



Exodus Privacy

Exodus Privacy at 42

Who we are

- MeTaL_PoU
- pnu

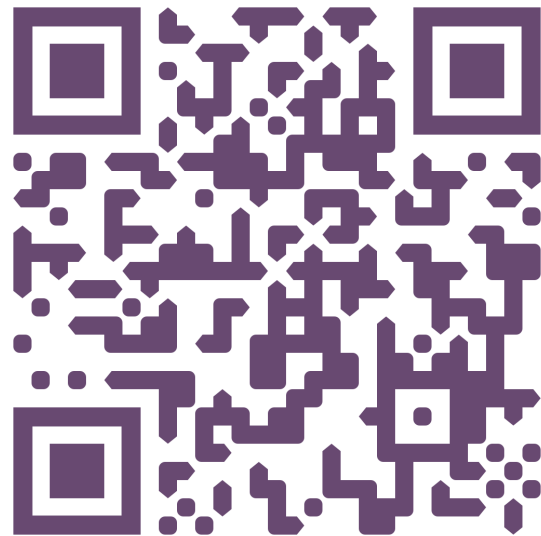
What we will talk about

- The behavior of mobile applications and its consequences for our privacy
- What *Exodus Privacy* tries to do against that

Who we are

Exodus Privacy

- Group of French hacktivists
- Non-profit organization founded in October 2017
- Undefined number of members
- Strict legal rules
- We do FLOSS



Our goal

“ *Make people aware of permanent tracking on smartphones* ”

How do we do?

- Develop the **exodus** privacy auditing platform
- Identify trackers by code signatures
- Statically analyze `APK` files

We develop a transparency tool allowing people to know what is embedded in Android applications.





Météo-France

21 trackers

12 permissions

Version 5.8.3 - [see other versions](#)

Created by Météo-France

Downloads: 5,000,000+

Report created on Nov. 13, 2017, 6:55 p.m. and updated on Nov. 10, 2019, 11:10 a.m.

[See on Google Play >](#)

21 trackers

We have found **code signature** of the following trackers in the application:

[AdColony >](#)

[Amazon Advertisement >](#)

[AppLovin >](#)

[ATInternet >](#)

[Facebook Ads >](#)

[Flurry >](#)

[Google Ads >](#)

What we call a tracker

“ *A tracker is a piece of software meant to collect data about you or your usages.* ”

Like **Ogury**, **Google Analytics**, **Teemo**, and many other.

Flurry

Present in: **7117 applications** 11%

[Tracker web page >](#)

Primary Location

United States

Website

<https://developer.yahoo.com>

About

Flurry is part of the Yahoo Developer network suite. Flurry's product, Flurry Analytics, offers mobile analytics, monetization, and advertising services [Yahoo, 01](#); [Yahoo, 14](#); [Wikipedia, 01](#)).

Ownership

Oath Inc. (subsidiary of Verizon Communications; Oath includes Yahoo and AOL) [Wikipedia, 01](#); [Ars Technica, 01](#)

Products and Services

Flurry Analytics:

How we detect them

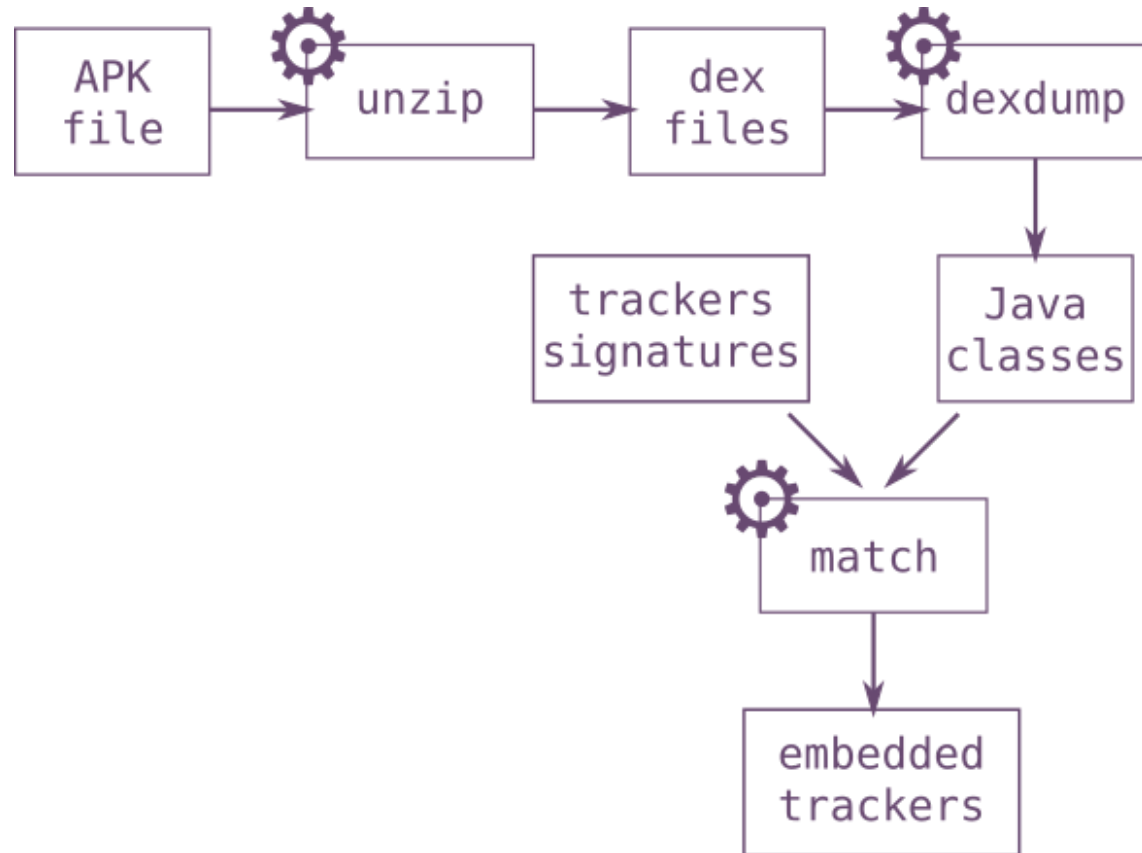
Static analysis

- List Java classes embedded in the APK
- Find classes matching the tracker code signature

What we use:

- *Gplaycli*: download the APK and get application details from Google Play
- *Androguard*: get permissions, code version and certificates
- *Dexdump*: extract list of classes from APK file

Static analysis



Static analysis

```
dexdump classes*.dex | perl -n -e '/[A-Z]+((?:\w+\/)+\w+)/ && print "$1\n"\'|sort|uniq
```

```
com/amazon/device/ads/UserIdParameter  
com/amazon/device/ads/Version  
com/amazon/device/ads/VideoActionHandler  
com/amazon/device/ads/ViewabilityChecker  
com/amazon/device/ads/ViewabilityCheckerFactory  
com/amazon/device/ads/ViewabilityInfo  
com/amazon/device/ads/ViewabilityJavascriptFetcher  
com/amazon/device/ads/ViewabilityJavascriptFetcherListener  
com/amazon/device/ads/ViewabilityObserver
```



Our tools

Exodus web platform

- Look for an Android application report with its search engine
- Analyze an Android application by submitting its identifier
- Get tips on how to better manage your privacy



What's next?

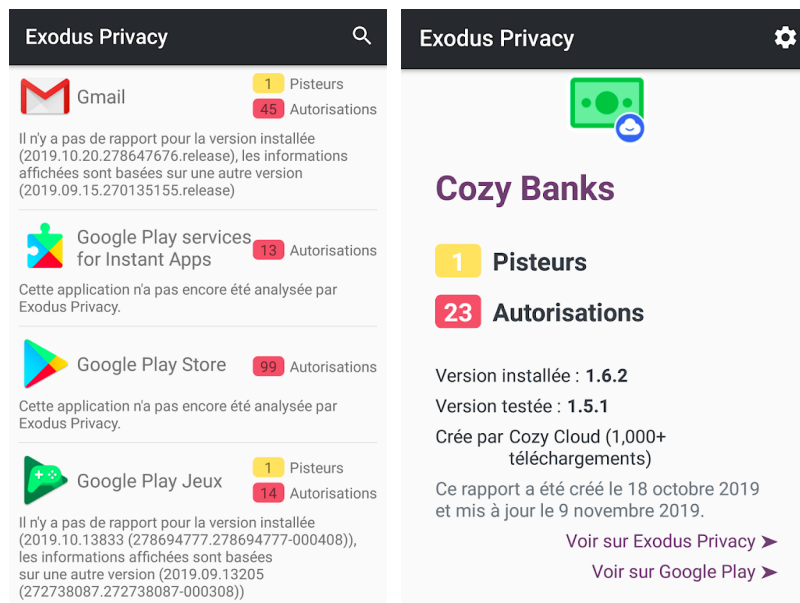
A list of tools and things you can do to better manage your privacy on your smartphone

Read the article

<https://reports.exodus-privacy.eu.org/>

Exodus Privacy Android application

Show the **trackers** and **required permissions** in the apps in your smartphone



Exodus Privacy (Search icon)

- Gmail**: 1 Pisteurs, 45 Autorisations
Il n'y a pas de rapport pour la version installée (2019.10.20.278647676.release), les informations affichées sont basées sur une autre version (2019.09.15.270135155.release)
- Google Play services for Instant Apps**: 13 Autorisations
Cette application n'a pas encore été analysée par Exodus Privacy.
- Google Play Store**: 99 Autorisations
Cette application n'a pas encore été analysée par Exodus Privacy.
- Google Play Jeux**: 1 Pisteurs, 14 Autorisations
Il n'y a pas de rapport pour la version installée (2019.10.13833 (278694777.278694777-000408)), les informations affichées sont basées sur une autre version (2019.09.13205 (272738087.272738087-000308))

Exodus Privacy (Settings icon)

Cozy Banks

- 1 Pisteurs
- 23 Autorisations

Version installée : 1.6.2
Version testée : 1.5.1
Crée par Cozy Cloud (1,000+ téléchargements)
Ce rapport a été créé le 18 octobre 2019 et mis à jour le 9 novembre 2019.

[Voir sur Exodus Privacy](#) ➤
[Voir sur Google Play](#) ➤

Available on F-Droid and Google Play!

Standalone local analysis tool

exodus-standalone

- exodus CLI client for local APK static analysis
- Can be used by developers to scan their own app before release
- Prints reports as simple text or JSON
- Available as a Docker image for easier usage



















github.com/Exodus-Privacy/exodus-standalone

Exodify: exodus in your browser

- Browser extension for Firefox and Chrome
- Displays the number of trackers of each application
- Quick link to submit the application for an analysis

Exodify: exodus in your browser

Applications

<p>5 Trackers</p>  <p>Ma Banque CREDIT AGRICOLE TEC</p> <p>★★★★★</p>	<p>5 Trackers</p>  <p>Banque Caisse d'Epargne</p> <p>★★★★★</p>	<p>0 Tracker</p>  <p>La Banque Postale La Banque Postale</p> <p>★★★★★</p>	<p>Unknown</p>  <p>Mes Banques par B BforBank</p> <p>★★★★★</p>	<p>1 Tracker</p>  <p>Crédit Mutuel Euro Information</p> <p>★★★★★</p>	<p>3 Trackers</p>  <p>L'Appli Société Générale Société Générale</p> <p>★★★★★</p>
<p>8 Trackers</p>  <p>Bankin' mon Budget Bankin</p> <p>★★★★★</p>	<p>13 Trackers</p>  <p>Boursorama Banque Boursorama</p> <p>★★★★★</p>	<p>5 Trackers</p>  <p>N26 – La Banque M N26</p> <p>★★★★★</p>	<p>Unknown</p>  <p>Carrefour Banque Carrefour Groupe</p> <p>★★★★★</p>	<p>0 Tracker</p>  <p>Banque Populaire BANQUE POPULAIRE</p> <p>★★★★★</p>	<p>Unknown</p>  <p>Banque Populaire P BANQUE POPULAIRE</p> <p>★★★★★</p>
<p>0 Tracker</p>  <p>Impots</p>	<p>Unknown</p> 	<p>1 Tracker</p>  <p>CIC</p>	<p>0 Tracker</p>  <p>AXA</p>	<p>Unknown</p> 	<p>Unknown</p> 

ETIP

exodus tracker investigation platform

- Tracker database for exodus
- Open to everyone and filled by the community
- Main features:
 - Track all modifications on trackers
 - Detect rules collisions for signature

<https://etip.exodus-privacy.eu.org/>

Our results

What we did since our launch

- We identified **+250 trackers**, analyzed **+60000 apps** and generated **+100000 reports**
- We provided **advices/courses to developers** who want to respect privacy
- We performed **deep audits** of several applications like **Deliveroo Rider** or **Baby+**
- We provided **statistics** and datasets to journalists and labs
- We opened a **REST API**
- We created video animations to explain trackers in applications

Everything is free and open 🎄

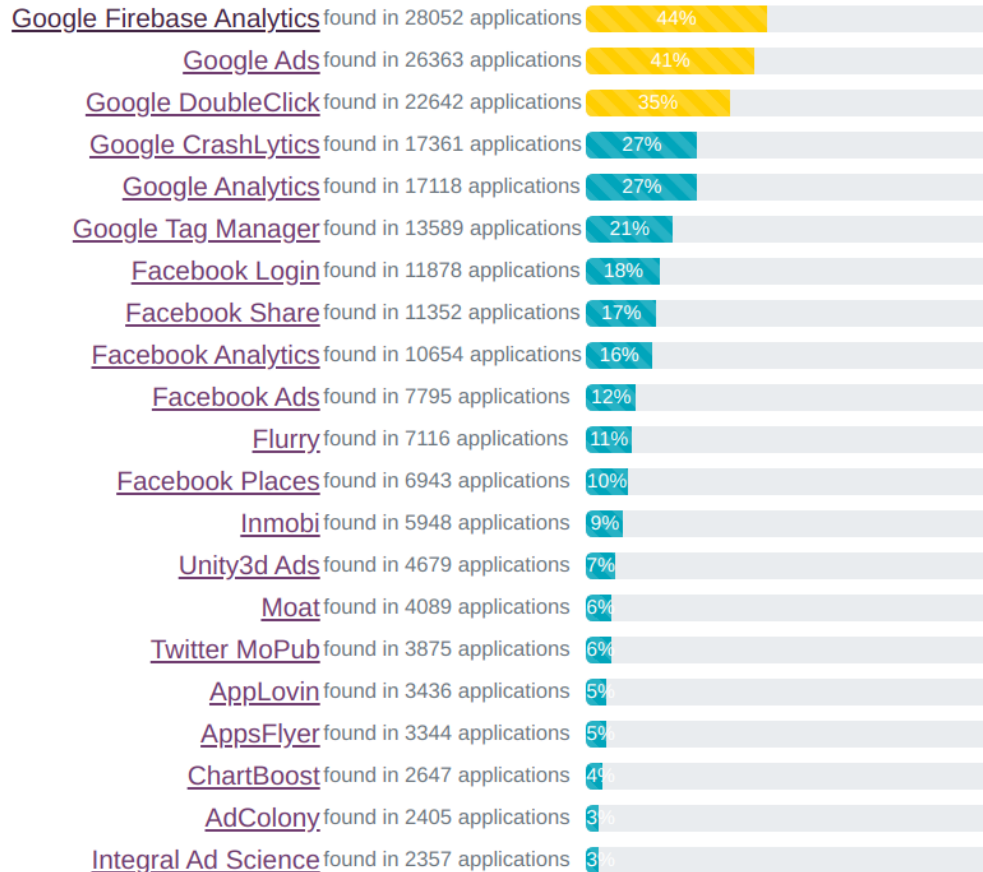
This application sends everything to facebook: baby name, gender, feeds, type of feeds, ...

```
POST https://179.60.192.3/v2.5/579769162185818/activities?access_token=&format=json&sdk=android HTTP/1.1
User-Agent:    FBAndroidSDK.4.10.0
Accept-Language:    en_US
Content-Type:    multipart/form-data; boundary=3i2ndDfv2rTHiSisAbouNdArYfORhtTPEefj3q2f
Transfer-Encoding:    chunked
Host:    graph.facebook.com
Connection:    Keep-Alive
Accept-Encoding:    identity
```

with this payload

```
format:                json
sdk:                   android
custom_events_file:    [{"_eventName":"User Info","_logTime":1513302840,"_ui":"unknown","Country":"US","Language":"en","Relationship":"mother","LoggedIn":"NO"}, {"_eventName":"Child Info","_logTime":1513302840,"_ui":"unknown","Is Breast Feeding":"NO","BF Days Complete":"0","Child Name":"erewrwerwerwer","Child Gender":"boy"}, {"_eventName":"Viewed Undefined","_logTime":1513302850,"_ui":"unknown","_valueToSum":1}, {"_eventName":"Viewed Feed","_logTime":1513302850,"_ui":"unknown","_valueToSum":1}]
event:                 CUSTOM_APP_EVENTS
advertiser_id:         0ea76bd4-3a79-432d-9c0f-c6f6b3cf8e66
advertiser_tracking_enabled: true
installer_package:    com.android.vending
anon_id:               XZfa9bbd90-abe1-4736-9abf-5966513a82eb
application_tracking_enabled: true
extinfo:               ["a2","com.hp.babyapp",25,"1.6.1","6.0.1","VirtualBox","en_US","GMT+01:00","","768,976","1.00",2,98,96]
application_package_name: com.hp.babyapp
```

Most frequent trackers on +60k applications



We are in the press

- 📰 **Le Monde** - Des mouchards cachés dans vos applications pour smartphones
- 📰 **The Intercept** - Staggering Variety of Clandestine Trackers Found in Popular [...]
- 📰 **Next Impact** - Rencontre avec Exodus Privacy, qui révèle les trackers [...]
- 📰 **BoingBoing** - Researchers craft Android app that reveals to find horrific [...]
- 📰 **The Guardian** - Three quarters of Android apps track users with third party tools
- 📰 **RT** - Smartphone apps track Android users with 'clandestine surveillance software'
- 📺 **France 2** - Ils promettent de vous faire gagner du temps
- 📰 **Numerama** - Lutter contre les mouchards des apps, une cause citoyenne : [...]
- 📺 **LeMédiaTV** - Surveillés, exploités : dans l'enfer des livreurs à vélo
- 📰 **Mediapart** - Dans le ventilateur à données de l'appli Météo-France

+8000 articles in +20 languages during the first 6 months

Communication

We use different ways to make us visible:

- Our blog - <https://news.exodus-privacy.eu.org/>
- PeerTube and YouTube channels
- Mastodon, Twitter and Facebook accounts
- Flyers & Stickers 😊
- Talks like the one of today

Our future

What's next

- Keep maintaining and improving the **exodus platform and application**
- Create more videos and podcasts to **explain tracking on mobile**
- Continue to animate our Facebook page, PeerTube and YouTube channels
- Translate our media and tools into new languages
- **Gather more and more motivated people** to increase our number of volunteers
- *Your next idea?*

What we need

We are a non-profit organization animated by volunteers.

To stay alive, we need:

Contributions & Money

<https://exodus-privacy.eu.org/en/page/contribute/>

Thanks

We want to thank all our donators and partners:



Code Lutin



Codeurs en liberté



F-Droid



Framasoft



Gandi



La Quadrature du Net



Octopuce



Yale Privacy Lab

as well as **the community and all the regular or one-shot donators**

Q/A