

INTRO

Who uses streaming services (Netflix, D+, etc.)?

Who is annoyed that other regions have more content?

Who knows about geo-unblocking (via VPN)?

Who knows *how* they do it?

STRANGER VPNS

**Investigating the Geo-Unblocking
Capabilities of Commercial VPN Providers**

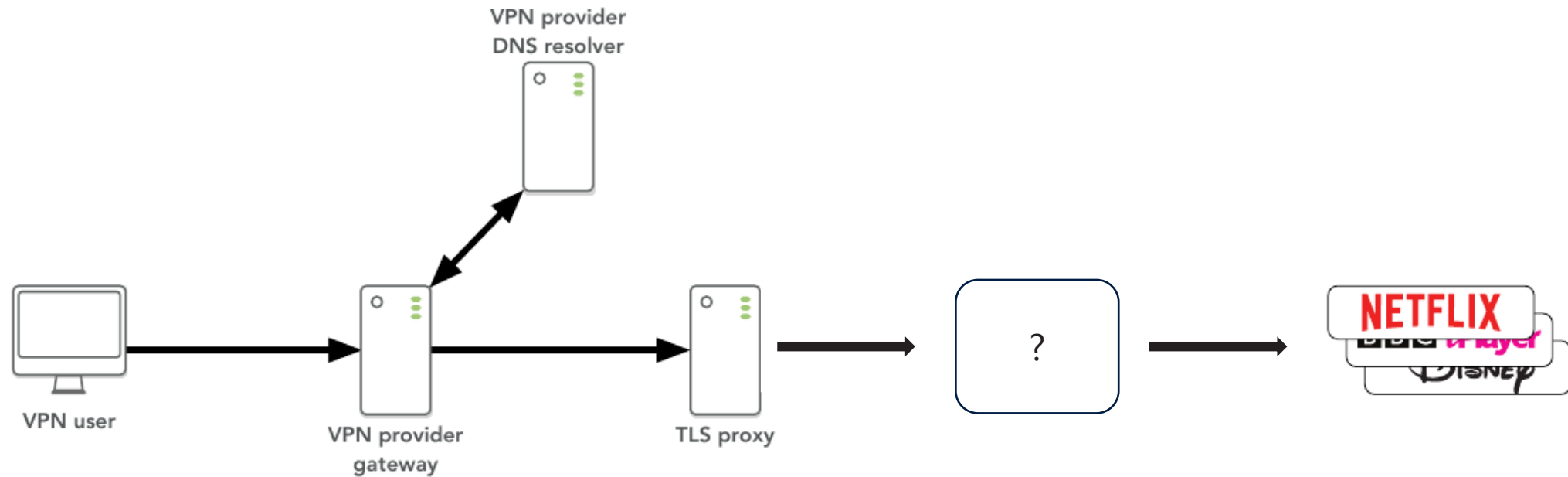
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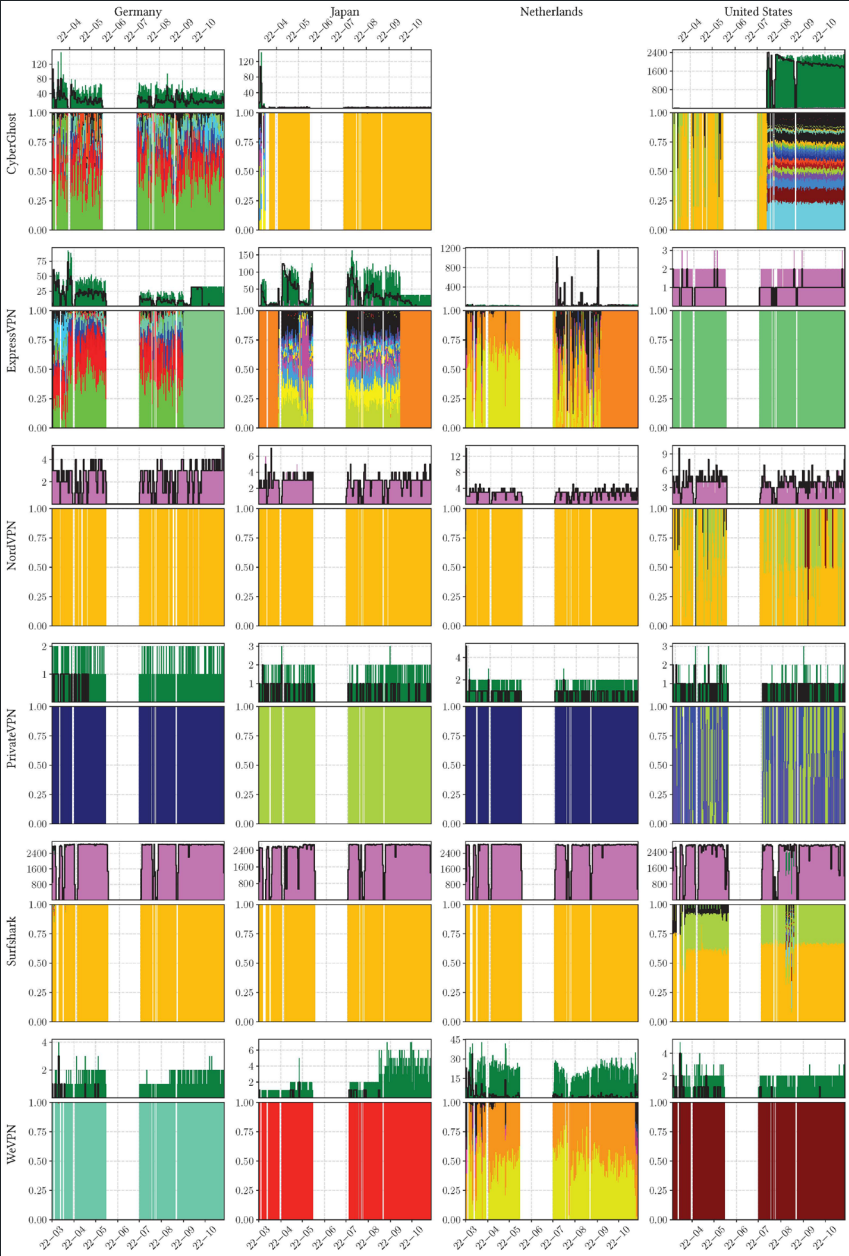
MEASURED REGIONS & PROVIDERS

Provider \ Vantage Point	US	DE	JP	NL
CyberGhost	✓	✓	✓	✗
ExpressVPN	✓	✓	✓	✓
NordVPN	✓	✓	✓	✓
PrivateVPN	✓	✓	✓	✓
Surfshark	✓	✓	✓	✓
WeVPN	✓	✓	✓	✓

INFERRED GEO-UNBLOCKING SYSTEM



RESULTS



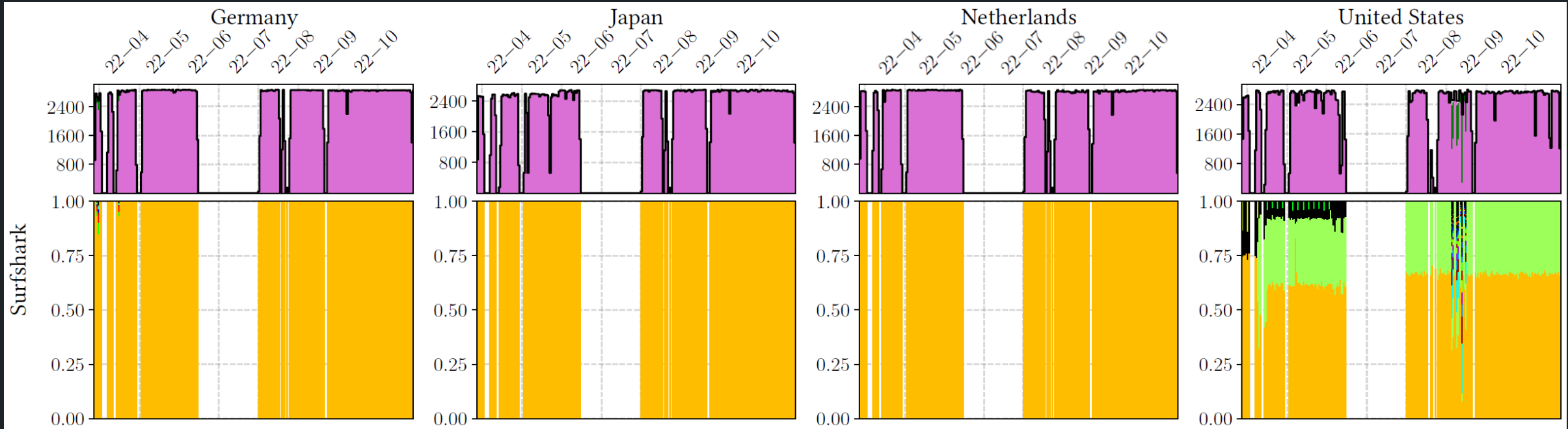
RESULTS - SURFSHARK

Top Graph: Unique IPs per day

Green → IPv4

Pink → IPv6

Black line → IP churn (fresh IPs/day)



Bottom graph: ASNs per day (relative)

Same color → same ASN

Black color ↴

ASNs outside of top 50 observed ASNs

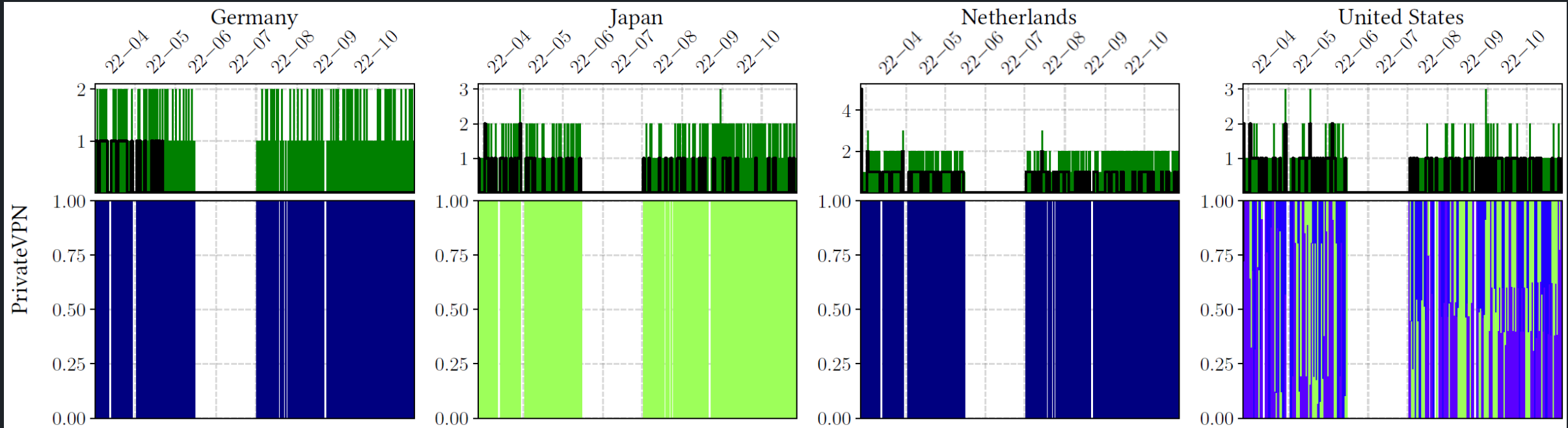
RESULTS - PRIVATEVPN

Top Graph: Unique IPs per day

Green → IPv4

Pink → IPv6

Black line → IP churn (fresh IPs/day)



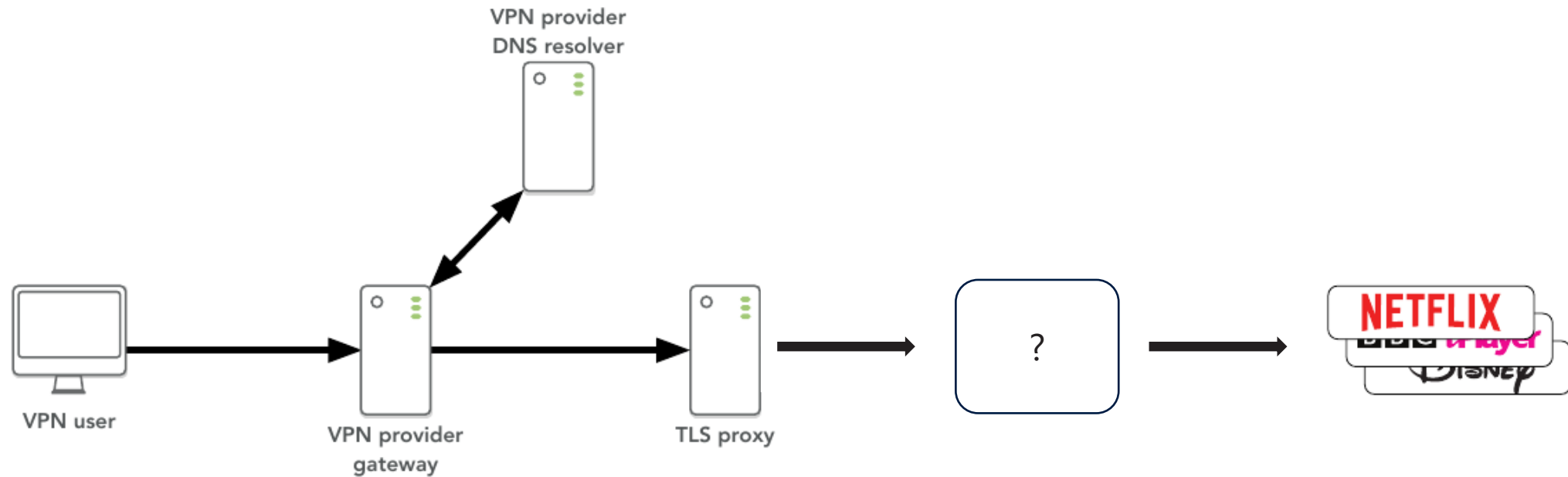
Bottom graph: ASNs per day (relative)

Same color → same ASN

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ASNs outside of top 50 observed ASNs

INFERRED GEO-UNBLOCKING SYSTEM



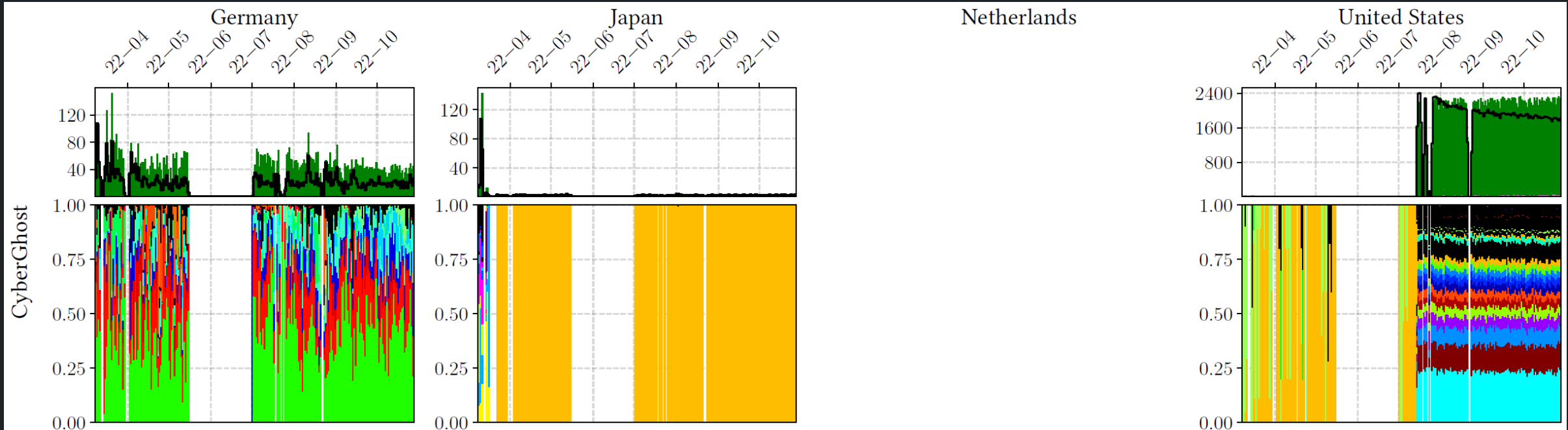
RESULTS - CYBERGHOST

Top Graph: Unique IPs per day

Green → IPv4

Pink → IPv6

Black line → IP churn (fresh IPs/day)



Bottom graph: ASNs per day (relative)

Same color → same ASN

Black color ↴

ASNs outside of top 50 observed ASNs

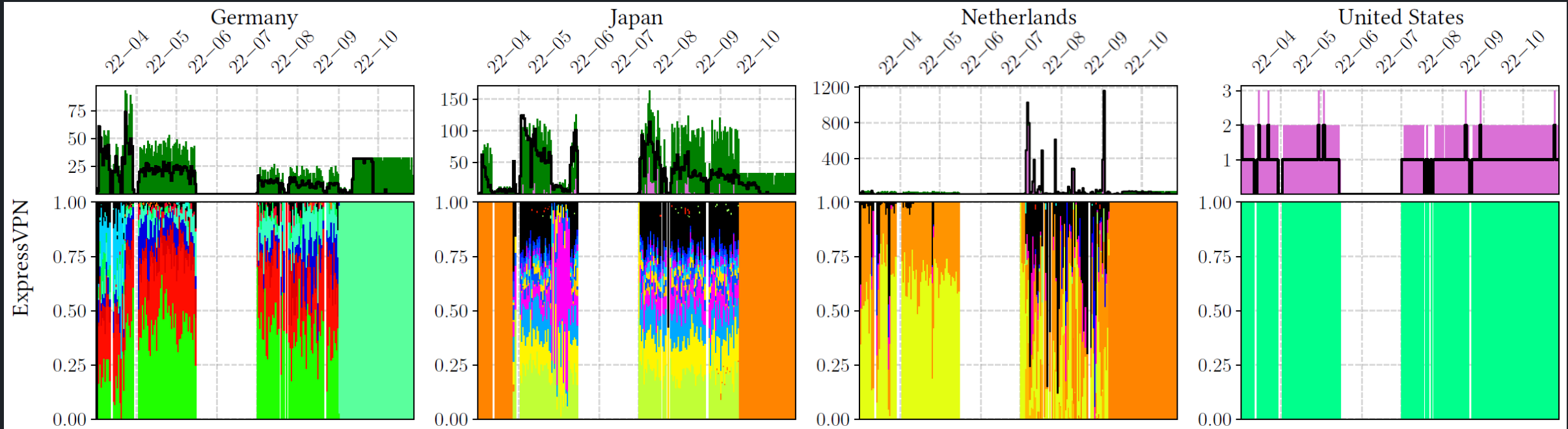
RESULTS - EXPRESSVPN

Top Graph: Unique IPs per day

Green → IPv4

Pink → IPv6

Black line → IP churn (fresh IPs/day)



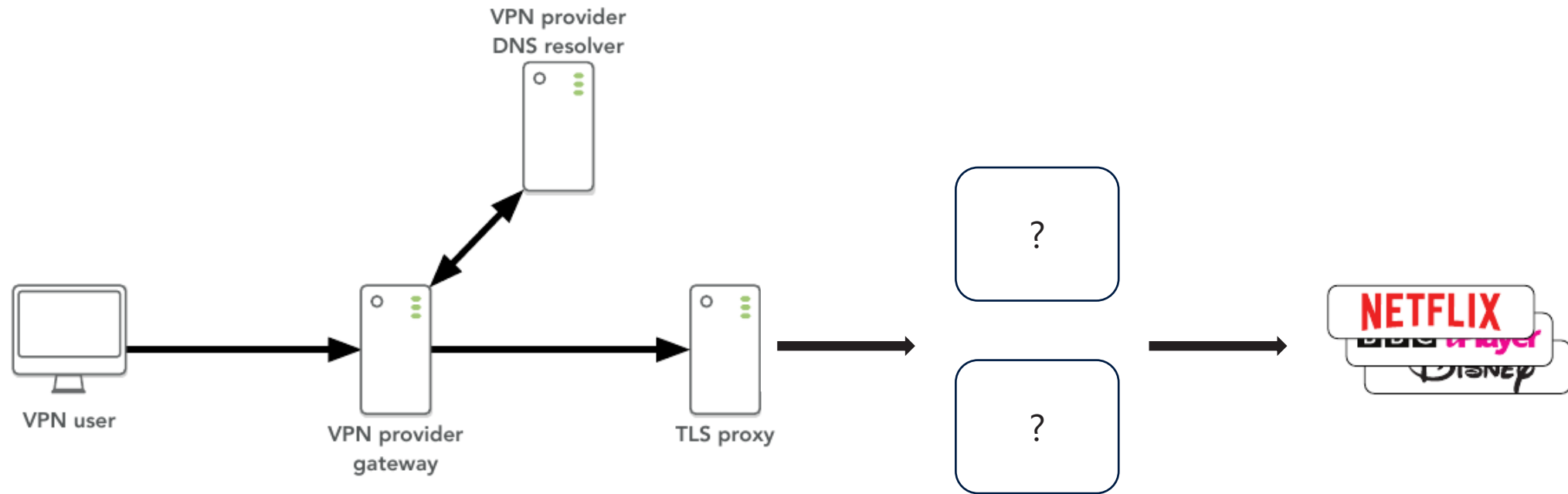
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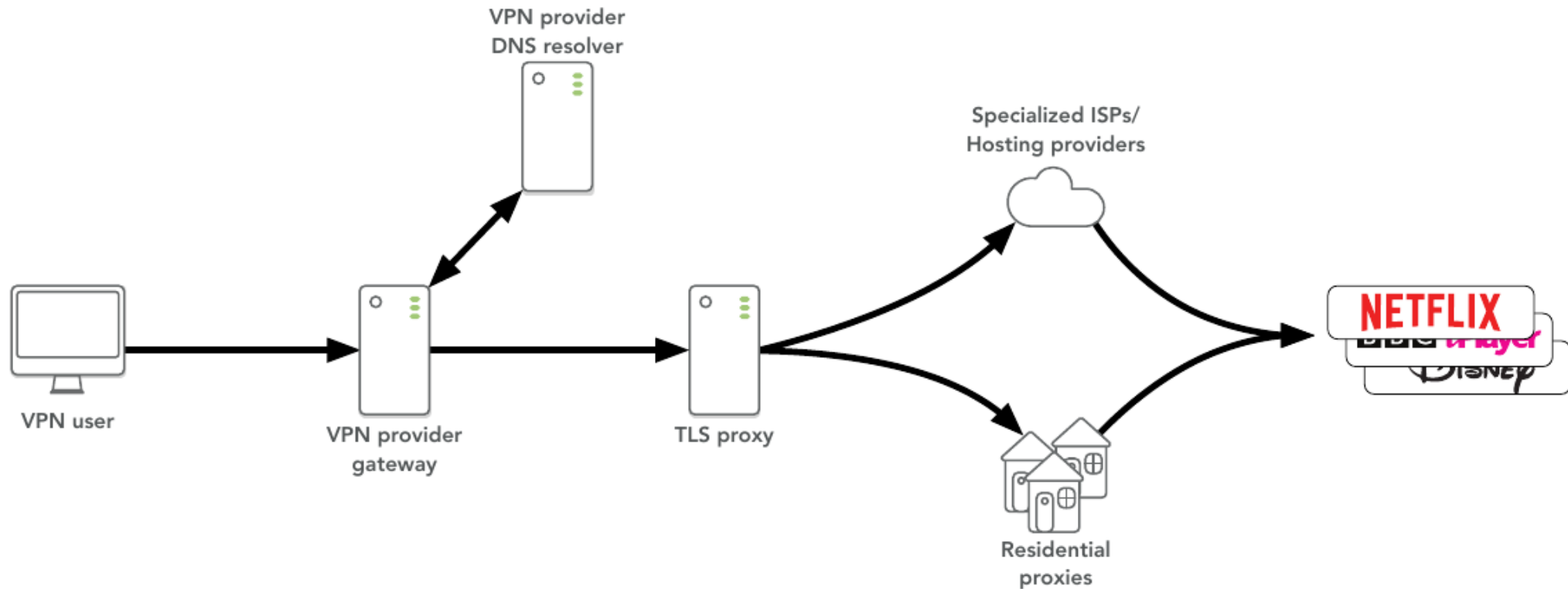
Black color ↴

ASNs outside of top 50 observed ASNs

INFERRED GEO-UNBLOCKING SYSTEM



INFERRED GEO-UNBLOCKING SYSTEM



THE NUMBERS

After ~8 months of data collection:

IPv4: 214.993

IPv6: 1.925.327

ASNs: > 2.000

RESIDENTIAL PROXIES

Country	AS	<i>n</i>
Germany	Deutsche Telekom (AS3320)	2,412
	Vodafone (AS3209)	1,143
Japan	NTT (AS4713)	1,052
	Softbank (AS17676)	724
Netherlands	Vodafone Libertel (AS33915)	347
	KPN (AS1136)	319
United States	Comcast (AS7922)	48,288
	AT&T (AS7018)	24,306

PLEASE TALK TO ME IF YOU...

Know where these residential proxies come from.

Have more questions about the paper.

Just want to talk.

FULL PAPER AND VIDEO PRESENTATION

Free access if you access through the QR code



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