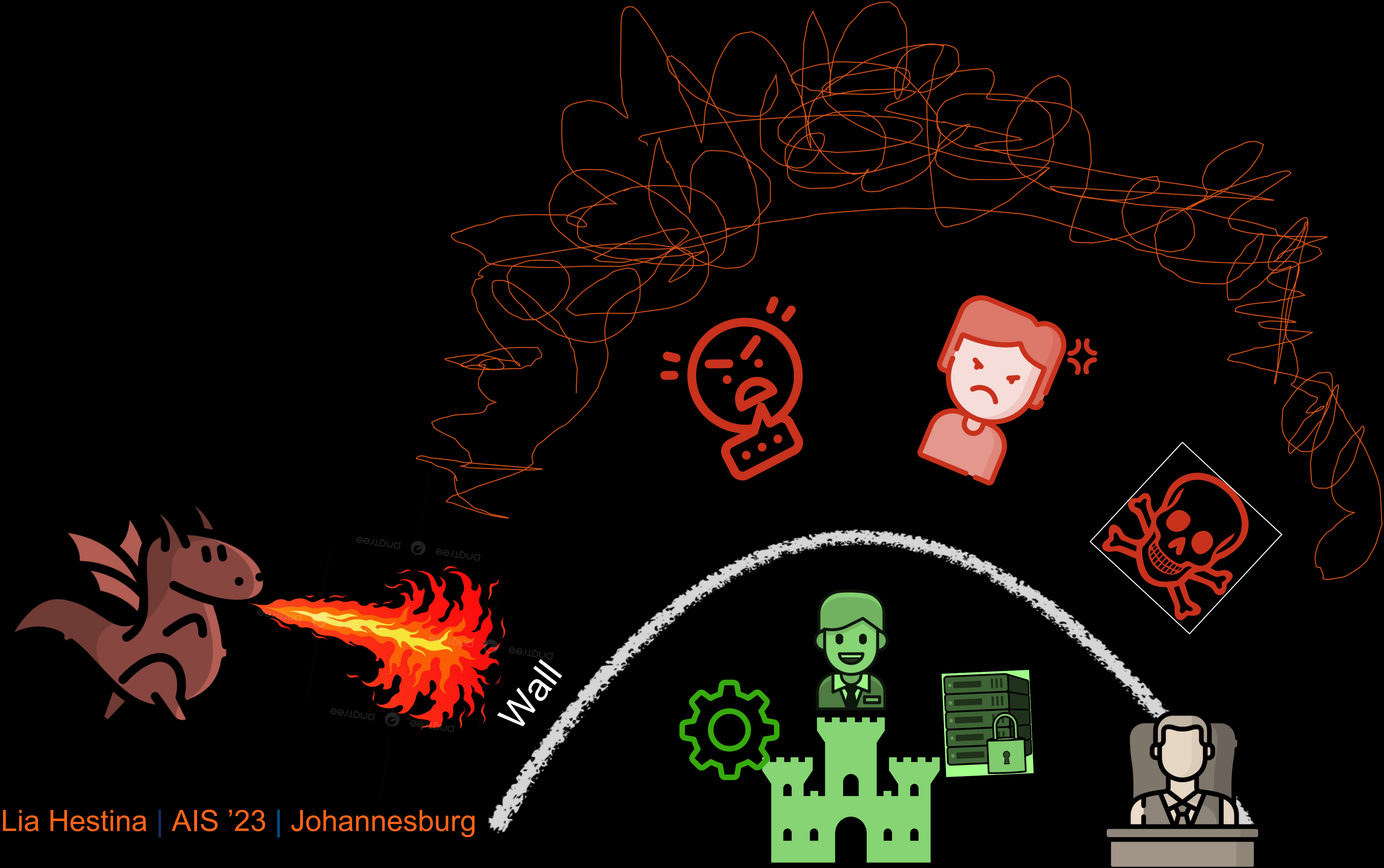


The World Outside is Dark





RIPE NCC

RIPE NETWORK COORDINATION CENTRE

MINIMISING IMPACT

When Incidents Occur With RIPE Atlas

Lia Hestina | AIS '23 | Johannesburg



RIPE Atlas

- RIPE Atlas is a global active measurements platform, funded by RIPE NCC members and sponsors
- Goal: view your Internet reachability from outside
- Probes hosted by volunteers, using a credits system
- Data is publicly available

atlas.ripe.net

RIPE Atlas

Accessible via

GUI

API

CLI TOOL

Type of measurements

PING

TRACEROUTE

DNS

NTP

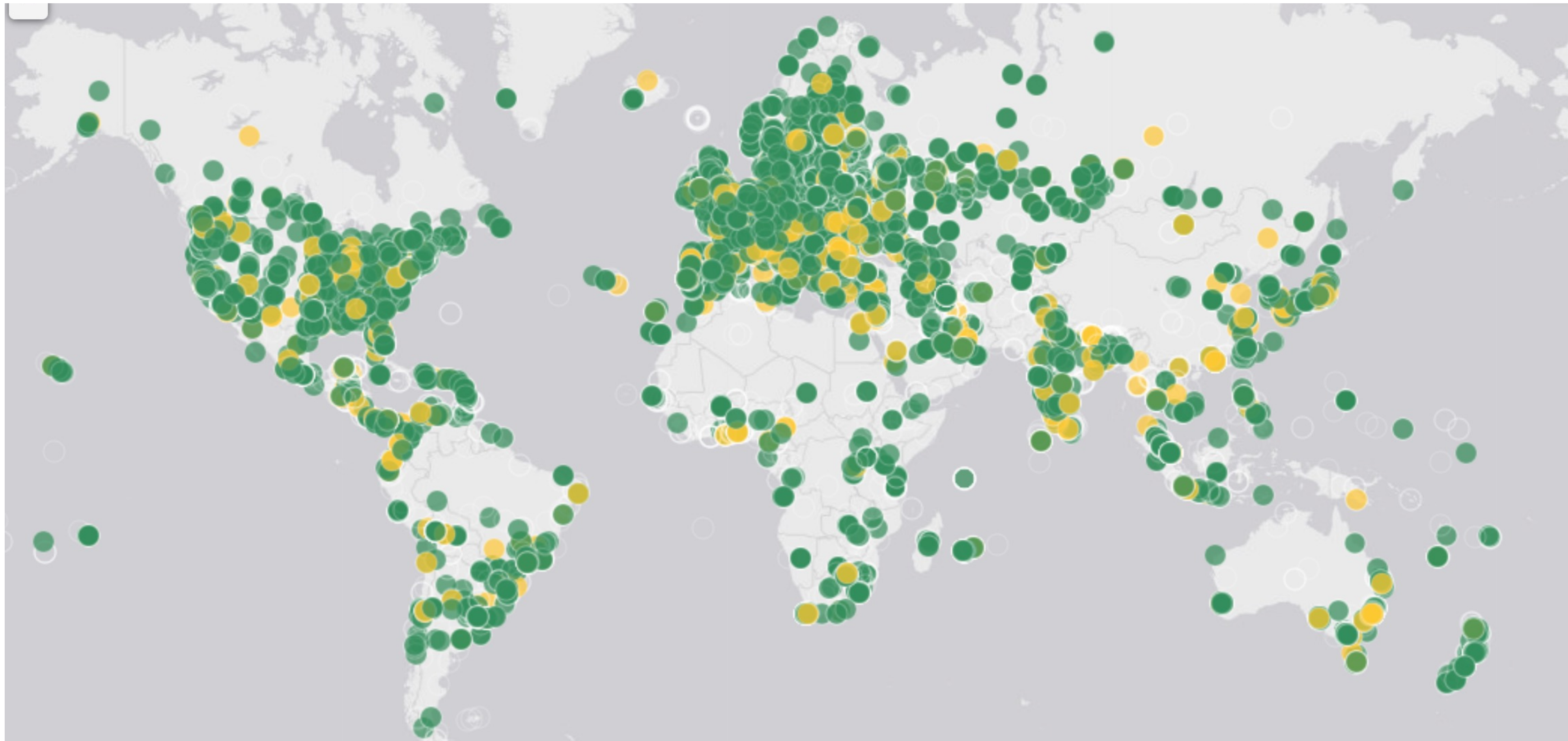
SSL/TLS

HTTP (anchors)

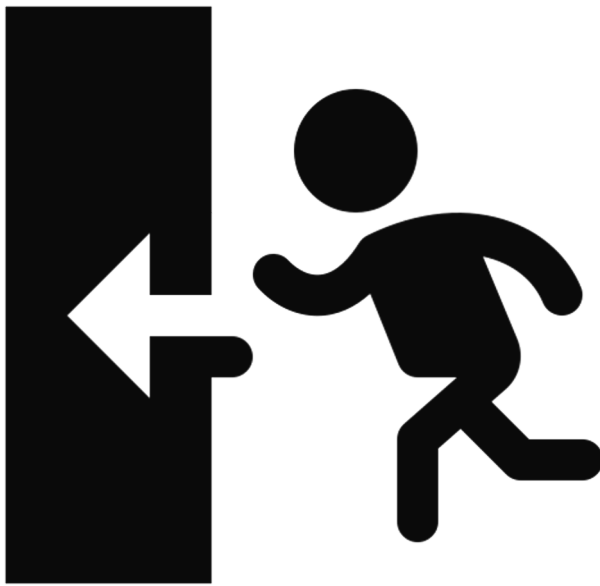
Run RIPE Atlas tests



More than **12000** probes connected globally



How do you minimize impact



Escape



Gear up



Action



Some Problems

- High latency - Impatient gamers
- Gamers from different networks
- Realtime application, unpredictable



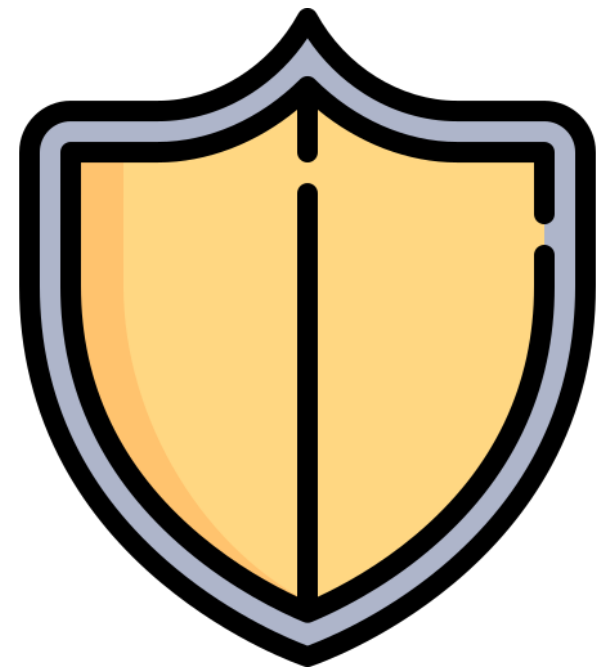
Mbappe

Online gaming company

Runs own LAN

Users from around the world

How do you minimize impact



Gear Up

- **Strategic Deployment:** Install **RIPE Atlas** probes strategically
- **Continuous Monitoring:** Conduct ongoing measurements
- **Abnormality Alerts:** Set up alerts for deviations from normal measurements



Action

- **Anomaly Detection:** Identify network issues swiftly.
- **Latency Assurance:** Debug and maintain low latency.
- **Performance Showcase:** Impress customers with network performance.

Issues spotted!



Probe	ASN (IPv4)	ASN (IPv6)	Time (UTC)	RTT	Hops	Success
4429	55430		2020-05-13 19:02	270.039	17	✗
14042	55430		2020-05-13 19:02	267.779	17	✗
22798	55430	55430	2020-05-13 19:02	268.372	17	✗
24422	55430		2020-05-13 19:02	268.974	17	✗
25828	4788		2020-05-13 19:02	364.127	15	✗
28850	4844		2020-05-13 19:02	265.993	17	✗
54623	4773	4773	2020-05-13 19:02	268.964	16	✗
55415	55430	55430	2020-05-13 19:02	367.158	13	✗

High latency Identified

Latest Traceroute Result for Measurement #59170999

2023-09-01 16:17 UTC

Traceroute to tiktok.com (3.160.5.56), 48 byte packets

- 192.168.0.1 0.457ms 0.368ms 0.346ms
- 100.91.127.254 5.424ms 4.347ms 4.594ms
- 10.233.97.55 4.777ms 4.537ms 4.473ms
- 10.55.192.63 193.346ms 194.974ms 194.312ms
- 213.248.79.106 lax-b3-link.ip.twelve99.net AS1299 182.594ms 182.382ms 182.325ms
- 62.115.126.250 lax-b23-link.ip.twelve99.net AS1299 202.572ms 203.672ms 203.016ms
- * 62.115.123.136 dls-bb2-link.ip.twelve99.net AS1299 232.324ms *
- 62.115.116.213 atl-b24-link.ip.twelve99.net AS1299 255.674ms 250.639ms 250.838ms
- 62.115.119.201 ipls-b2-link.ip.twelve99.net AS1299 255.624ms 255.207ms 255.525ms
- 62.115.139.235 clb-b1-link.ip.twelve99.net AS1299 260.81ms 260.133ms 259.797ms
- ***
- ***
- ***
- ***
- ***
- 3.160.5.56 server-3-160-5-56.cmh68.r.cloudfront.net AS16509 243.323ms 242.473ms

243.412ms

Talk to your peers, ISP or any that can help improve RTT

Settings & Status Latest Results Map Tracemon IPMap Downloads

Probe	ASN (IPv4)	ASN (IPv6)	Time (UTC)	RTT	Hops	Success
4429	55430		2020-05-13 20:17	4.394	14	✓
14042	55430		2020-05-13 20:17	3.042	14	✓
22798	55430	55430	2020-05-13 20:17	3.336	14	✓
24422	55430		2020-05-13 20:17	3.993	15	✓
25828	4788		2020-05-13 20:17	3.158	14	✓
28850	4844		2020-05-13 20:17	3.127	14	✓
31918	55430		2020-05-13 20:17	5.194	15	✓
54623	4773	4773	2020-05-13 20:17	4.505	14	✓
55415	55430	55430	2020-05-13 20:17	3.508	14	✓

Lower latency after debugging



Hooray Moments!

Improve Performance

Shorter path is selected, better latency, reliability & security

Control & Flexibility

Repeat tests as much as you need!

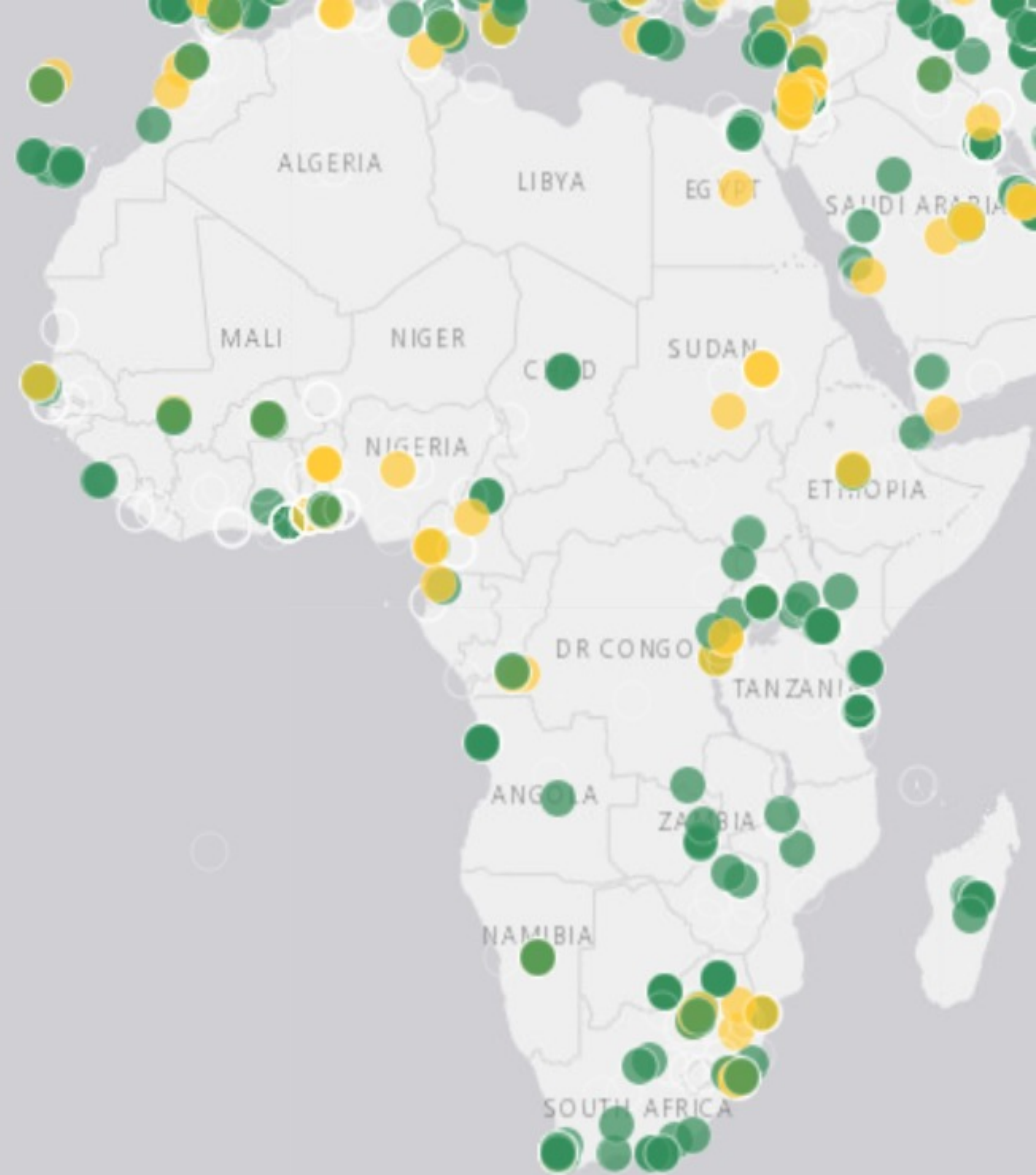
Service desks RIPE Atlas ❤️ GUI

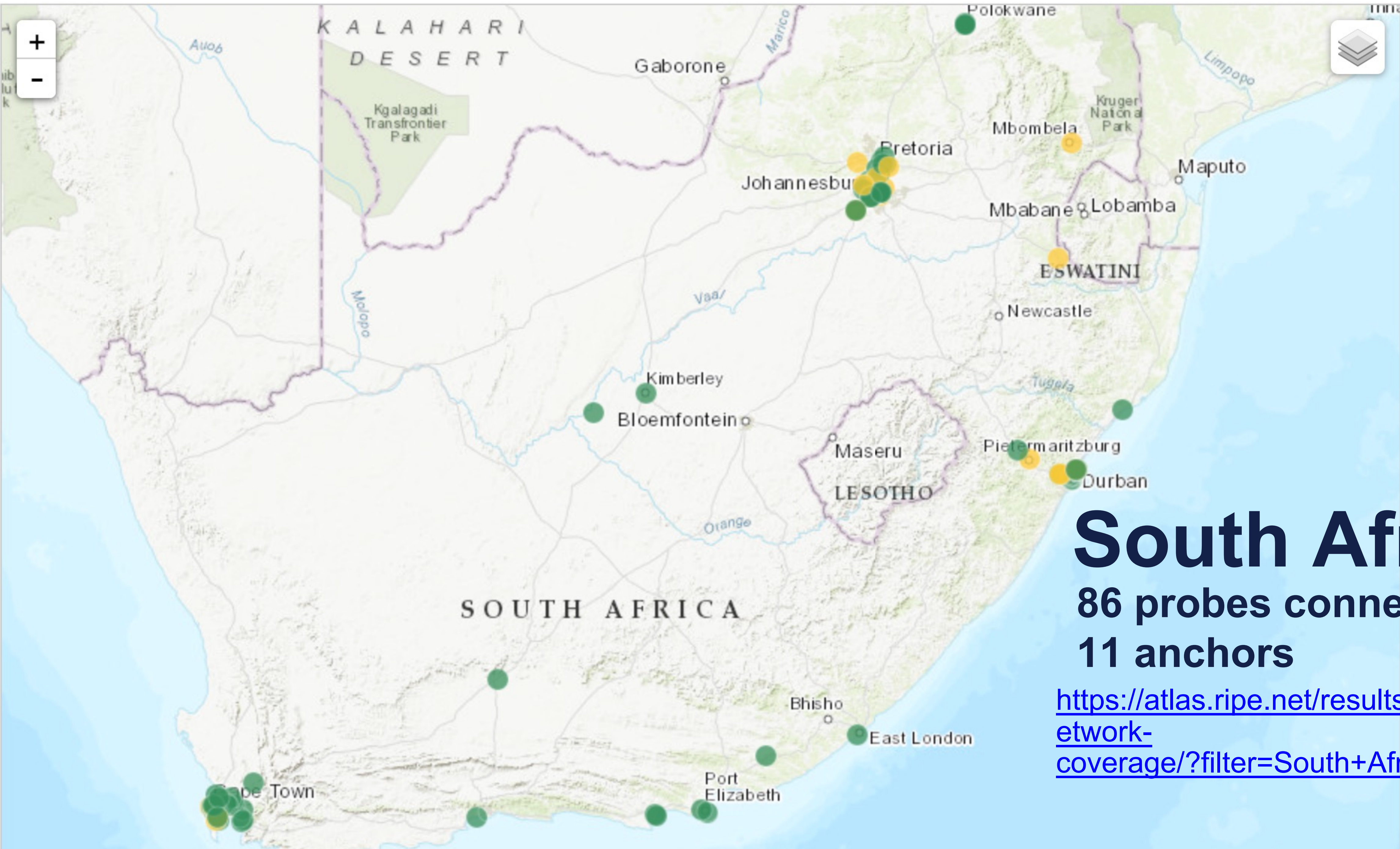
To validate findings



A view into
South Africa and Kenya

Probes in AFRICA





South Africa
86 probes connected
11 anchors

[https://atlas.ripe.net/results/maps/network-coverage/?filter=South+Africa+\(za\)](https://atlas.ripe.net/results/maps/network-coverage/?filter=South+Africa+(za))



Tools to check your Network Performance (Prototype)

Fullscreen + -

Origin (ASN or ix-ID)

37457

Date

14/08/2023

Address Family

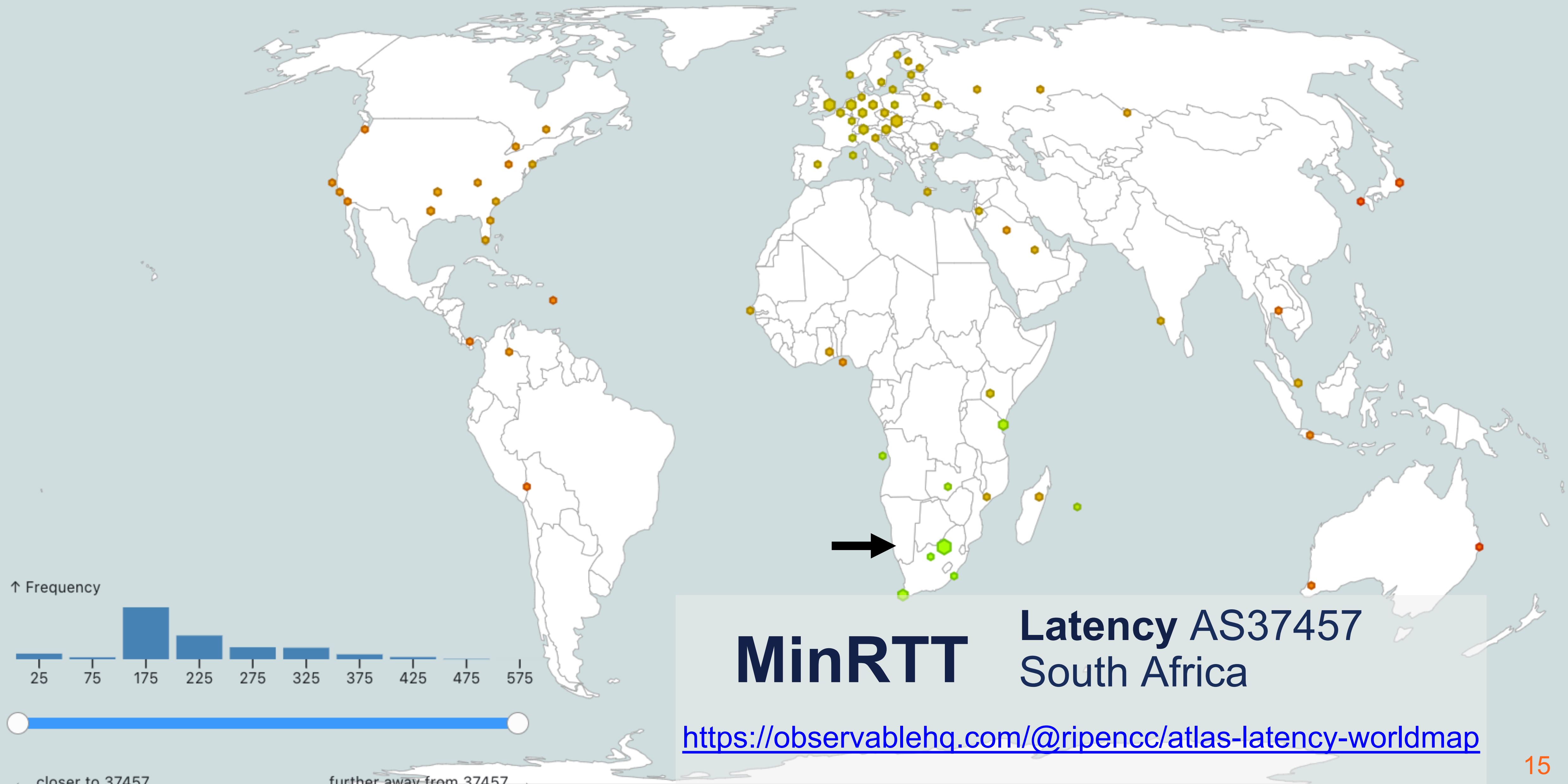
IPv4

Protocol

Any

Aggregate function

Median



MinRTT

Latency AS37457 South Africa

<https://observablehq.com/@ripenc/atlas-latency-worldmap>

Fullscreen + -

Origin (ASN or ix-ID)

33771

Date

14/08/2023

Address Family

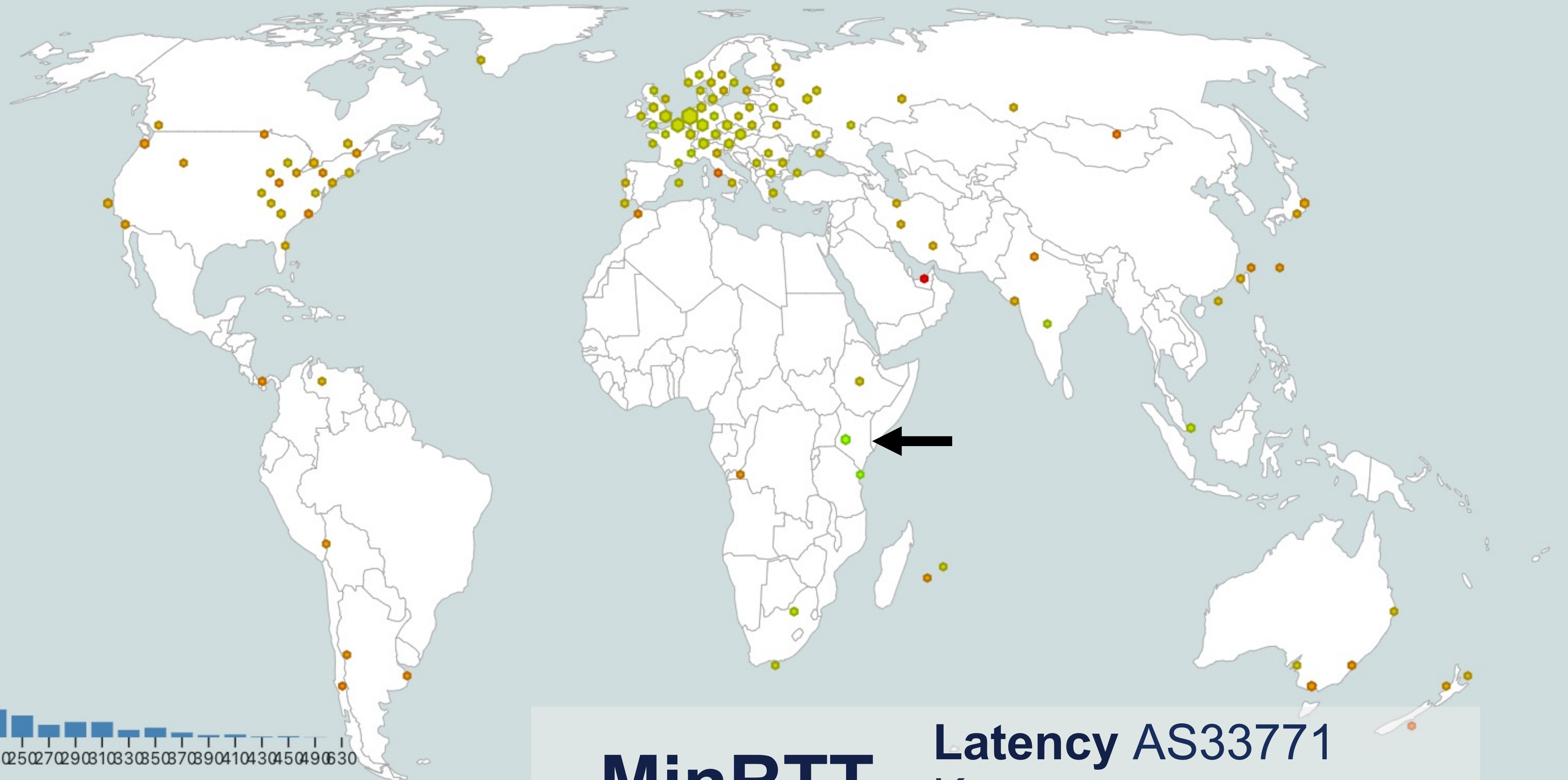
IPv4

Protocol

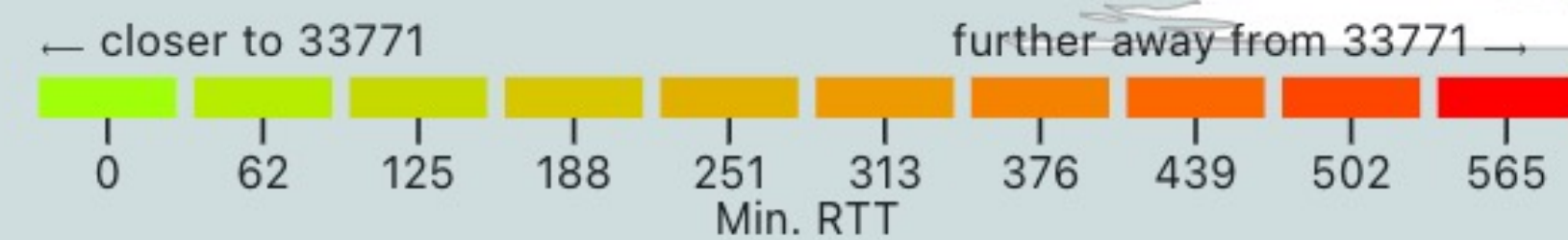
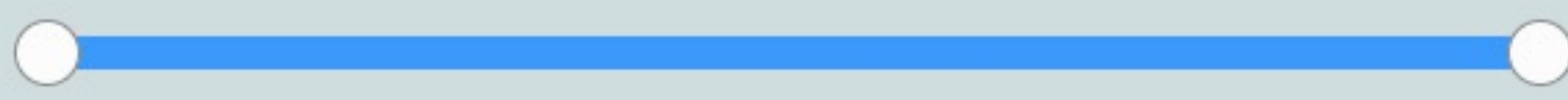
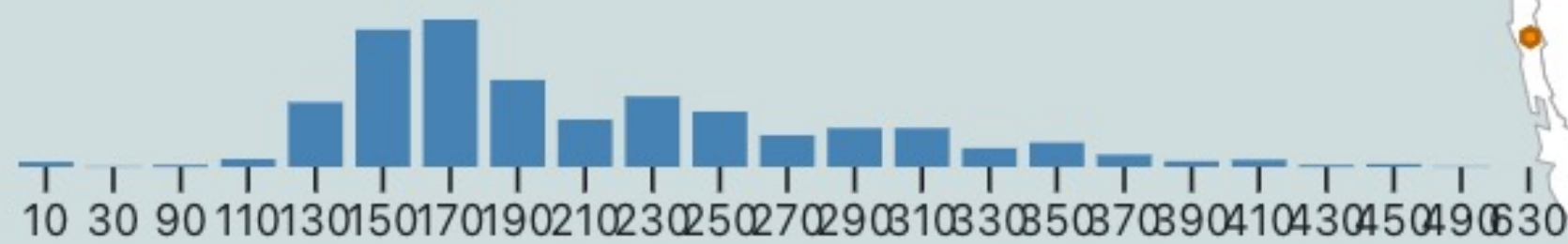
Any

Aggregate function

Median



↑ Frequency



MinRTT

Latency AS33771 Kenya

<https://observablehq.com/@ripenc/atlas-latency-worldmap>

Fullscreen + -

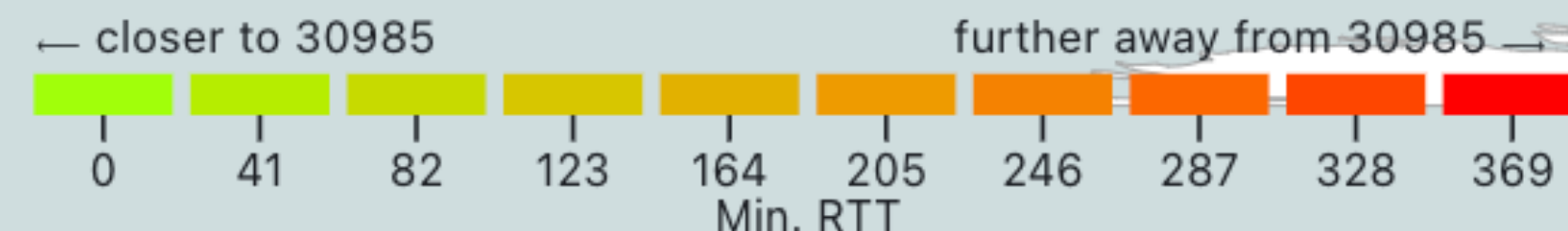
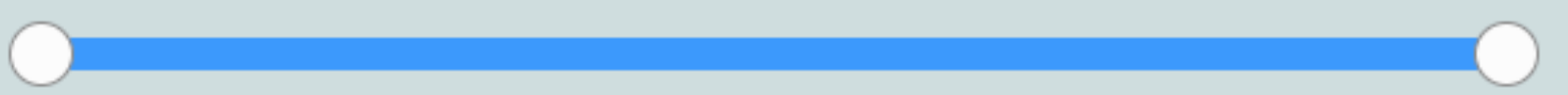
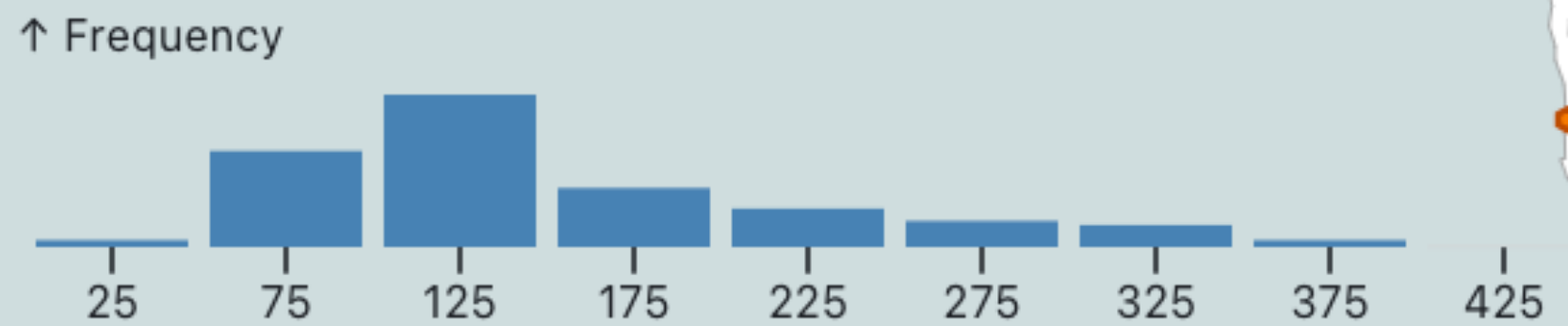
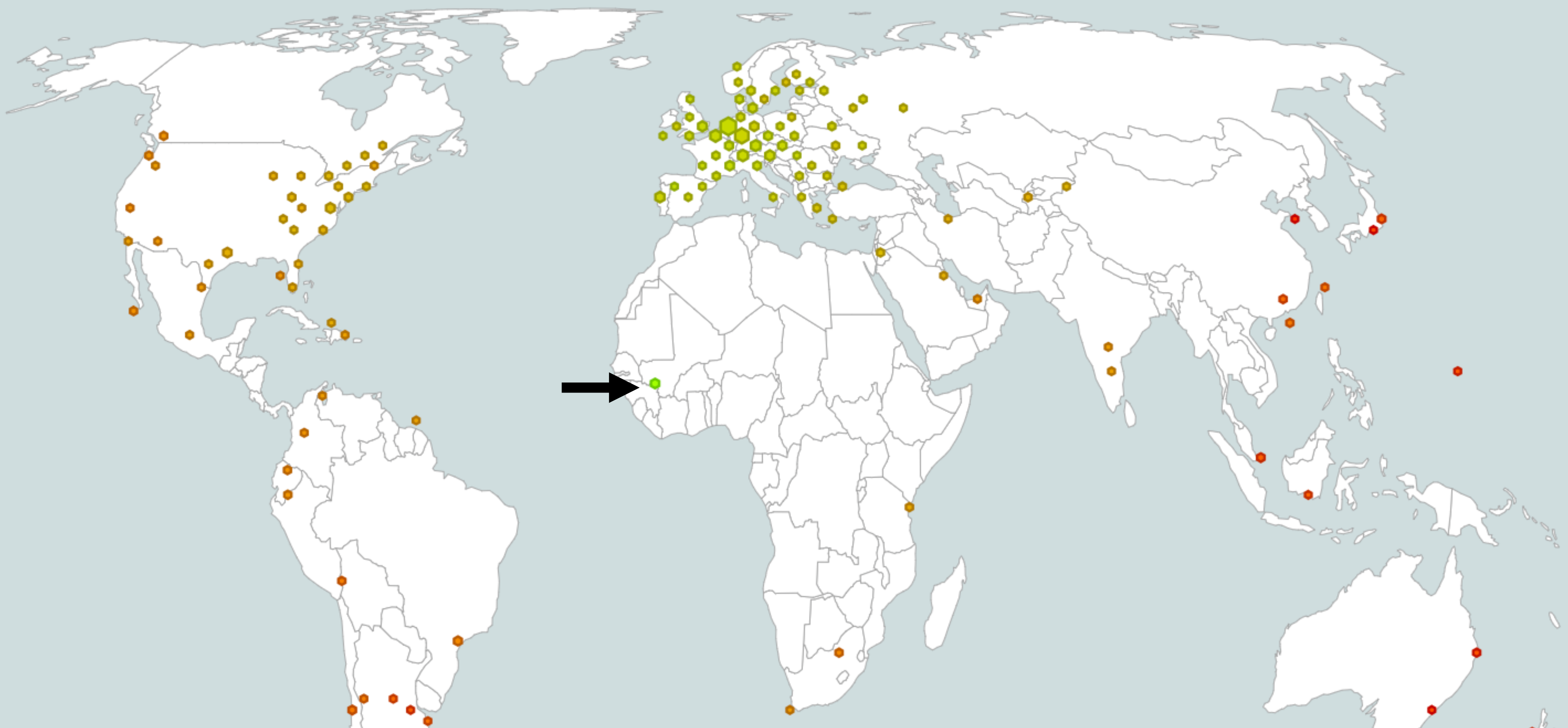
Origin (ASN or IX-ID) 30985

Date 14/08/2023

Address Family IPv4

Protocol Any

Aggregate function Median



MinRTT Latency AS30985
Mali

<https://observablehq.com/@ripenc/atlas-latency-worldmap>

MinRTT

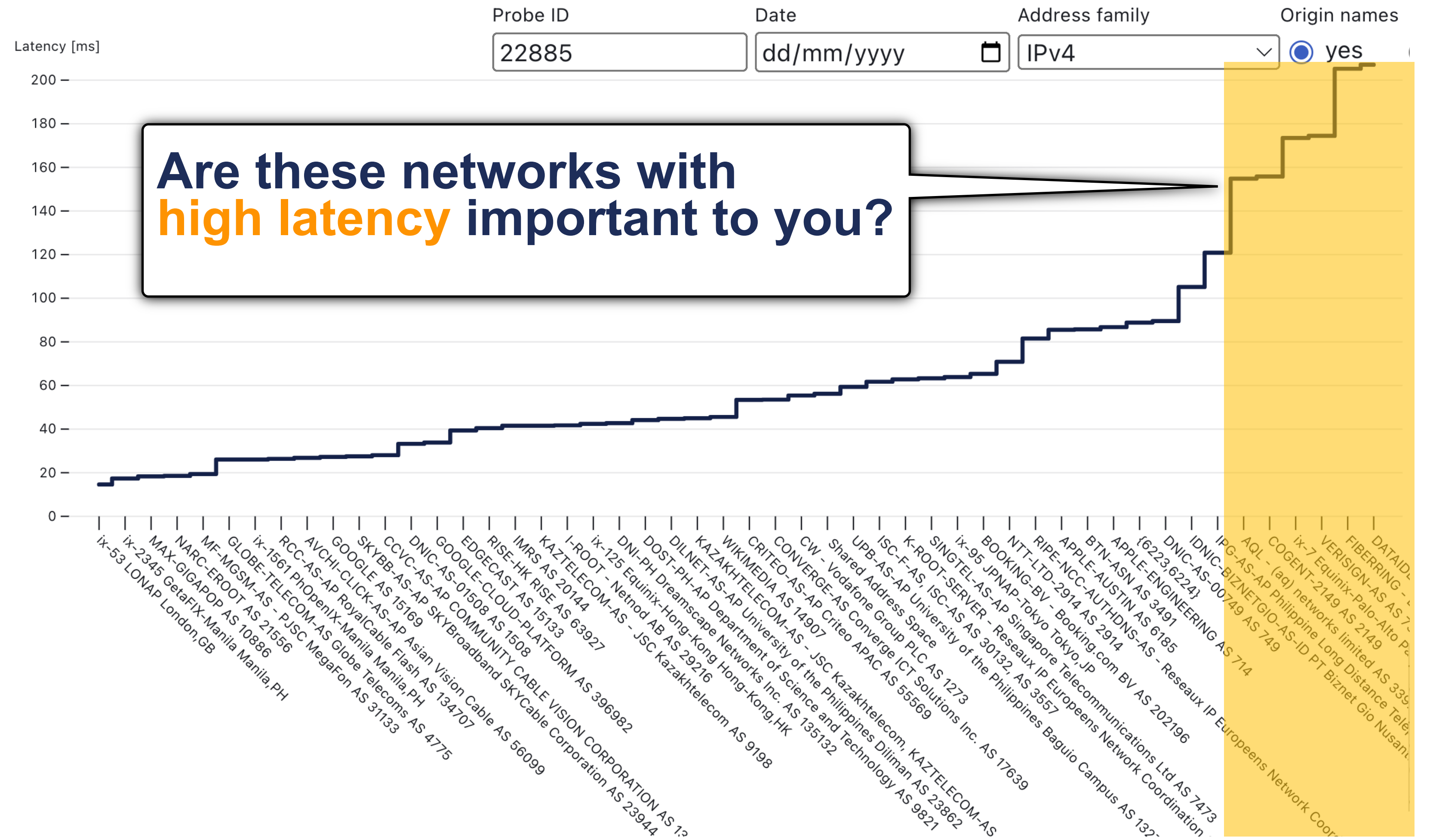
Your network **neighbourhood** as seen through RIPE Atlas



Try your probe here

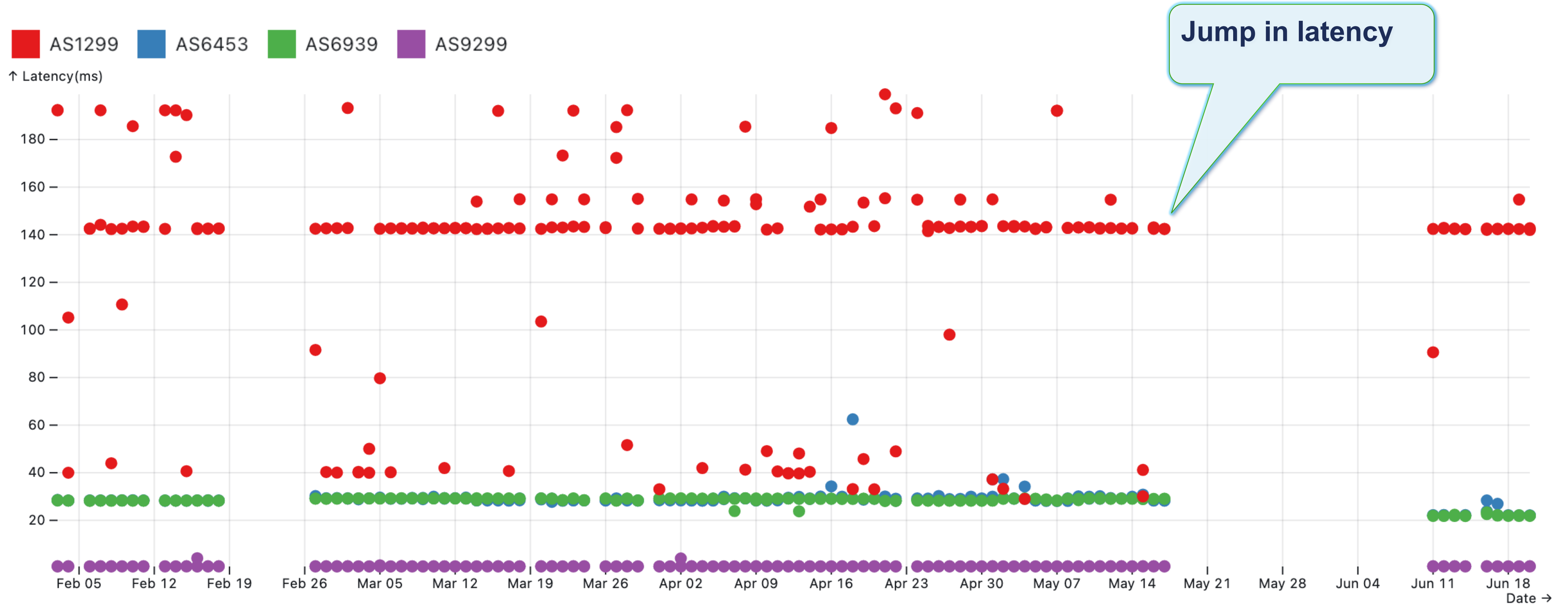


<https://observablehq.com/@ripenccl/atlas-probe-neighbourhood?>



3. Finding anomalies in Min. RTT explorer

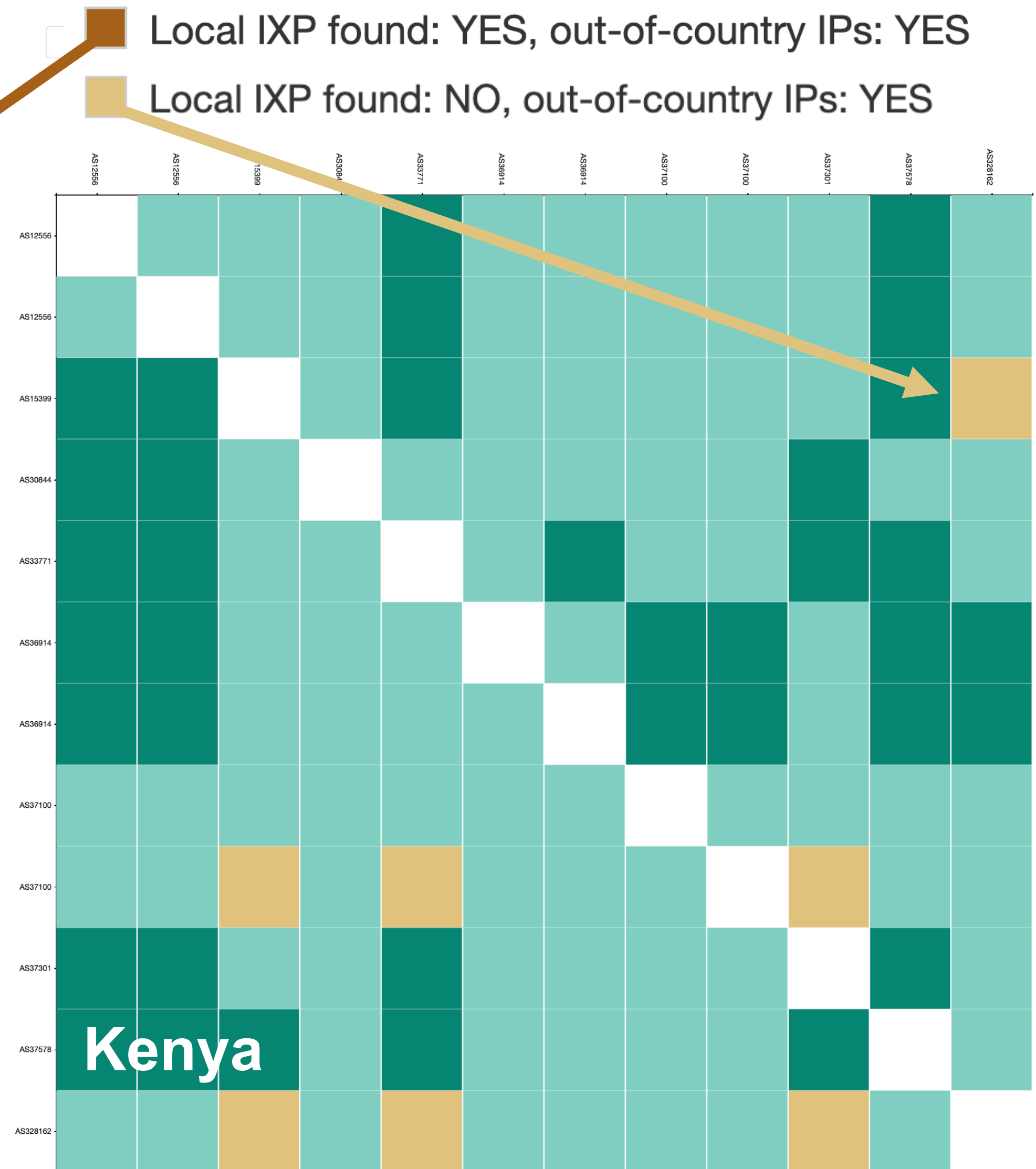
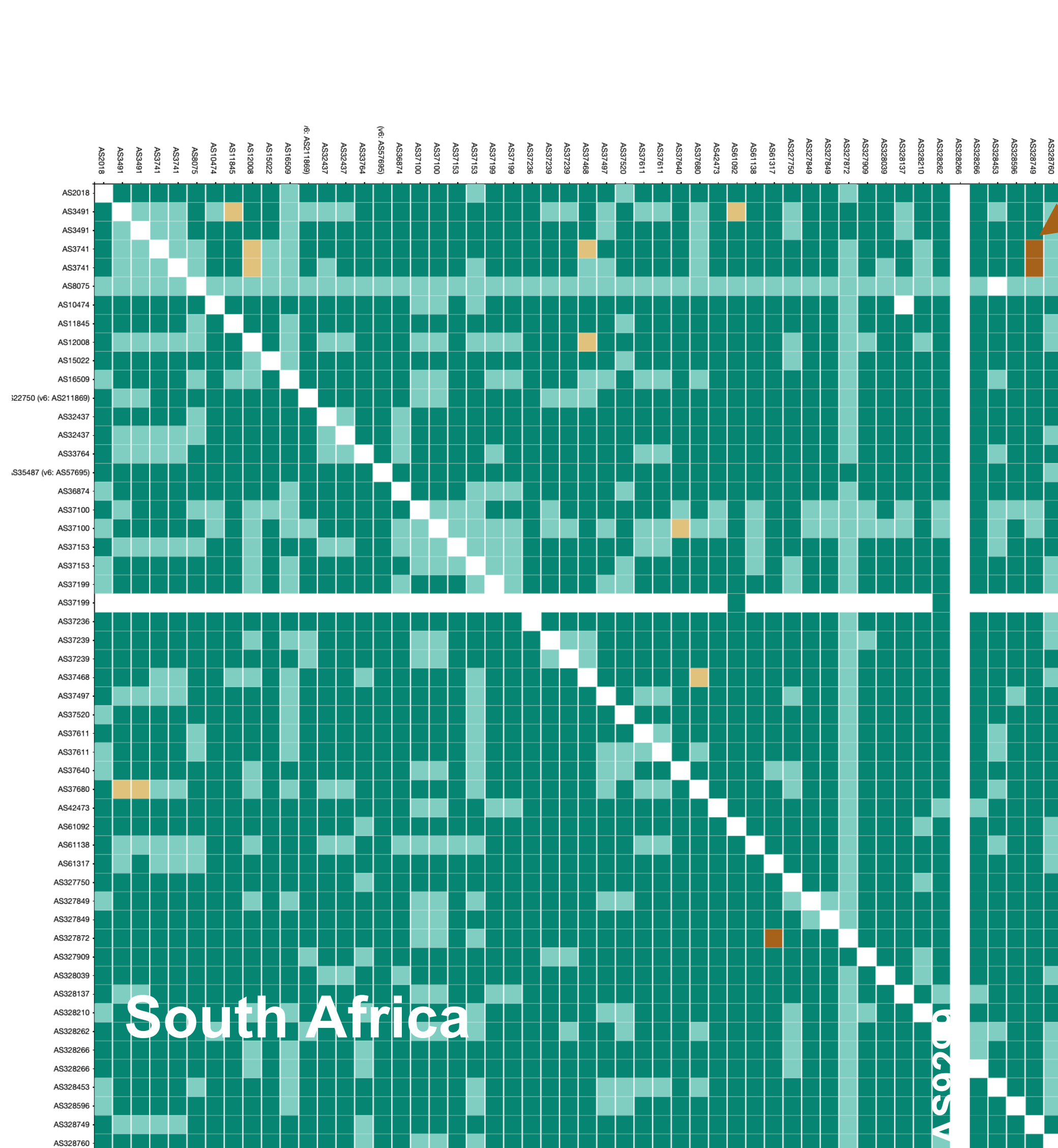
Observed by Probe 22471 in AS9299





Country IXP Jedi
Keeping traffic Local

3. Finding anomalies in Country IXP JEDI



<https://jedi.ripe.net/latest/PH/ixpcountry/index.html?ASNS=all&ipv=v4>



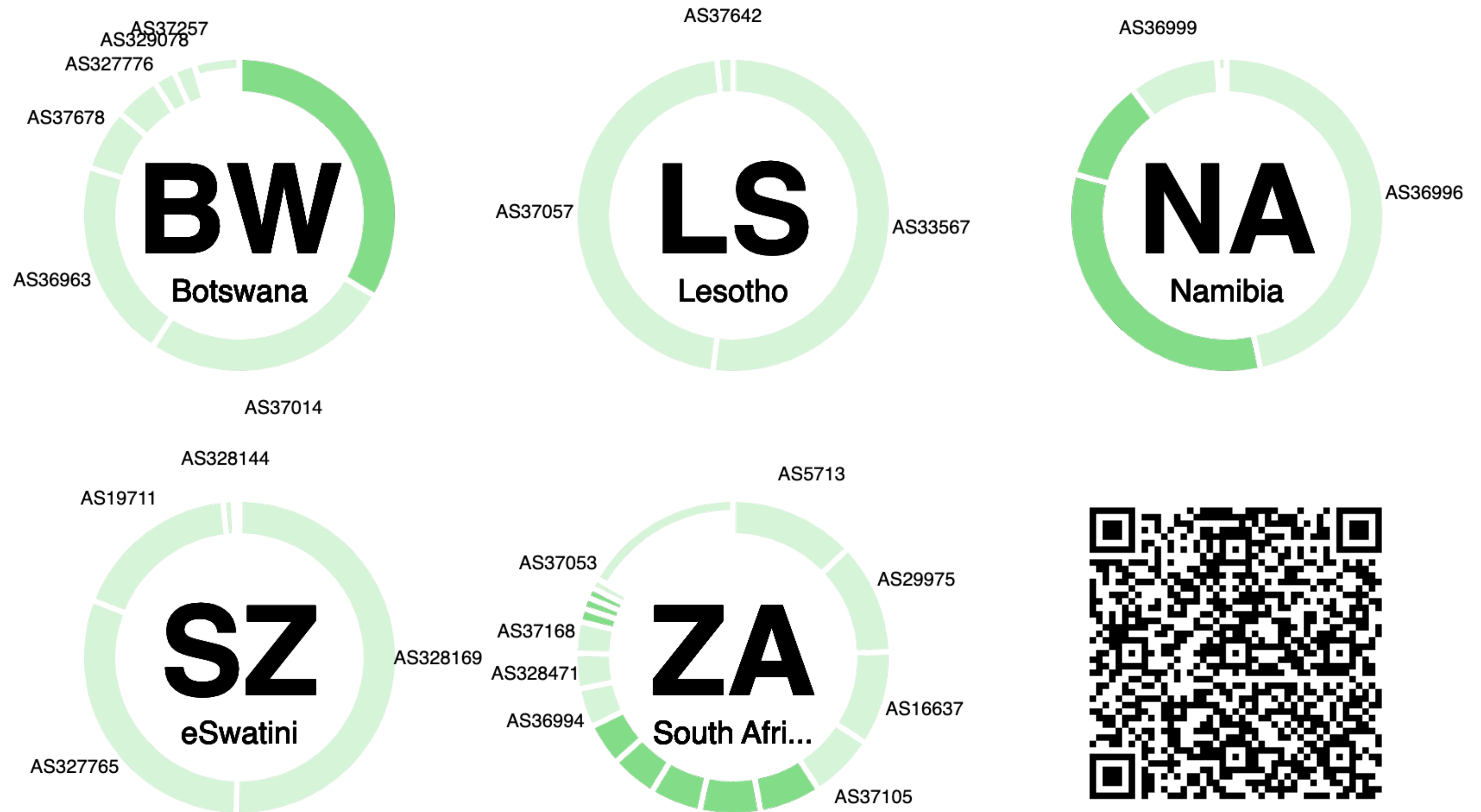
RIPE Atlas probe coverage

Showing ASNs covering at least 1% of the country's population (2023-08-15)

- ASN is not covered
- ASN has at least 1 probe



We'd like to install probes in these ASNs



More reasons to love RIPE Atlas



12,000 Probes

Global Coverage

Fair Use/
NON Monetary



Trusted Source

Non-profit organization
Volunteers: End Users

Safe & Secure

Regular third-party security review

Open Data

Measurement results open to all

Community Driven

From the community & RIPE NCC
for the community



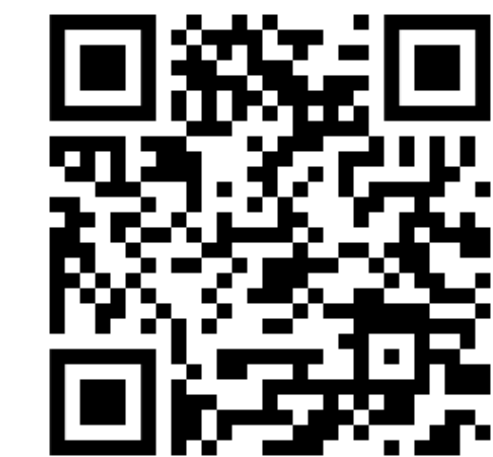


What do you do now?

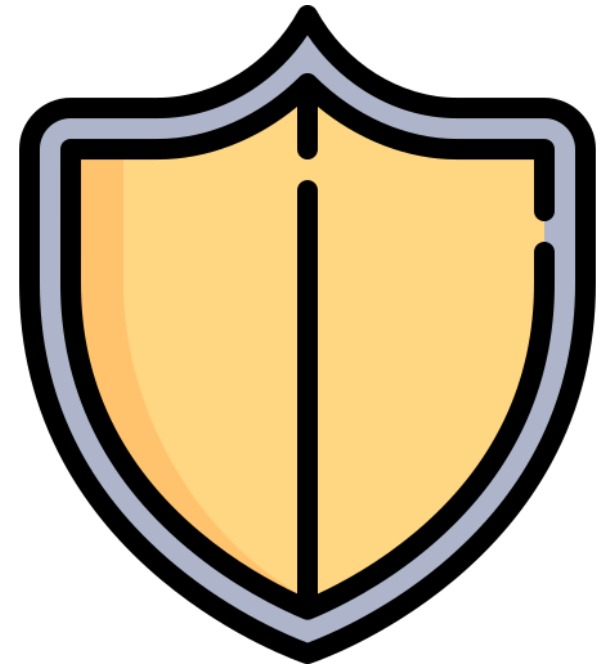
- 1 Create RIPE NCC Access **ACCOUNT**
- 2 **INSTALL** RIPE Atlas probe strategically
- 3 Start testing, **MONITOR** your network performance
- 4 Got a disconnected probe? **Reconnect!**

Redeem This Voucher

AIS23JB



How do you minimize impact



Gear Up

- **Strategic Deployment:** Install **RIPE Atlas** probes strategically
- **Continuous Monitoring:** Conduct ongoing measurements
- **Abnormality Alerts:** Set up alerts for deviations from normal measurements



Action

- **Anomaly Detection:** Identify network issues swiftly.
- **Latency Assurance:** Debug and maintain low latency.
- **Performance Showcase:** Impress customers with network performance.



Questions



lhestina@ripe.net

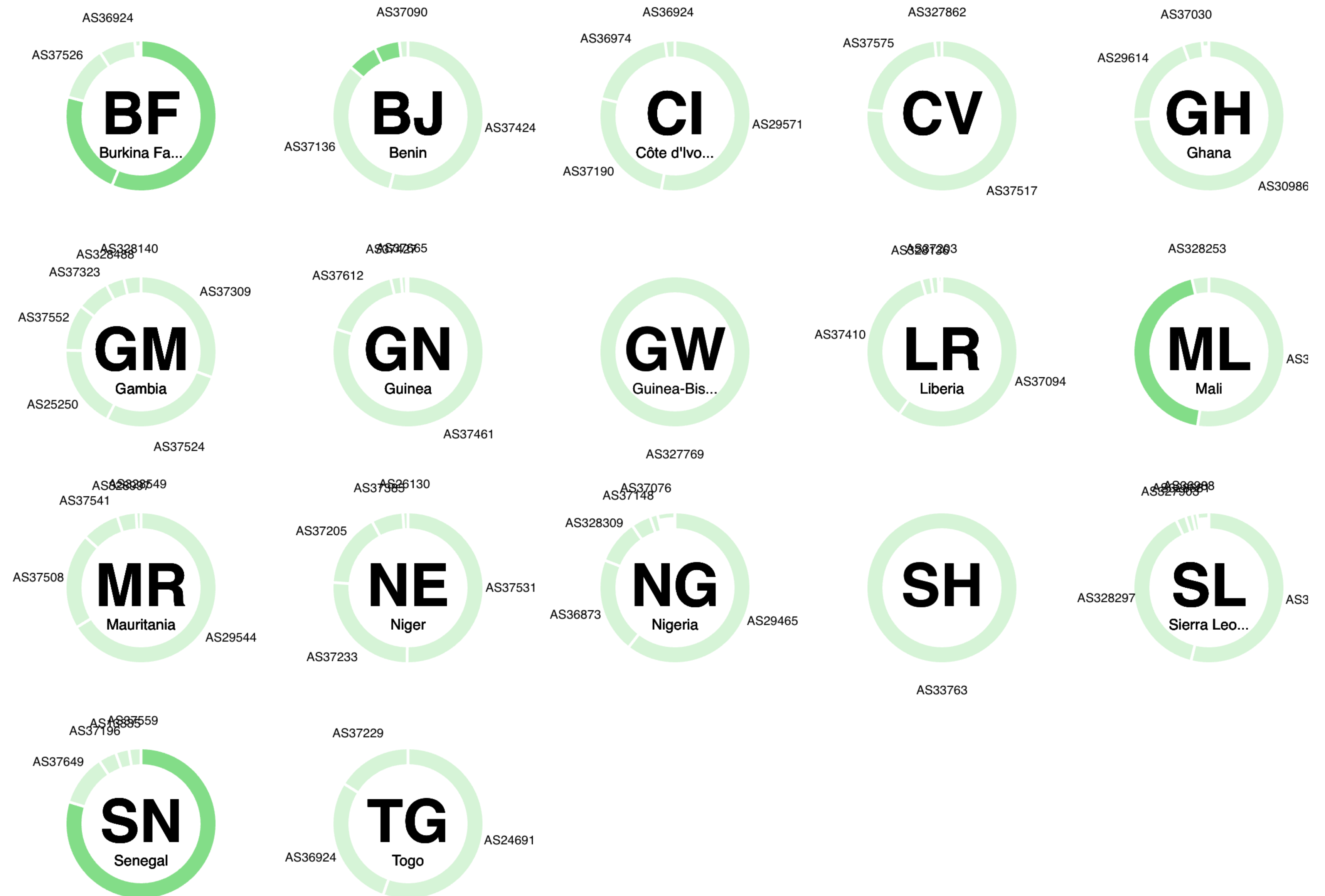
atlas@ripe.net

RIPE Atlas probe coverage
 Showing ASNs covering at least 1% of the country's population (2023-09-12)

- ASN is not covered
- ASN has at least 1 probe



We'd like to install probes in these ASNs



Use Cases



A distributed view of the Internet

https://labs.ripe.net/author/alun_davies/ripe-atlas-a-distributed-view-of-the-internet/

The Kazakhstan outage as seen from RIPE Atlas

<https://labs.ripe.net/author/emileaben/the-kazakhstan-outage-as-seen-from-ripe-atlas/>

Detecting DNS root manipulation

<https://labs.ripe.net/author/qasim-lone/detecting-dns-root-manipulation/>

DNS vulnerability, configuration errors that can cause DDoS

https://labs.ripe.net/author/giovane_moura/dns-vulnerability-configuration-errors-that-can-cause-ddos/