Anonymity Report

What is This Report
This is a regular report published by Spur (https://spur.us) on the state and trends of anonymization infrastructure online. We generate this report by evaluating changes to our anonymous infrastructure data over time. This is intended to be useful for security researchers and analysts. It is also a plug for the work we do to prevent fraud and improve security for our clients. We offer enrichments on VPN and Proxy activity as a product through our IP Context API.

Our Findings
As our opening report, this is an introduction to the general size and scope of the anonymization space based on 3 months of activity. Attackers have evolved their tradecraft and traditional intelligence sources are becoming obsolete. Anonymous infrastructure is a key component to fraud and cyber-attacks. Adversaries are leveraging quasi-legitimate commercial services to hide their activity and blend in with real users. There are hundreds of services that span millions of IP addresses. Some services, like commercial VPNS, use data-centers and are found in (but not limited to) more abuse tolerant hosting providers. Some services, like residential proxies, route their traffic through unwitting phones and laptops and are found primarily in business and residential IP space. We find information about all of these exit points to be under-represented in the threat-intelligence space. The concentration of users on each service can vary greatly. Similarly, malicious behavior gravitates towards certain services over others.

Contact us
Our clients use us to identify transactions for higher scrutiny, prevent wasted analytic time chasing proxies, identify proxies and malware in their internal networks, track threat-actor tradecraft, filter geo-fraud, identify VPN operators, enrich security logs, and more. To learn more, schedule a demo or inquire about our offerings, please contact sales@spur.us. or visit our website.

	Type	Services Monitored	IPs per Service	ASNs per Service	Countries per Service	Avg. Users per IP
1.	PROXY	14	4,663,310.36	10,702.29	170	117.48
2.	VPN	342	1,523.8	37.13	19.86	30.65

1 - 2 / 2 ‹ ›

Server Locations Worldwide

1   7,008,544

SPUR
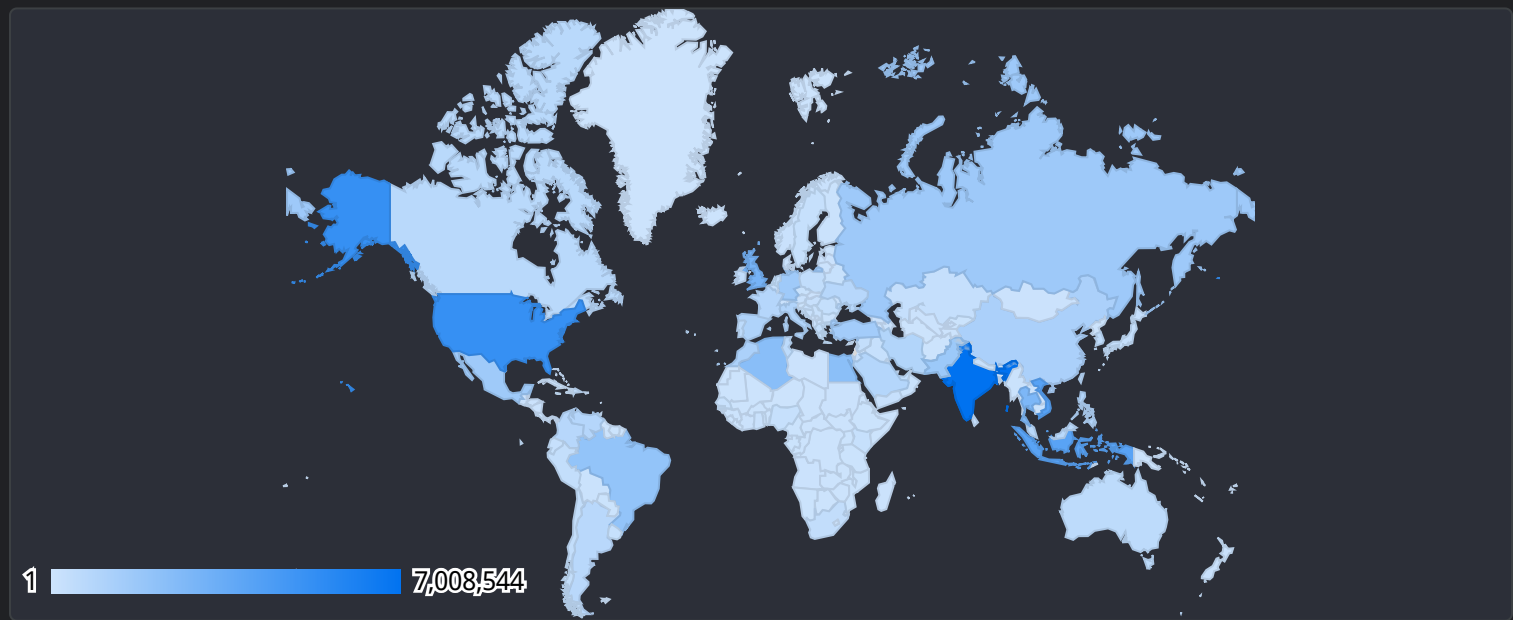
Provider Overview

	service	Type	ASNs	Countries	Avg. Users per IP	Unique IPs ▾
1.	LUMINATI	PROXY	30,185	231	90.6	26,257,880
2.	OXYLABS	PROXY	21,882	199	191.95	15,249,483
3.	AWM	PROXY	17,734	233	122.1	10,317,793
4.	PROXYRACK	PROXY	17,382	229	93.28	6,393,973
5.	GEOSURF	PROXY	15,304	206	187.3	3,506,313
6.	SPIDER	PROXY	10,428	213	141.16	1,752,912
7.	SHIFTER	PROXY	9,476	224	127.25	744,334
8.	GENERIC MALWARE	PROXY	9,923	208	11.12	543,725
9.	SMARTPROXY	PROXY	10,047	213	164.56	397,134
10.	PROXYLAND	PROXY	2,802	179	318.11	81,316
11.	PURE	VPN	505	150	8.36	73,656
12.	VYPR	VPN	91	75	1.51	71,662
13.	VPNGATE	VPN	1,013	103	26.47	50,480
14.	HOTSPOT	VPN	980	148	86.22	45,079

1 - 33 / 33 ‹ ›

Daily New IPs

VPN IP Space

	VPN Services Tracked	Total VPN IPs
	342	521,138
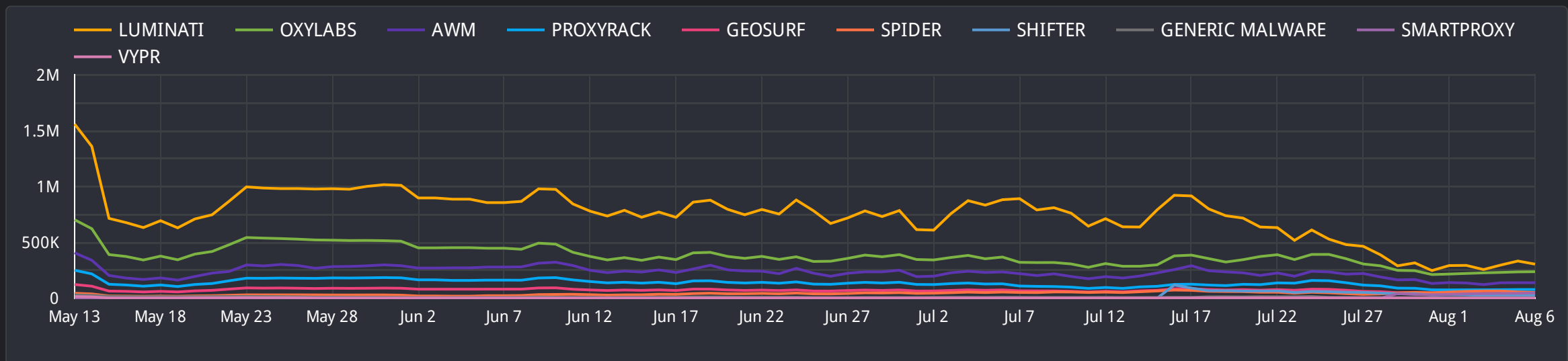
Top Unique IPs

	service	ASNs	Countries	Avg. Users per IP	Unique IPs ▼
1.	PURE	505	150	8.36	73,656
2.	VYPR	91	75	1.51	71,662
3.	VPNGATE	1,013	103	26.47	50,480
4.	HOTSPOT	980	148	86.22	45,079
5.	IVACY	285	80	5.22	34,049
6.	NORD	578	114	46.04	19,296
7.	EXPRESS	506	138	42.53	14,939
8.	CYBER GHOST	193	79	6	14,431
9.	PIA	283	81	58.83	12,622
10.	TUNNELBEAR	176	59	29.15	12,401

1 - 10 / 22 ‹ ›

VPN IPs per ASN

- M247 Ltd — 11.4%
- PHMGMT-AS1 — 10.4%
- DIGITALOCEAN-ASN — 7.8%
- PARAD-40-ASN
- TOTAL-SERVER-SOLUTIONS
- Korea Telecom
- Datacamp Limited
- UK-2 Limited
- ASN-QUADRANET-GLOBAL
- AIS Fibre
- SOFTLAYER
- Voxility LLP
- StackPath LLC
- CLOUDFLARENET
- others — 47.4%
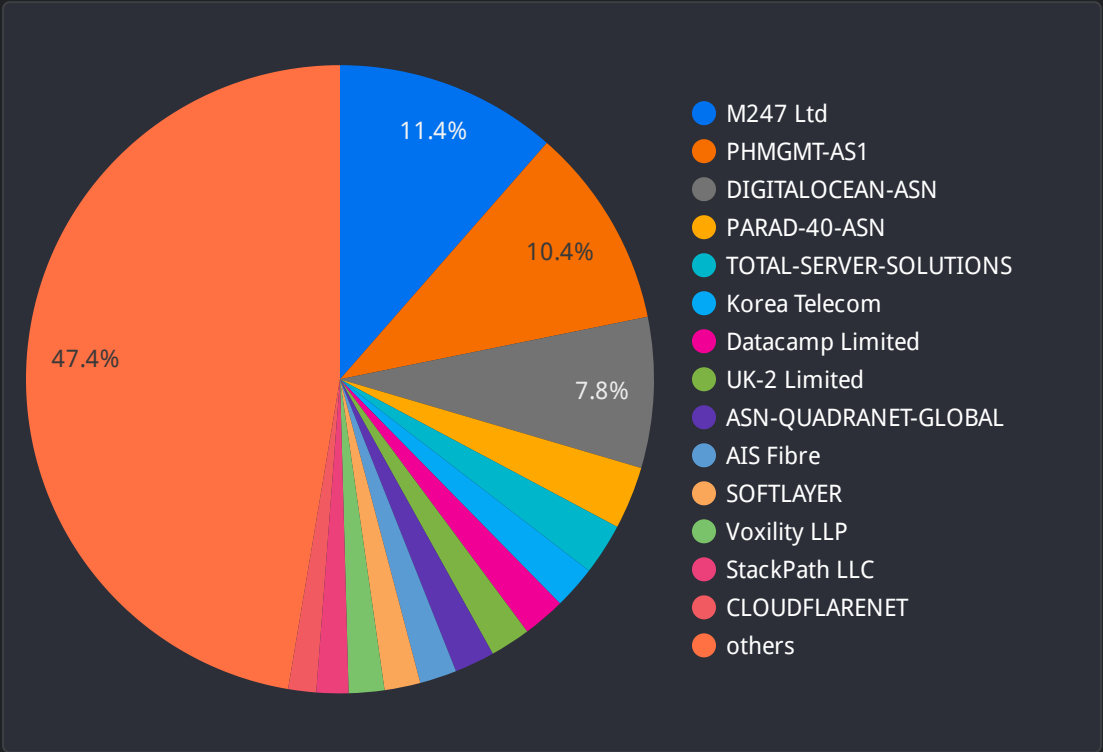
Distinct VPN Services per ASN

Legend: Unique VPN Services

Y-axis: 0, 50, 100, 150, 200

X-axis categories: OVH SAS, DIGITALOCEAN-ASN, AS-CHOOPA, M247 Ltd, Online S.a.s., AMAZON-02, SOFTLAYER, Iomart Cloud Services Limited, Hetzner Online GmbH, COGENT-174
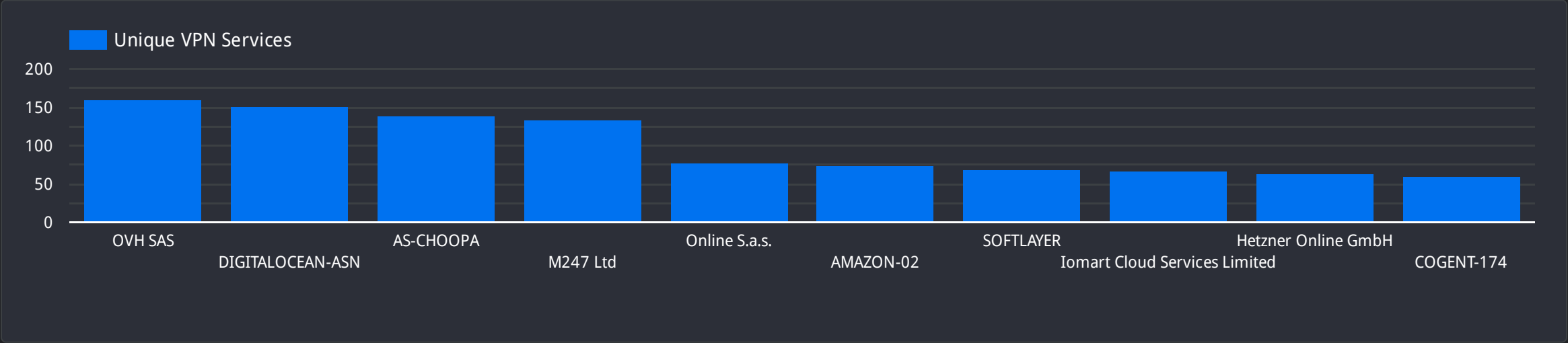
Intersection with Scan Activity

GREYNOISE

Malicious Scanning Observed

Legend:
- TUNNELBEAR_VPN
- HIDE_MY_ASS_VPN
- NORD_VPN
- TOUCH_VPN
- PIA_VPN
- EXPRESS_VPN
- PROTON_VPN
- VPNGATE_VPN
- IPVANISH_VPN
- MULLVAD_VPN
- WINDSCRIBE_VPN
- others

Pie chart values: 38%, 24.5%, 6.9%, 6.2%, 4.9%, 7.4%
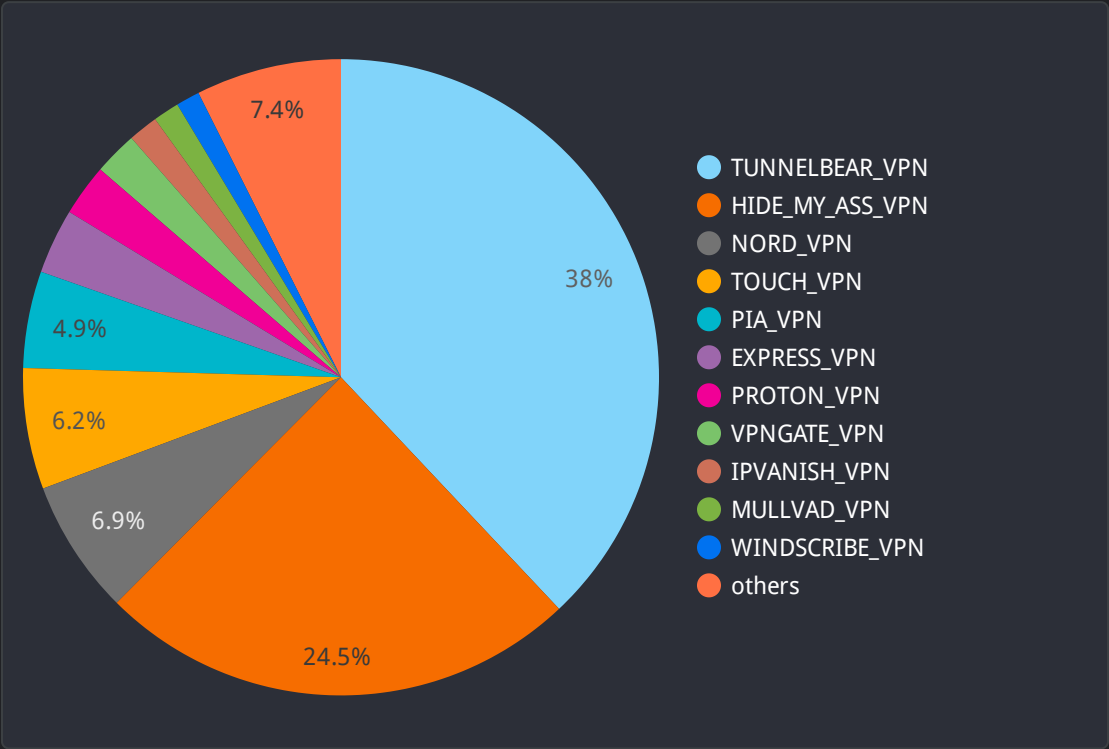
	CVE	VPN IPs ▾
1.	CVE-2017-0144	408
2.	CVE-2018-14847	25
3.	CVE-2008-4250	17
4.	CVE-2019-8950	1
5.	CVE-2020-5902	1
6.	CVE-2017-17215	1
7.	CVE-2020-11651	1
8.	CVE-2020-11652	1

1 - 8 / 8

VPN Service Performing Scanning

Treemap labels: NORD_VPN, VYPR_VPN, EXPRESS_VPN, HIDE_MY_ASS_VPN, PIA_VPN, PURE_VPN, SURFSHARK_VPN, VPNGATE_VPN, HOTSPOT_VPN, CYBER_GHOST_VPN, TOUCH_VPN, TUNNELBEAR_VPN, GECKO_VPN, IPVANISH_VPN, ZORRO_VPN, PIG..., BR..., P..., TOR_GUAR..., TURBO_VPN, VPNU..., WAR..., LUNA_..., G..., DROC..., THU..., VI..., P..., WINDSCRIB..., SAVAGE_VPN, OPE..., VPN_..., T..., S..., PROTON_VPN, IVACY_VPN, MULL..., A..., A..., M..., VP..., G..., STRO..., HIDEME_..., IPRE..., S..., J..., Z..., F..., NAMECH..., T..., F..., A..., Z..., C..., B...
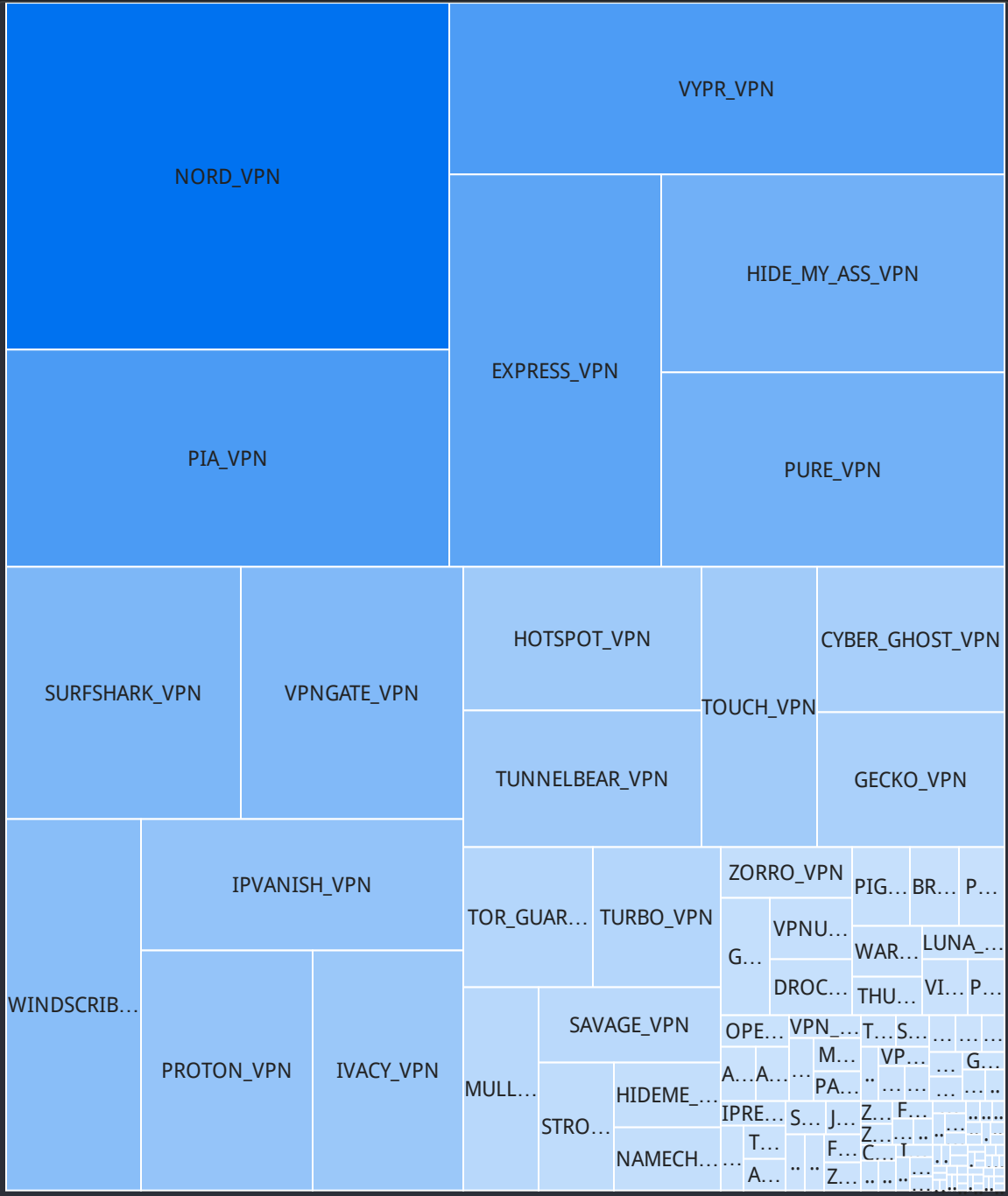
Proxies are Everywhere

Proxy Services Tracked	Total Proxy IPs
14	49,030,734

The Unknown Threat

Residential and malware proxies can be found in most networks around the world. These services utilize integrated SDKs in mobile and desktop applications to source proxy exit points. These services provide no outward evidence that they are proxying traffic. Proxies outnumber VPNs in every way. The chart on the right demonstrates how many distinct proxy IPs are in every country compared to VPN IPs.

	service	ASNs	Countries	Avg. Users per IP	Unique IPs ▼
1.	LUMINATI	30,185	231	90.6	26,257,880
2.	OXYLABS	21,882	199	191.95	15,249,483
3.	AWM	17,734	233	122.1	10,317,793
4.	PROXYRACK	17,382	229	93.28	6,393,973
5.	GEOSURF	15,304	206	187.3	3,506,313
6.	SPIDER	10,428	213	141.16	1,752,912
7.	SHIFTER	9,476	224	127.25	744,334
8.	GENERIC MALWARE	9,923	208	11.12	543,725
9.	SMARTPROXY	10,047	213	164.56	397,134
10.	PROXYLAND	2,802	179	318.11	81,316

1 - 10 / 14 ‹ ›

Fortune 100 Companies with Proxies Present
56

Network Registrants Containing Proxies
425,900

Average IPs per Service
4,663,310.36

VPN/Proxy Comparison by Country

	Anonymity Type / Distinct IPs	
Country Code	PROXY	VPN
IN	6,990,291	18,253
US	4,973,989	170,026
VN	4,010,138	3,510
ID	3,958,754	4,038
GB	2,922,406	39,700
TH	2,711,397	14,292
DZ	2,313,228	666
EG	2,237,093	1,401
BR	1,938,541	3,642
PK	1,631,286	1,140
RU	1,591,225	5,419
MX	1,550,268	2,258
DE	1,518,615	23,106
TR	1,418,463	1,908
CN	1,147,450	828
MA	1,089,322	203
ES	983,945	2,813
IT	917,590	4,644
IR	885,309	222
PH	855,666	2,743
SA	829,373	2,226
FR	778,560	13,127