

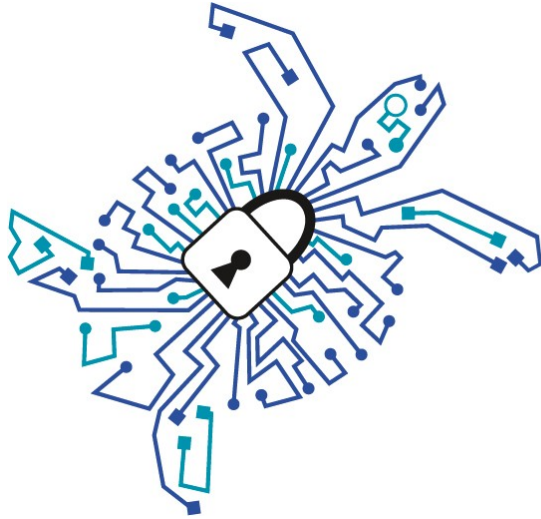


Erfahrungsbericht eines Tor Exit Relay Betreibers

Metaday 104
2025-03-14

Agenda

- Tor Einführung
- Unsere Geschichte
- Daten und Fakten unserer Tor Infrastruktur
- Erfahrungen Abuse Handling mit Behörden
- Anekdoten
- Herausforderungen für das Tor-Netzwerk



Foundation for Applied Privacy

...ein non-profit Privacy Infrastruktur Betreiber

Tor



Tor Project



Alice



Guard



Middle



Jane

Step 2: Alice's Tor client picks a random path to destination server. Green links are encrypted, red links are in the clear.



Exit



Bob



Dave

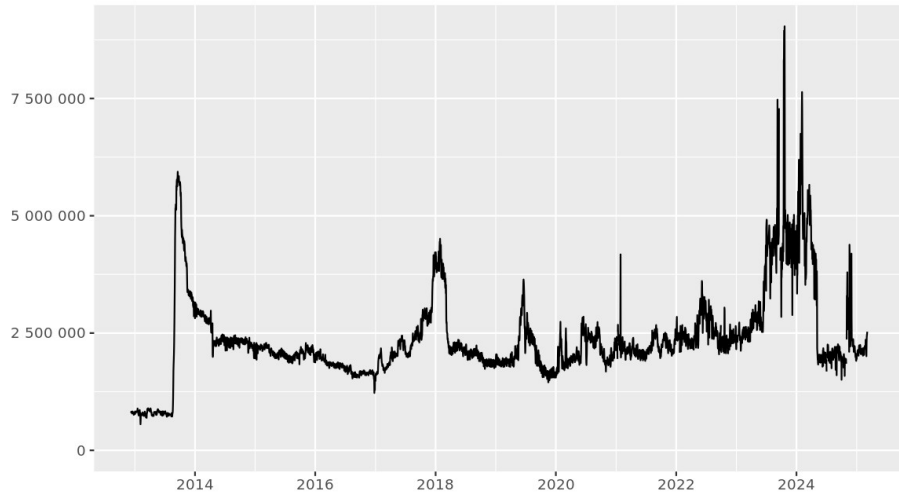


Relay Operators

- Betrieb des Tor Netzwerks
- Privatpersonen, Vereine, Firmen, etc.
- Nicht Teil vom Tor Projekt

~2.5 Millionen Benutzer:innen

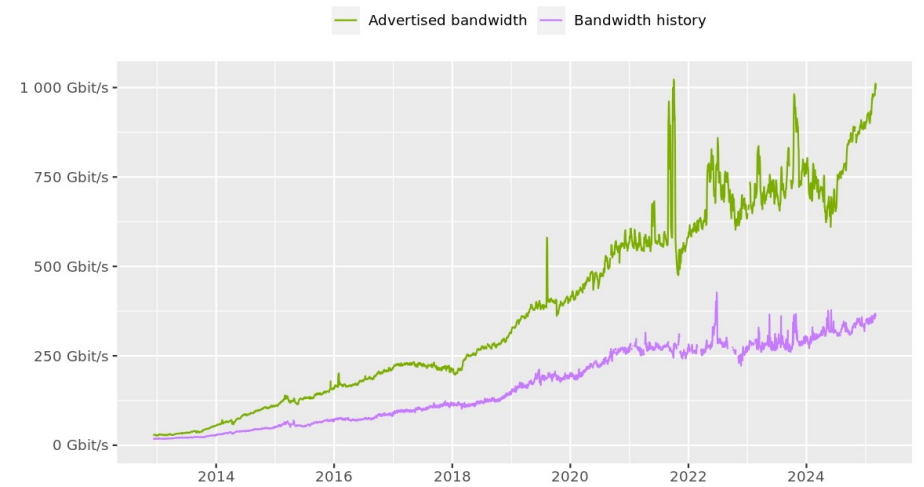
Directly connecting users



The Tor Project - <https://metrics.torproject.org/>

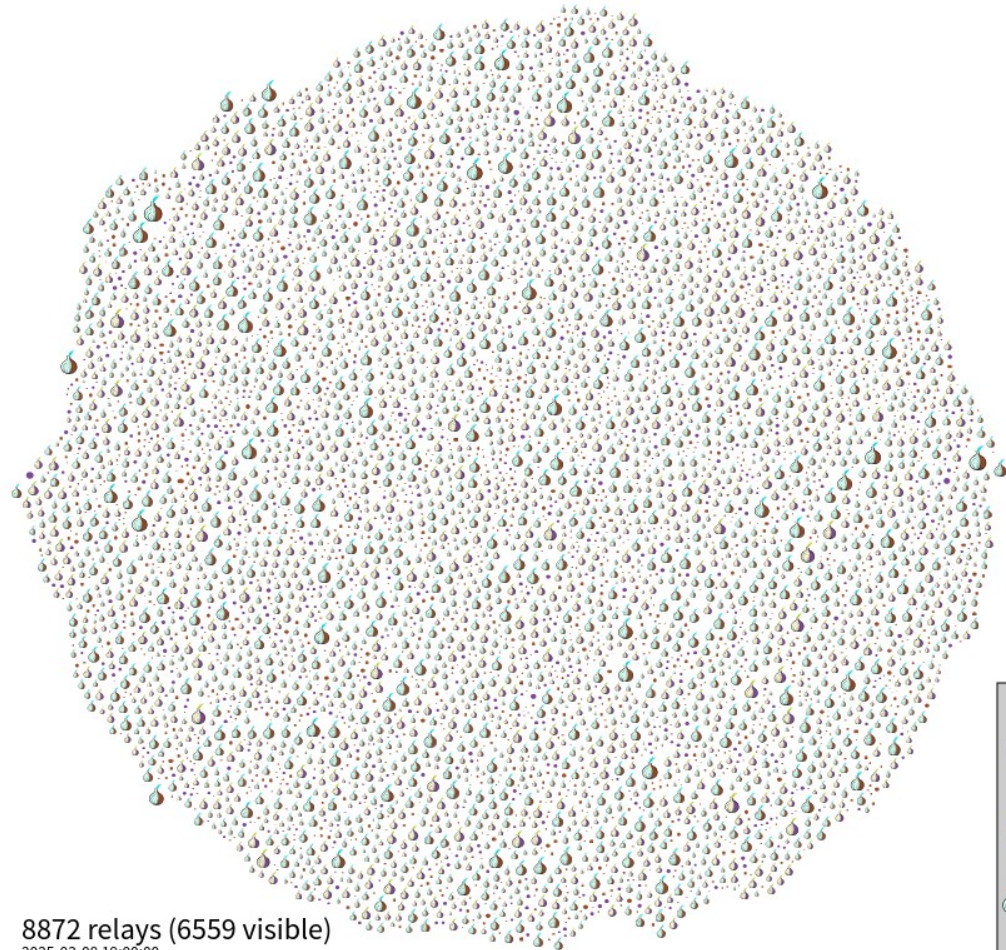
~1000 Gbit/s Advertised bandwidth

Total relay bandwidth

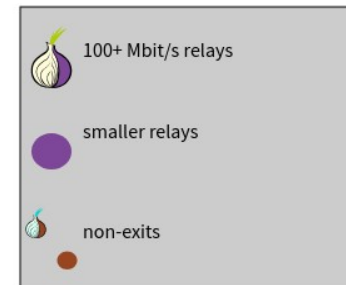


The Tor Project - <https://metrics.torproject.org/>

~9000 Tor Relays

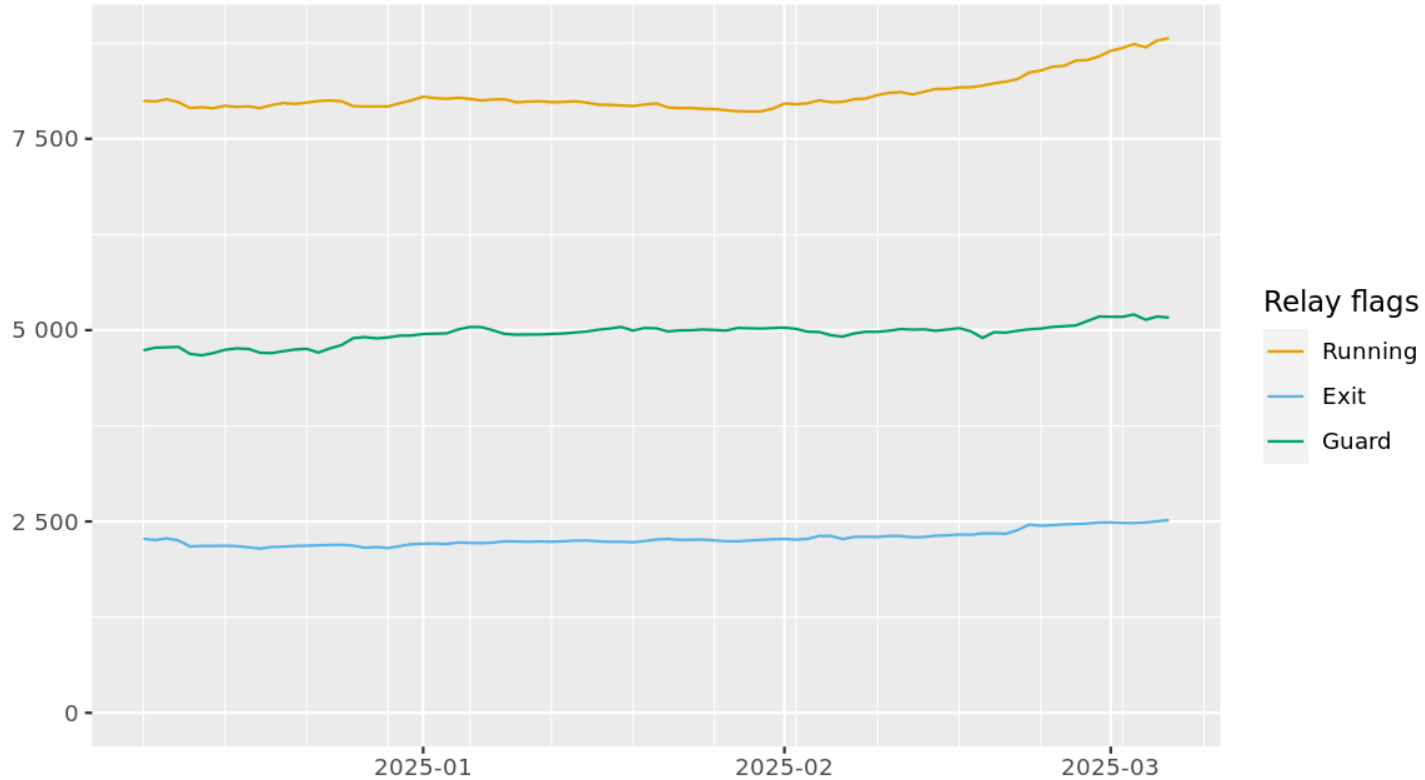


8872 relays (6559 visible)
2025-03-08 19:00:00



Tor Relays

Number of relays with relay flags assigned

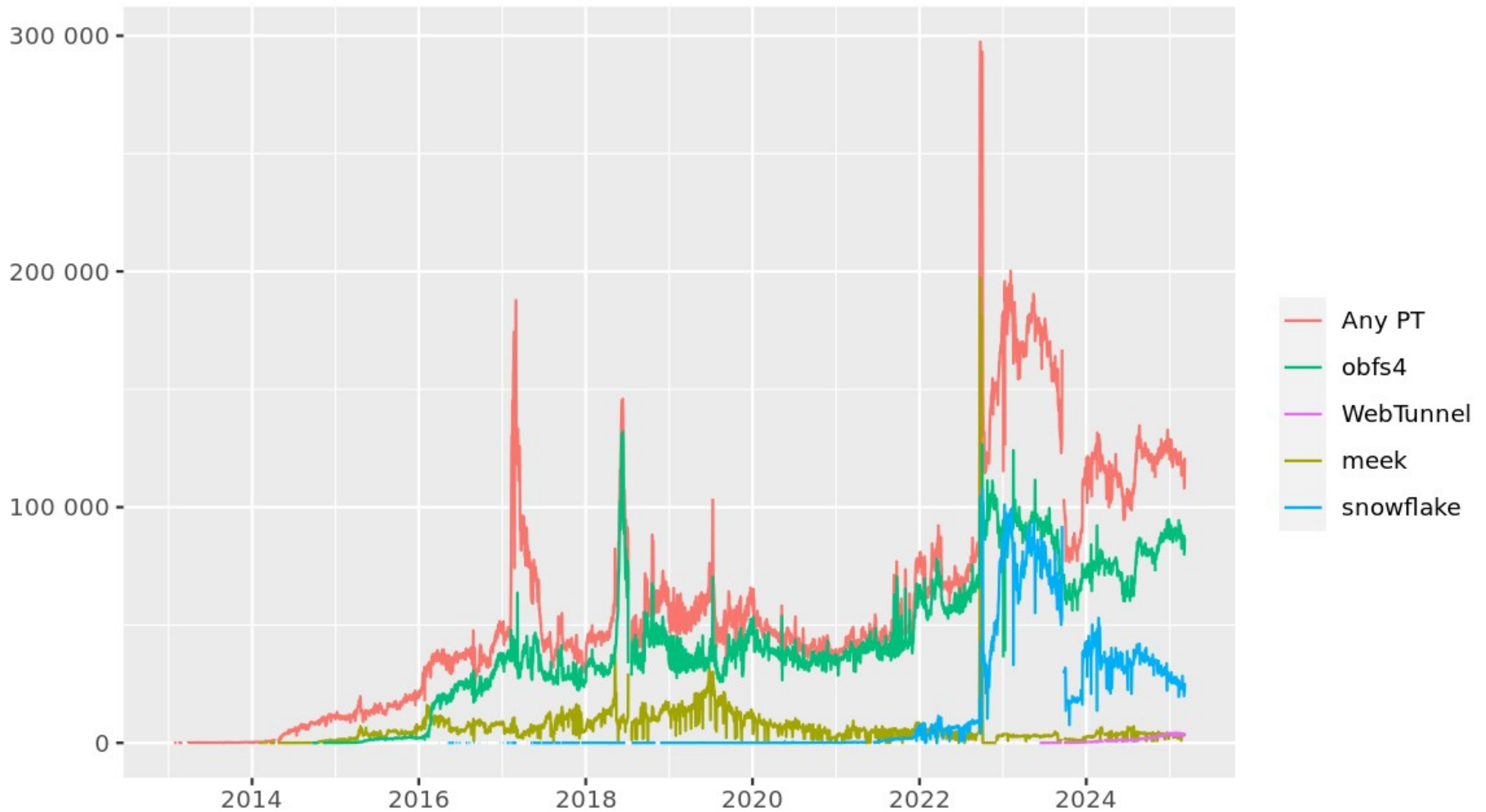


The Tor Project - <https://metrics.torproject.org/>

Bridges/Pluggable Transports

- Zensurumgehung
- Typen:
 - obfs4
 - meek-azure
 - Webtunnel
 - Snowflake

Bridge users by transport



The Tor Project - <https://metrics.torproject.org/>

Bridge Transports Distribution

Show entries

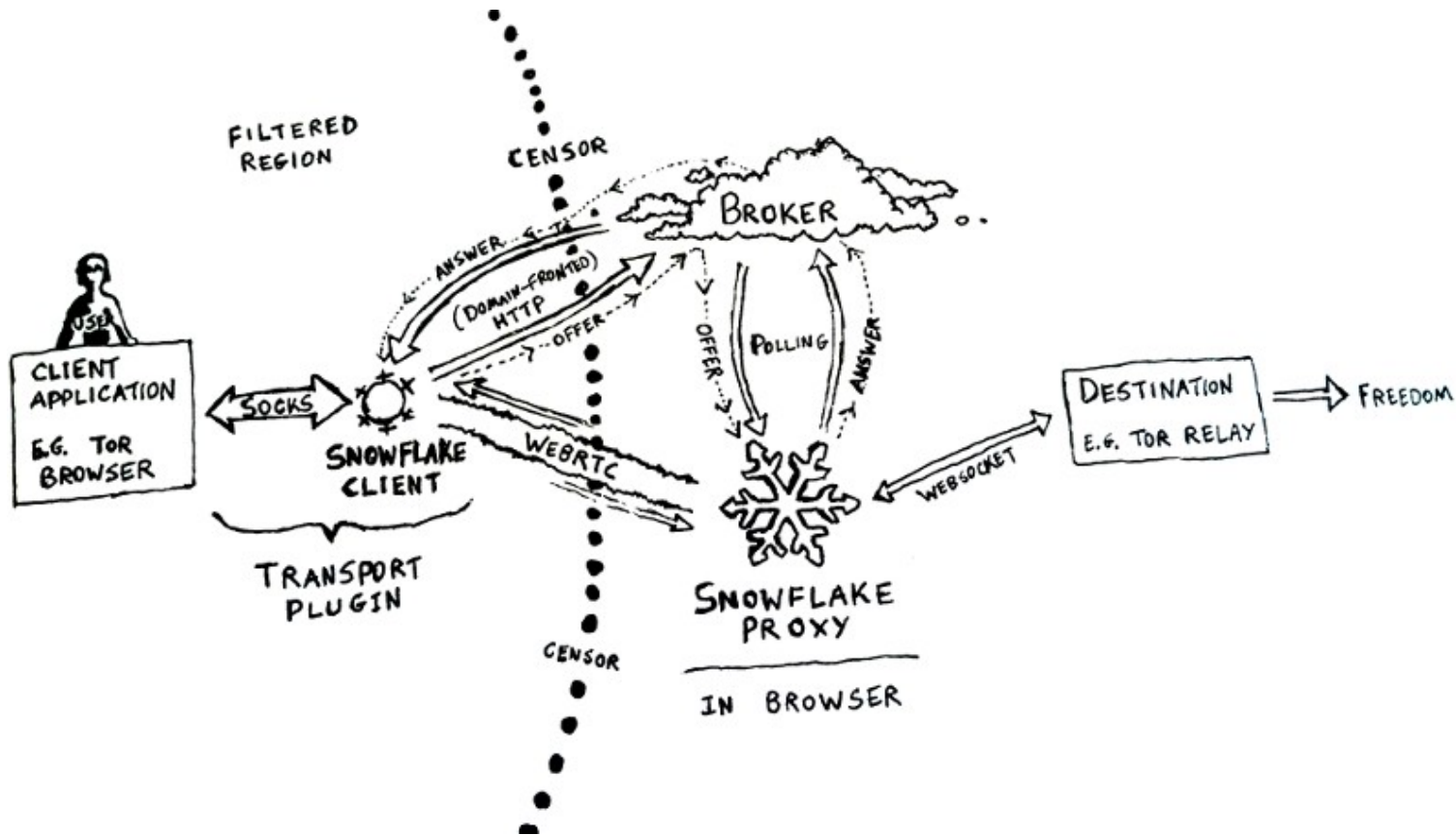
Search:

Supported Transports	Bridges
obfs4	1432
None	288
webtunnel	185
obfs3, obfs4	20
obfs4, webtunnel	4
meek	3
obfs3	2
obfs4, obfs4	2
obfs2, obfs3, obfs4	1

Showing 1 to 9 of 9 entries

Previous Next

Snowflake



<https://gitlab.torproject.org/tpo/anti-censorship/pluggable-transport/snowflake/-/wikis/uploads/8716c3ba1226bd90009268a777ed2ccb/snowflake-diagram.png>

Vereinszweck

- Betrieb kostenlos nutzbarer technischer Privacy Infrastruktur für die Öffentlichkeit
- Förderung von freier Software für:
 - Sichere Kommunikation
 - Schutz der Privatsphäre
- **Erfahrungsaustausch**
- ...

Unsere Geschichte

Saal 1 10:48
Next talk
11:30
in 42 min
Datenschutz und Mobilität
Werner Illsinger
C³W
Clean Computer - Clean World



PRIVACYWEEK
PRIVATSPHARE IM DIGITALEN ZEITALTER
WIR WÜNSCHEN EUCH EINEN
SCHÖNEN GUTEN MORGEN!
PW17
C³W
Clean Computer - Clean World



Tor exit node - Erfahrungsbericht



Der Betrieb eines Tor-Exit-Nodes in Österreich



Michael Sonntag
Institute of Networks and Security



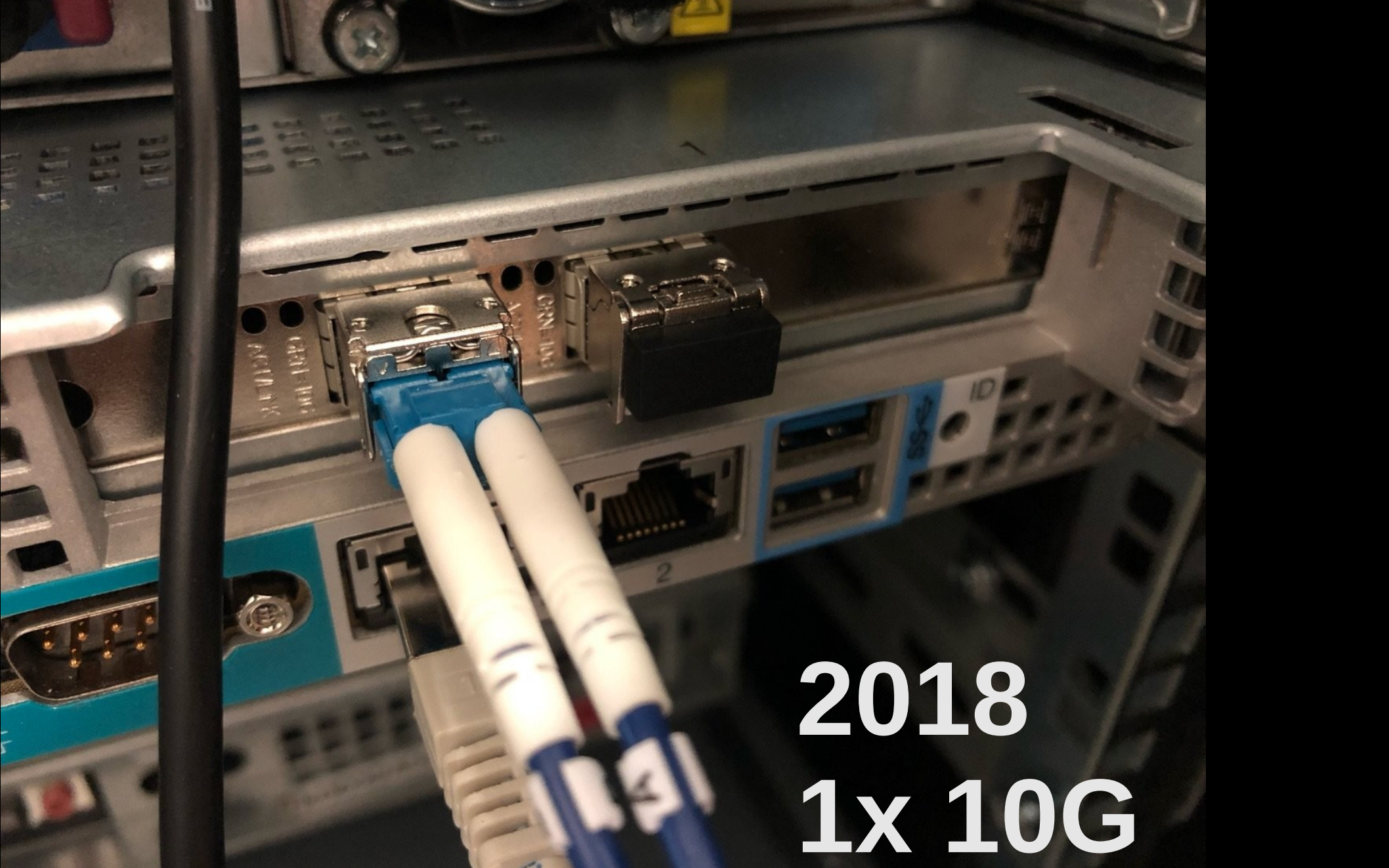


Erfahrungsbericht Tor Exit-Knoten in Österreich betreiben

 [Michael Sonntag](#)





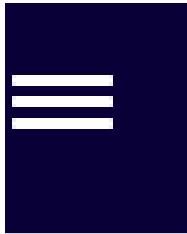


2018
1x 10G



**2019
DNS Privacy**

Eigenes Autonomes System (AS) registriert



RIPE Database

aut-num:

AS208323

as-name:

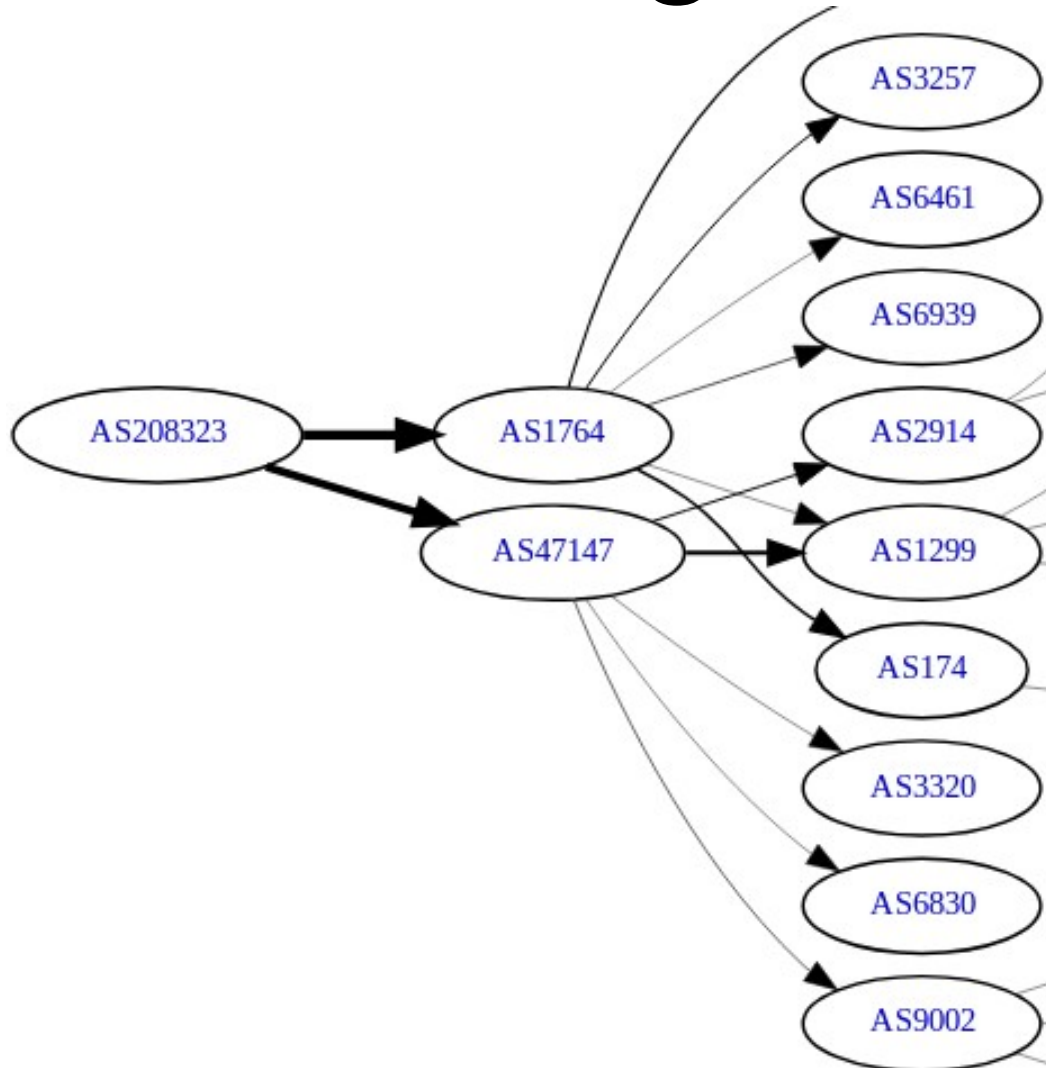
APPLIEDPRIVACY-AS

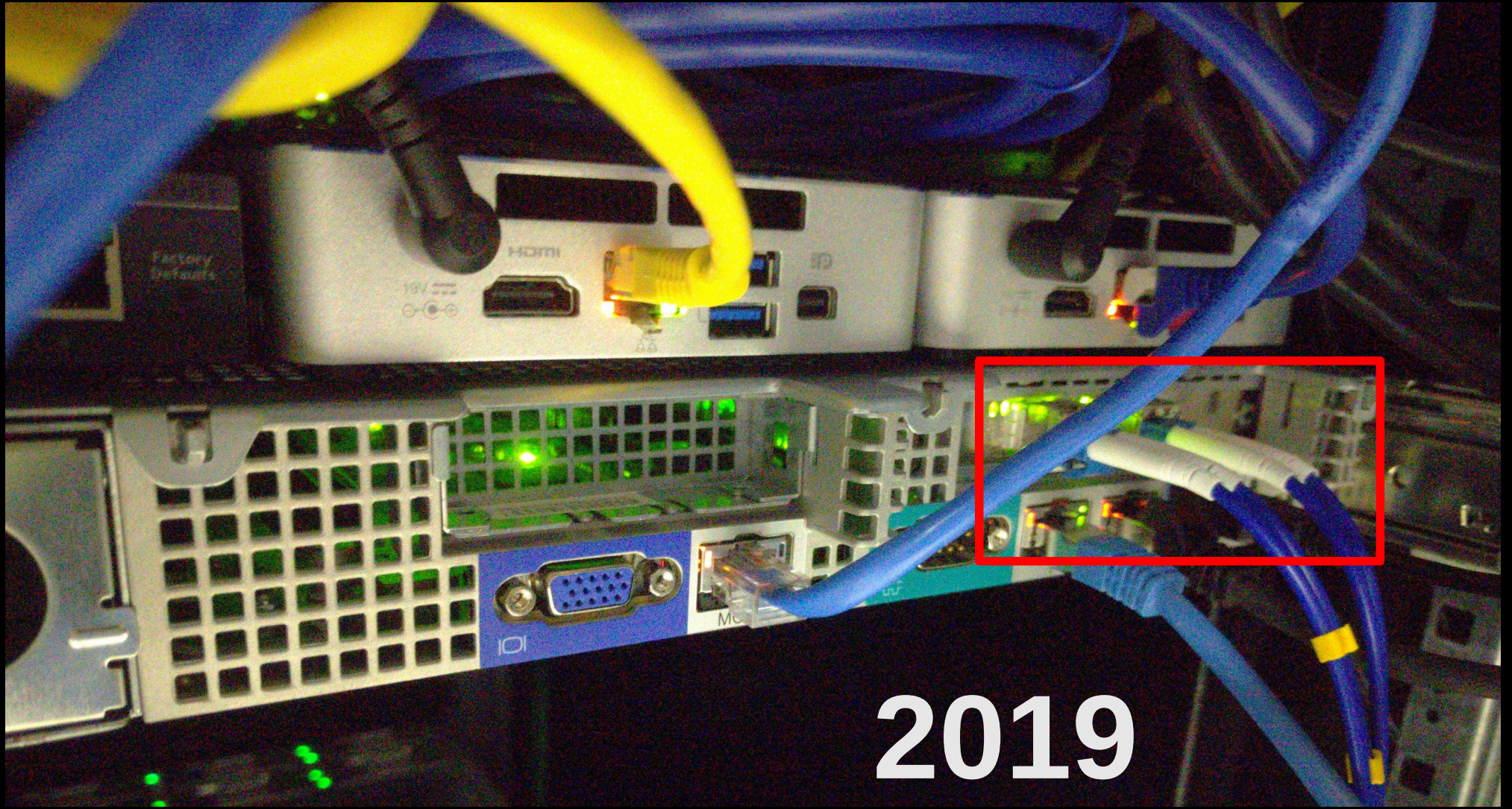
org:

ORG-PRIV3-RIPE

2019

Unser eigenes AS





2019

2x 10G

**(reserviert)Nur 1 Stück! Server Intel R1000 2x E5-2650, 128 Gb RAM,
2x 500 Gb HDD, RAID**

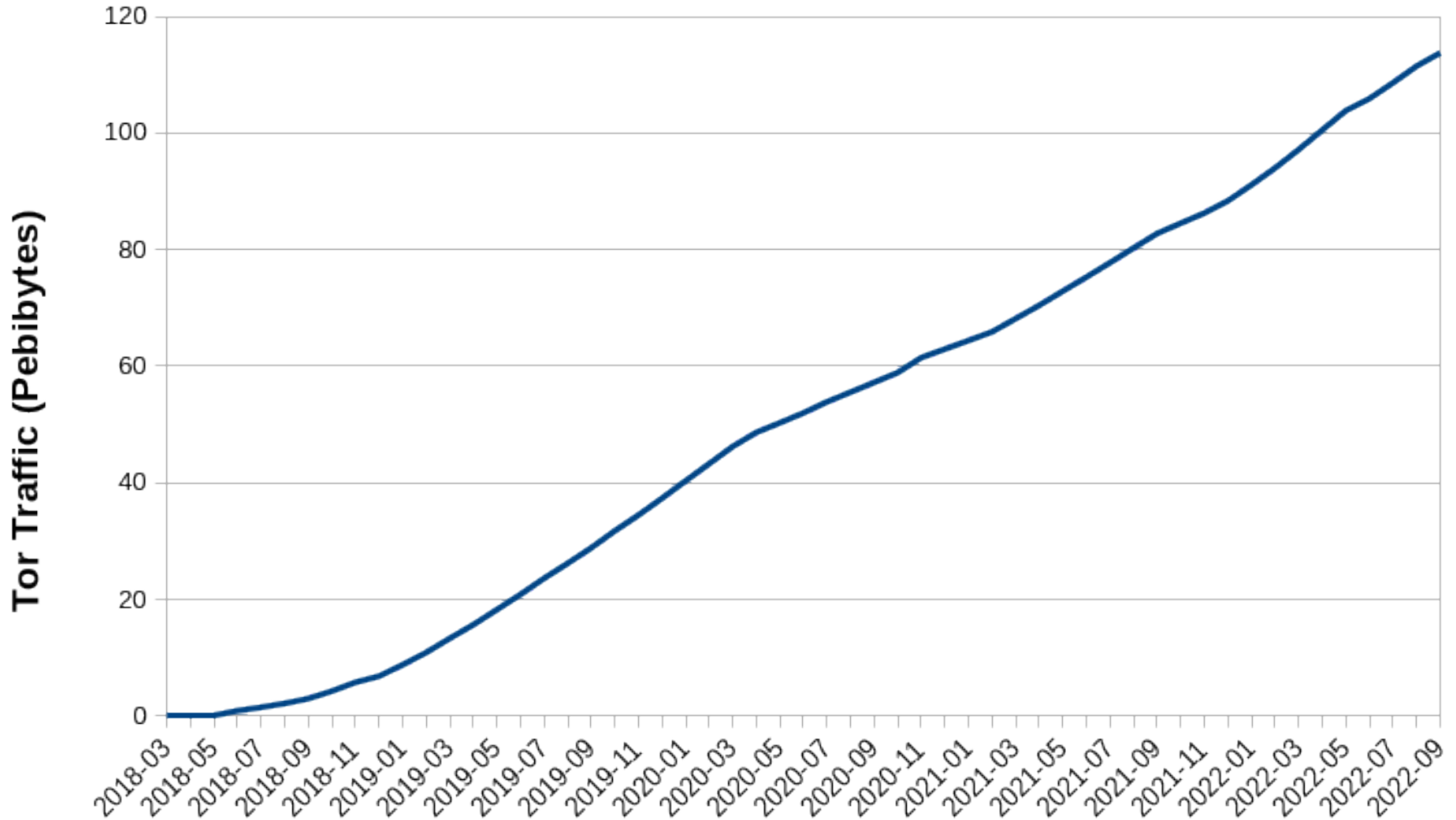


Daten und Fakten

Tor Exit Relay Hardware

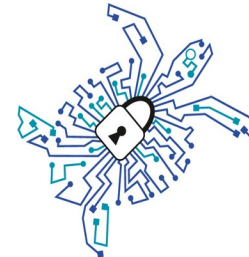
- 2 (alte) Server
- 4 CPUs
- 32 CPU Cores
- 192 GB RAM

Tor Traffic



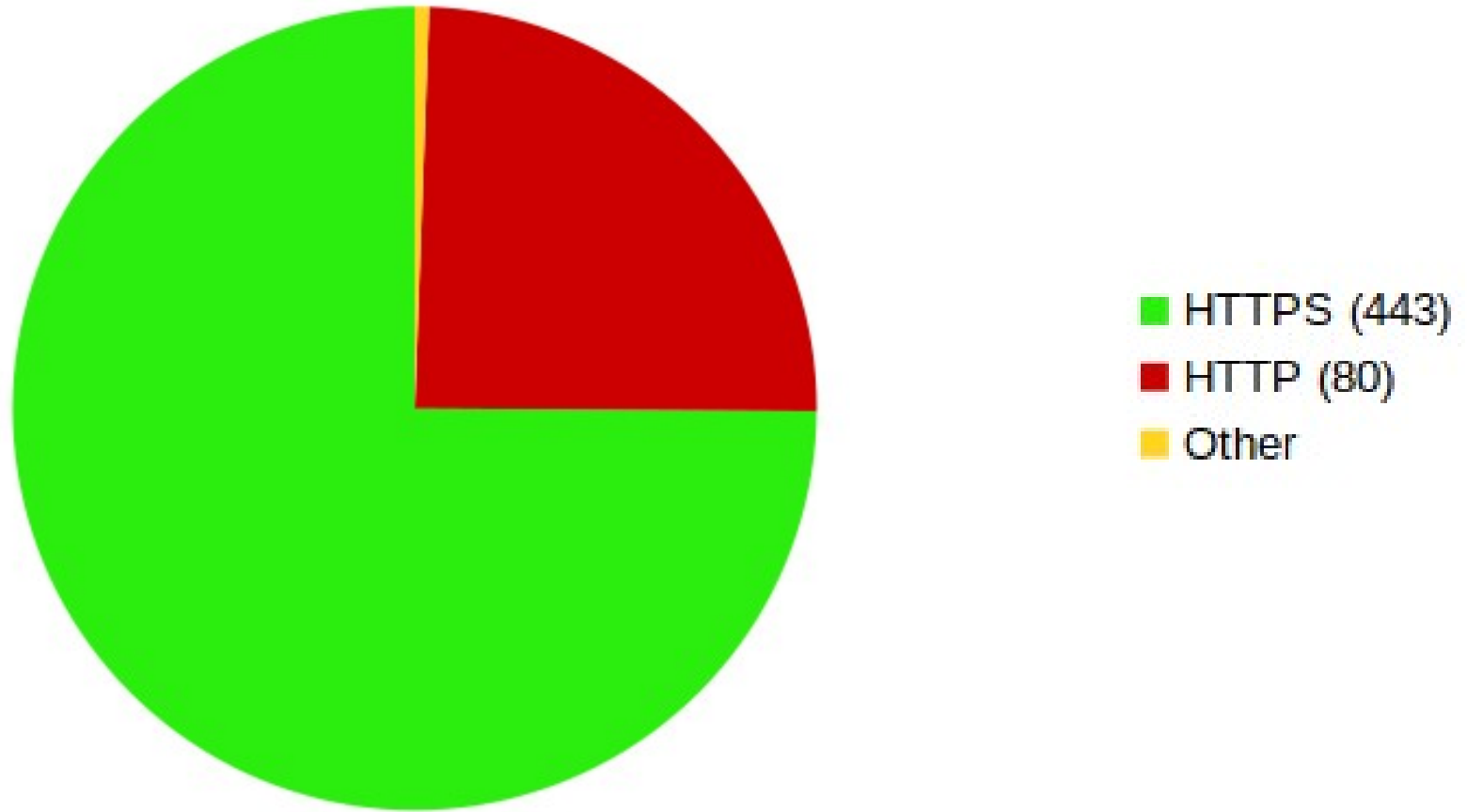
~ 177 Petabyte Tor Traffic

2018/03 - 2025/03

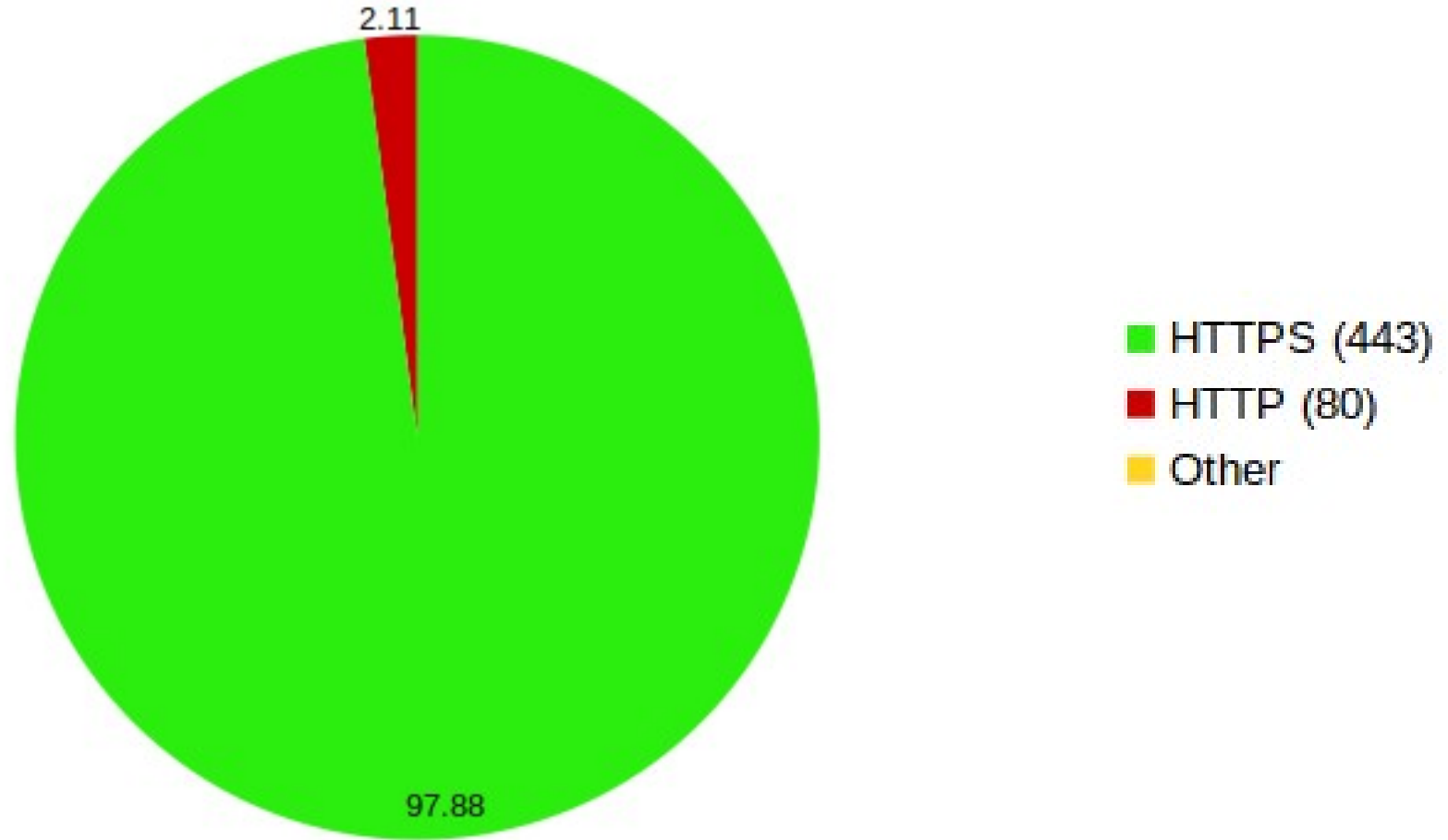


Foundation for
Applied Privacy

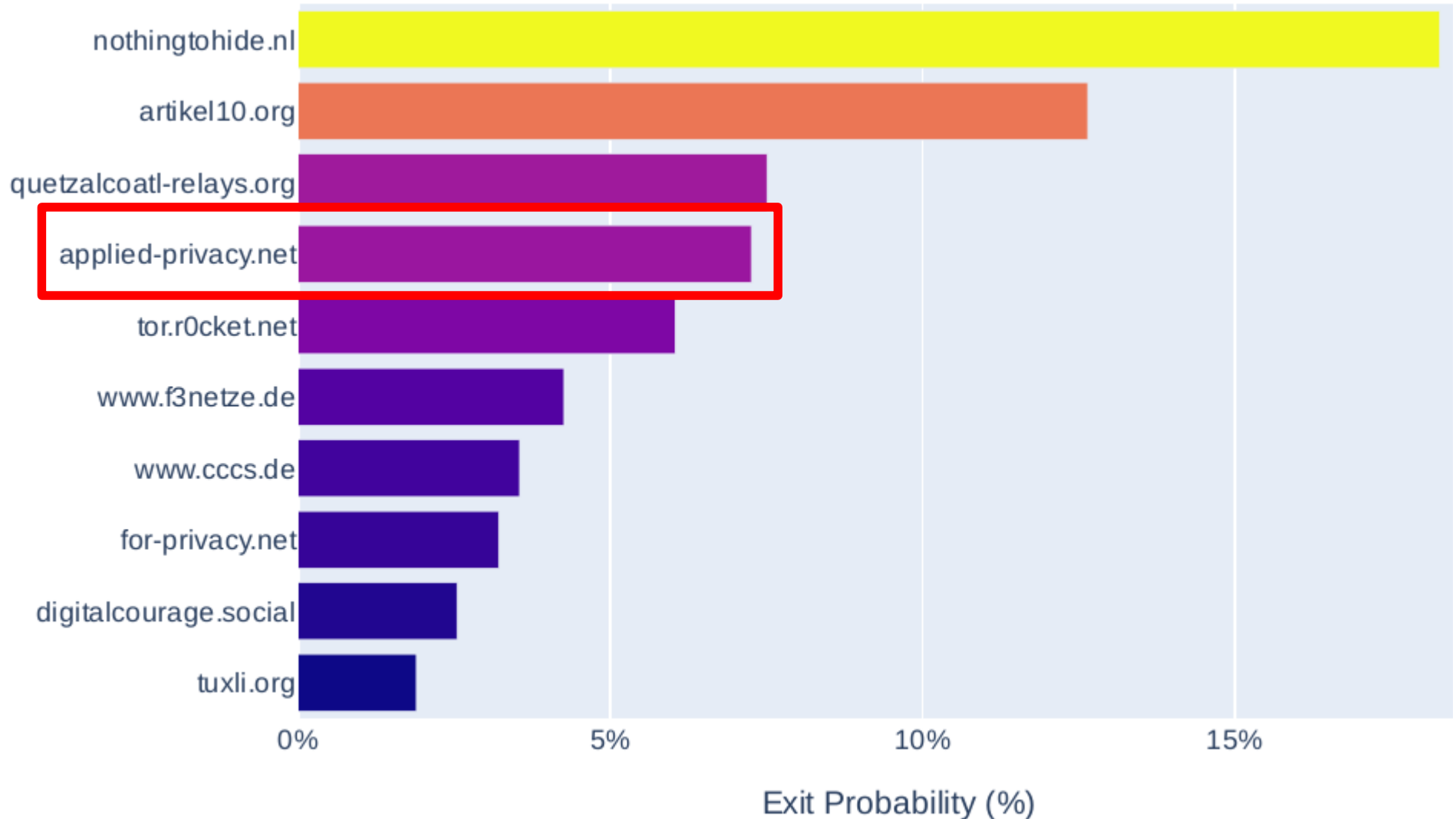
Tor Exit Traffic per Port (2019)













Tor Exit Traffic per Port (2025)



Exit Relay Operator Ranking



Country Ranking

Country	Autonomous System	Consensus Weight	Advertised Bandwidth
 Germany	(132 distinct)	35.2080%	37277.71 MiB/s
 Netherlands	(97 distinct)	17.9160%	18689.58 MiB/s
 Sweden	(38 distinct)	5.2598%	6275.12 MiB/s
 France	(33 distinct)	5.0793%	6024.66 MiB/s
 United States	(213 distinct)	4.9416%	10502.05 MiB/s
 Poland	(36 distinct)	4.5855%	6646.86 MiB/s
 Finland	(21 distinct)	4.3904%	5279.85 MiB/s
 Austria	(22 distinct)	2.7345%	2749.48 MiB/s
 United Kingdom	(49 distinct)	2.5352%	2872.54 MiB/s
 Russia	(27 distinct)	2.1446%	2824.4 MiB/s

Abuse Handling

Alice



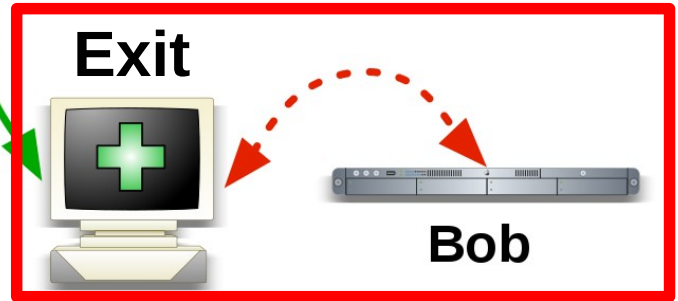
Step 2: Alice's Tor client picks a random path to destination server. **Green links** are encrypted, **red links** are in the clear.



Jane



Dave



Exit



Bob



Tor Exit Abuse Handling

- Eigenes Autonomes System
- Eindeutiger WHOIS Eintrag
- Ticket System: Auto Reply mit Infos zu Tor
- Telefonnummer

WHOIS

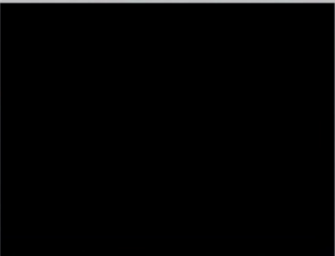


RIPE Database

Responsible organisation: [Foundation for Applied Privacy](#)

Abuse contact info: abuse@appliedprivacy.net

```
inetnum:          109.70.100.0 - 109.70.100.127
netname:          Tor-Exit-Anonymizer--Foundation-for-Applied-Privacy
remarks:         Send abuse emails to: abuse@appliedprivacy.net
country:         AT
```



An das LKA Wien

STRAFSACHE der [REDACTED]

Gegen:

Ut

<Vertreter>

Wegen: Widerrechtlicher Zugriff auf ein Computersystem

Bezug:

ANORDNUNG DER VOLLSTRECKUNG EINER EUROPÄISCHEN ERMITTLUNGSANORDNUNG

Die Staatsanwaltschaft Wien ordnet die Vollstreckung der angeschlossenen Europäischen Ermittlungsanordnung der [REDACTED] gemäß § 55e Abs 1 EU-JZG an.

Es ist die Erteilung einer Auskunft über Stamm- und Zugangsdaten nach Maßgabe des § 99 Abs. 5 Z 2 TKG durchzuführen:

Für

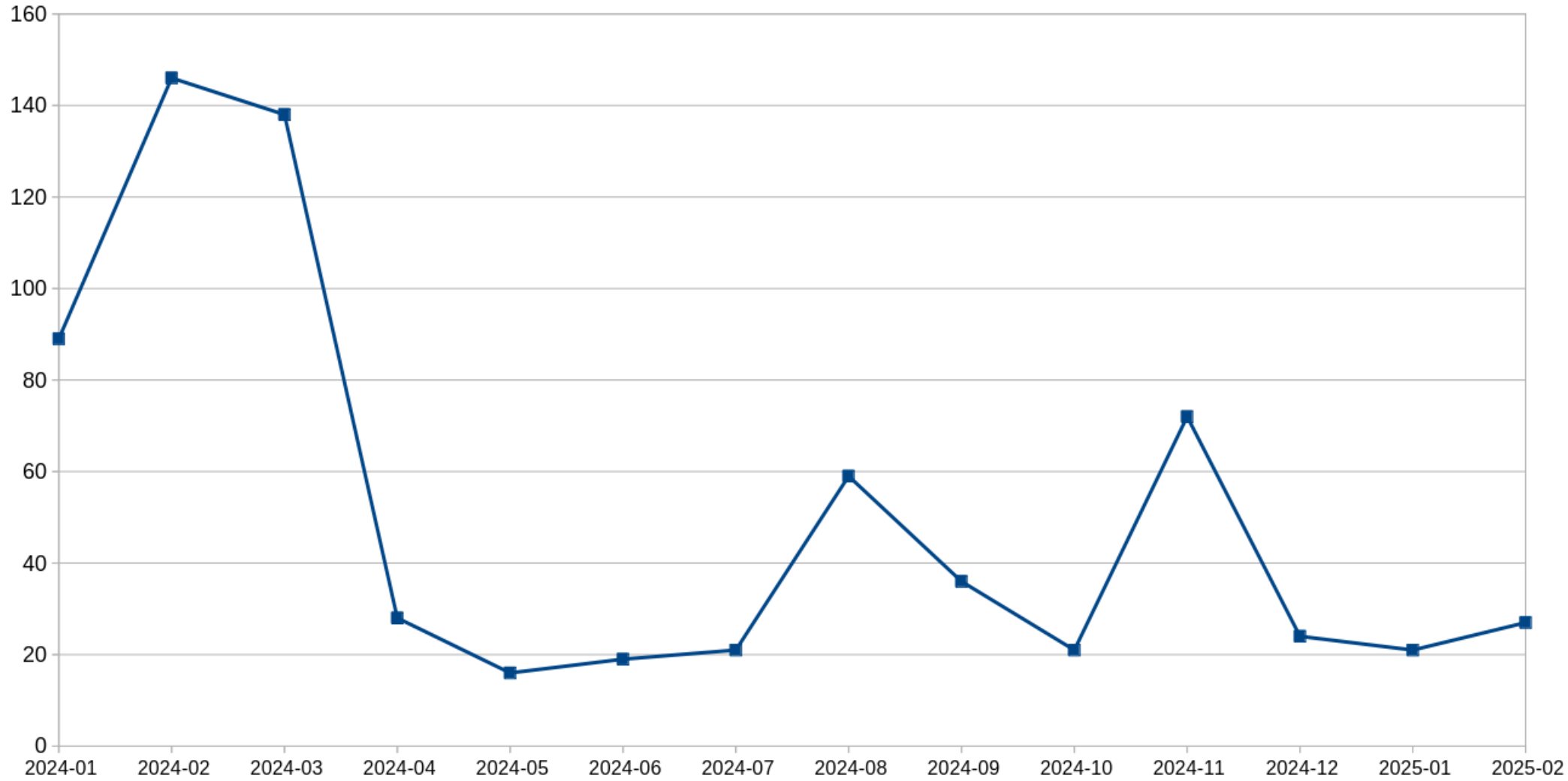
den Internet-Zugangsdienst „Foundation for Applied Privacy“, ZVR 1254016365, Floragasse 7, 1040 Wien

Name, Anschrift und Teilnehmerkennung der Teilnehmerin/des Teilnehmers, der/dem

am [REDACTED]

die IP Adresse 109.70.100.[REDACTED]

Abuse Emails pro Monat



Abuse Emails (2024)

- 669 Abuse Emails
- 12 Anfragen von Behörden

Behörden Anfragen 2024 (AT)

- BMI für INTERPOL: 1
- BMI C4 für USDOJ/FBI: 1
- Staatsanwaltschaft Wien für Rumänien: 1

Behörden Anfragen 2024

- Indien: 5
- Spanien: 2
- Frankreich: 1
- Deutschland: 1

Behörden kennen Tor (Indien)

1. Account Holder Information:

- Full name of the subscriber
- Residential/Business address
- Contact number(s)
- Email address(es)



2. Connection Details:

- Date and time the IP address was assigned to the account holder
- Duration of the assignment
- Any logs or metadata related to the connection

3. Middle Node IP Details (For Tor Exit Nodes):

- The IP address of the node/server that transmitted the request to the exit node IP on the specified dates and times.
- Any associated logs or metadata related to this communication

Anektoten

Der „Veteranen-Forum“ Fall 2022

Unbekannte Besucher:innen 2025

Fake RIPE DB Eintrag

Responsible organisation: PRIVACY

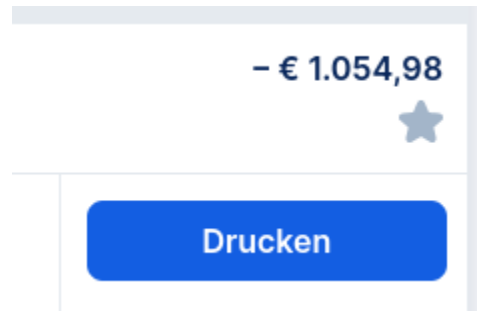
Abuse contact info: abuse@appliedprivacy.net



```
inetnum:          5.181.91.0 - 5.181.91.255
netname:          PRIVACY
mnt-routes:      PRIVACY-PROTECTION-COMPANY
org:             ORG-PA1214-RIPE
country:         US
admin-c:         PD9898-RIPE
tech-c:         PD9898-RIPE
status:         ASSIGNED PA
mnt-by:         PRIVACY-PROTECTION-COMPANY
created:         2019-06-15T20:34:34Z
last-modified:   2019-06-17T11:43:06Z
source:         RIPE
```


**Fake Bad-Relay Meldung
gegen uns**

Unautorisierte Lastschriften



Herausforderungen für das Tor-Netzwerk



Sign in to confirm you're not a bot

This helps protect our community. [Learn more](#)

Sign in

Access Denied

You don't have permission to access

Forbidden - ID: b998

Metaday 100



Metalab

283 subscribers

Subscribe



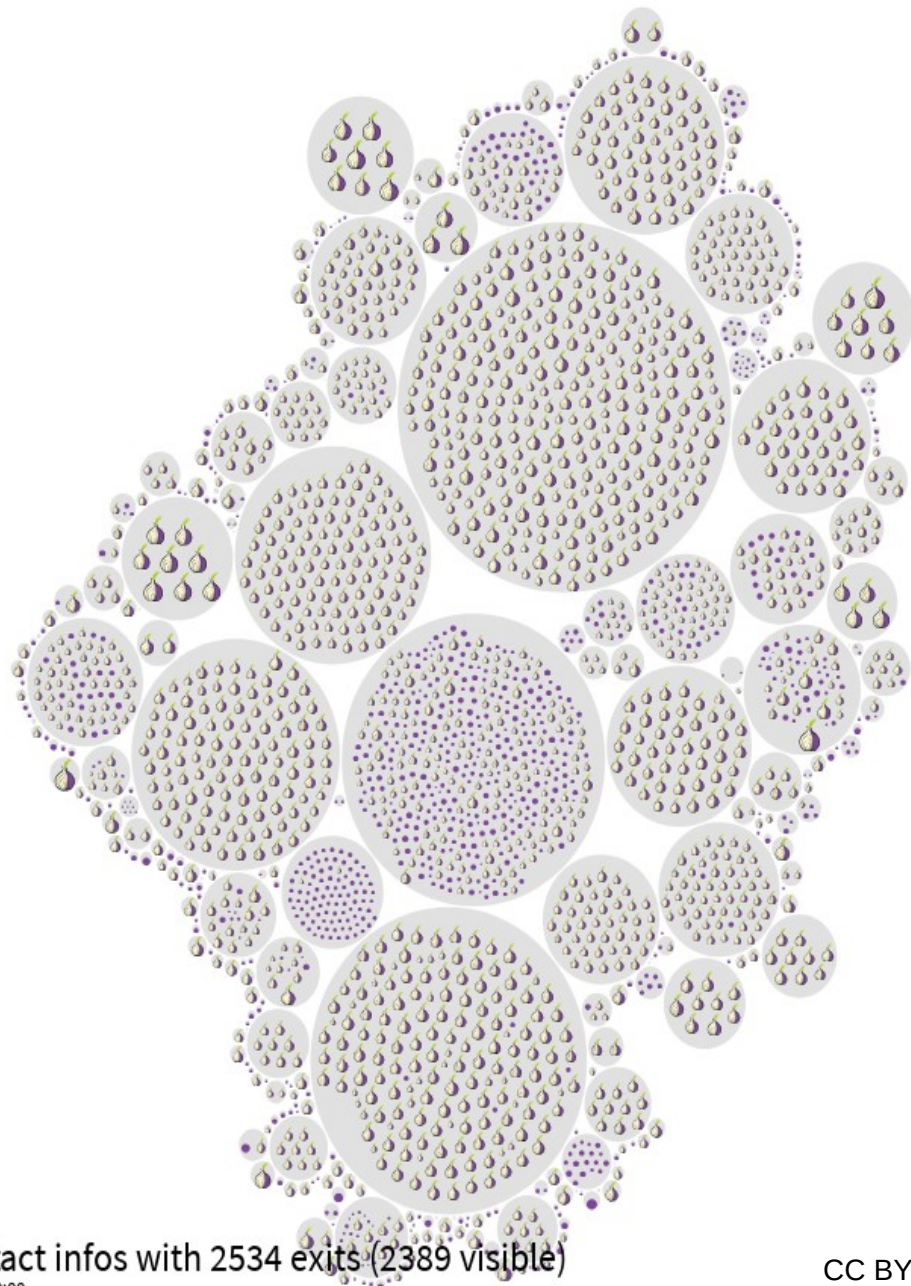
0



Share

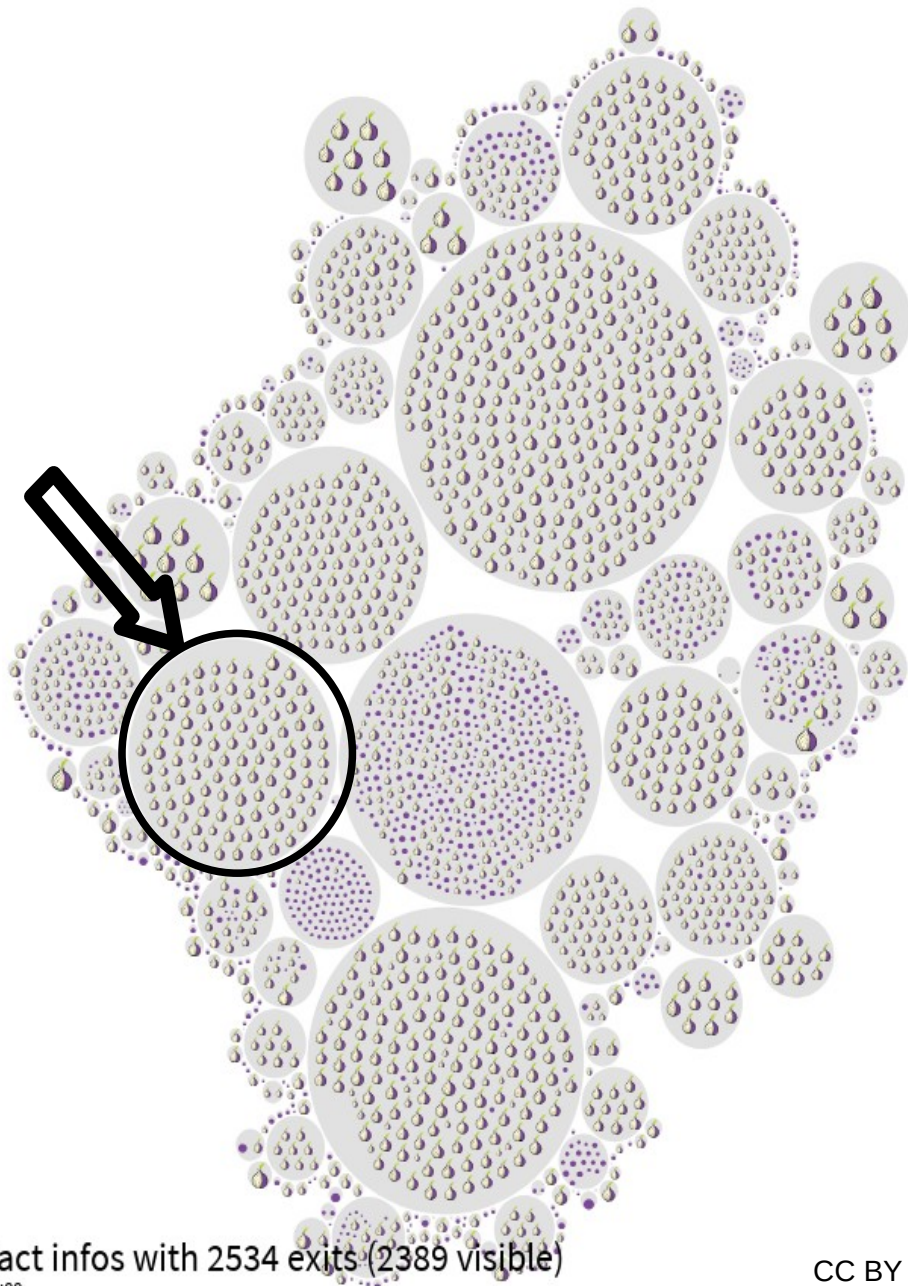
C-Tor
vs.





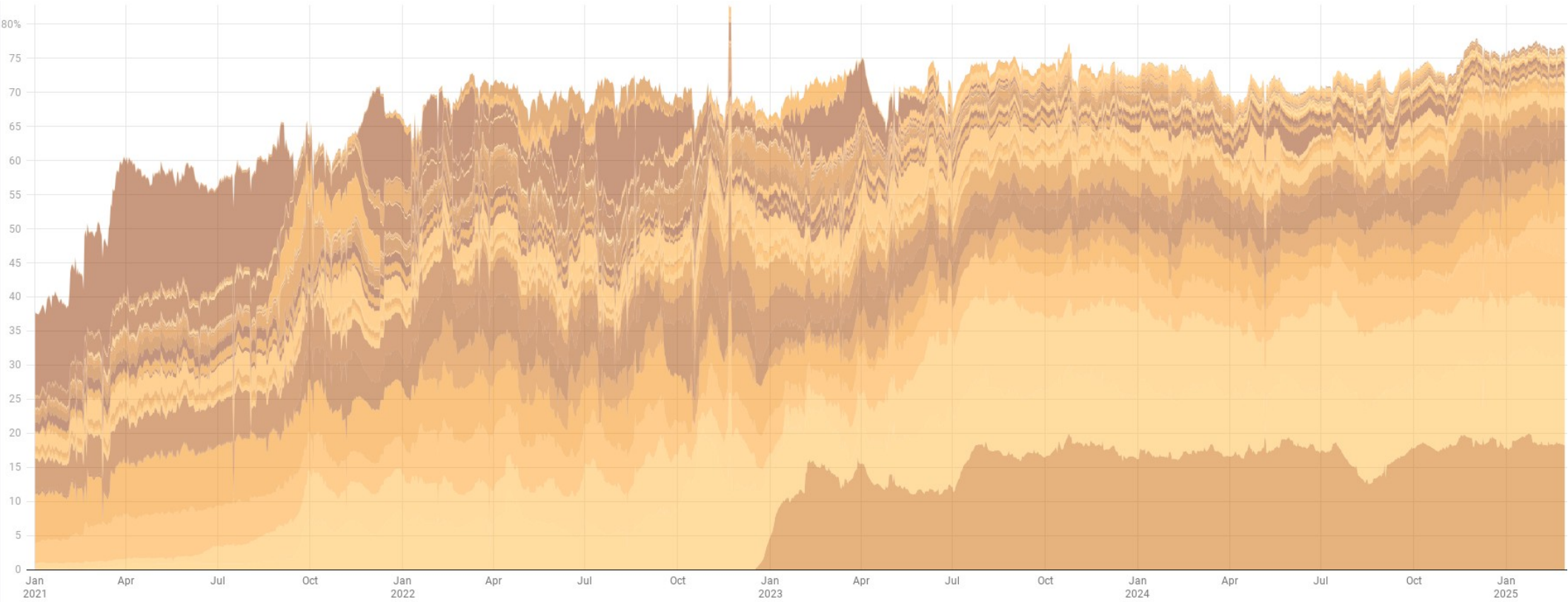
410 contact infos with 2534 exits (2389 visible)
2025-03-08 10:00:00

CC BY 3.0 US <https://metrics.torproject.org/bubbles.html#contact-exits-only>



410 contact infos with 2534 exits (2389 visible)
2025-03-08 10:00:00

Zuordenbare Tor Exit Kapazität



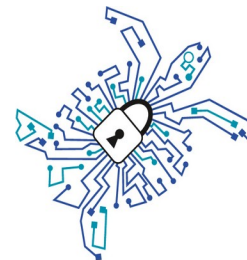
**Es braucht mehr
zuordenbare Tor Guard
Kapazität**

<https://applied-privacy.net>

 https://mastodon.social/@applied_privacy

 contact@appliedprivacy.net

Signal User: [applied_privacy_net.99](#)



Foundation for
Applied Privacy



STICKERS!!!!!!11