

An introduction to **Web Tracking**

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Outline...

- Tracking information on the Internet
- Zombie Cookies
- Network configuration in Firefox
- Tor and Tails
- Firefox add-ons
- Graphs
- Monitoring and deleting cookies in Firefox

Tracking information on the Internet

- Recap on Device or Browser Fingerprinting
 - Information collected about a remote device for identification.
 - Cookies are not required to be turned on, other information can be used to univocally track a device.

IP

DNS data

JavaScript

Flash

Zombie Cookie

Tracking information on the Internet

- Recap on Device or Browser Fingerprinting

WHY???

- Targeted Advertising



- Prevention of online identity theft

- Content Locking



CPAlead

Tracking information on the Internet

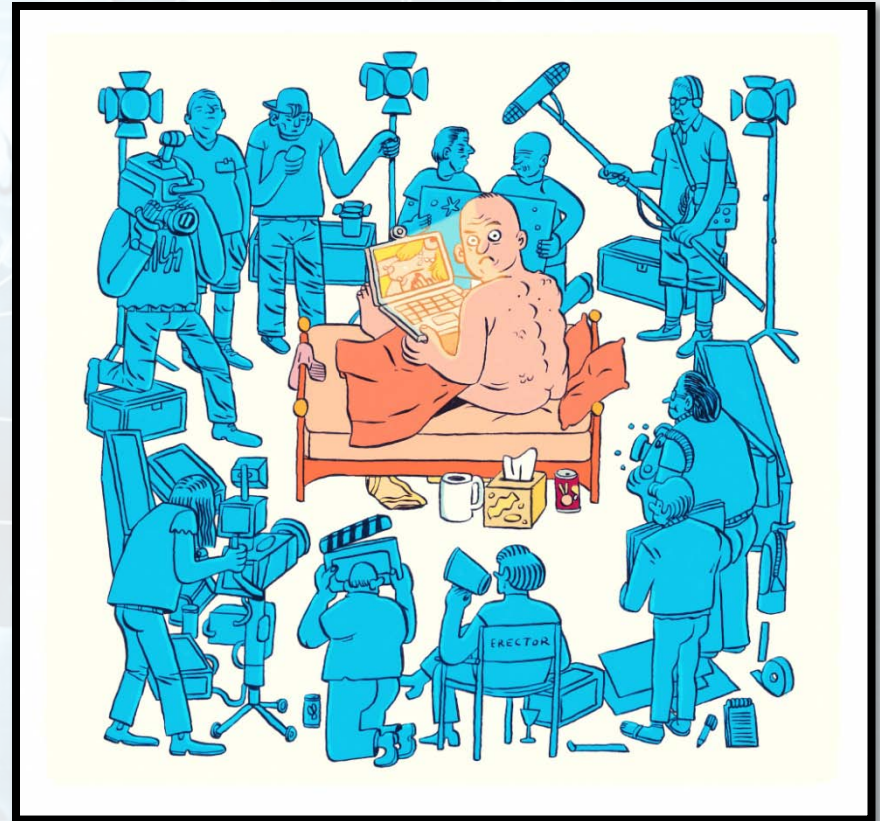
Your Porn Is Watching You [\(<http://goo.gl/5v8bFO>\)](http://goo.gl/5v8bFO)

written by BRIAN MERCHANT

April 6, 2015 // 09:35 AM EST

“Thirty million Americans regularly watch porn online, according to the Wall Street Journal.”

“If you are watching porn online in 2015, even in incognito mode, you should expect that at some point your porn viewing history will be publicly released and attached to your name.”



Tracking information on the Internet

Your Porn Is Watching You (<http://goo.gl/5v8bFO>)

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False or true?

According to Alexa, Xvideos is the 41^o most visited website in the world.



Thousands of terabytes a day to store tracking information

38	Wordpress.com	Free blogs managed by the developers of the WordPress software. Includes c
39	Aliexpress.com	Launched in April 2010, AliExpress (www.aliexpress.com) is a global retail mar
40	Pinterest.com	Pinterest is an online pinboard: a place where you can post collections of thin
41	Xvideos.com	
42	Tumblr.com	A free blog hosting platform offering customizable templates, bookmarklets, r
43	Paypal.com	Online payment service for individuals and merchants. Allows users to send r

Zombie Cookie

Flash Cookies and Privacy
(Soltani et al.)

A cookie that is recreated after deletion.



- It may be stored online or locally
- Used to force user tracking
(marketing research, unique visitors)

Where it can be hidden...

- HTTP cookies
- Local Shared Objects
- Silverlight Isolated Storage
- PNGs
- HTML5 Session Storage
- HTML5 Local Storage
- HTML5 Global Storage
- HTML5 Global Storage

Evercookie

Evercookie is a javascript API that produces extremely persistent cookies in a browser. (by Samy Kamkar)

“In 2013, a top-secret NSA document, leaked by Edward Snowden, cited Evercookie as a method of tracking Tor users.”

- <http://www.samy.pl/evercookie/>
- <https://github.com/samyk/evercookie/>

Examples of Browser Fingerprinting

- noc.to





The screenshot shows the 'Device Fingerprint' website interface. It features a blue header with the title 'Device Fingerprint' and a navigation bar with links for 'Current Imprint', 'Linked Imprints', 'Same IP Imprints', 'Feedback', and 'Help'. The main content is organized into several sections:

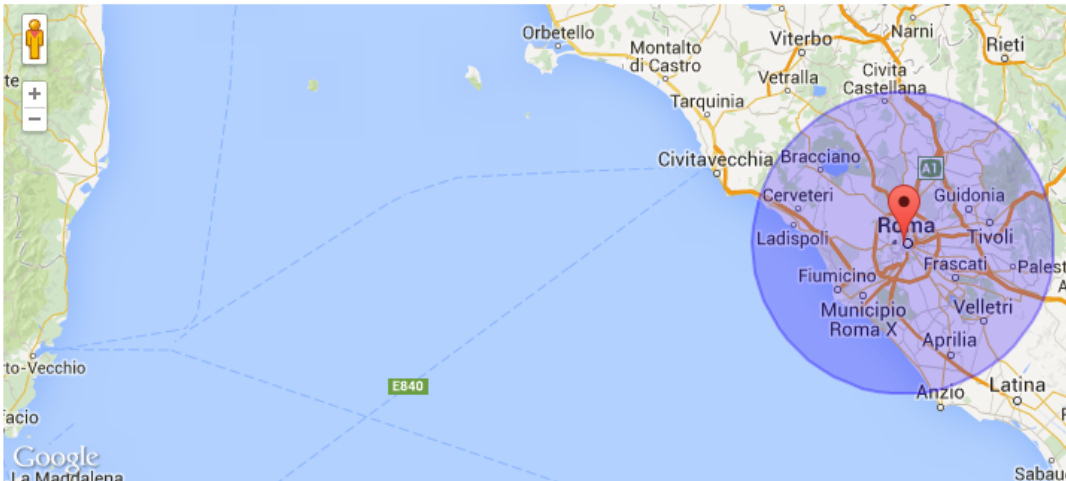
- Summary**: A table listing key identifiers such as Public Hostname, Public IP (Port), Operating System, Screen Resolution, Server Timestamp, and Client Timestamp.
- Zombie Cookie**: A table listing various cookies including ID, Inception, Regular Cookie, ETag Request Cookie, ETag Reponse Cookie, Web Storage Cookie, and Flash Cookie.
- Browser Geolocation**: A section with a right-pointing arrow.
- IP Geolocation (MaxMind)**: A section with a right-pointing arrow.
- Javascript Data**: A table listing JavaScript-related identifiers such as User Agent, App Name, App Code Name, App Version, and Platform.

Examples of Browser Fingerprinting

- noc.to

▼ IP Geolocation (MaxMind)

Latitude/Longitude  (41.9°, 12.4833°)
Accuracy Radius  46 kilometers
Lookup Timestamp 3 May 2015 17:14:46 UTC+02:00





Continent Europe
Country (conf%) Italy (99%)
Region (conf%) Lazio (85%)
City (conf%) Rome (39%)
Postal Code (conf%) 00198 ([no data]%)
Time Zone Europe/Rome
ISP
Organization
AS Number
Domain


Examples of Browser Fingerprinting


- noc.to

▼ **Browser Geolocation**


Latitude/Longitude  [blurred]

Accuracy Radius  26 meters

Geolocation Timestamp 3 May 2015 18:10:43 UTC+02:00 



Closest Reverse Geocode Coordinates (Google) — [View Full Decode](#)

Latitude/Longitude  [blurred]

Address [blurred]

Address Type [blurred]

Street Number [blurred]

Route [blurred]

Locality [blurred]

Admin Area Level 1 [blurred]

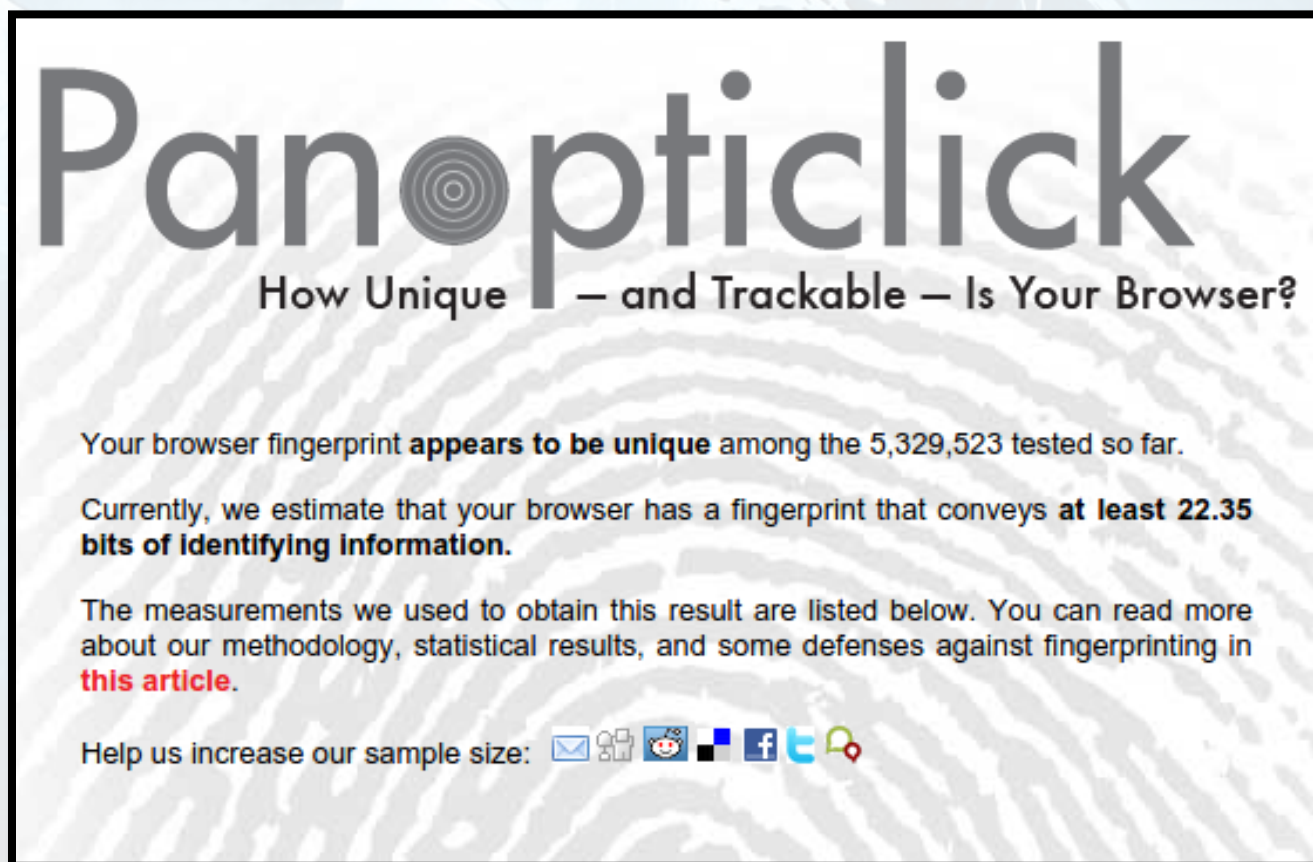
Admin Area Level 2 [blurred]

Country [blurred]

Postal Code [blurred]

Examples of Browser Fingerprinting

- panoptick.eff.org



Panoptick
How Unique — and Trackable — Is Your Browser?

Your browser fingerprint **appears to be unique** among the 5,329,523 tested so far.

Currently, we estimate that your browser has a fingerprint that conveys **at least 22.35 bits of identifying information**.

The measurements we used to obtain this result are listed below. You can read more about our methodology, statistical results, and some defenses against fingerprinting in [this article](#).

Help us increase our sample size: 