created, it is disguised by being relabeled twice. First it is renamed “alart” and then “art”, but the underlying value is unchanged—it persists. The CRT/alart/art value creates an identifiable link from the device to the Zynga game to the Shopify store.  Between all of them are APP’s servers.  As users play mobile games, APP obtains data and builds out the user mosaic (or the synthetic PIG).  The more users play, play in different the geographic locations, and use their device while the apps are running, the more data APP can collect and the more robust the user mosaic becomes.

As explained in our original report, the more robust the synthetic PIG, the better APP can determine if a user has already visited an advertiser’s website, added items to a cart or started a checkout, and thereby obtain signal.  If the signal is strong, APP knows to bid to win that ad auction—and importantly, knows to retarget that interested customer with an ad for the products or brands whose sites they visited and demonstrated intent, such as initiating a purchase event.

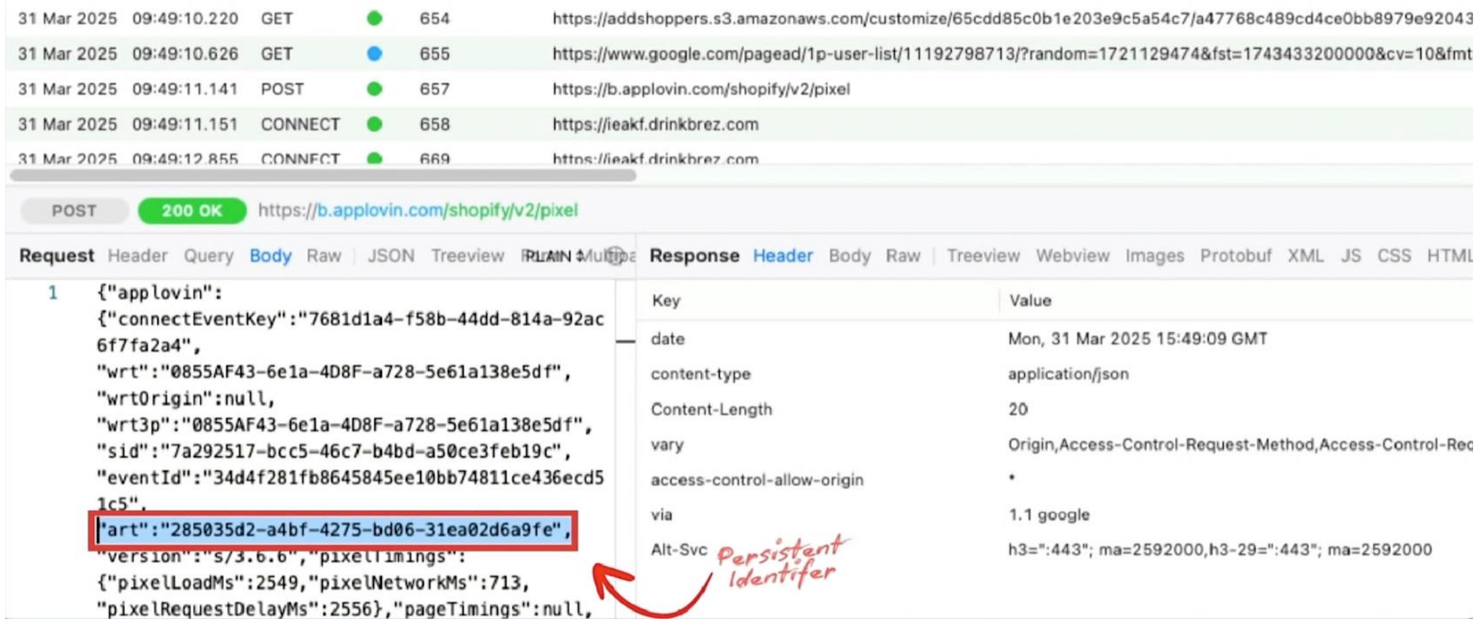




# New Retargeting Example Based On Website Traffic

Our ongoing research turned up new examples of retargeting. PRR's video shows an example where an APP ad for DrinkBrez is served while playing a Zynga game shortly after visiting the DrinkBrez website. The event captured includes the persistent identifier, the "**art"** value, which is shared with the mobile Safari browser and drinkbrez.com shortly before the retargeting happens. The shared "**art"** value is the same as what APP is using to track the user in the Zynga game, presenting both an observable phenomenon of cross-application use (Safari and a Zynga mobile game) as well as the likely technical component.

Below: Screen shot of data collected while playing Words With Friends. The "art" value: 285035d2-a4bf-4275-bd06-31ea02d6a9fe is shared with the mobile Safari browser and drinkbrez.com shortly before the retargeting ad is served.



```
31 Mar 2025  09:49:10.220  GET      ●  654  https://addshoppers.s3.amazonaws.com/customize/65cdd85c0b1e203e9c5a54c7/a47768c489cd4ce0bb8979e92043
31 Mar 2025  09:49:10.626  GET      ●  655  https://www.google.com/pagead/1p-user-list/11192798713/?random=1721129474&fst=1743433200000&cv=10&fmt
31 Mar 2025  09:49:11.141  POST     ●  657  https://b.applovin.com/shopify/v2/pixel
31 Mar 2025  09:49:11.151  CONNECT  ●  658  https://ieakf.drinkbrez.com
31 Mar 2025  09:49:12.855  CONNECT  ●  669  https://ieakf.drinkbrez.com
```

POST  200 OK  https://b.applovin.com/shopify/v2/pixel

```
{"applovin":
{"connectEventKey":"7681d1a4-f58b-44dd-814a-92ac
6f7fa2a4",
"wrt":"0855AF43-6e1a-4D8F-a728-5e61a138e5df",
"wrtOrigin":null,
"wrt3p":"0855AF43-6e1a-4D8F-a728-5e61a138e5df",
"sid":"7a292517-bcc5-46c7-b4bd-a50ce3feb19c",
"eventId":"34d4f281fb8645845ee10bb74811ce436ecd5
1c5",
"art":"285035d2-a4bf-4275-bd06-31ea02d6a9fe",
"version":"s/3.6.6","pixelTimings":
{"pixelLoadMs":2549,"pixelNetworkMs":713,
"pixelRequestDelayMs":2556},"pageTimings":null,
```

| Key | Value |
|---|---|
| date | Mon, 31 Mar 2025 15:49:09 GMT |
| content-type | application/json |
| Content-Length | 20 |
| vary | Origin,Access-Control-Request-Method,Access-Control-Req |
| access-control-allow-origin | * |
| via | 1.1 google |
| Alt-Svc | h3=":443"; ma=2592000,h3-29=":443"; ma=2592000 |

Persistent Identifer

# New Retargeting Example Based On Website Traffic, Cont.

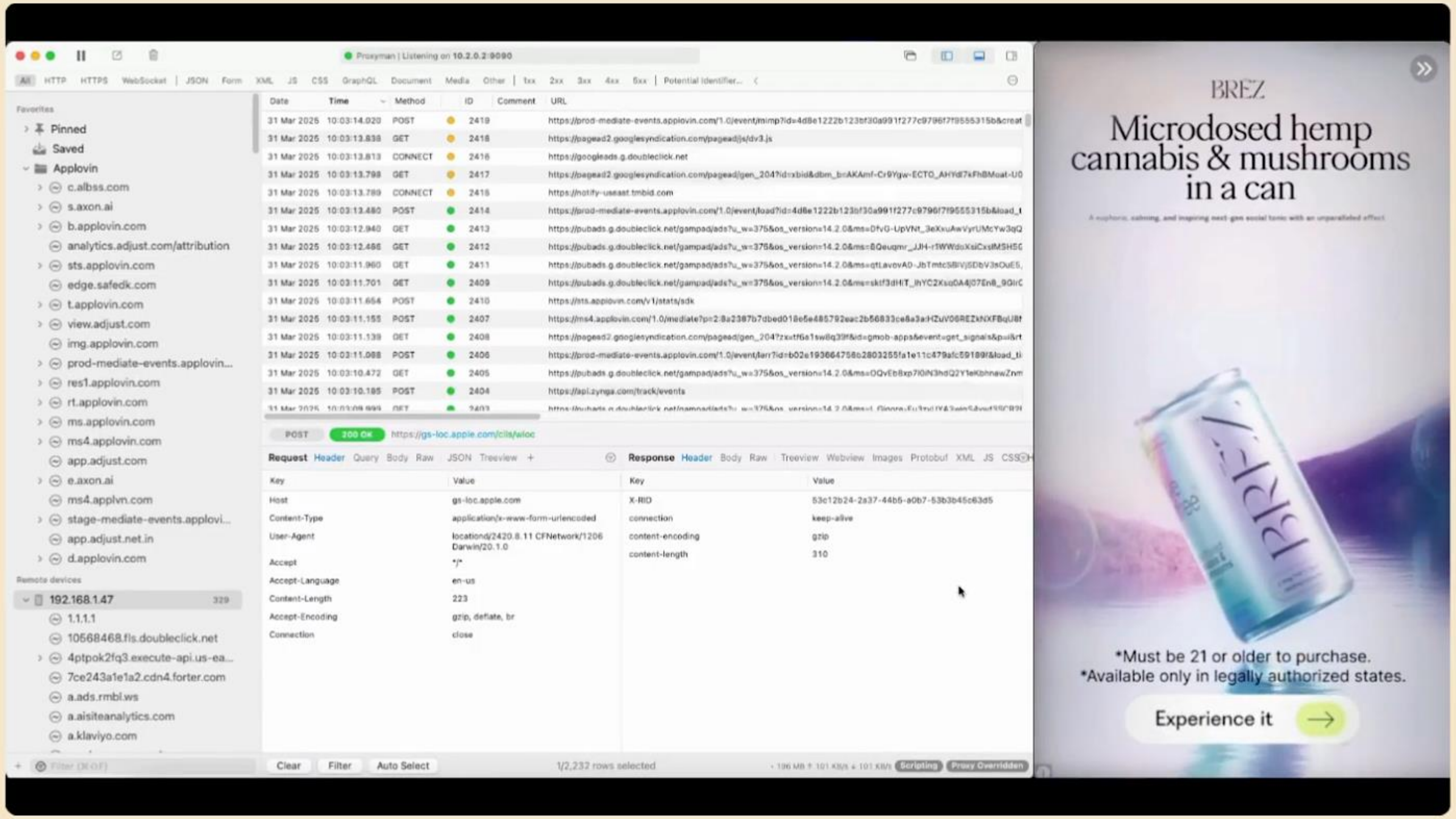
Shortly after the connections are made between Words With Friends, APP, and drinkbrez.com a “BREZ” ad is shown.

This in-app example presents compelling evidence of APP tracking a user across domains, matching the user’s history with a mobile application, and then winning the ad auction to retarget an existing website visitor, an already in-the-funnel prospective customer.

This additional retargeting example exemplifies how APP’s ads seek to win conversions by retargeting—as opposed to being substantially all truly net new customers.

This was one of many instances where we observed retargeting happening in this way, with data captured to prove it.

Below: Split screen image of the drinkbrez.com ad running along with the data connections and transfers between the device, APPs servers, and the web browser.



Applovin
- c.albss.com
- s.axon.ai
- b.applovin.com
- analytics.adjust.com/attribution
- sts.applovin.com
- edge.safedk.com
- t.applovin.com
- view.adjust.com
- img.applovin.com
- prod-mediate-events.applovin...
- res1.applovin.com
- rt.applovin.com
- ms.applovin.com
- ms4.applovin.com
- app.adjust.com
- e.axon.ai
- ms4.applvn.com
- stage-mediate-events.applovi...
- app.adjust.net.in
- d.applovin.com

192.168.1.47 329
- 1.1.1.1
- 10568468.fls.doubleclick.net
- 4ptpok2fq3.execute-api.us-ea...
- 7ce243a1e1a2.cdn4.forter.com
- a.ads.rmbl.ws
- a.aisiteanalytics.com
- a.klaviyo.com

| Date | Time | Method | | ID | Comment | URL |
|---|---|---|---|---|---|---|
| 31 Mar 2025 | 10:03:14.020 | POST | ● | 2419 | | https://prod-mediate-events.applovin.com/1.0/event/mimp?id=4d8e1222b123bf30a991f277c9796f7f9555315b&creat |
| 31 Mar 2025 | 10:03:13.838 | GET | ● | 2418 | | https://pagead2.googlesyndication.com/pagead/js/dv3.js |
| 31 Mar 2025 | 10:03:13.813 | CONNECT | ● | 2416 | | https://googleads.g.doubleclick.net |
| 31 Mar 2025 | 10:03:13.798 | GET | ● | 2417 | | https://pagead2.googlesyndication.com/pagead/gen_204?id=xbid&dbm_b=AKAmf-Cr9Ygw-ECTO_AHYdl7kFhBMoat-U0 |
| 31 Mar 2025 | 10:03:13.789 | CONNECT | ● | 2415 | | https://notify-useast.tmbid.com |
| 31 Mar 2025 | 10:03:13.480 | POST | ● | 2414 | | https://prod-mediate-events.applovin.com/1.0/event/load?id=4d8e1222b123bf30a991f277c9796f7f9555315b&load_t |
| 31 Mar 2025 | 10:03:12.940 | GET | ● | 2413 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=DfvG-UpVNt_3eXxuAwVyrUMcYw3qQ |
| 31 Mar 2025 | 10:03:12.486 | GET | ● | 2412 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=8Qeuqmr_JJH-rTWWduXsiCxslMSH5C |
| 31 Mar 2025 | 10:03:11.960 | GET | ● | 2411 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=qtLavovA0-JbTmtcSBIVjSDbV3sOuE5, |
| 31 Mar 2025 | 10:03:11.701 | GET | ● | 2409 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=sktf3dHIT_lhYC2Xsq0A4j07En8_9GlrC |
| 31 Mar 2025 | 10:03:11.654 | POST | ● | 2410 | | https://sts.applovin.com/v1/stats/sdk |
| 31 Mar 2025 | 10:03:11.155 | POST | ● | 2407 | | https://ms4.applovin.com/1.0/mediate?p=2:8a2387b7dbed018e5e485792eac2b56833ce8a3a:HZuV06REZkNXFBqU8t |
| 31 Mar 2025 | 10:03:11.139 | GET | ● | 2408 | | https://pagead2.googlesyndication.com/pagead/gen_204?zx=tf6a1sw8q39f&id=gmob-apps&event=get_signals&p=i&rt |
| 31 Mar 2025 | 10:03:11.088 | POST | ● | 2406 | | https://prod-mediate-events.applovin.com/1.0/event/lerr?id=b02e193664756b2803255fa1e11c479afc59189f&load_ti |
| 31 Mar 2025 | 10:03:10.472 | GET | ● | 2405 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=OQvEb8xp7I0iN3hdQ2Y1eKbhnawZnm |
| 31 Mar 2025 | 10:03:10.185 | POST | ● | 2404 | | https://api.zynga.com/track/events |
| 31 Mar 2025 | 10:03:09.999 | GET | ● | 2403 | | https://pubads.g.doubleclick.net/gampad/ads?u_w=375&os_version=14.2.0&ms=[illegible] |

POST 200 OK https://gs-loc.apple.com/clls/wloc

Request Header Query Body Raw JSON Treeview +

| Key | Value |
|---|---|
| Host | gs-loc.apple.com |
| Content-Type | application/x-www-form-urlencoded |
| User-Agent | locationd/2420.8.11 CFNetwork/1206 Darwin/20.1.0 |
| Accept | */* |
| Accept-Language | en-us |
| Content-Length | 223 |
| Accept-Encoding | gzip, deflate, br |
| Connection | close |

Response Header Body Raw Treeview Webview Images Protobuf XML JS CSS

| Key | Value |
|---|---|
| X-RID | 53c12b24-2a37-44b5-a0b7-53b3b45c63d5 |
| connection | keep-alive |
| content-encoding | gzip |
| content-length | 310 |

1/2,232 rows selected · 196 MB ↑ 101 KB/s ↓ 101 KB/s

BREZ
Microdosed hemp cannabis & mushrooms in a can
A euphoric, calming, and inspiring next-gen social tonic with an unparalleled effect
BREZ
*Must be 21 or older to purchase.
*Available only in legally authorized states.
Experience it

# Mapping Persistent ID's Across Domains & Applications

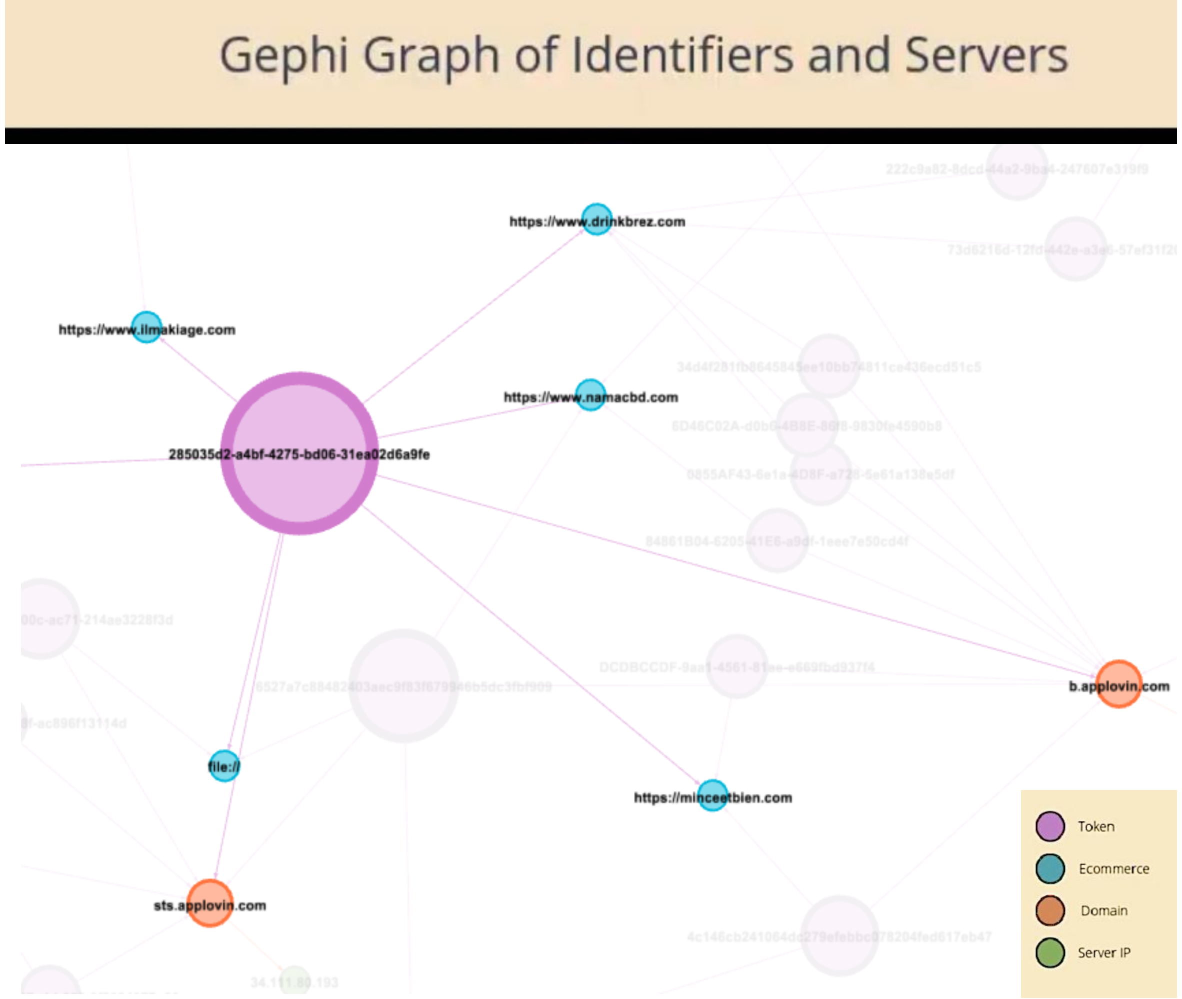
PRR's video presentation concludes with a Gephi graph visualization of identifiers and servers. The graph uses the captured APP data from our analysis and then visually maps the IDs, including persistent IDs, to show the web of data connections. The graph visually reveals the cross-domain and cross-environment identifiers that APP uses.

Like the data analysis spreadsheet shown earlier, this illustrates how the synthetic PIG value is connected to multiple APP domains running mobile applications and web browsers viewing e-commerce sites.

In other words, the data collected indicates use of persistent identifiers used to target and re-target users across domains and applications.

- Persistent ID value: 285035d2-a4bf-4275-bd06-31ea02d6a9fe
- E-commerce websites: drinkbrez.com, namacbd.com, mincebien.com, ilmakiage.com,
- APP domains: sts.applovin.com, b.applovin, ms.applovin (offscreen at left)

Below: a Gephi graph mapping the links and nodes of APP's persistent identify graph (PIG)


Gephi Graph of Identifiers and Servers
https://www.drinkbrez.com
https://www.ilmakiage.com
https://www.namacbd.com
285035d2-a4bf-4275-bd06-31ea02d6a9fe
b.applovin.com
file://
https://minceetbien.com
sts.applovin.com
222c9a82-8dcd-44a2-9ba4-247607e319f9
73d6216d-12fd-442e-a3e6-57ef31f2
34d4f281fb8645845ee10bb74811ce436ecd51c5
6D46C02A-d0b6-4B8E-86f8-9830fe4590b8
0855AF43-6e1a-4D8F-a728-6e61a138e5df
84861B04-6205-41E6-a9df-1eee7e50cd4f
00c-ac71-214ae3228f3d
6527a7c88482403aec9f83f67994 6b5dc3fbf909
DCDBCCDF-9aa1-4561-81ee-e669fbd937f4
f-ac896f13114d
4c146cb241064dd279efebbc078204fed617eb47
34.111.80.193
Token
Ecommerce
Domain
Server IP

# Video: APP's Cross-App Cross-Domain Tracking, Persistent Identity Graph Creation & Retargeting

This video is intended to illuminate for APP investors, partners, stakeholders, and others in AdTech, privacy research and cybersecurity, how the APP identifiers reach across domains and applications, and how these persistent identifiers interact with APP's tech stack and during the mobile ad auction (mediation) process.

The video demonstrates:

- That APP uses persistent identifiers, in sharp contrast with its Foroughi's claims and the Shikin's examples of FB and GOOG;
- The mechanics of how APP creates persistent identifiers on device;
- How these identifiers are combined to create device and user graphs (synthetic PIGs);
- That these identifiers are shared across domains and applications; and
- An example of an APP ad retargeting immediately following a visit to the ad customer's website.

This video draws from original data research performed both prior and subsequent to our original report. It was prepared by our outside, third-party technical expert, Justin Seitz of Permanent Record Research.

MAY 2, 2025

ANALYZING

APPLOVIN

PERMANENT RECORD RESEARCH INC.

PLAY VIDEO

# Conclusion: Execs Lied About Persistent Identifiers Likely Due to Pressure from Deplatforming and Margin Compression Risks

Evidence in the captured data indicates that APP's CEO and CTO blatantly lied and misled investors about APP's use of persistent identifiers.  We think this is because there is significant risk of APP being deplatformed for TOS privacy violations, as well as potential risks of regulatory action.  Additionally, we see material risks from margin-compression as APPs techniques become better understood by its competitors and customers.

For example, as noted in our initial report, Meta is both a key platform partner (Facebook Audience Network partner) and a major competitor.  One sell side analyst recently reported that Meta was the the primary contributor to APPs market share gains.  We believe Meta will be paying closer attention to APP and that Meta has the means to remove APP as a competitor, if it so choses.

Nevertheless, if no platforms take direct action, then other Ad tech competitors will be compelled to replicate APPs techniques to keep up.

Last, we contend that as customers find they are paying, or indeed overpaying, for retargeting ads they will likely further cut spend and/or or seek lower cost approaches to retarget interested or existing customers, diminishing APPs potential customer base, revenues, and margins.