Spotting Latency Issues With RIPE Atlas

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Return ticket *(Unwanted trip)* around the world

RIPE Atlas

- RIPE Atlas is a global <u>active</u> measurements platform, funded by RIPE NCC members and sponsors

- Goal: view Internet reachability

- Probes hosted by volunteers, using a credits system

- Data is publicly available

<u>atlas.ripe.net</u>

RIPE Atlas

- Runs six type of measurements:
    - **Ping, Traceroute, DNS, NTP, SSL/TLS** and **HTTP**(anchors only)

- Accessible via **GUI, API** and **CLI Tool**

atlas.ripe.net

Some Problems

- High latency - Impatient gamers

- Many networks, globally

- Realtime application, unpredictable

Mark
Online gaming company
Runs own LAN
Users from around the world

Run RIPE Atlas tests

Issues spotted!

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

High latency
Identified

Probe	ASN (IPv4)	ASN (IPv6)			Time (UTC)	RTT		Hops	Success	
1037	55430		🇸🇬	☁	2020-05-13 18:36	40.742		13	✓	ℹ
4429	55430		🇸🇬	☁	2020-05-13 18:36	40.020			✓	ℹ
14042	55430		🇸🇬	☁	2020-05-13 18:36	38.630		13	✓	
22798	55430	55430	🇸🇬	☁	2020-05-13 18:36	38.872		13	✓	ℹ
24422	55430		🇸🇬	☁	2020-05-13 18:36	39.624		13	✓	ℹ
25828	4788		🇲🇾	☁	2020-05-13 18:36	36.563		13	✓	ℹ
28850	4844		🇸🇬	☁	2020-05-13 18:36	36.242		13	✓	ℹ
54623	4773	4773	🇸🇬	☁	2020-05-13 18:36	40.107		12	✓	ℹ
55415	55430	55430	🇸🇬	☁	2020-05-13 18:36	36.952		13	✓	ℹ

Lower latency
after debugging

Solution attempted

- Talk to peers to improve routing & RTT results
- Talk to the ISP

LOW latency

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	✔		ⓘ

Settings & Status | Latest Results | Map | Tracemon | IPMap | Downloads

Hooray Moments!

1. Improve performance

Shorter path is selected, better latency, reliability & security

2. Control & flexibility

Repeat the tests as much as you need!

3. Service desks ❤️ RIPE Atlas GUI to validate findings

RIPE Atlas

A view into the
Philippines (ASEAN)

The Philippines

31 probes connected
2 anchors

6887	Dreamscape Networks	Cebu	PH
7032	PCCW Global	Makati City	PH
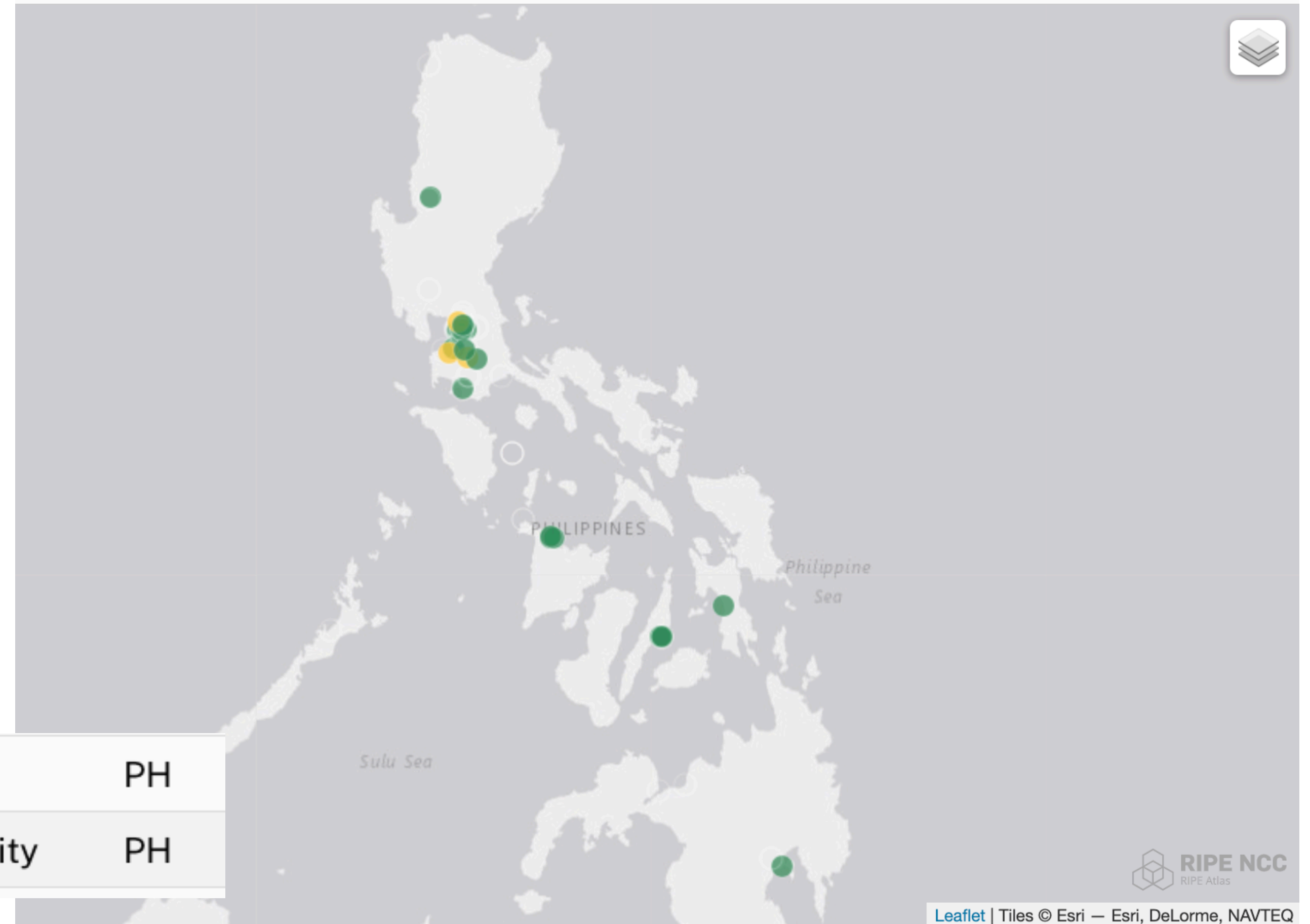
https://atlas.ripe.net/results/maps/network-coverage/?filter=Philippines+
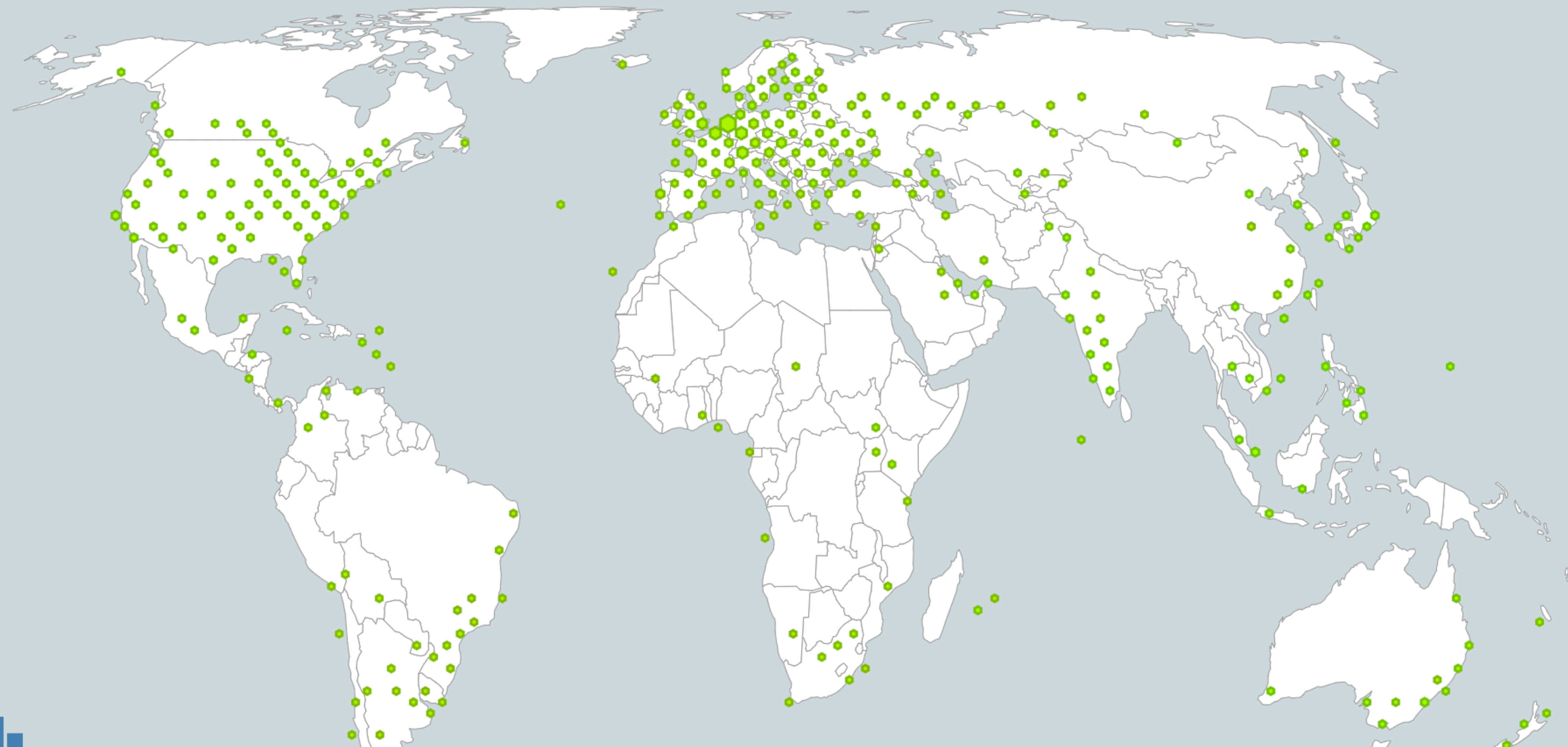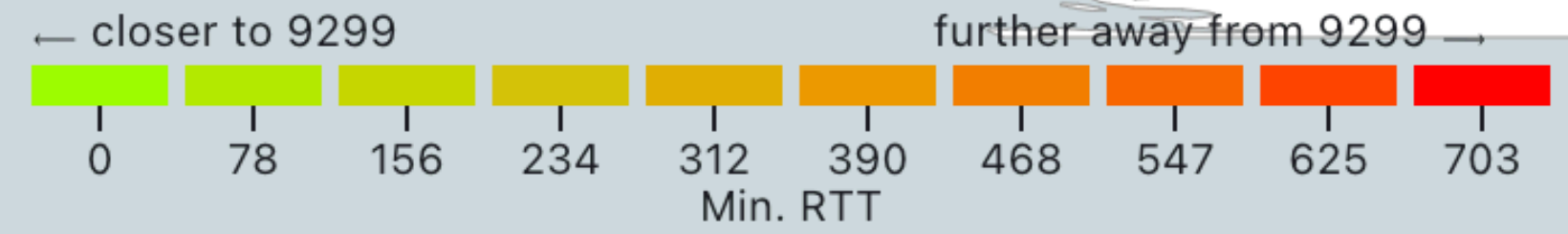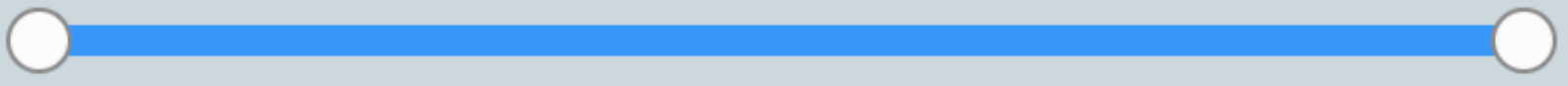
MinRTT **Latency** AS9299
Philippines

https://observablehq.com/@ripencc/atlas-latency-worldmap

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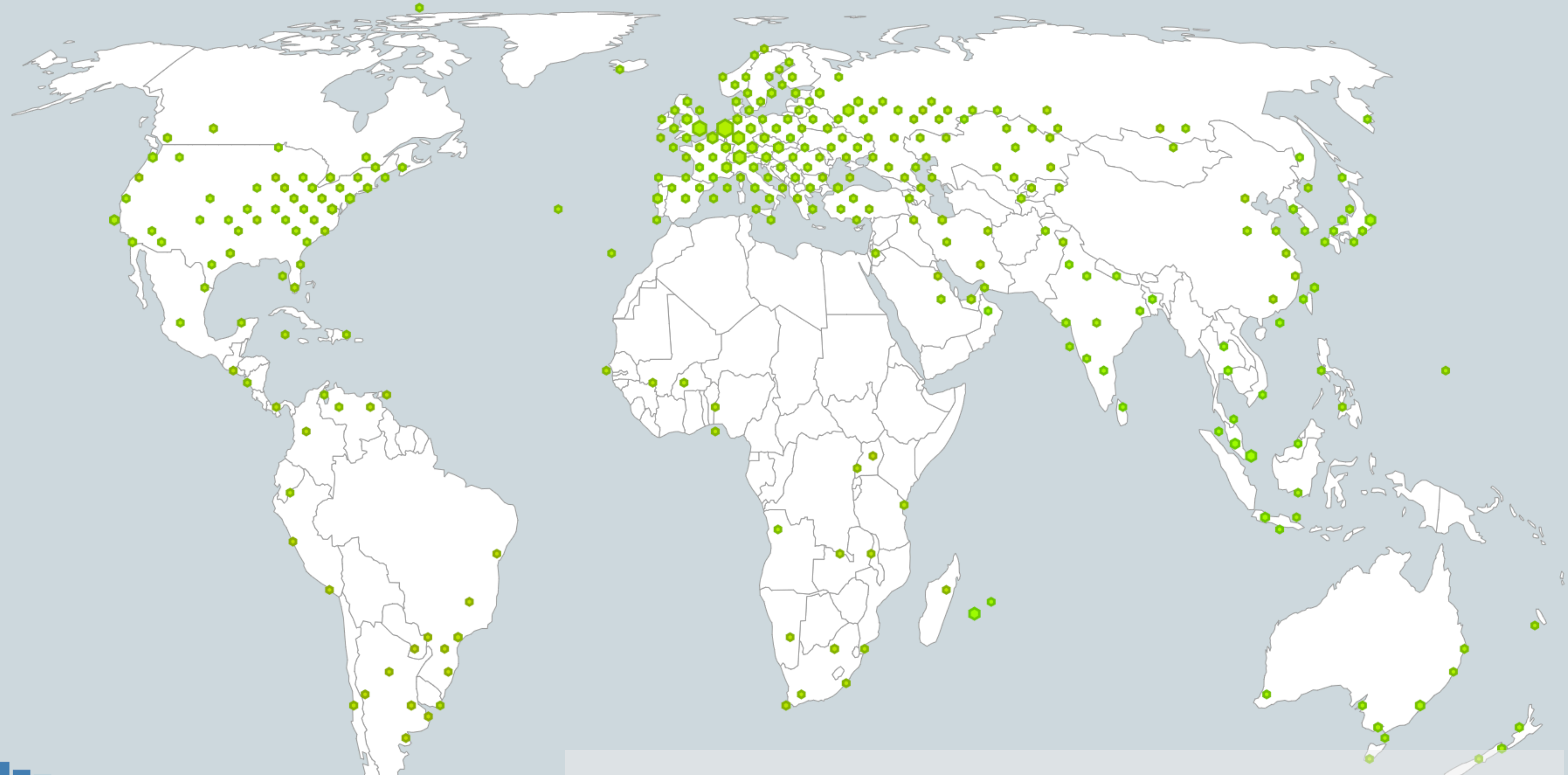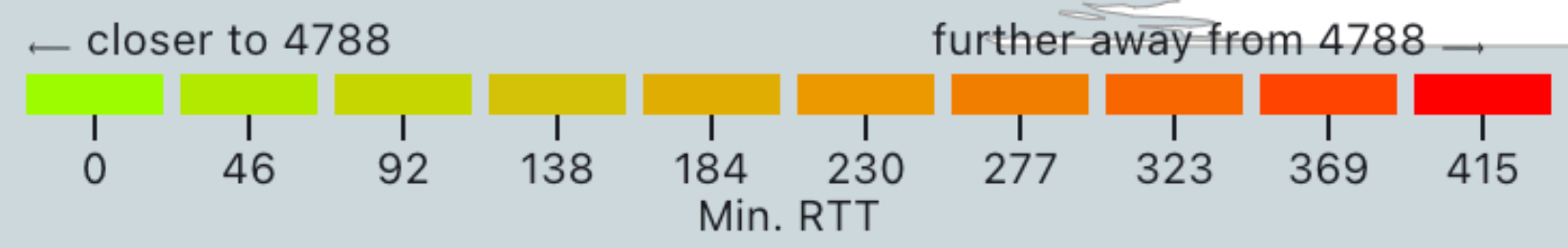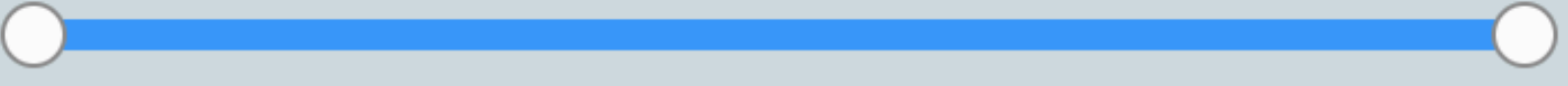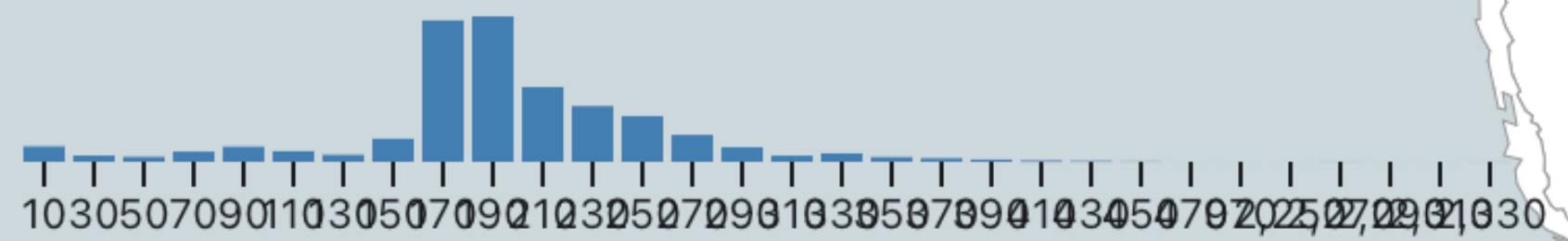
MinRTT — **Latency** AS4788 Malaysia

https://observablehq.com/@ripencc/atlas-latency-worldmap

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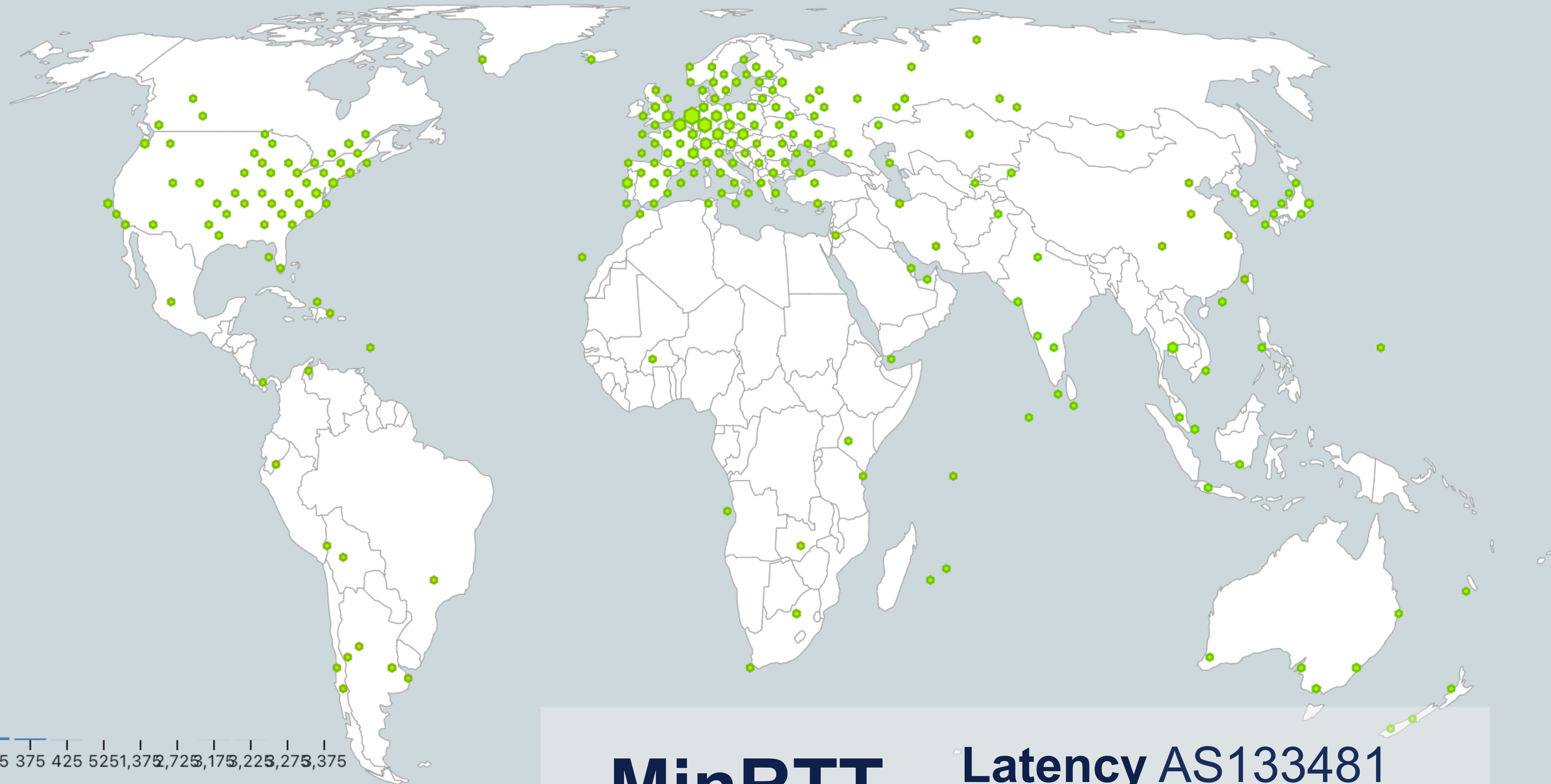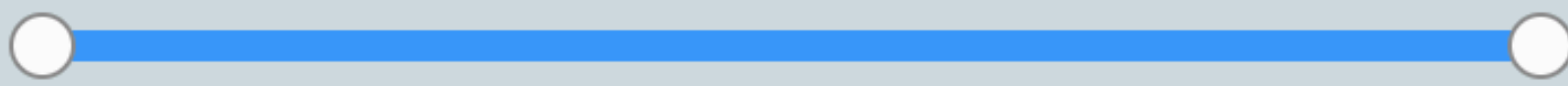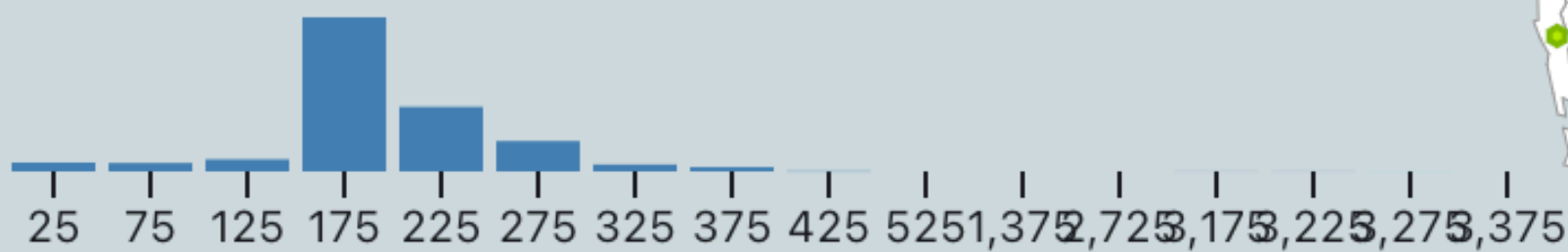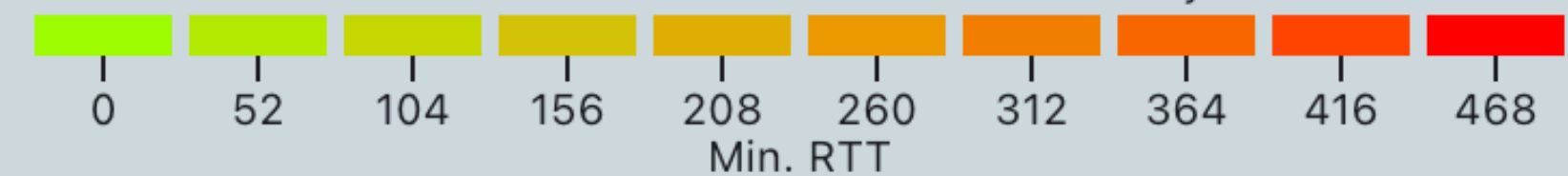
MinRTT

Latency AS133481
Thailand

https://observablehq.com/@ripencc/atlas-latency-worldmap

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3. Finding anomalies in Min. RTT explorer
Observed by Probe 22471 in AS9299

A Jump in latency
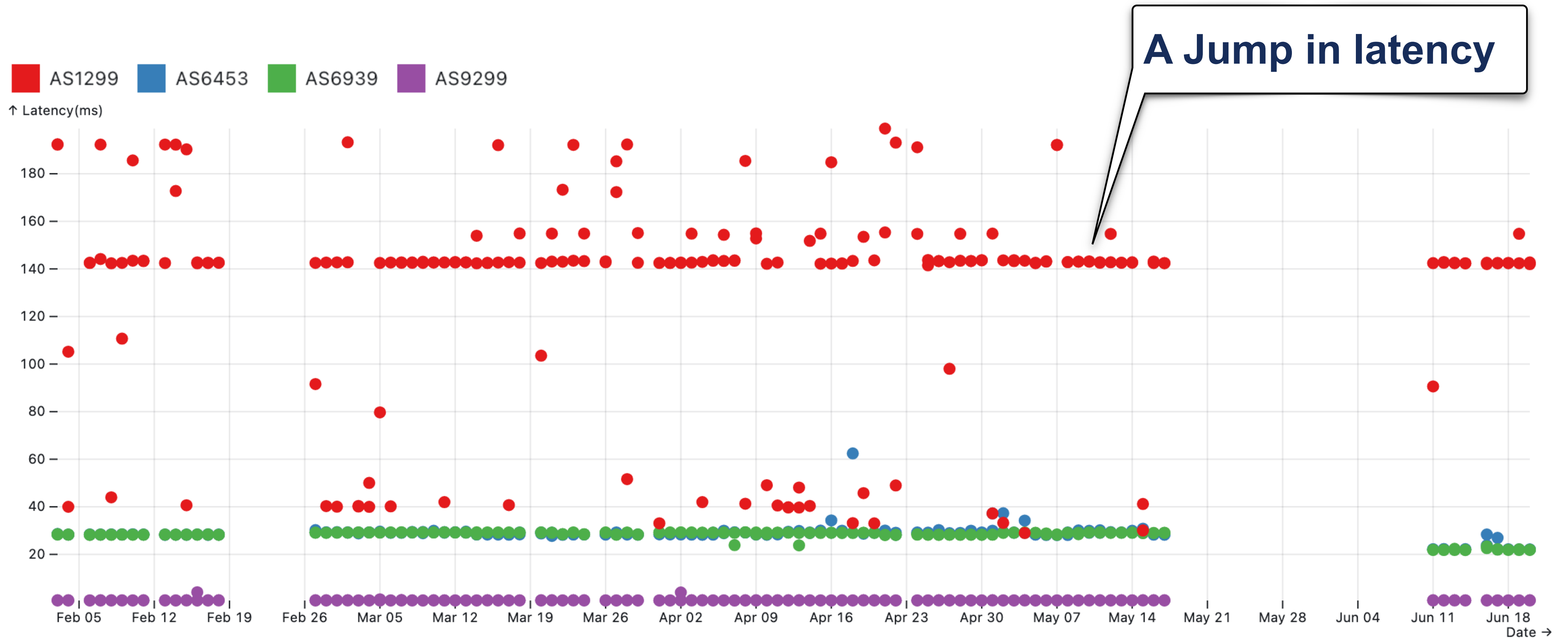
3. Finding anomalies in Country IXP JEDI - AS9299

IXP Country Jedi | Main page | GeoPath | AS Graph | **IXP Country** | RTT Mesh | IXP LANs | Probe Tags | Per ASN Report

Mouse click on every box to see the traceroute path. | Showing **12 of 12 ASNs (IPv4)**. | Click here for **IPv6**.

Show Filter ASNs | Hide Legend

■ Local IXP found: YES, out-of-country IPs: NO   ■ Local IXP found: NO, out-of-country IPs: NO
■ Local IXP found: YES, out-of-country IPs: YES   ■ Local IXP found: NO, out-of-country IPs: YES

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

□ Local IXP found: NO, out-of-country IPs: YES
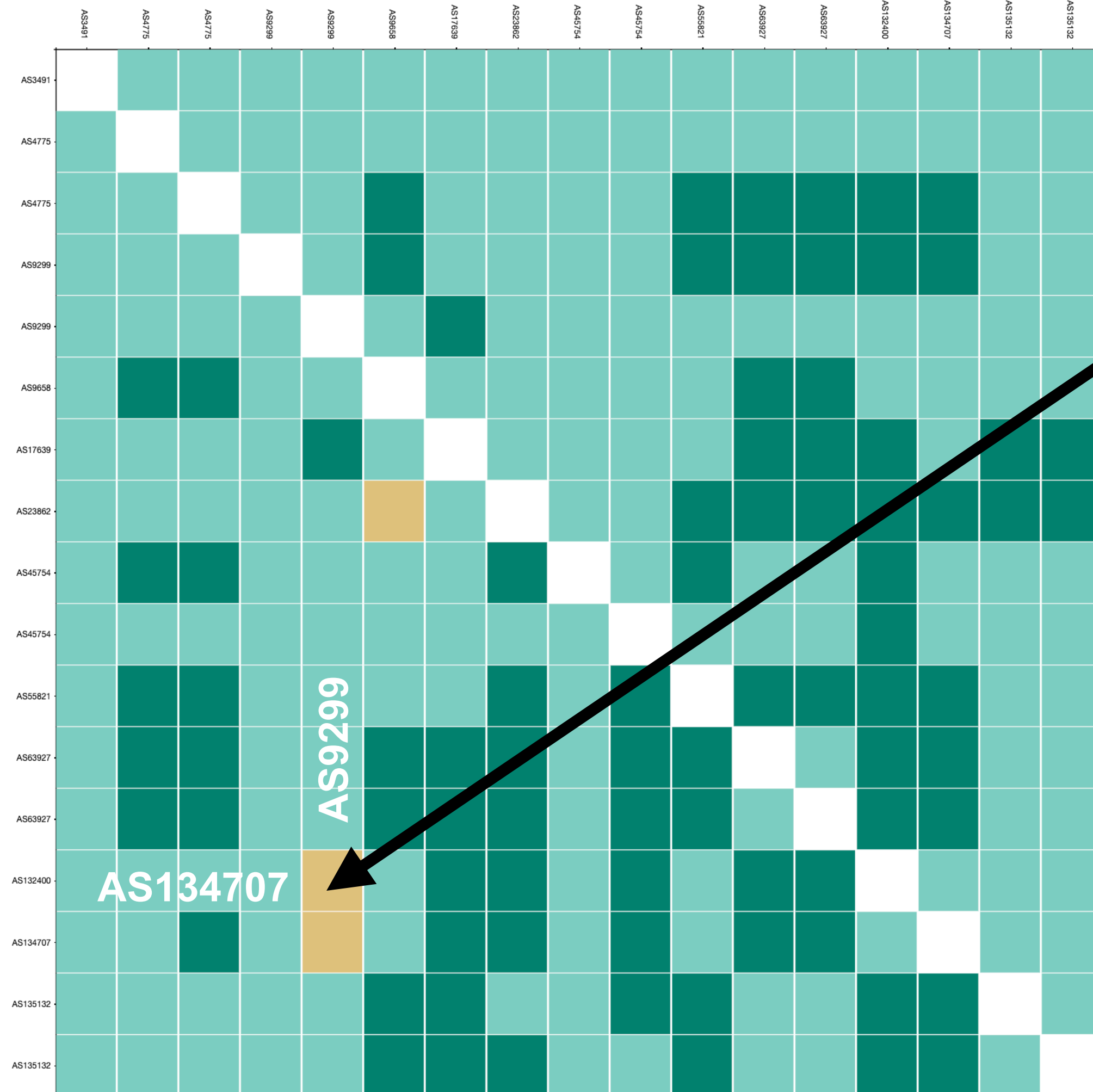
IPv4 Traceroute:

AS(v4) Path:
1) AS134707
2) AS174
3) AS1299
4) AS9299

v4

msm_id:54834827 prb_id:60711 dst:112.201.106.95 ts:2023-06-02 08:23:14 +00:00

```
0: ()  192.168.1.1  (0.565 0.794 0.836) ||
1: (AS134707)  103.196.136.1  (1.491 1.514 7.149) ||
2: ()  10.255.255.158  (1.503 1.51 1.522) ||
3: (AS134707)  203.189.117.201  (1.961 2.245 2.394) ||
4: (AS134707)  203.189.117.249  (1.735 3.629 5.062) ||
5: (AS134707)  203.189.117.189  (16.928 17.276 18.238) ||
6: (AS*) Uknown (*) (* * *) |*|
7: (AS174)  be2899.ccr31.mrs02.atlas.cogentco.com  (176.637 176.808 177.305) ||
8: (AS1299)  mei-b5-link.ip.twelve99.net  (166.664 167.006 167.908) |Prague,CZ|
9: (AS*) Uknown (*) (* * *) |*|
10: (AS1299)  snge-b5-link.ip.twelve99.net  (168.471 169.262) |Vienna,AT|
11: (AS1299)  pldt-ic-360941.ip.twelve99-cust.net  (169.806 170.099 174.129) ||
12: (AS9299)  210.213.130.64.static.pldt.net  (195.735 195.829 196.419) ||
13: (AS9299)  210.213.130.53.static.pldt.net  (195.741 196.012 196.52) ||
14: (AS9299)  122.2.206.41.static.pldt.net  (205.96 206.445 207.002) ||
15: (AS*) Uknown (*) (* * *) |*|
16: (AS*) Uknown (*) (* * *) |*|
17: (AS*) Uknown (*) (* * *) |*|
18: (AS*) Uknown (*) (* * *) |*|
19: (AS*) Uknown (*) (* * *) |*|
20: (AS*) Uknown (*) (* * *) |*|
```

Grey bar: max-min RTT of all hops.
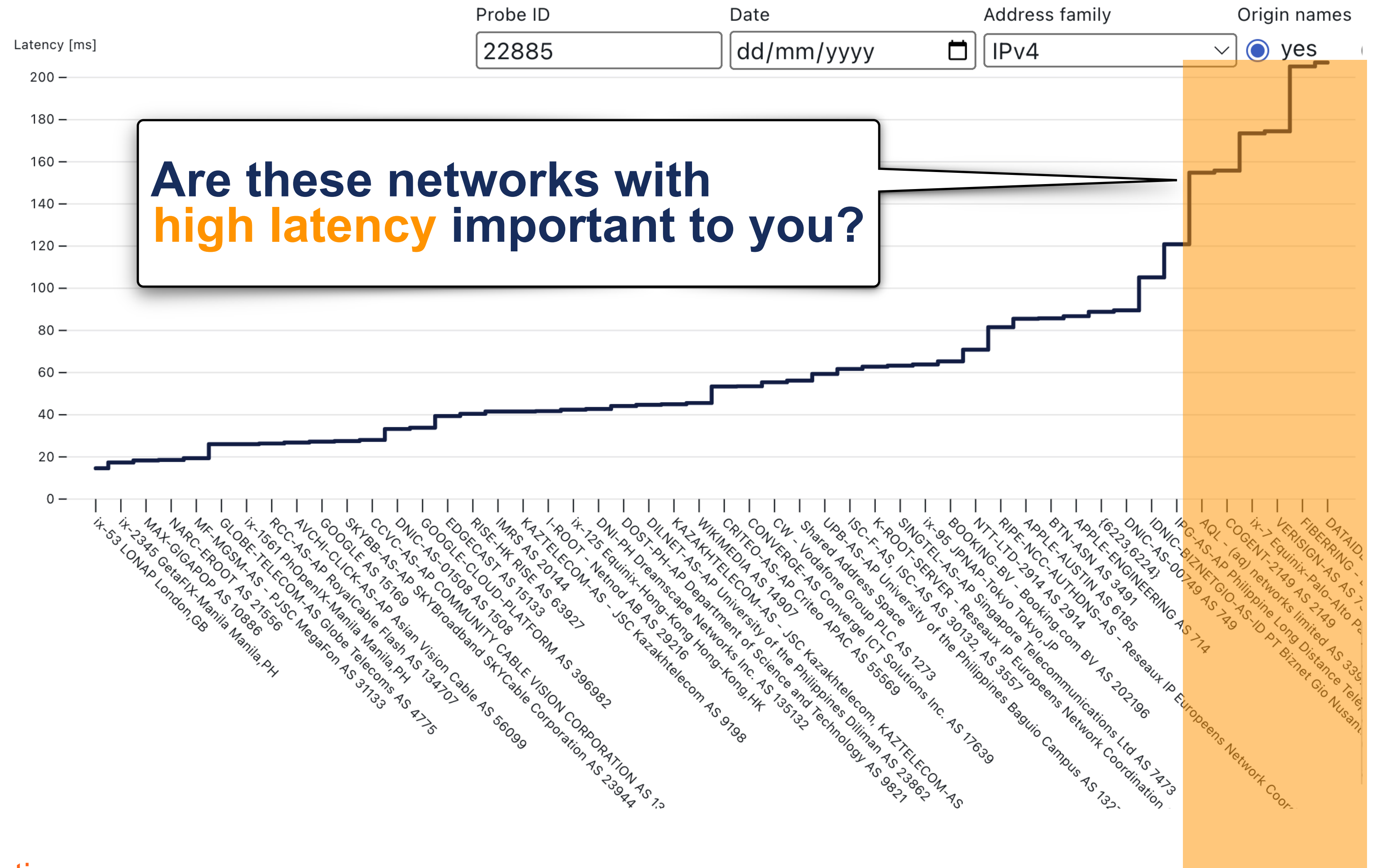Light-blue bar: min RTT of the hop.

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

Try your probe here

https://observablehq.com/
@ripencc/atlas-probe-
neighbourhood?

Are these networks with high latency important to you?

We'd like to install probes in these ASNs

https://sg-pub.ripe.net/petros/
population_coverage/country.html?name=PH

Network (ASN)	Network Name	Estimated User Population %
9299	IPG-AS-AP	34.99
17639	CONVERGE-AS	17.01
132199	GLOBE-MOBILE-5TH-GEN-AS	14.86
4775	GLOBE-TELECOM-AS	10.52
10139	SMARTBRO-PH-AP	9.58
139831	DTC-AS-AP	2.73
23944	SKYBB-AS-AP	2.3
134707	RCC-AS-AP	0.83
136515	DCSI-AS-AP	0.54
137226	ACCTN-AS-AP	0.49
55821	RADIUSTELECOMS-AS-AP	0.44
45754	CLEARPATH-AS-AP	0.38
56099	AVCHI-CLICK-AS-AP	0.37
56262	USATV-DAGUPAN-AS-AP	0.33
135607	INFINIVAN-AS-AP	0.32
134788	PARASATCABLETV-AS-AP	0.32

| Network (ASN)	Network Name	Estimated User Population %
133923	PLANETCABLETV-AS-AP	0.26
138965	SSTI-AS-AP	0.21
56207	COMCLARK-PH	0.19
9658	ETPI-IDS-AS-AP	0.17
132021	KALIBOCABLE-PH	0.13
137239	FPSTI-AS-AP	0.11
45499	CABLELINK-TRANSIT-AS-AP	0.11
134497	CINE-AS-AP	0.1
132400	CCVC-AS-AP	0.1
136929	MERIDIAN1-AS-AP	0.09
135582	GCC-AS-AP	0.09
135345	NEWMOUNTAINVIEW-PH	0.09
139034	SATTLINK-INC-AS-AP	0.08
138958	TETCI-AS-AP	0.08
140243	CCVI-AS-AP	0.07
45622	SKYBB-PILIPINOCABLE-AS-AP	0.06

Help us cover these ASNs in South East Asia

RIPE Atlas probe coverage
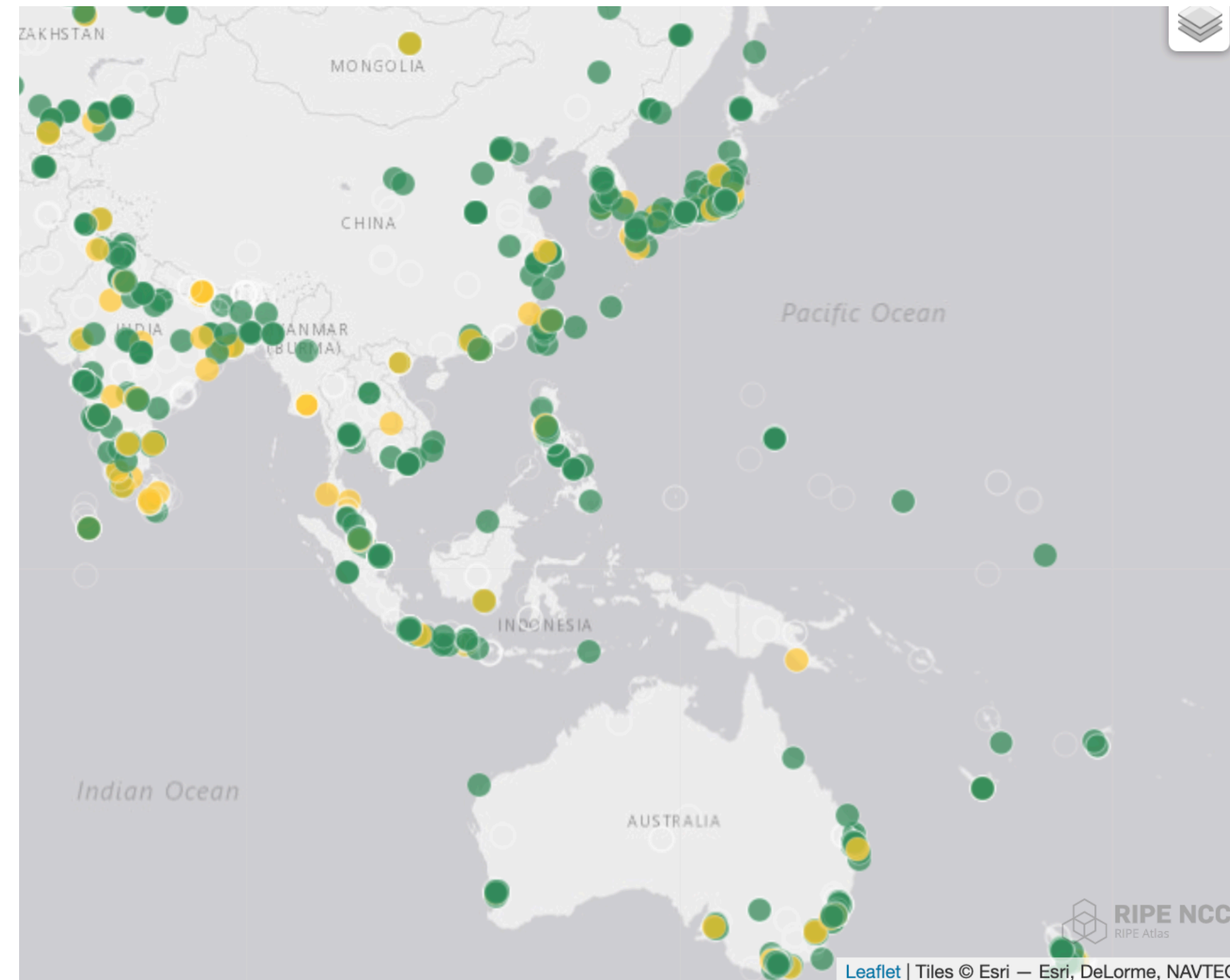Showing ASNs covering at least 1% of the country's population (2023-04-25)

○ ASN is not covered
● ASN has at least 2 probes
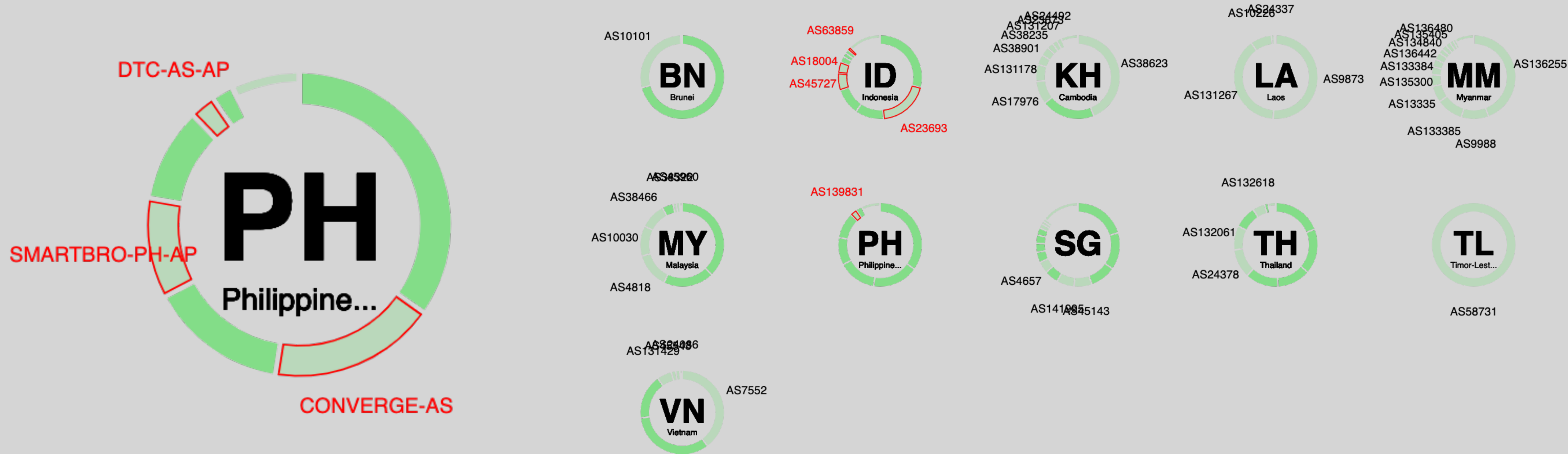
Probes in the ASEAN region

Economy	Active Probes
BD	6
ID	69
KH	1
LA	2
MM	1
MY	26
PH	31
SG	113
TH	20
TL	1
VN	9

Distribution in Asia Pacific

Some reasons to love RIPE Atlas

12,000 Probes — Global Coverage

Fair Use/ NON Monetary

Trusted Source — Non-profit organisation
Volunteers: End Users

Safe & Secure — Regular third-party security review

Open Data — Measurement results open to all

Community Driven — From the community for the community

INTERNET
BEST
MEASUREMENT PLATFORM

What's next

1. Increase Coverage by 20 new probes in PH - 2023

2. Deploy SW probes in multiple locations: 7 Sept 2023

3. Reconnect your probes!

Questions

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atlas@ripe.net

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/