Dataplane.org

The Dataplane.org Sensor Network: Operation and Analysis

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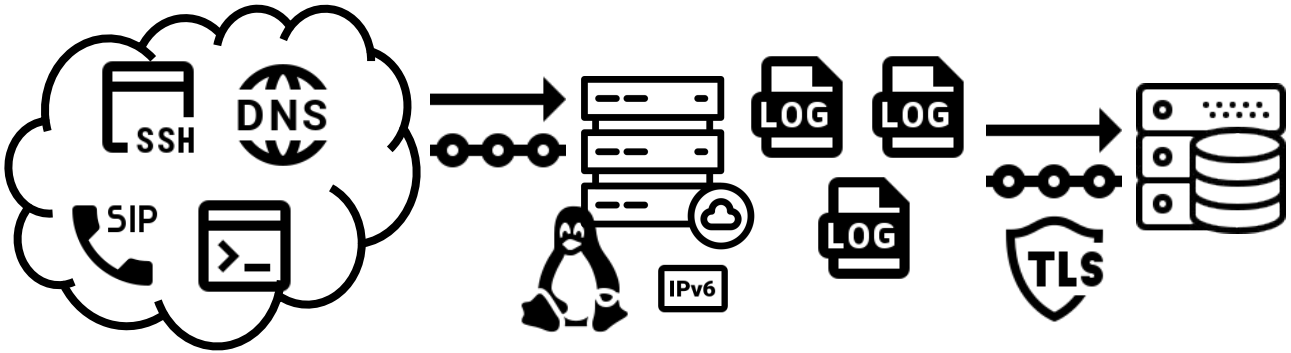
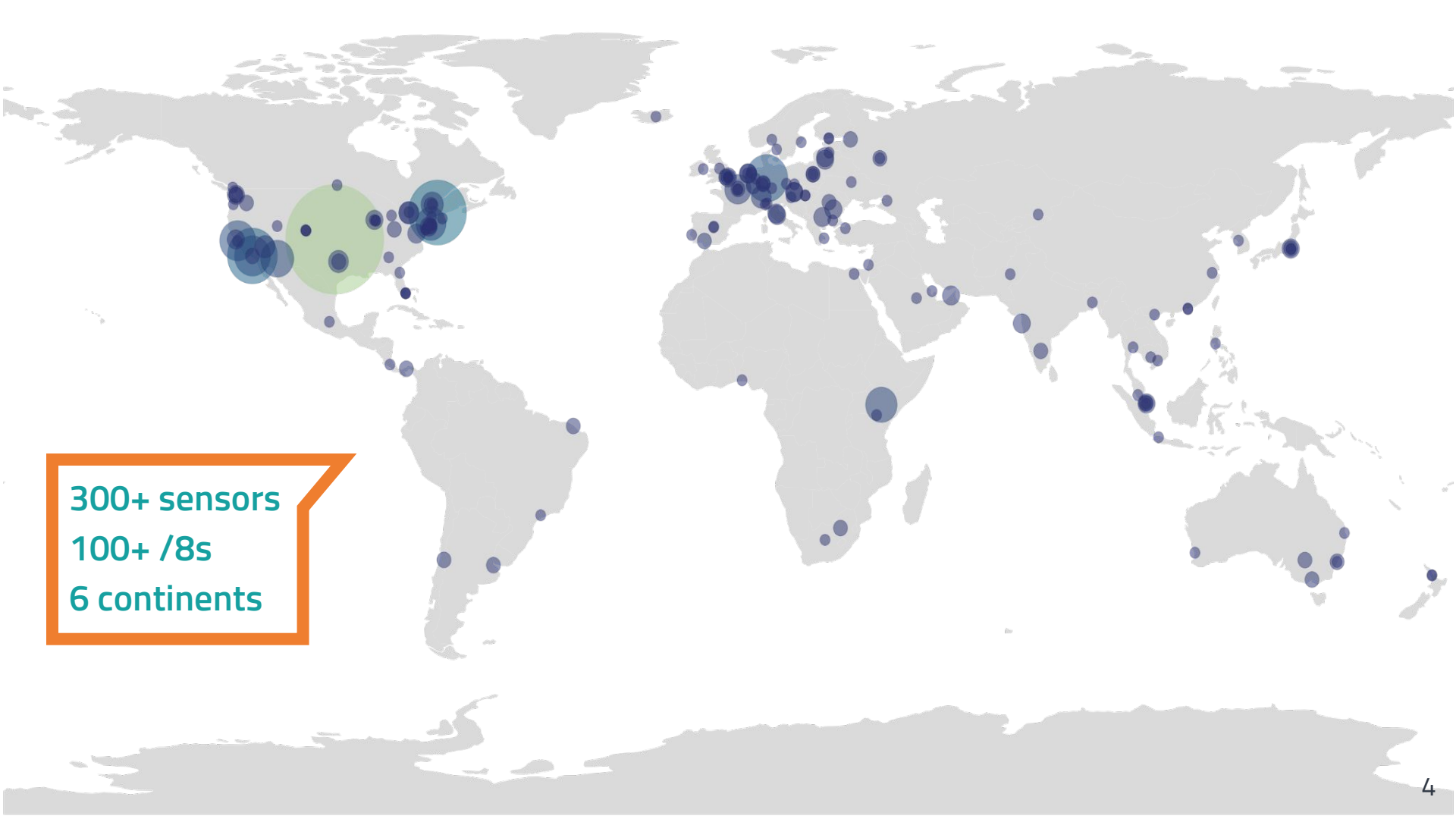
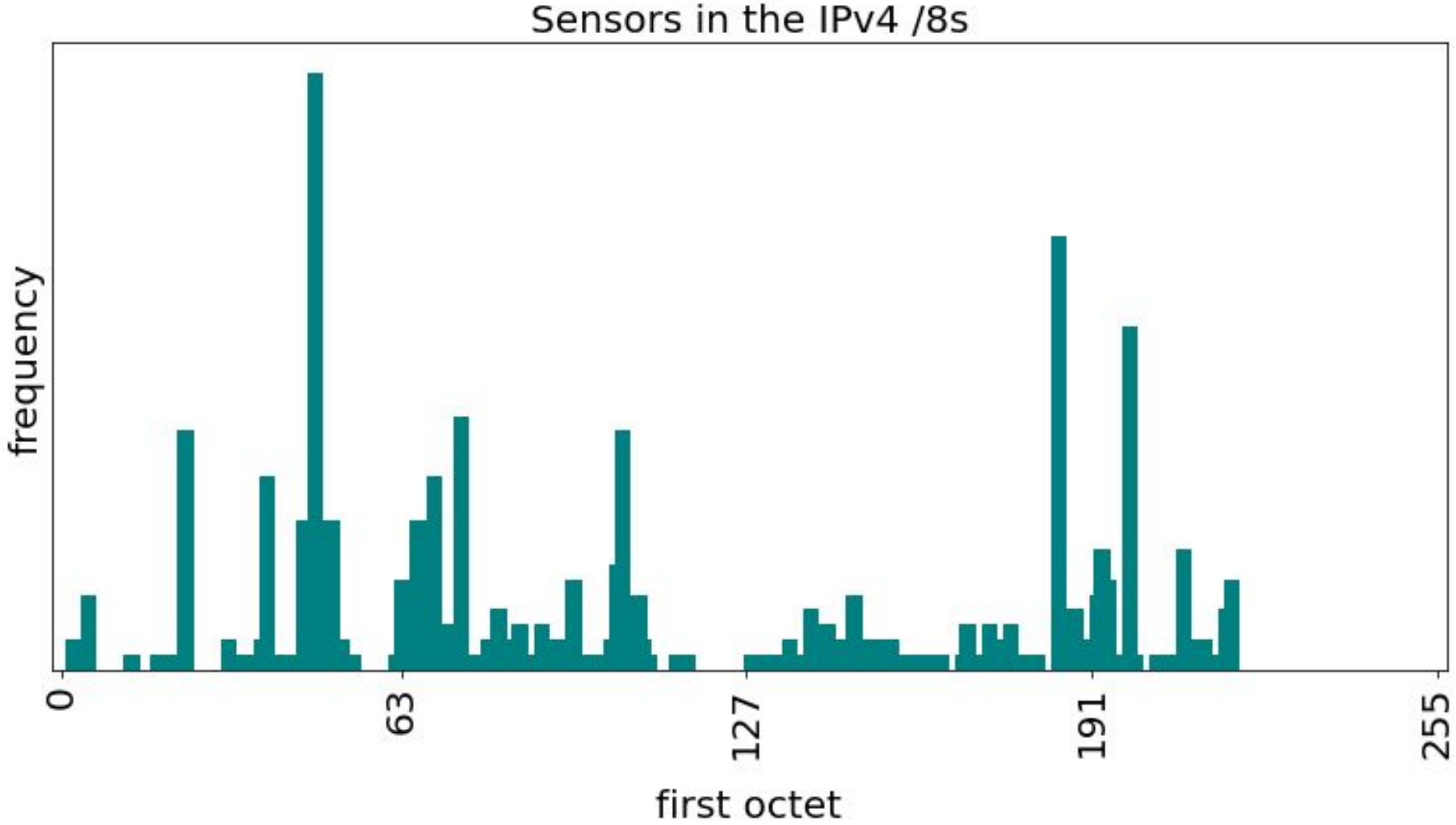
Vantage Points

- Sensors - listeners
- Probes - senders




300+ sensors
100+ /8s
6 continents


Sensors in the IPv4 /8s
frequency
0
63
127
191
255
first octet

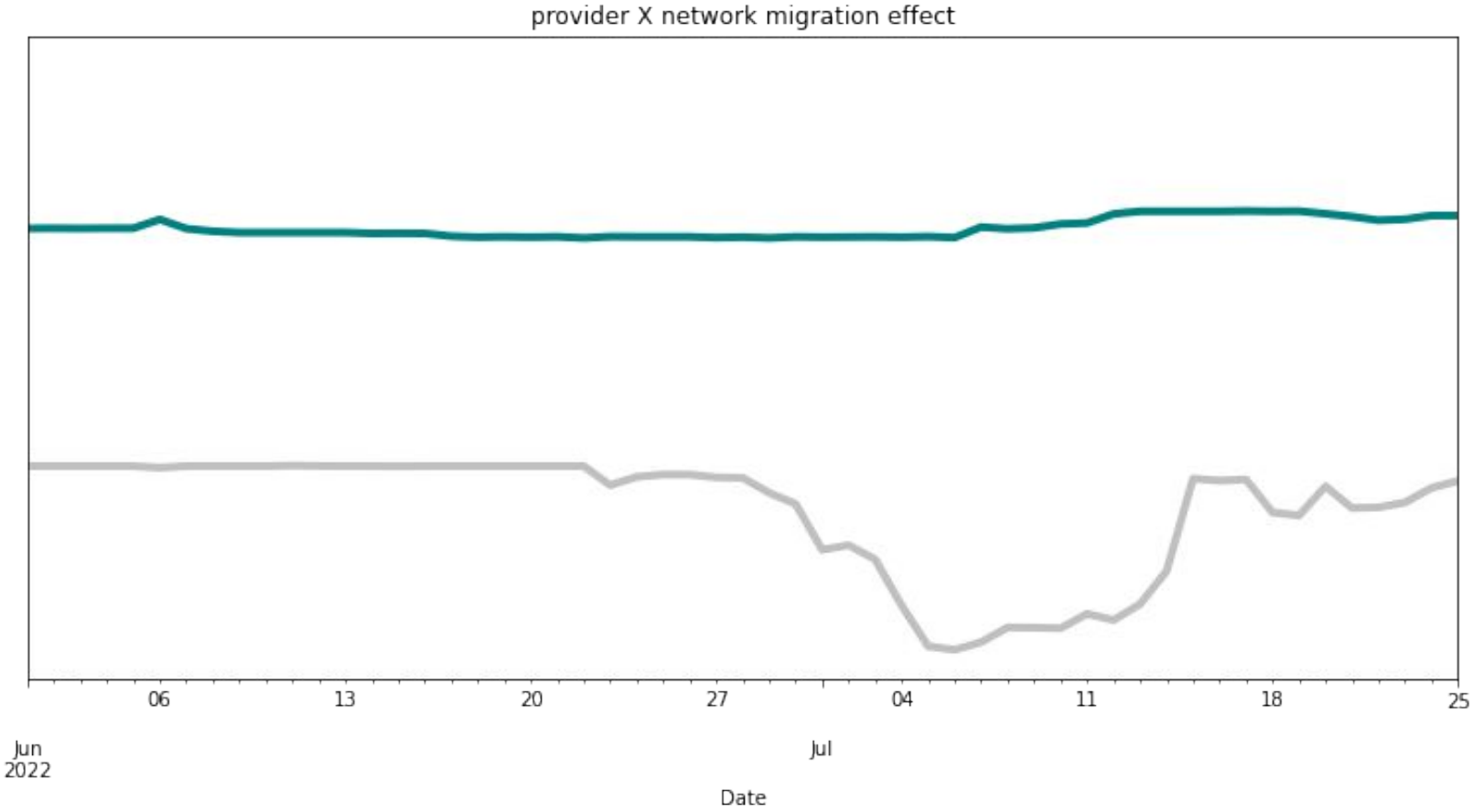
Hosting providers

- ~100 different hosting providers
- OpenVZ, KVM, dedicated servers, others
- Lots of logins and payment agreements
- Cost varies from <$10/year to >$20 month
- Stability, support, and practices vary widely

IP re-addressing events in 2021

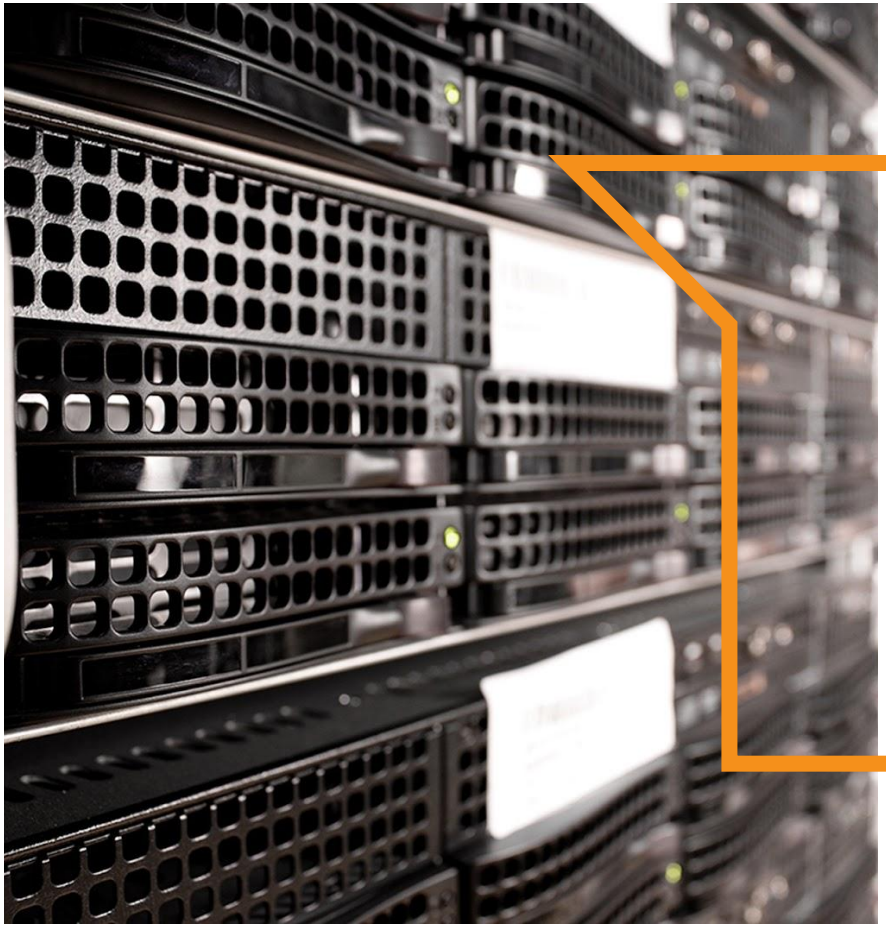
- 70% - never
- 12% - once
- 15% - twice
- 2% - three times
- <1% but not zero - four times

Host Provider Uncertainty



Sensing techniques

- Passive pcap or firewall log-based
- Custom or standard listeners
- Local system handling versus tunneled



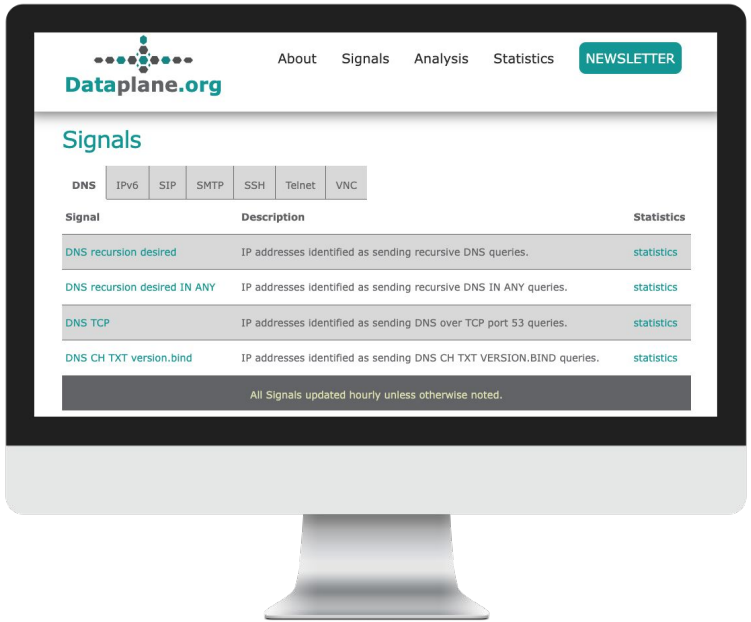
Sensor Management

ANSIBLE

debian

Signals

- Not block lists
- Minimal daemons
- Logs to syslog
- Signals (partial list)
  - DNS
  - SIP
  - SSH
  - Telnet
  - VNC



SSH Signal

SSH Client Connections

# ASN	ASname	ipaddr	lastseen	category
803	SASKTEL	71.17.149.4	2022-09-27 05:28:05	sshclient
88	PRINCETON-AS	128.112.138.144	2022-09-27 13:48:37	sshclient

SSH Password Authentication

# ASN	ASname	ipaddr	lastseen	category
3	MIT-GATEWAYS	18.18.245.11	2022-09-22 10:58:53	sshpwauth
1257	TELE2	83.249.223.18	2022-09-26 02:06:11	sshpwauth

SSH ID/Password Pairs

# category	id	password
sshidpw	admin	pa$$w0rd15
sshidpw	centos	qwerty1234

DNS Signal

DNS Recursion Desired

# ASN	ASname	ipaddr	lastseen	category
4134	CHINANET-BACKBONE	112.102.204.2	2022-09-25 10:13:24	dnsrd
13036	TMOBILE-CZ T-Mobile Czech Repu	46.13.73.47	2022-09-28 17:19:48	dnsrd

DNS Recursion Desired IN ANY

# ASN	ASname	ipaddr	lastseen	category
18881	TELEFONICA BRASIL S.A	177.16.64.10	2022-09-22 02:53:24	dnsrdany
203451	K-Telecom-Network K-telekom LL	185.15.37.229	2022-09-25 21:09:46	dnsrdany

DNS TCP

# ASN	ASname	ipaddr	lastseen	category
1103	SURFNET-NL SURF B.V.	145.102.6.125	2022-09-28 15:58:26	dnstcp
3214	XTOM xTom GmbH	62.133.33.33	2022-09-26 08:00:51	dnstcp

DNS CH TXT version.bind

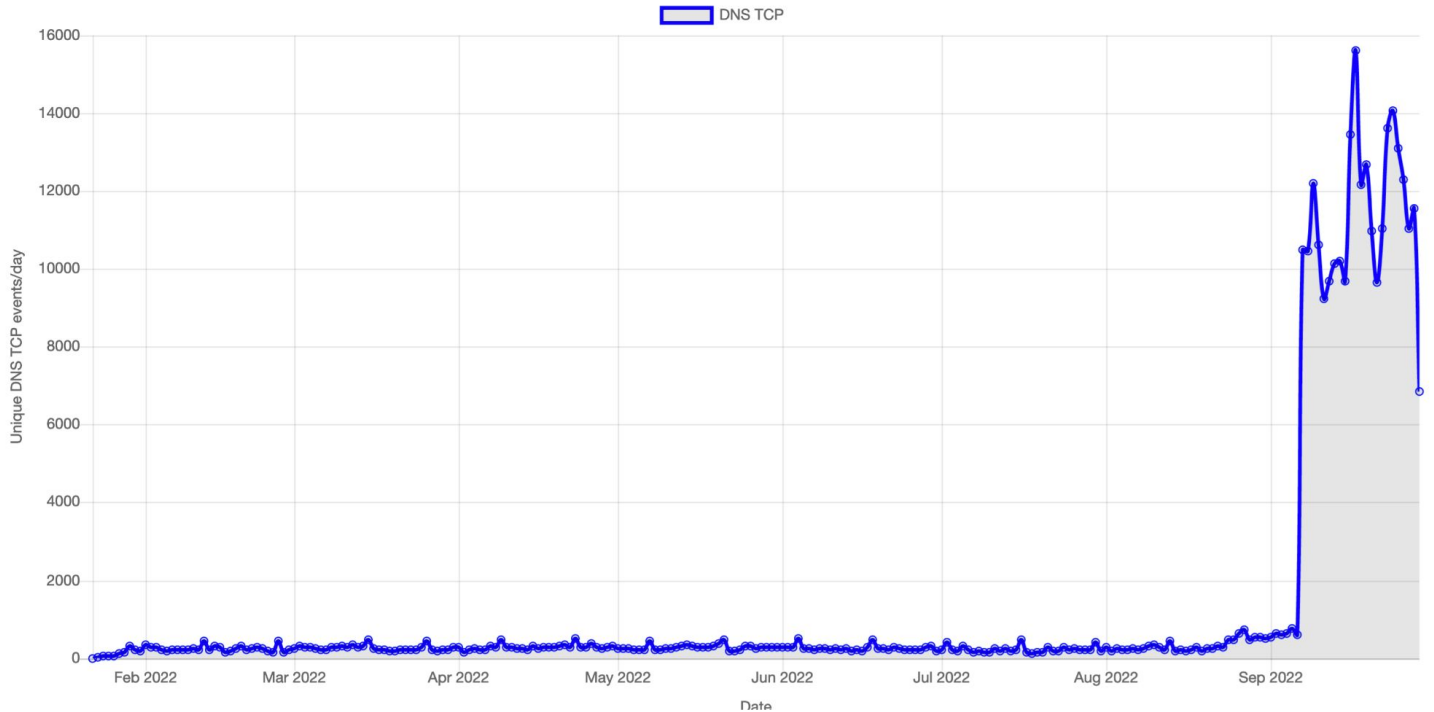
# ASN	ASname	ipaddr	lastseen	category
9808	CHINAMOBILE-CN China Mobile Co	117.187.173.111	2022-09-25 16:23:37	dnsversion
37963	ALIBABA-CN-NET Hangzhou Alibab	8.142.139.58	2022-09-26 14:56:18	dnsversion

DNS TCP

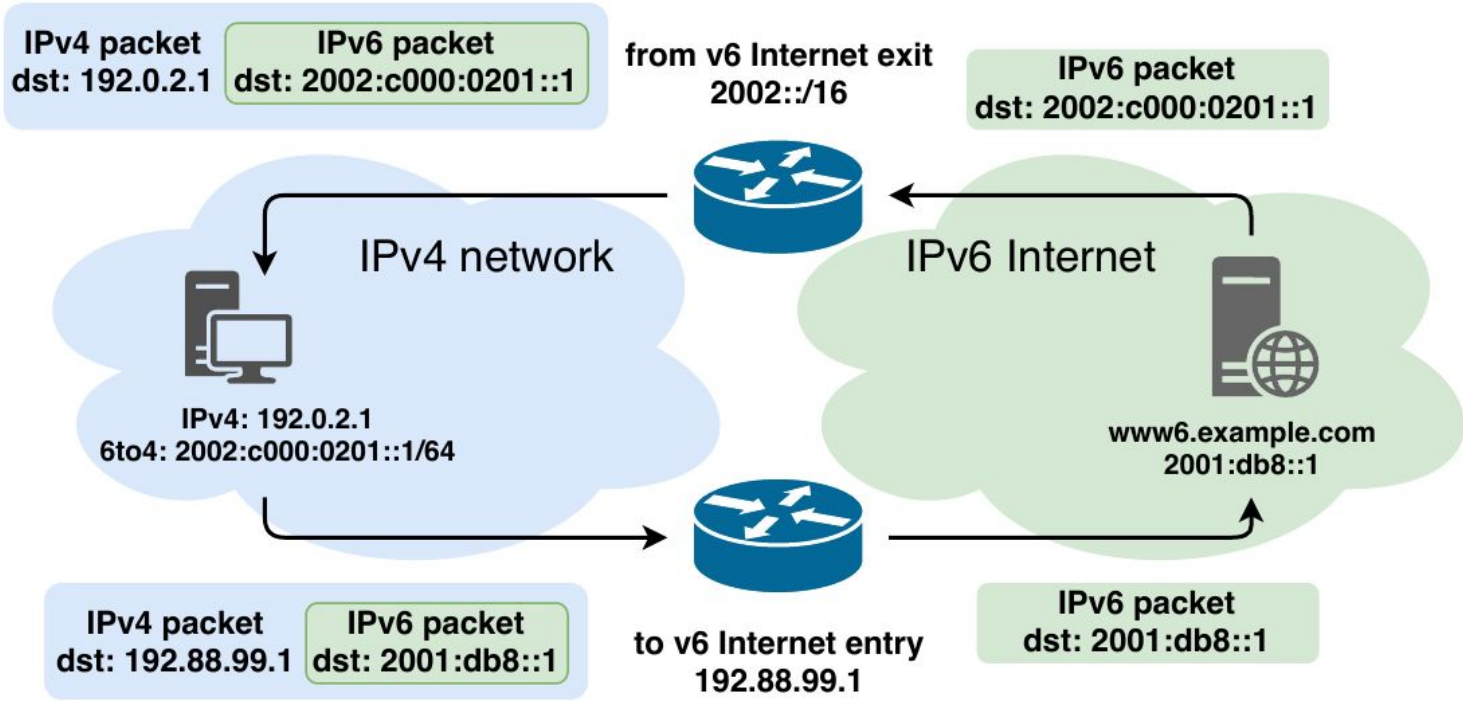
Statistics>

DNS TCP Signal Statistics @ Dataplane.org

This interactive time-series plot is a measure our observed DNS TCP signals data.



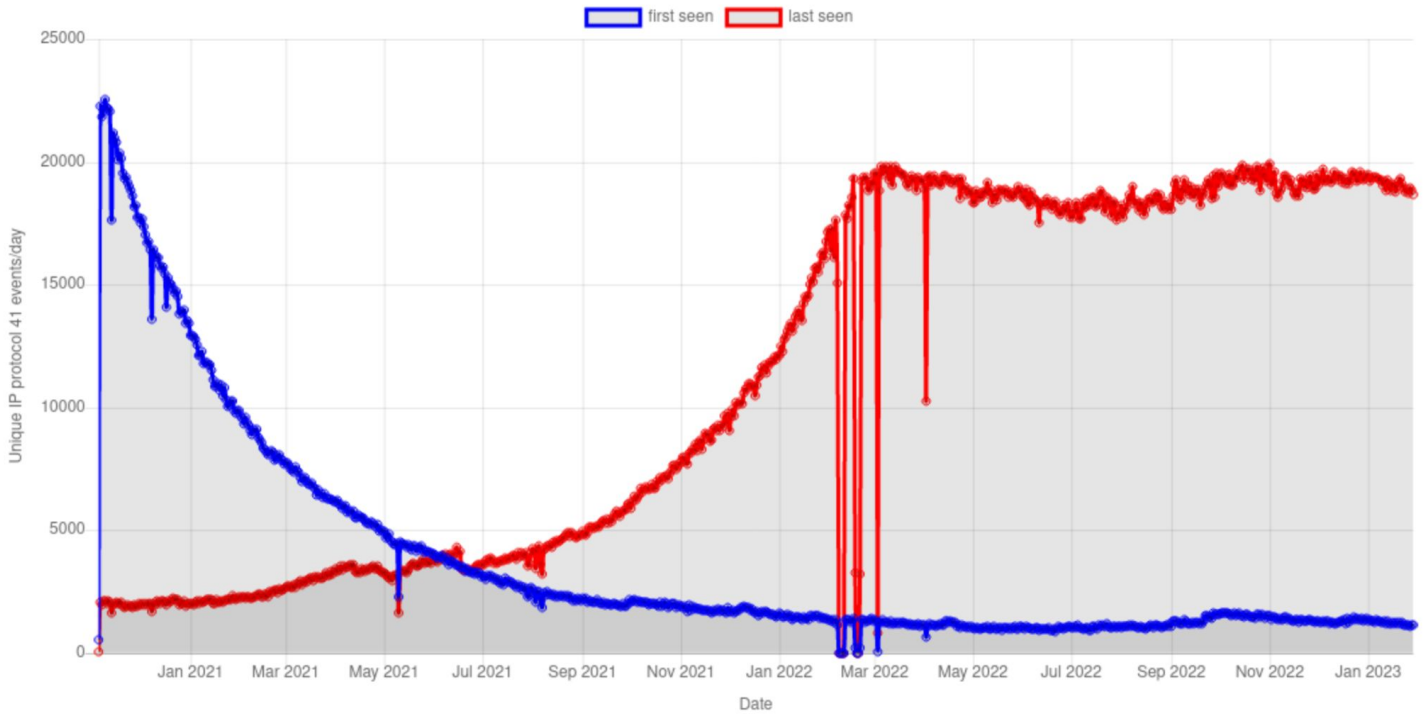
IP protocol 41 (proto41)



IP Protocol 41

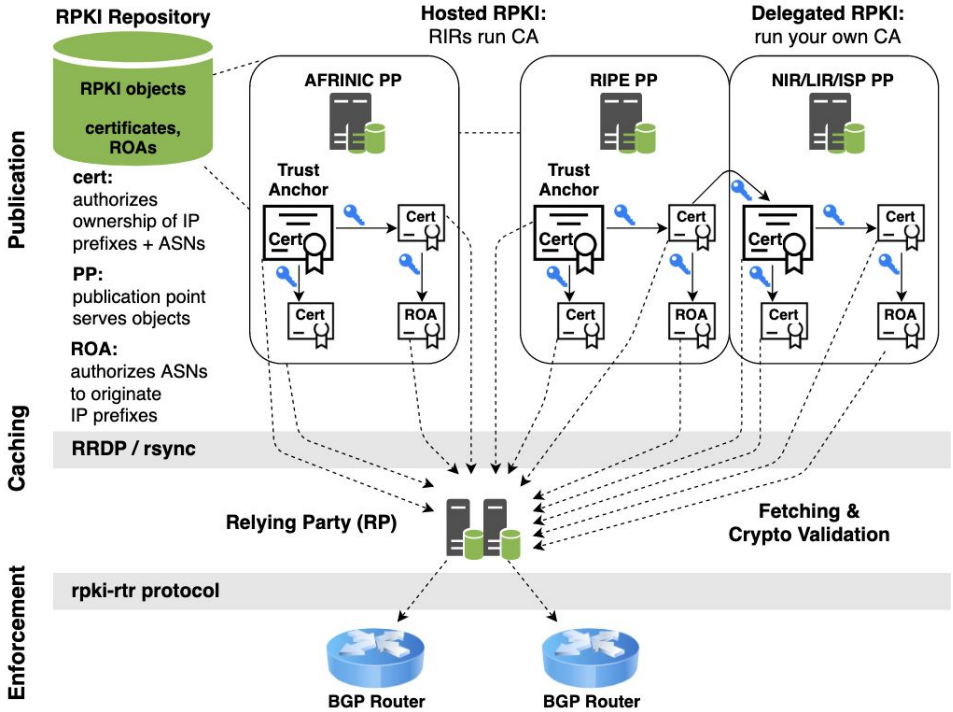
IP protocol 41 Signal Statistics @ Dataplane.org

This interactive time-series plot is a measure our observed IP Protocol 41 signals data.



Dataplane.org PP operation

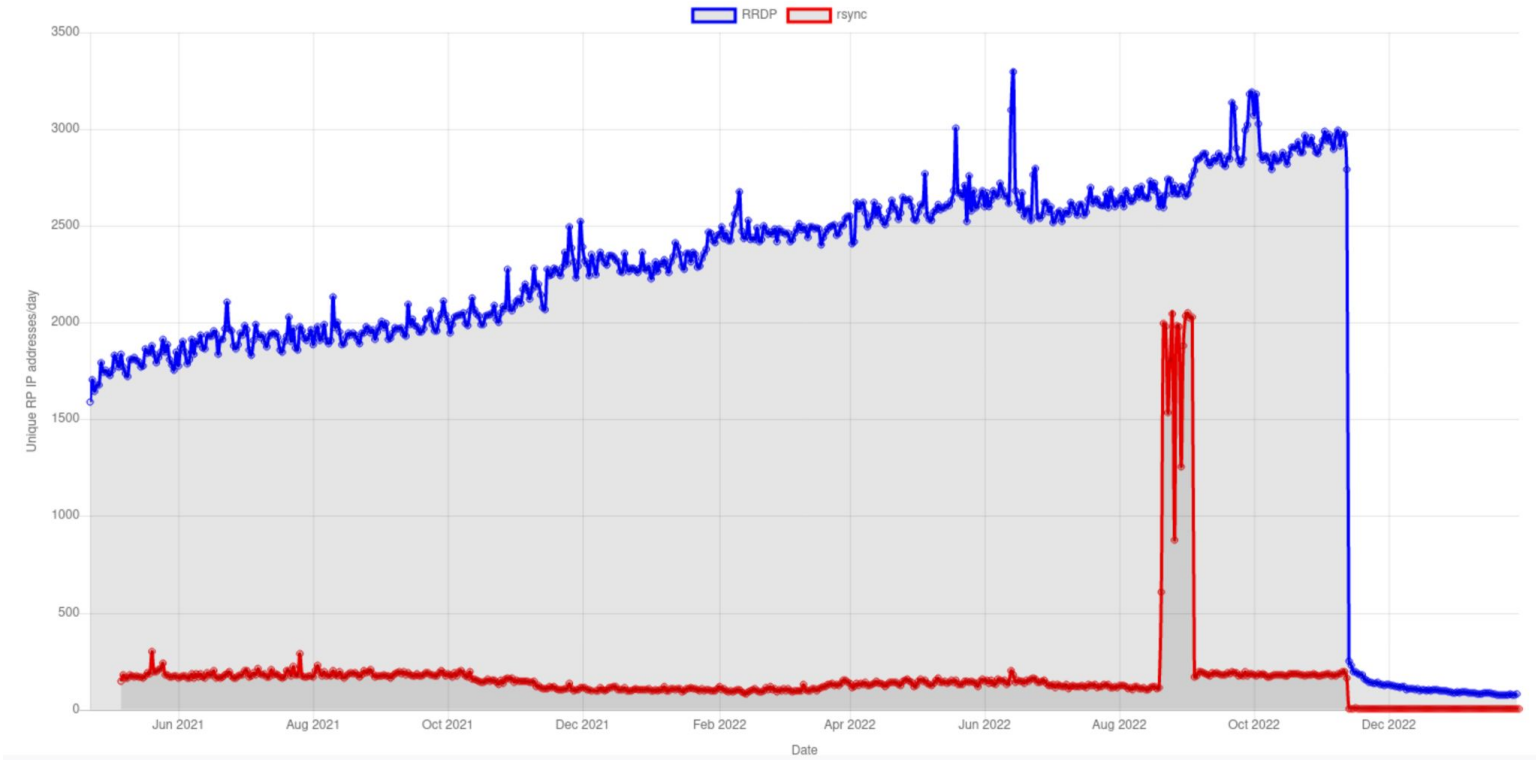
The rpki.dataplane.org system is a publication point (PP) under the ARIN RPKI trust anchor (TA)



On Measuring RPKI Relying Parties. https://dataplane.org/jtk/publications/kbkmp-mrrp-20.pdf

RPKI Monitor

Number of per day unique IP addresses retrieving RRDP /rrdp/notification.xml file or rsync fetch on the repository



Signal Users

BRANDEFENSE

SHADOWSERVER

RISKIQ
A MICROSOFT COMPANY

MISP
Threat Sharing

Recorded Future®

INTELMQ

ThreatSTOP

altrail

CUJOAI

TEAM CYMRU

Signal data in 2023

- Full public archive of delayed data
- Custom real-time signal feeds
- Additional applications (e.g., RDP)
- Additional insight (e.g., SSH client software)
- Full flow monitoring
- BGP RTBHs (black hole announcements)

Legal

Incorporation
Employer Identification Number
Charitable Status 501(c)(3)

Financial

Banking
Tax Exempt Status
Expenses

Reporting

Accounting
Tax Preparation
Board Meetings

Not For Profit Setup

Matt John Bill

To improve Internet infrastructure operations by facilitating access to raw data collections, measuring Internet activity, analyzing trends, and supporting researchers.

THANK YOU!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github.com/dataplane


AS 54278