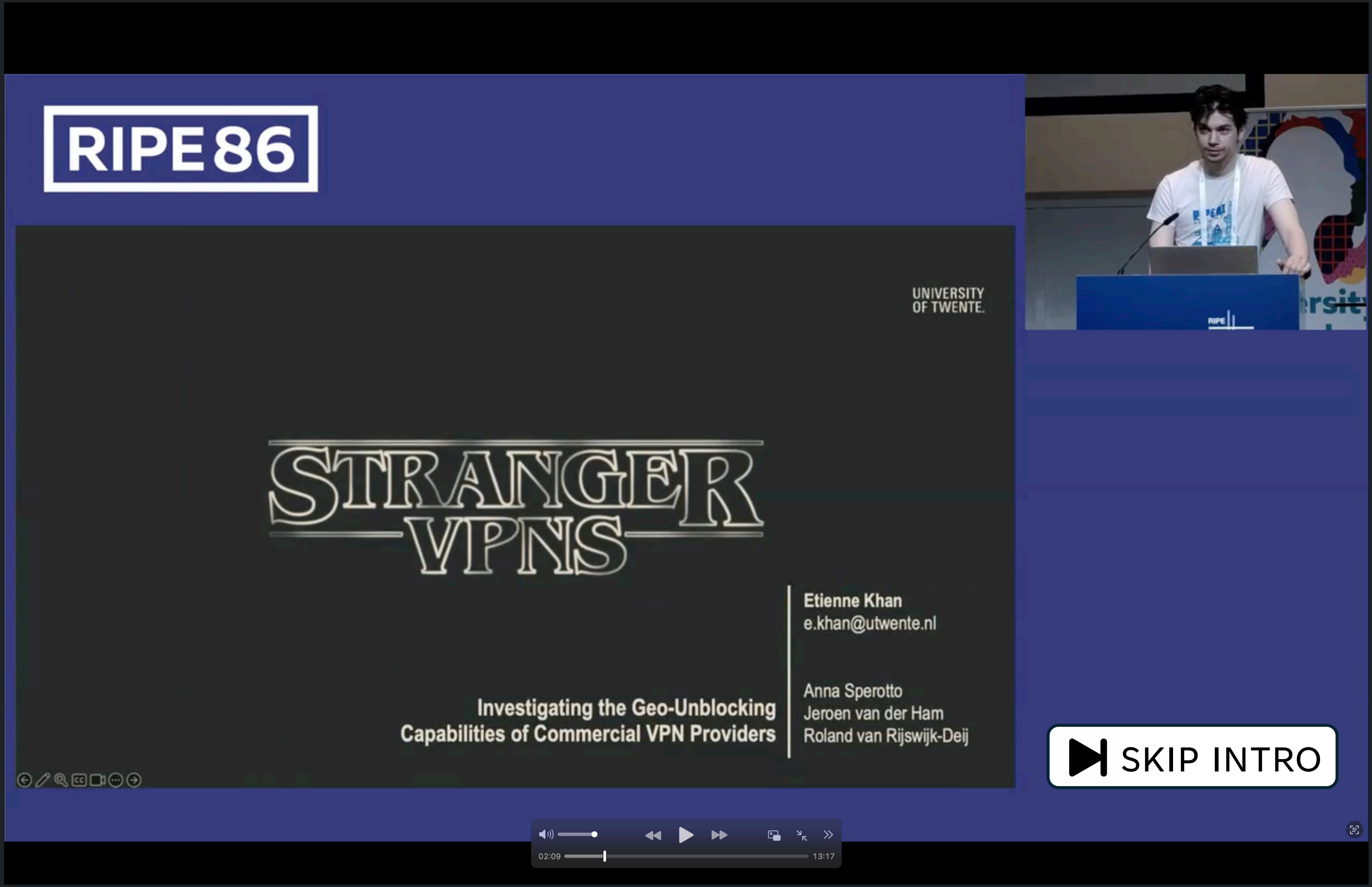
PREVIOUSLY ON…

Episode 1



RIPE86

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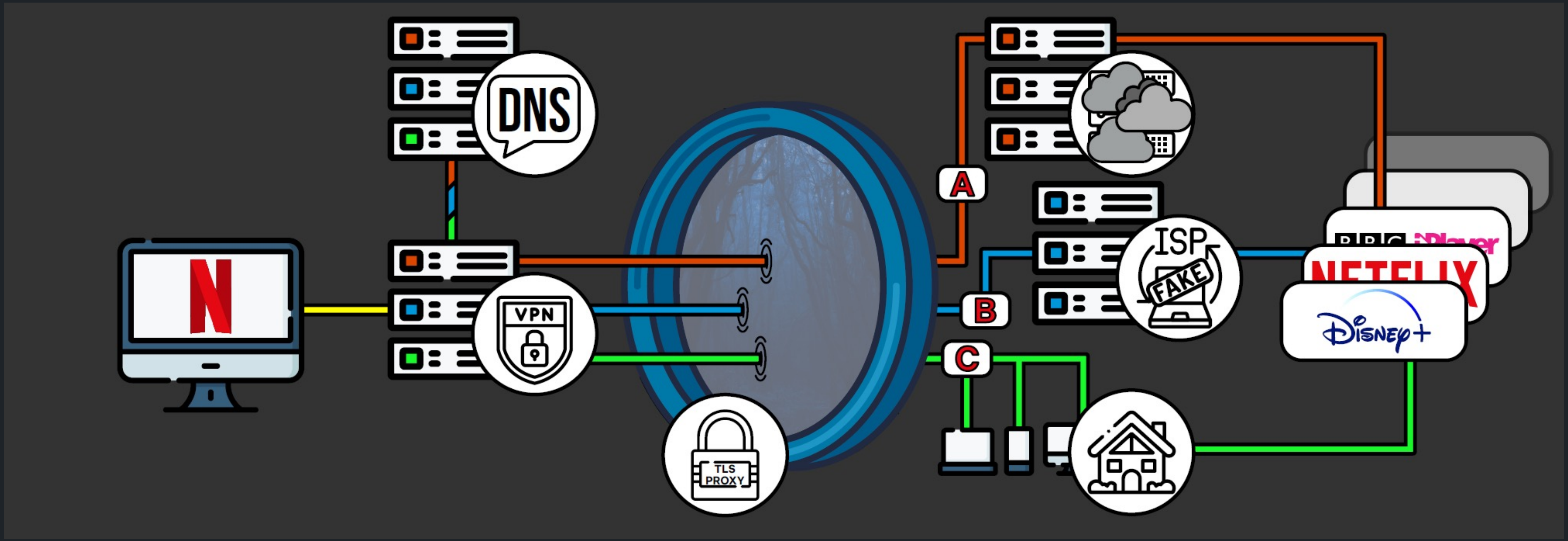
STRANGER VPNS

Investigating the Geo-Unblocking
Capabilities of Commercial VPN Providers

Etienne Khan
e.khan@utwente.nl

Anna Sperotto
Jeroen van der Ham
Roland van Rijswijk-Deij

Recap



Episode 2

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A First Look at User-Installed Residential Proxies

From a Network Operator’s Perspective

Etienne Khan, Elisa Chiapponi, Martijn Verkleij,
Anna Sperotto, Roland van Rijswijk-Deij and Jeroen van der Ham-de Vos

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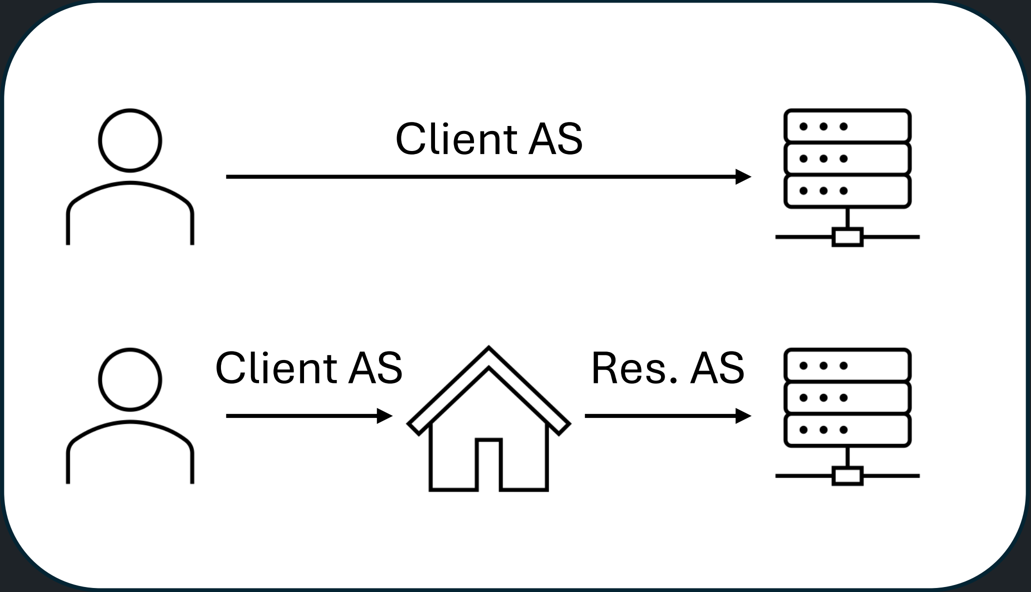
A First Look at User-Installed Residential Proxies

From a Network Operator’s Perspective

Residential Proxies



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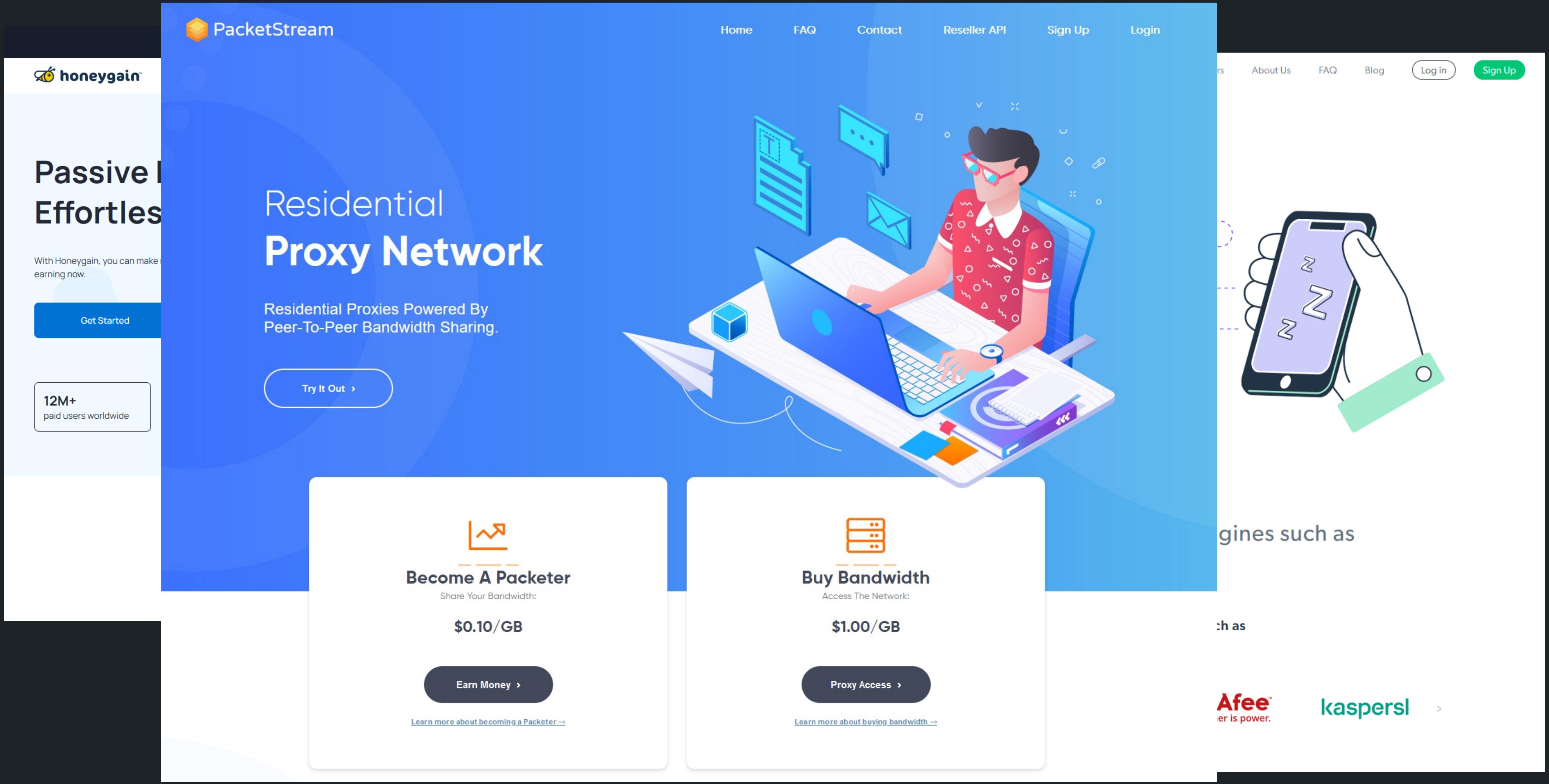
A First Look at User-Installed Residential Proxies

From a Network Operator’s Perspective

User-Installed



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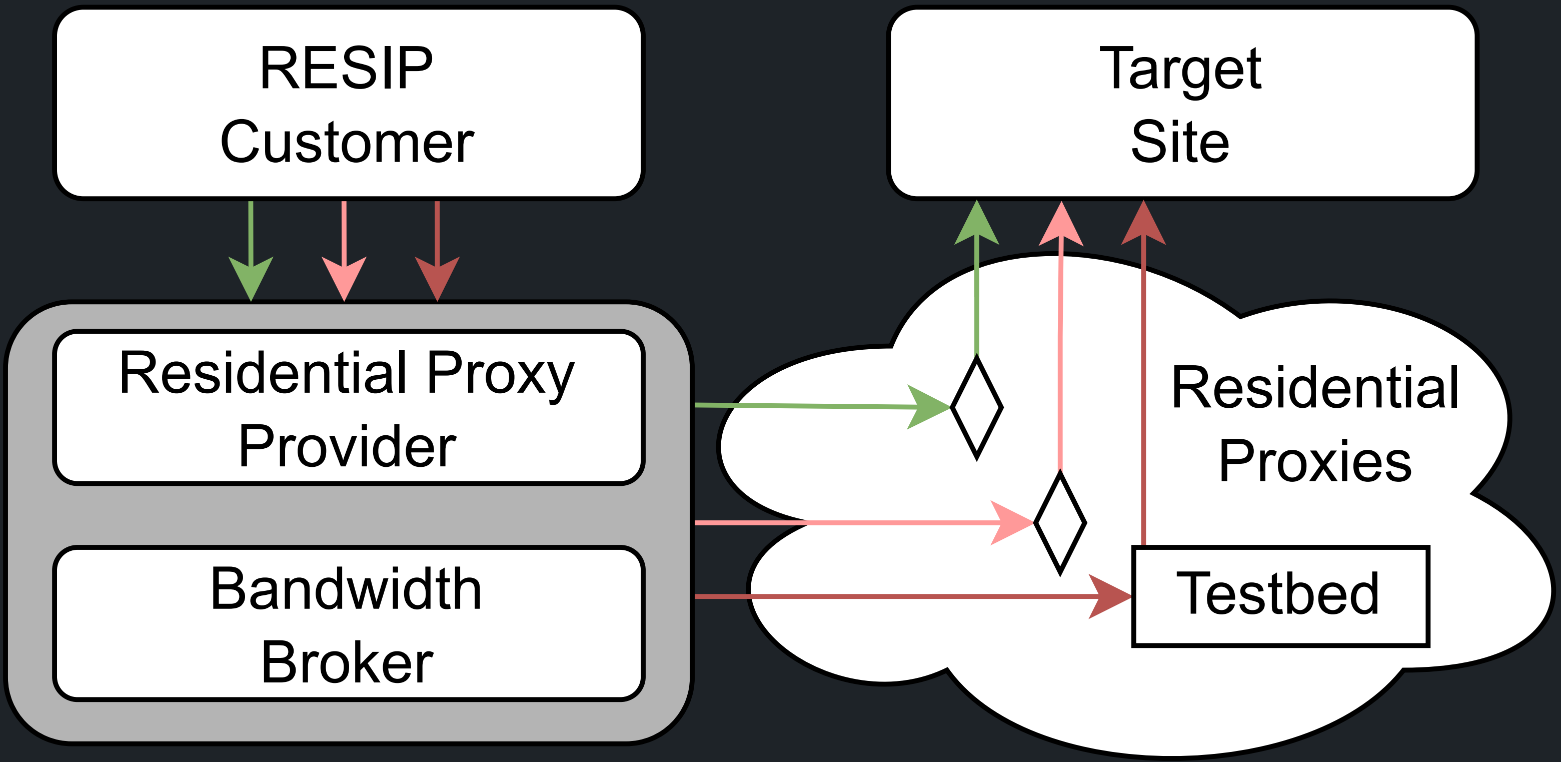

Tranalyzer

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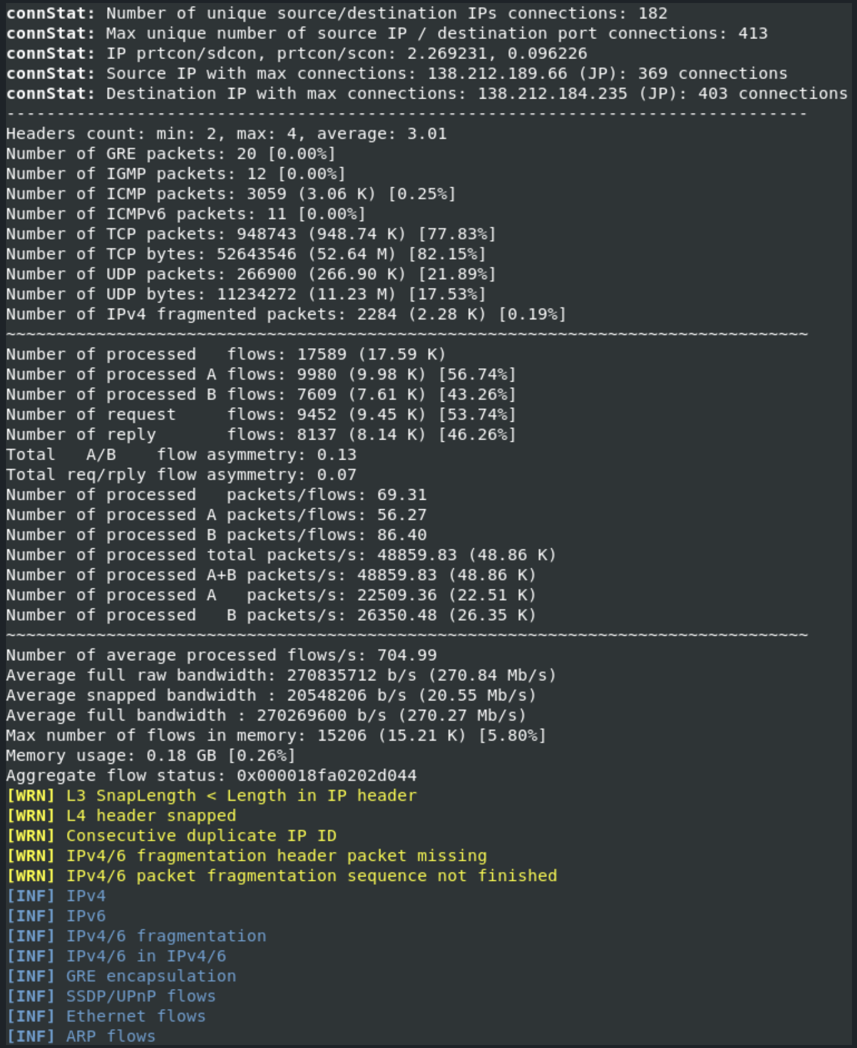

```
connStat: Number of unique source/destination IPs connections: 182
connStat: Max unique number of source IP / destination port connections: 413
connStat: IP prtcon/sdcon, prtcon/scon: 2.269231, 0.096226
connStat: Source IP with max connections: 138.212.189.66 (JP): 369 connections
connStat: Destination IP with max connections: 138.212.184.235 (JP): 403 connections
--------------------------------------------------------------------------------
Headers count: min: 2, max: 4, average: 3.01
Number of GRE packets: 20 [0.00%]
Number of IGMP packets: 12 [0.00%]
Number of ICMP packets: 3059 (3.06 K) [0.25%]
Number of ICMPv6 packets: 11 [0.00%]
Number of TCP packets: 948743 (948.74 K) [77.83%]
Number of TCP bytes: 52643546 (52.64 M) [82.15%]
Number of UDP packets: 266900 (266.90 K) [21.89%]
Number of UDP bytes: 11234272 (11.23 M) [17.53%]
Number of IPv4 fragmented packets: 2284 (2.28 K) [0.19%]
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Number of processed   flows: 17589 (17.59 K)
Number of processed A flows: 9980 (9.98 K) [56.74%]
Number of processed B flows: 7609 (7.61 K) [43.26%]
Number of request     flows: 9452 (9.45 K) [53.74%]
Number of reply       flows: 8137 (8.14 K) [46.26%]
Total   A/B    flow asymmetry: 0.13
Total req/rply flow asymmetry: 0.07
Number of processed   packets/flows: 69.31
Number of processed A packets/flows: 56.27
Number of processed B packets/flows: 86.40
Number of processed total packets/s: 48859.83 (48.86 K)
Number of processed A+B packets/s: 48859.83 (48.86 K)
Number of processed A   packets/s: 22509.36 (22.51 K)
Number of processed   B packets/s: 26350.48 (26.35 K)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Number of average processed flows/s: 704.99
Average full raw bandwidth: 270835712 b/s (270.84 Mb/s)
Average snapped bandwidth : 20548206 b/s (20.55 Mb/s)
Average full bandwidth : 270269600 b/s (270.27 Mb/s)
Max number of flows in memory: 15206 (15.21 K) [5.80%]
Memory usage: 0.18 GB [0.26%]
Aggregate flow status: 0x000018fa0202d044
[WRN] L3 SnapLength < Length in IP header
[WRN] L4 header snapped
[WRN] Consecutive duplicate IP ID
[WRN] IPv4/6 fragmentation header packet missing
[WRN] IPv4/6 packet fragmentation sequence not finished
[INF] IPv4
[INF] IPv6
[INF] IPv4/6 fragmentation
[INF] IPv4/6 in IPv4/6
[INF] GRE encapsulation
[INF] SSDP/UPnP flows
[INF] Ethernet flows
[INF] ARP flows
```

User-Installed

Episode 2

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A First Look at User-Installed Residential Proxies

From a Network Operator’s Perspective

First Look

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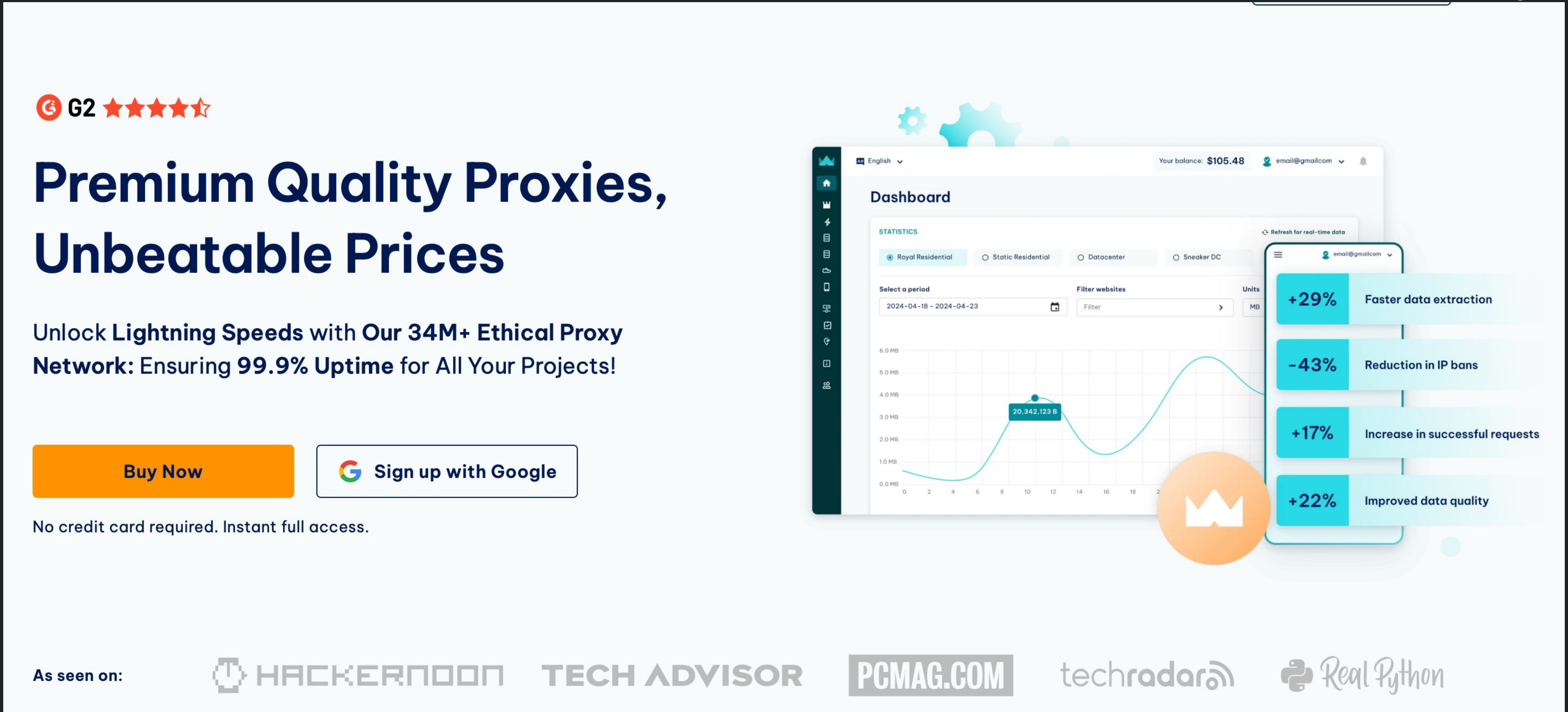

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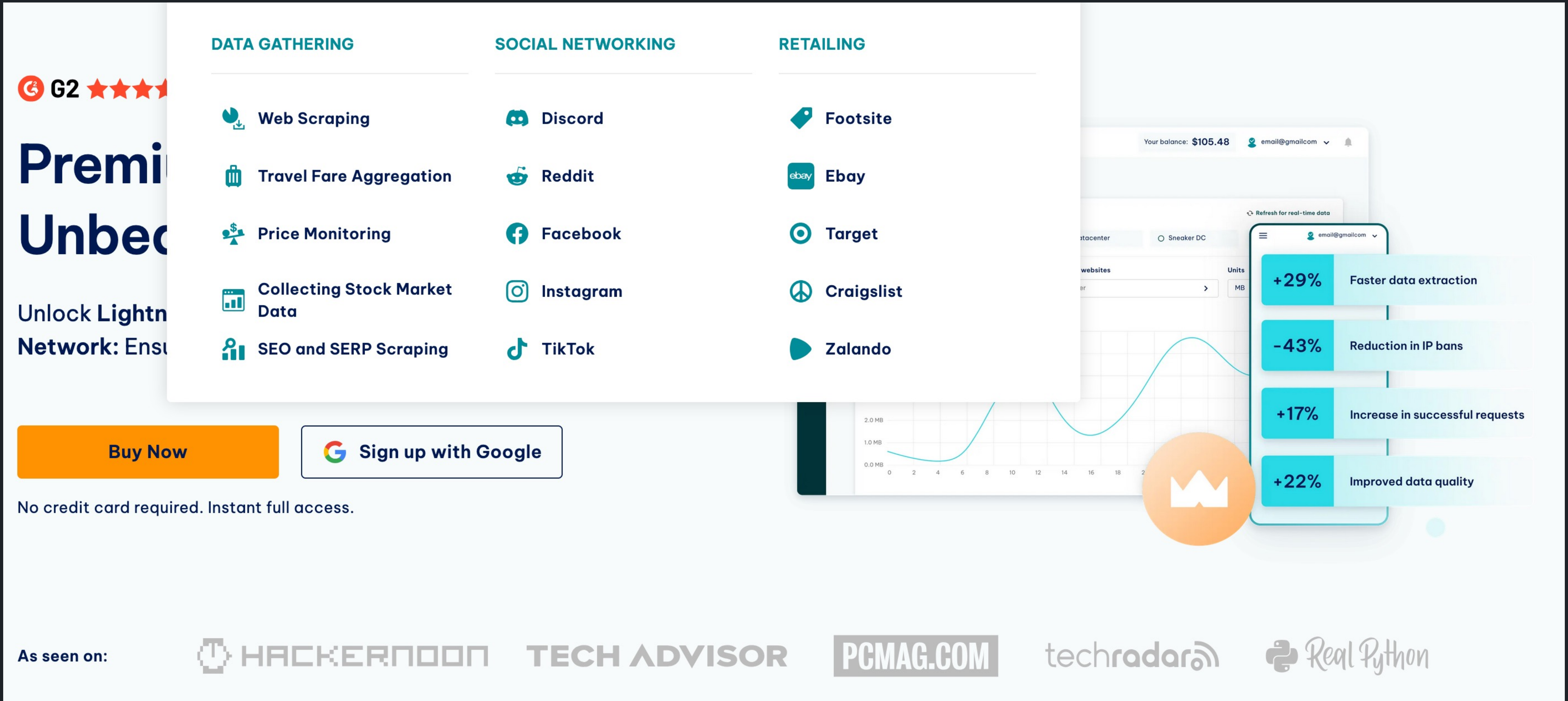
First Look



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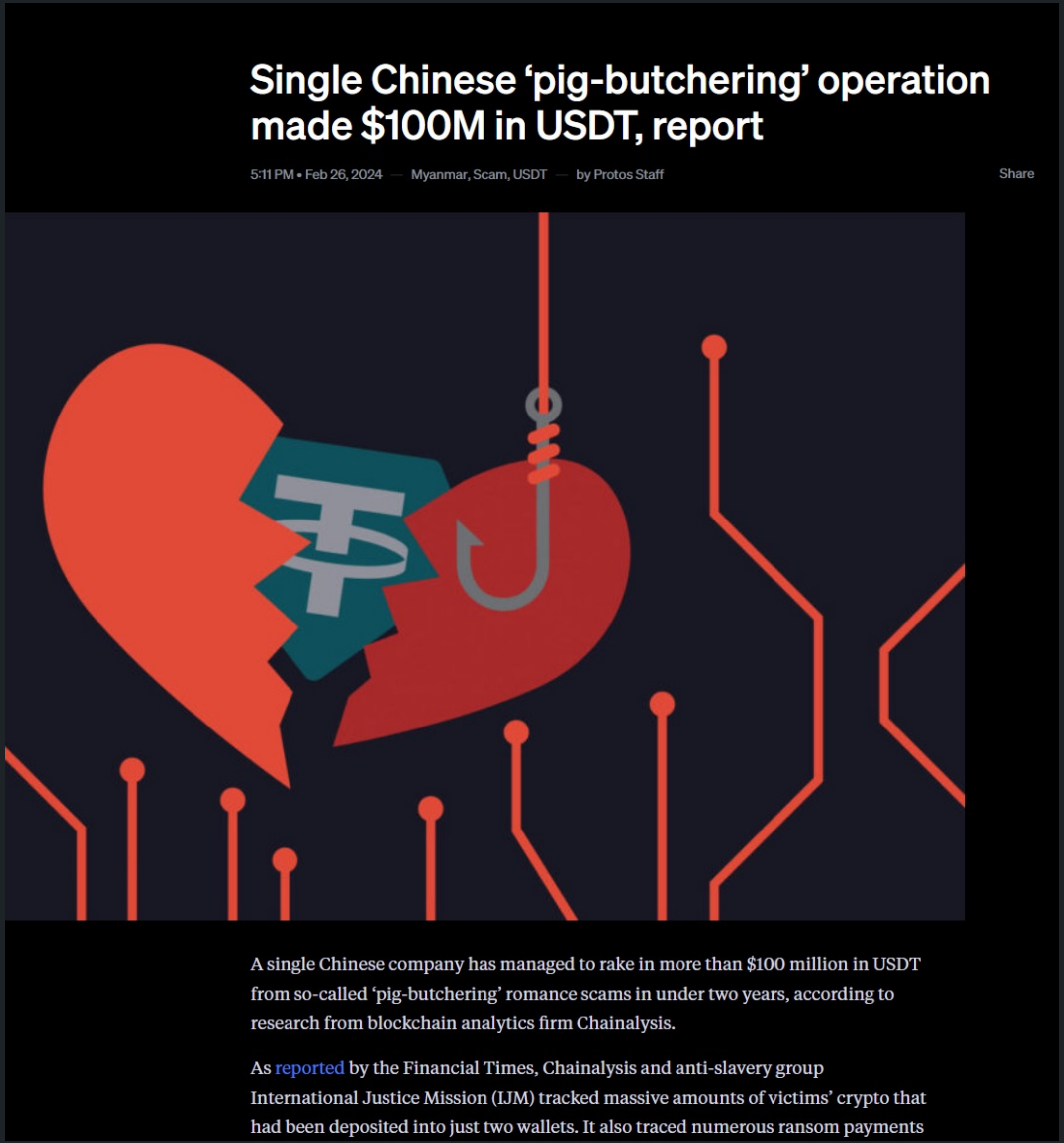
First Look



Single Chinese ‘pig-butchering’ operation made $100M in USDT, report

5:11 PM • Feb 26, 2024 — Myanmar, Scam, USDT — by Protos Staff

A single Chinese company has managed to rake in more than $100 million in USDT from so-called ‘pig-butchering’ romance scams in under two years, according to research from blockchain analytics firm Chainalysis.

As reported by the Financial Times, Chainalysis and anti-slavery group International Justice Mission (IJM) tracked massive amounts of victims’ crypto that had been deposited into just two wallets. It also traced numerous ransom payments

First Look - Tinder

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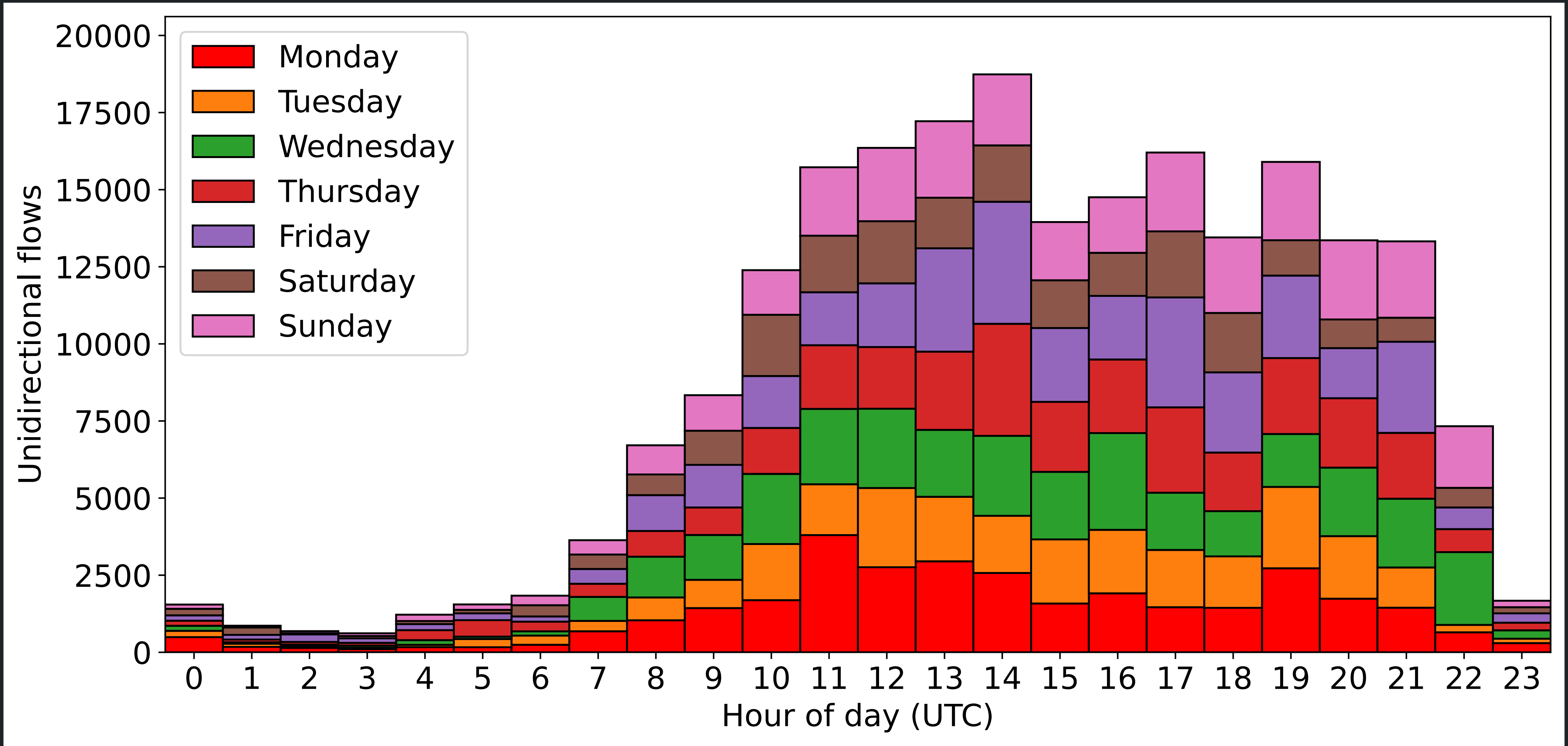

First Look - Phishing

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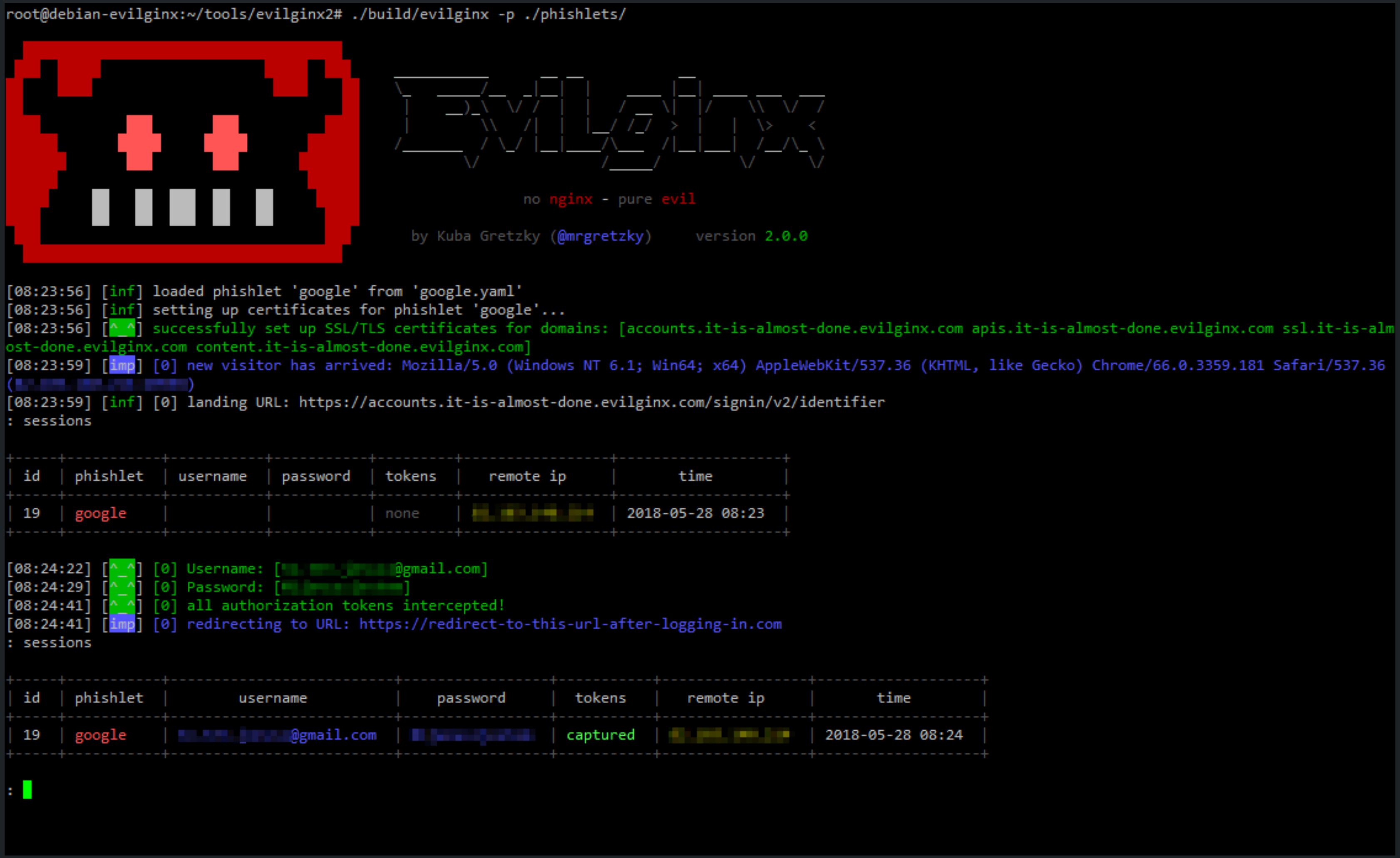

```
root@debian-evilginx:~/tools/evilginx2# ./build/evilginx -p ./phishlets/

                        no nginx - pure evil

            by Kuba Gretzky (@mrgretzky)     version 2.0.0

[08:23:56] [inf] loaded phishlet 'google' from 'google.yaml'
[08:23:56] [inf] setting up certificates for phishlet 'google'...
[08:23:56] [^_^] successfully set up SSL/TLS certificates for domains: [accounts.it-is-almost-done.evilginx.com apis.it-is-almost-done.evilginx.com ssl.it-is-alm
ost-done.evilginx.com content.it-is-almost-done.evilginx.com]
[08:23:59] [imp] [0] new visitor has arrived: Mozilla/5.0 (Windows NT 6.1; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/66.0.3359.181 Safari/537.36
([redacted])
[08:23:59] [inf] [0] landing URL: https://accounts.it-is-almost-done.evilginx.com/signin/v2/identifier
: sessions

+-----+----------+----------+----------+--------+------------------+------------------+
| id  | phishlet | username | password | tokens |    remote ip     |       time       |
+-----+----------+----------+----------+--------+------------------+------------------+
| 19  | google   |          |          | none   | [redacted]       | 2018-05-28 08:23 |
+-----+----------+----------+----------+--------+------------------+------------------+

[08:24:22] [^_^] [0] Username: [[redacted]@gmail.com]
[08:24:29] [^_^] [0] Password: [[redacted]]
[08:24:41] [^_^] [0] all authorization tokens intercepted!
[08:24:41] [imp] [0] redirecting to URL: https://redirect-to-this-url-after-logging-in.com
: sessions

+-----+----------+--------------------------+------------------+----------+------------------+------------------+
| id  | phishlet |         username         |     password     |  tokens  |    remote ip     |       time       |
+-----+----------+--------------------------+------------------+----------+------------------+------------------+
| 19  | google   | [redacted]@gmail.com     | [redacted]       | captured | [redacted]       | 2018-05-28 08:24 |
+-----+----------+--------------------------+------------------+----------+------------------+------------------+

: 
```

First Look - Phishing

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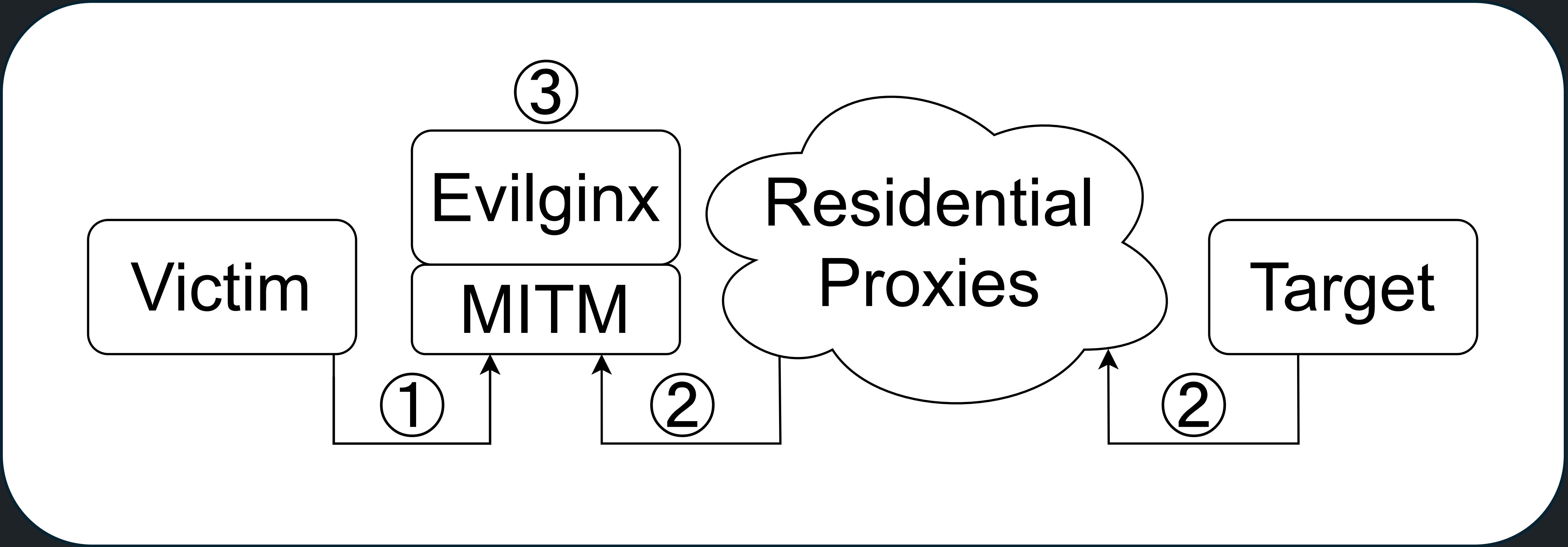

First Look - Phishing: TLS Fingerprinting

JA4 + SNI =

First Look - Phishing: TLS Fingerprinting

account.booking.com
outlook.office365.com
discord.com
paypal.com
And more

First Look - Sophisticated Bots

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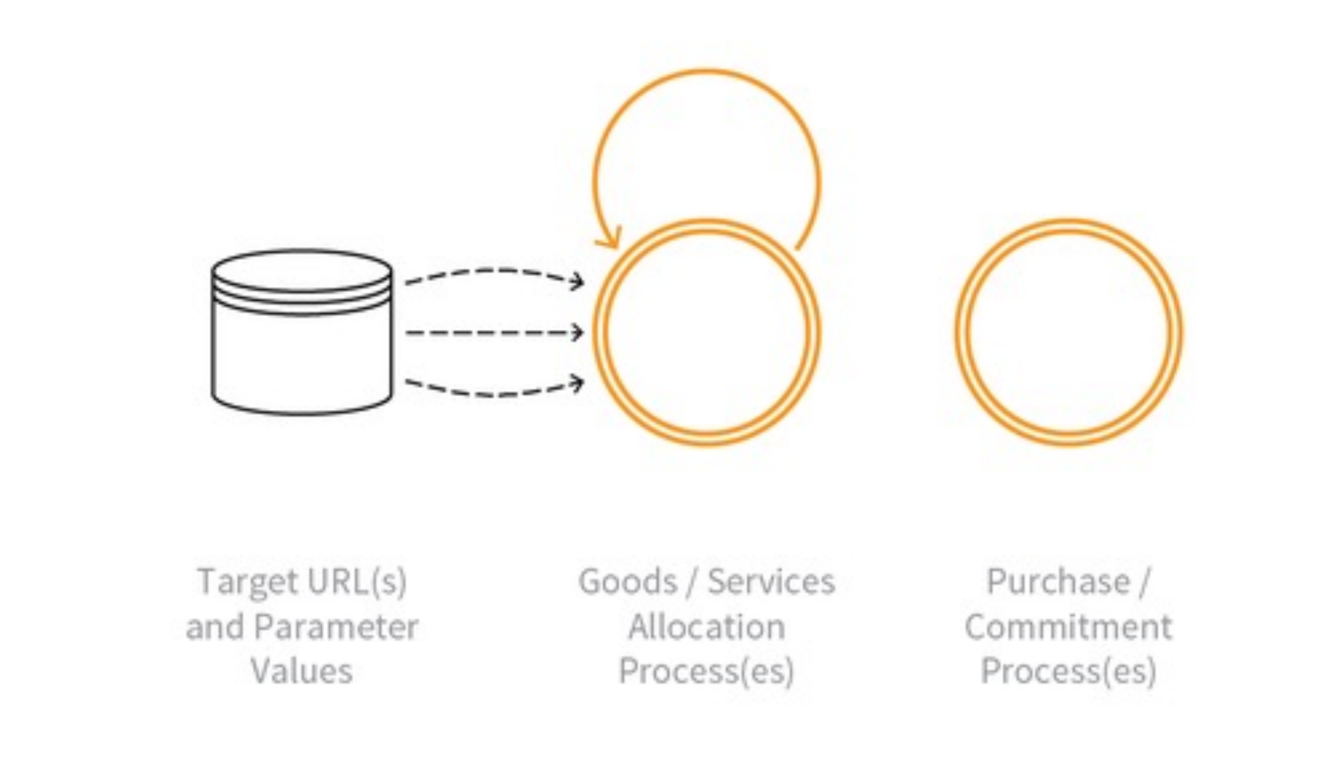
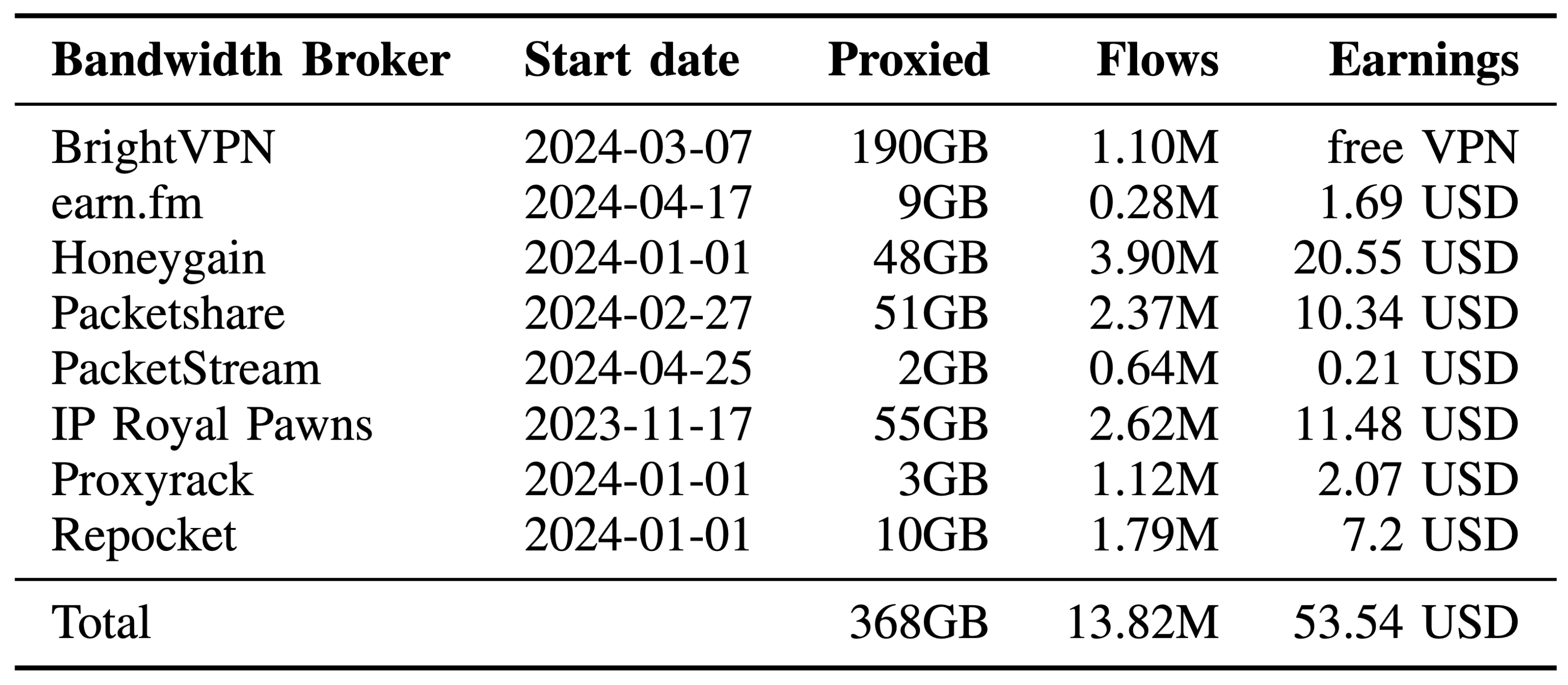

Target URL(s) and Parameter Values
Goods / Services Allocation Process(es)
Purchase / Commitment Process(es)

First Look - Riches Beyond Imagination



Bandwidth Broker	Start date	Proxied	Flows	Earnings
BrightVPN	2024-03-07	190GB	1.10M	free VPN
earn.fm	2024-04-17	9GB	0.28M	1.69 USD
Honeygain	2024-01-01	48GB	3.90M	20.55 USD
Packetshare	2024-02-27	51GB	2.37M	10.34 USD
PacketStream	2024-04-25	2GB	0.64M	0.21 USD
IP Royal Pawns	2023-11-17	55GB	2.62M	11.48 USD
Proxyrack	2024-01-01	3GB	1.12M	2.07 USD
Repocket	2024-01-01	10GB	1.79M	7.2 USD
Total		368GB	13.82M	53.54 USD

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A First Look at User-Installed Residential Proxies

From a Network Operator’s Perspective

From a Network Operator’s Perspective

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My testbed consisted only of one network operator…

Call to Action

We can deepen our understanding of this phenomenon by sampling for proxy indicators in end-user networks or at IXPs

Takeaways

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- Don’t share your Internet connection for money
- Vehicle for serious crime
- Looking for traces in end-user networks might reveal the true extent of these residential proxies

Contact, Questions, Discussions

Etienne Khan
e.khan@utwente.nl

Or here, in person