RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Know Your Network

Why every network operator should host a RIPE Atlas probe

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11 Things Network Operators Do

Network Infrastructure Management	Security Management	Configuration and Optimisation
Capacity Planning	**Network Monitoring**	Troubleshooting
Software Updates and Patch Management		8 to 11

No News Is Good News

What's Known

- Your infrastructure
- System & Software
- Your People
- Monitoring Tools
- Security Measures

The Unknown

- Threats/ Unpredictability
- What our competitor do
- Everchanging Technology
- Hijacks/ Natural Disaster
- Opportunity

RIPE Atlas

- RIPE Atlas is a global active 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
- atlas.ripe.net
- www.ripe.net/ripe-atlas/

RIPE Atlas

Accessible via

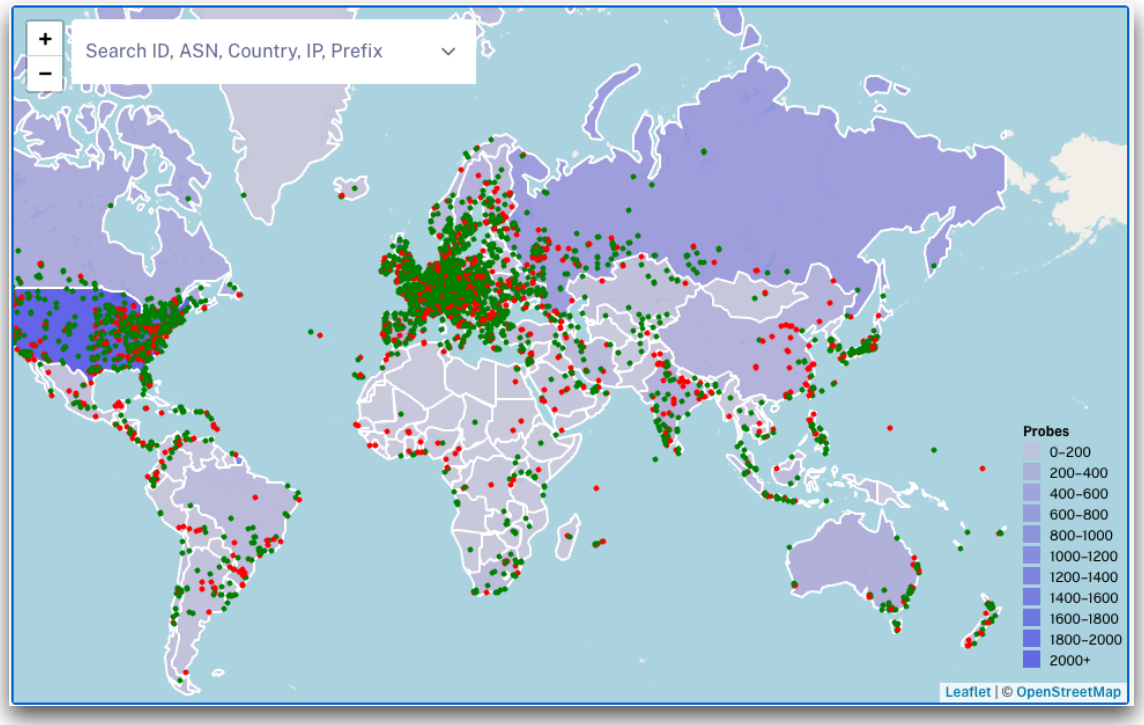
- GUI
- API
- CLI TOOL

Measurement Types

- PING
- TRACEROUTE
- DNS
- NTP
- SSL/TLS
- HTTP (anchors)

Run RIPE Atlas tests

- More than 12,000 probes connected
- More than 3,000 ASNs globally
- 347 in South East Asia



Some Problems

- High latency - impatient gamers
- Gamers from different networks
- Realtime application is unpredictable

Issues Spotted!

High latency Identified

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	✗

Talk to your peers, ISP or anyone who 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	✓

Latest Traceroute Result for Measurement #59170999

2023-09-01 16:17 UTC

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

1 192.168.0.1 0.457ms 0.368ms 0.346ms
2 100.91.127.254 5.424ms 4.347ms 4.594ms
3 10.233.97.55 4.777ms 4.537ms 4.473ms
4 10.55.192.63 193.346ms 194.974ms 194.312ms
5 213.248.79.106 lax-b3-link.ip.twelve99.net AS1299 182.594ms 182.382ms 182.325ms
6 62.115.126.250 lax-b23-link.ip.twelve99.net AS1299 202.572ms 203.672ms 203.016ms
7 * 62.115.123.136 dls-bb2-link.ip.twelve99.net AS1299 232.324ms *
8 62.115.116.213 atl-b24-link.ip.twelve99.net AS1299 255.674ms 250.639ms 250.838ms
9 62.115.119.201 ipls-b2-link.ip.twelve99.net AS1299 255.624ms 255.207ms 255.525ms
10 62.115.139.235 clb-b1-link.ip.twelve99.net AS1299 260.81ms 260.133ms 259.797ms
11 * * *
12 * * *
13 * * *
14 * * *
15 * * *
255 3.160.5.56 server-3-160-5-56.cmh68.r.cloudfront.net AS16509 243.323ms 242.473ms 243.412ms

Lower latency after debugging

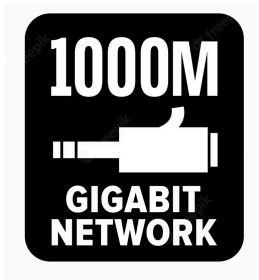
Hooray Moments!

Improve Performance
Shorter path is selected, better latency, reliability and security

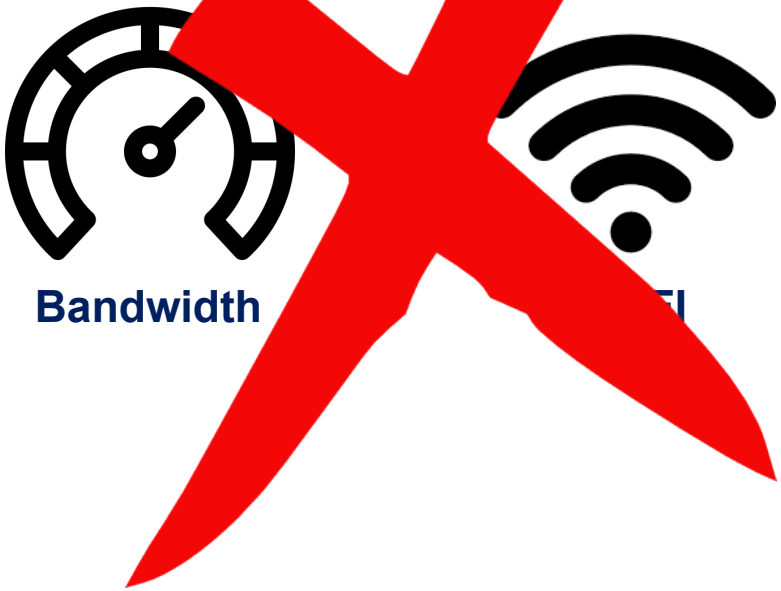
Control and Flexibility
Repeat tests as much as you need!

Service desk ❤️ RIPE Atlas + GUI
To validate findings

What it Isn’t



Traffic Volume



Bandwidth

Making your Coffee

Dare to Take a Risk?

Try it Wisely

- Who uses the platform?
- What do people say?
- Search for BAD reviews/BAD experiences online
- What's the source? Trusted?
- Is it NEW?

Convinced?

Security and Privacy

Probes

- Trust Material (regular server address, keys)
- NO open Ports/initiate connection/ NAT is OK
- Doesn’t listen to local traffic/ No snooping

Measurements

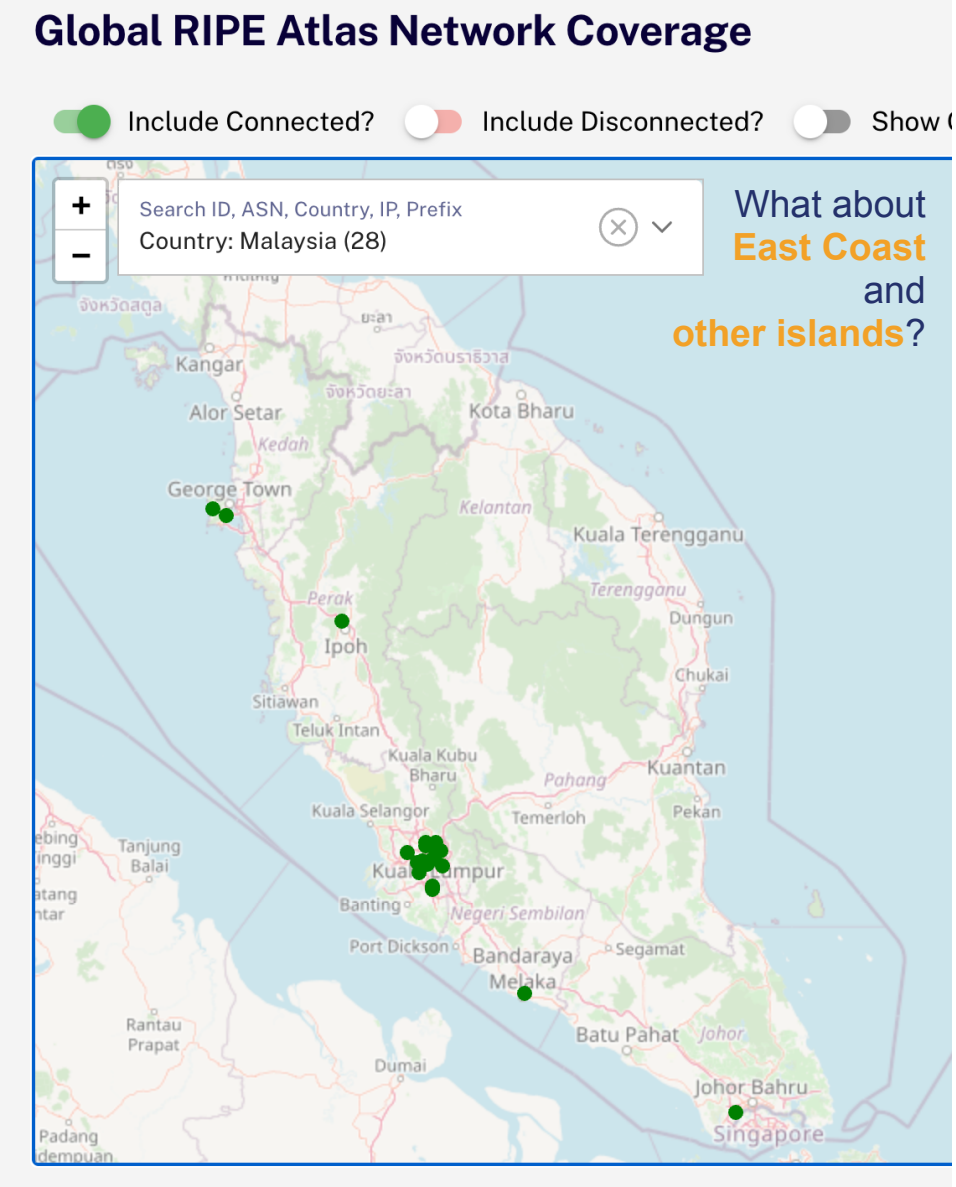
- No passive measurements
- Probes initiate SSH connections from probe to server
- Code of measurements publicly available

A View Into Malaysia

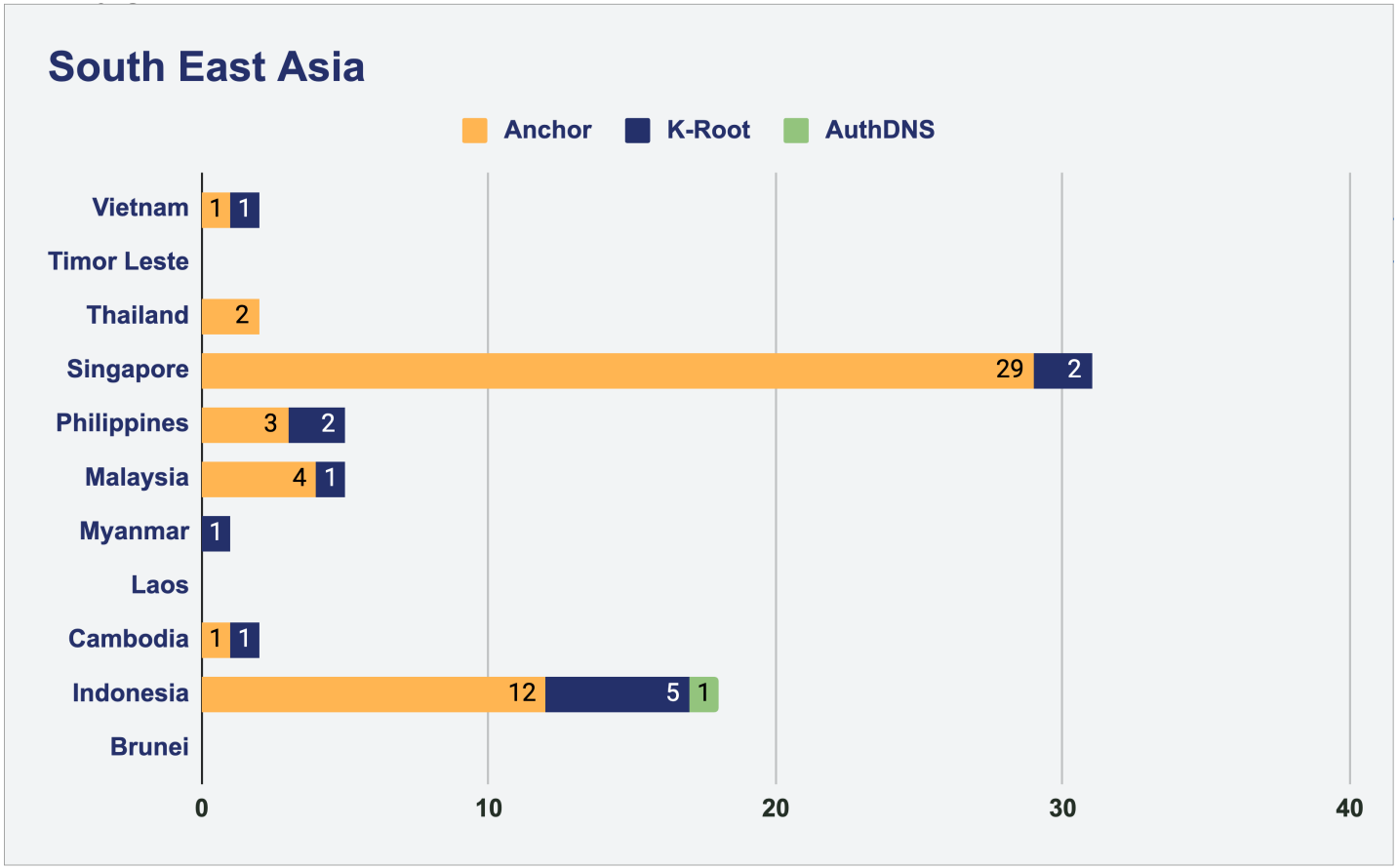
Probes in South East Asia

Country	RIPE Atlas
Vietnam	7
Timor Leste	1
Thailand	27
Singapore	117
Philippines	60
Myanmar	2
Malaysia	28
Laos	1
Indonesia	99
Cambodia	2
Brunei	3

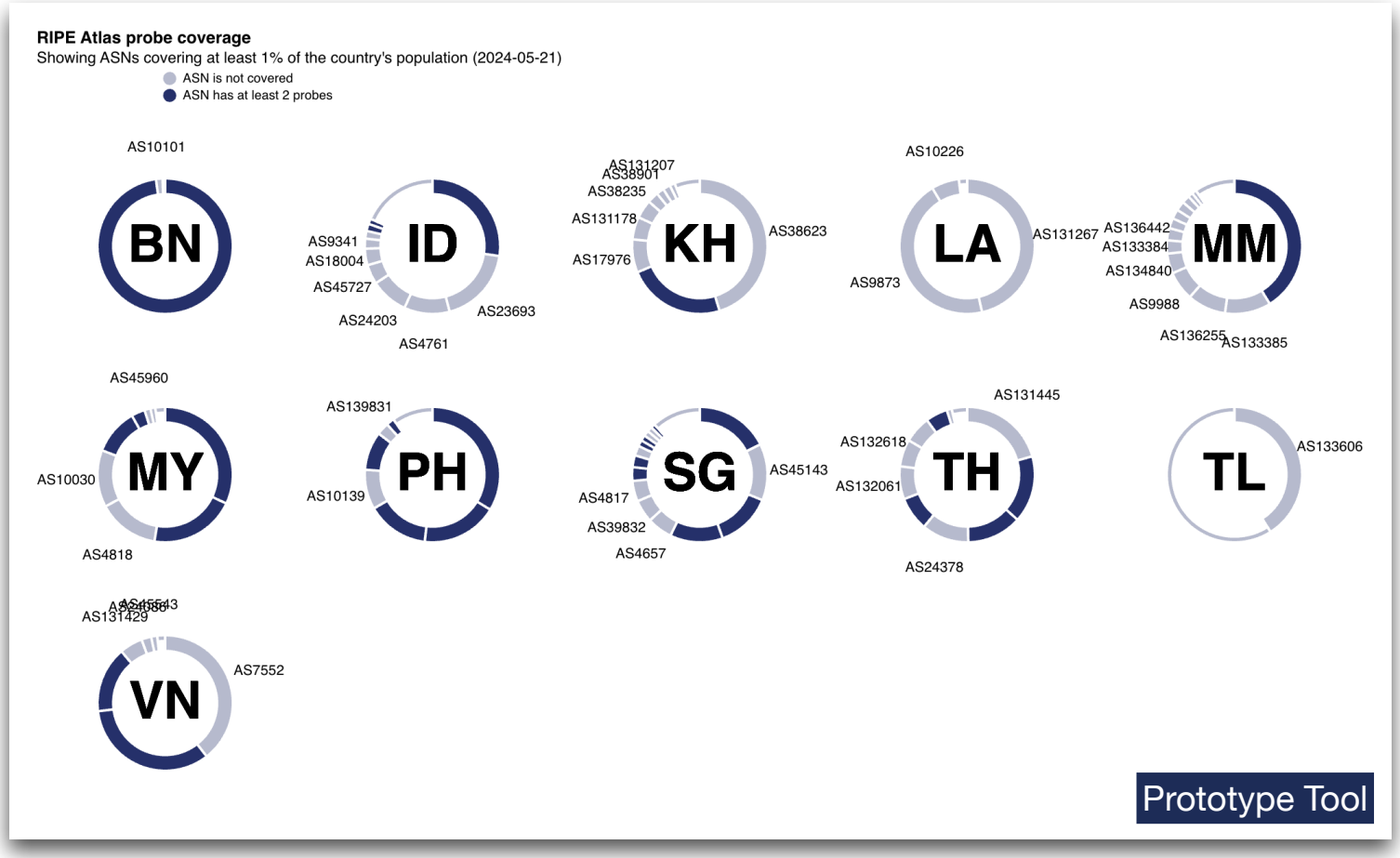
• Data from 20 May 2024



RIPE NCC Tools and Services



Let's Cover These Networks in South East Asia

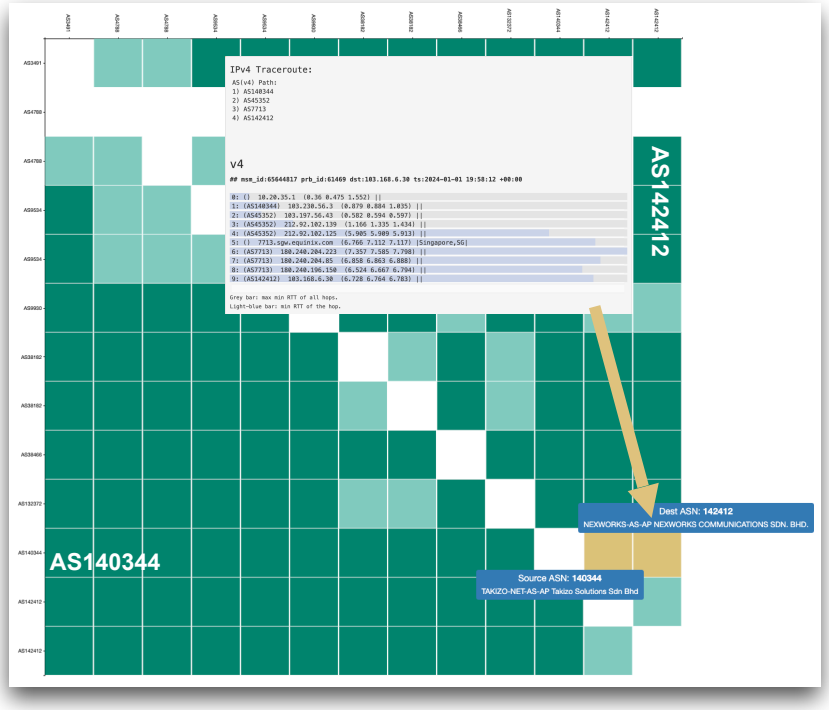


10030	CELCOMNET-AP	Malaysia
4818	DIGIIX-AP	Malaysia
38466	UMOBILE-AS-AP	Malaysia
9930	TTNET-MY	Malaysia
45960	YTLCOMMS-AS-AP	Malaysia
38322	TTSSB-MY	Malaysia
56231	ASTRO-MY-AS-AP	Malaysia
45410	ALLOTECH-AS-MY	Malaysia

[RIPE Atlas network coverage]

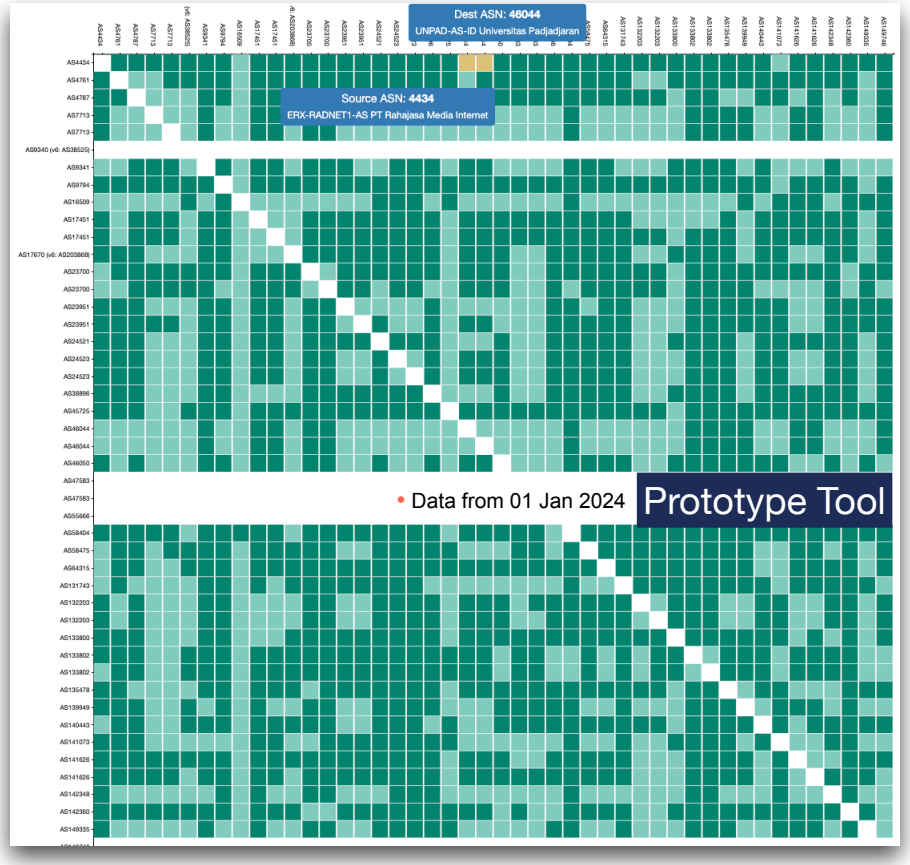
Did my Paths Go Out of the Country?

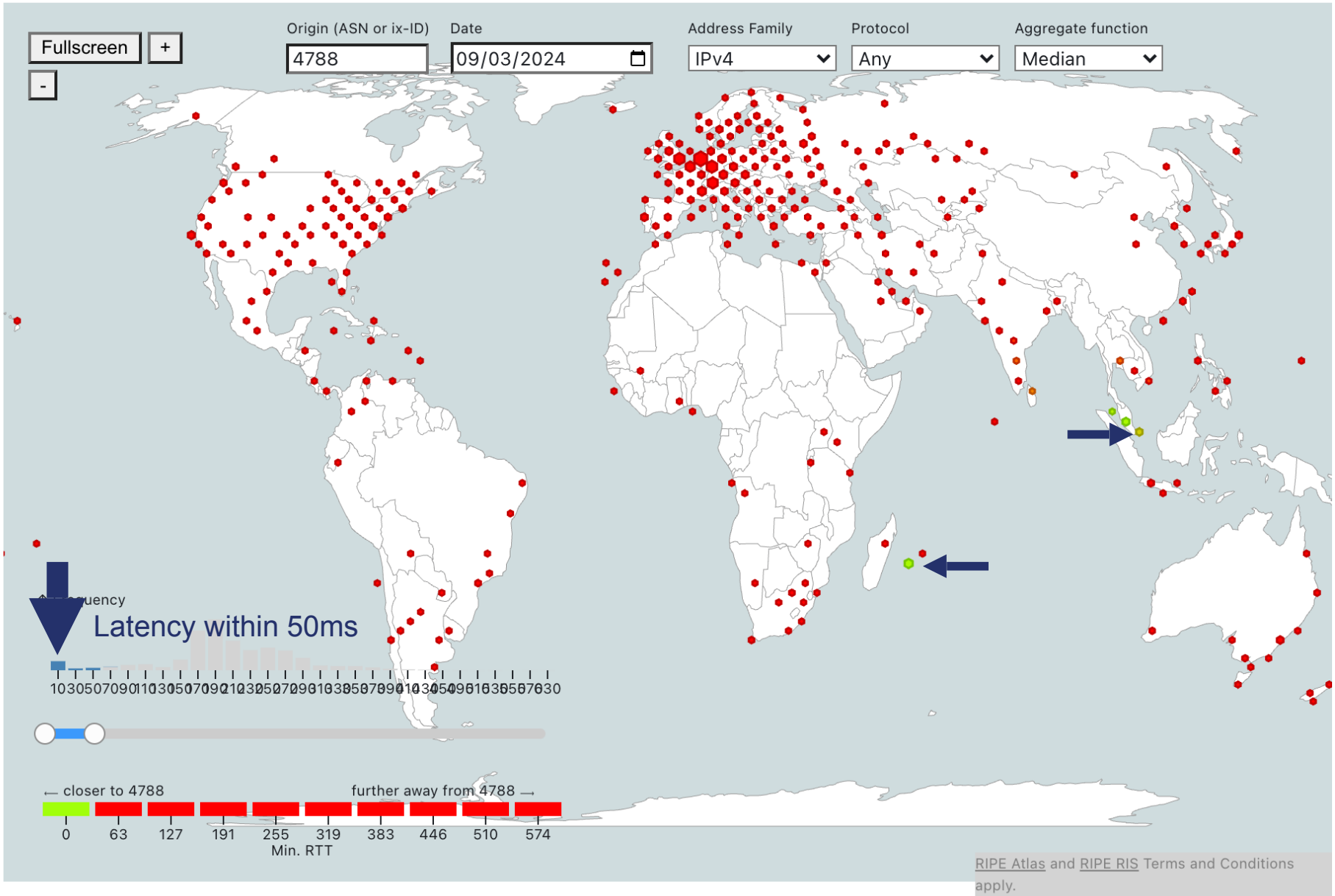
Malaysia



[IXP Country Jedi]

Indonesia





MinRTT

Prototype Tool

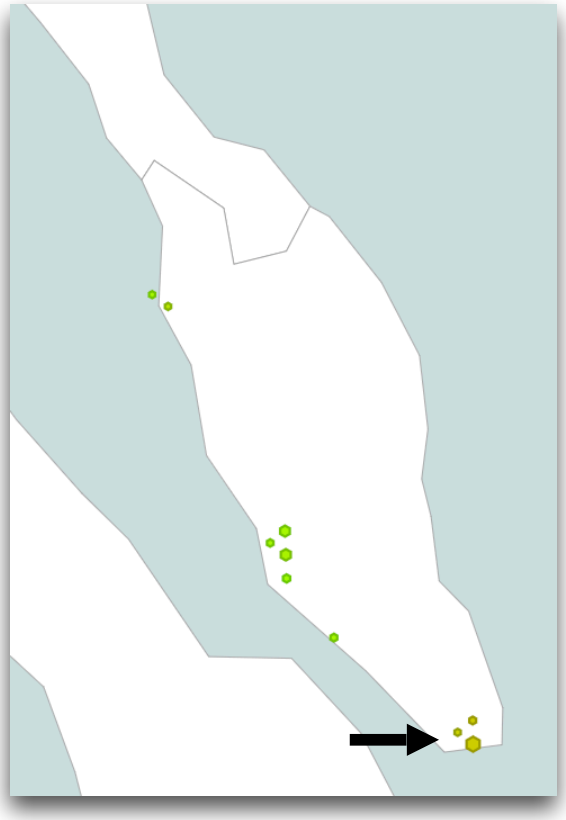
World Latency to AS4788

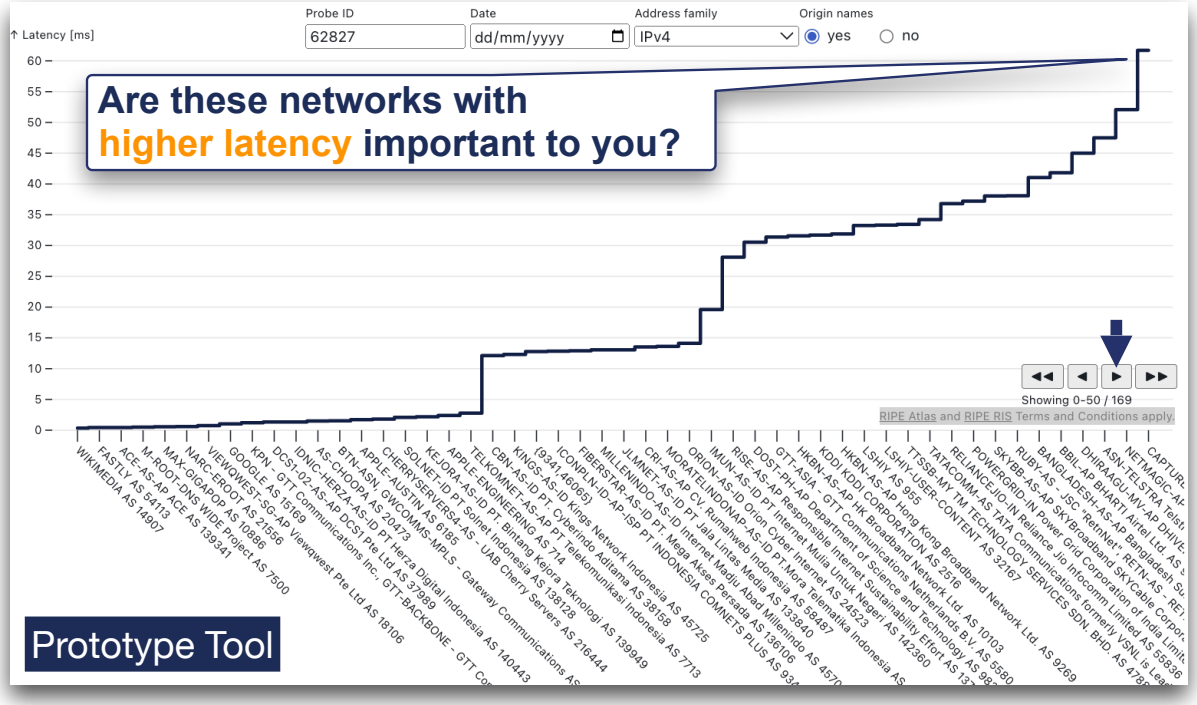
TM TECHNOLOGY SERVICES SDN. BHD

Atlas Latency World Map

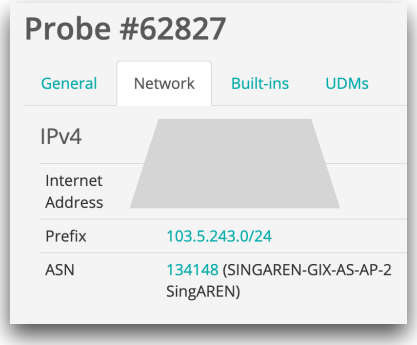
Probe Neighbourhoods

Let’s zoom in





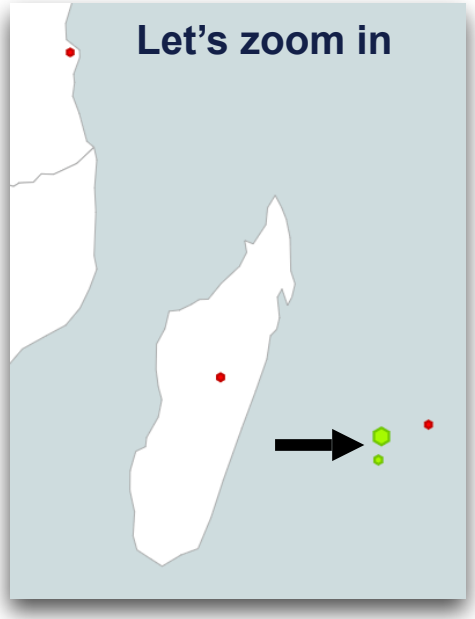
[RIPE Atlas Probe Neighbourhood]

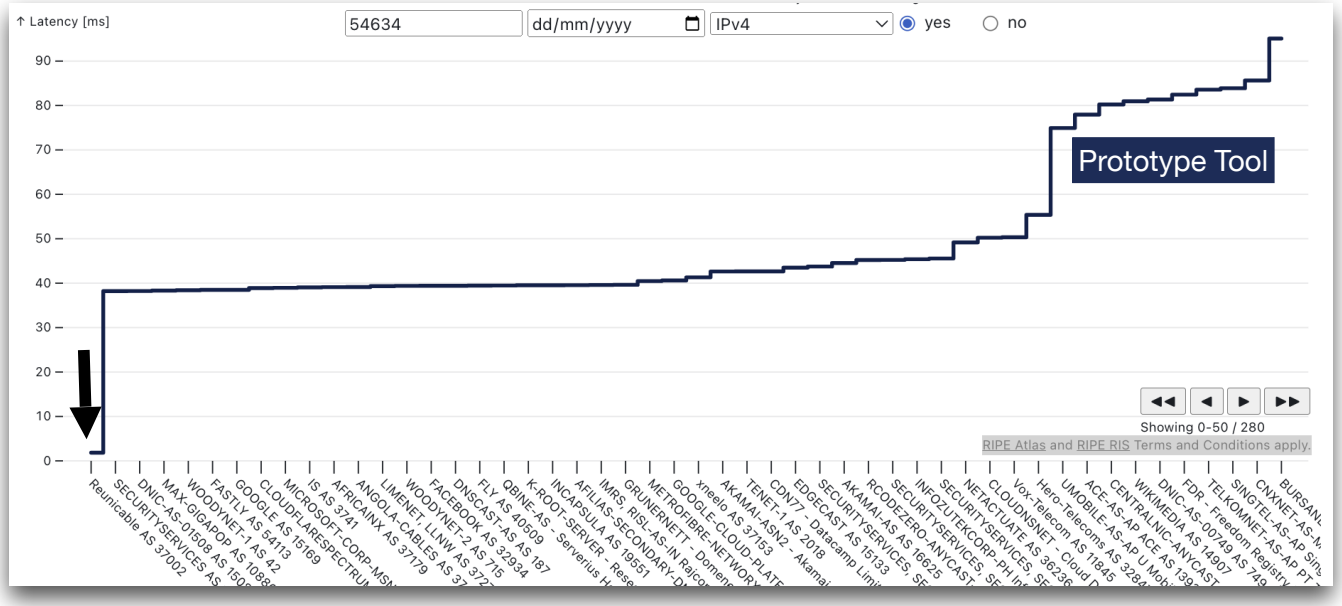


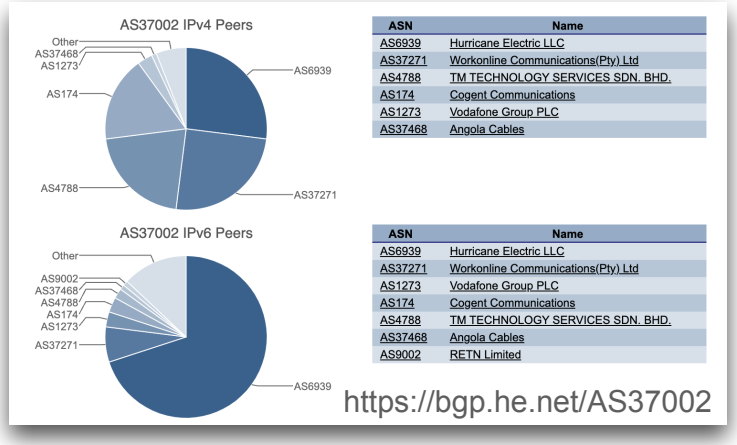
ProbeID 62827
Singapore

[RIPE Atlas probes]

Why is AS4788 Seen in Reunion in Africa?





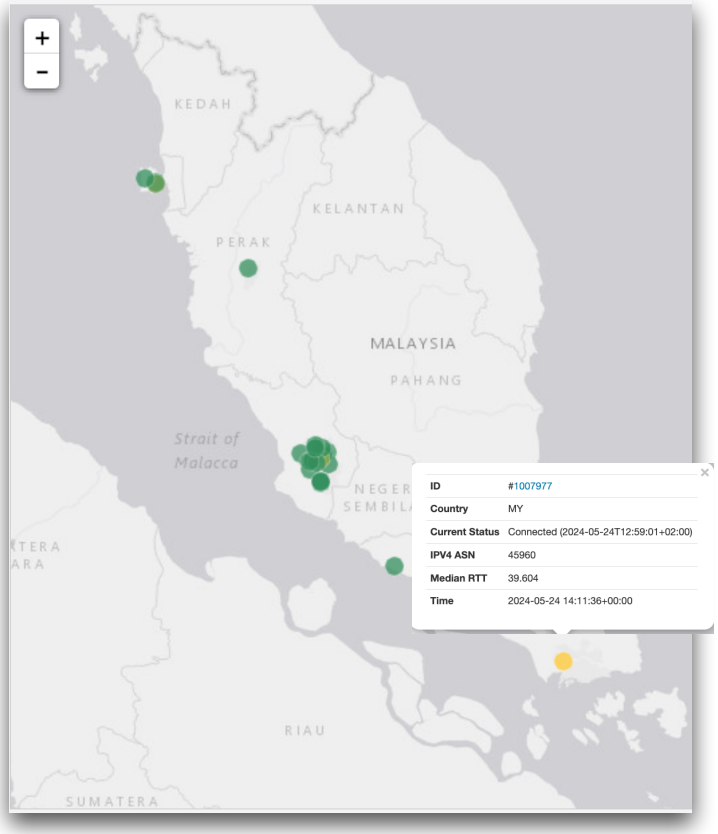


ProbeID 55282
AS21351 Reunion

RIPE Atlas probes

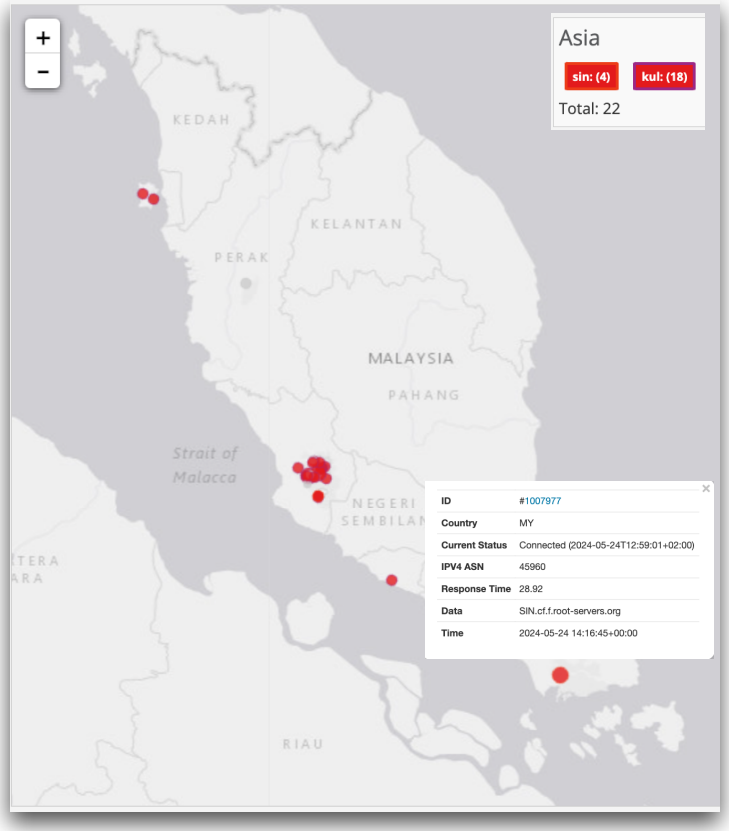
Which DNS Root Instances answer to the query from probes in Malaysia (f, e, m & d)

MRTT Measurements to f-root in Malaysia (4)



RTT map result

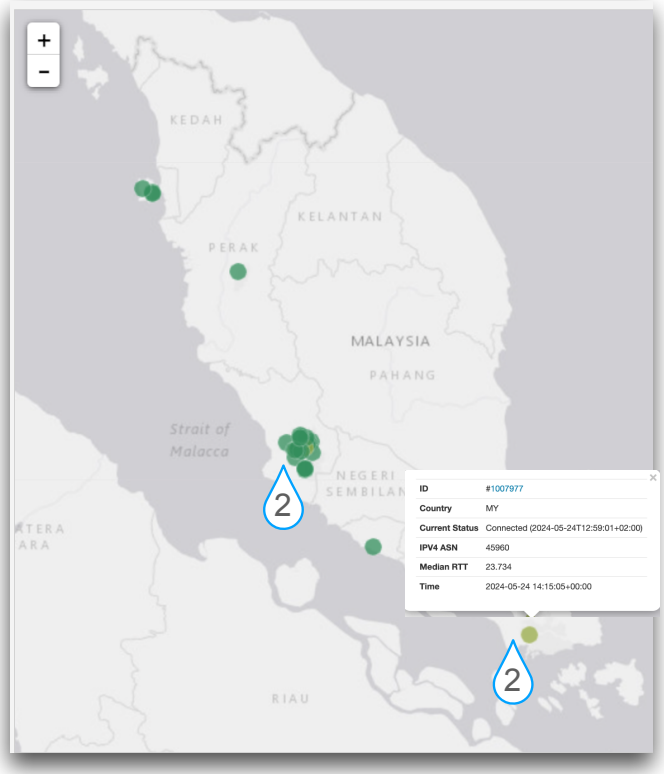
Which f-root respond to the query?



DNS Root Instances

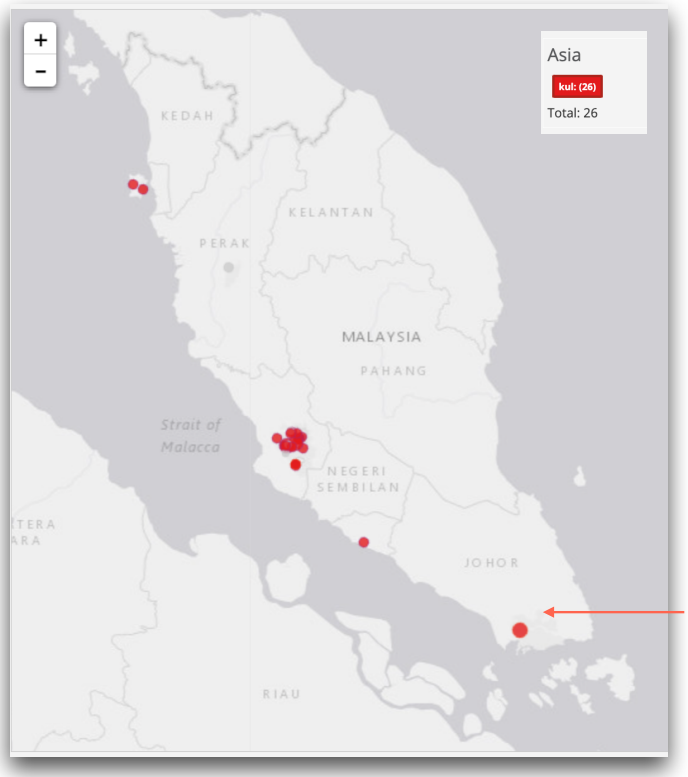
- 4 f-root in Malaysia:
  - 2 in Kuala Lumpur
  - 2 in Johor Baru
- MRTT 0-50ms
- 18 probes got answers from f-root in Kuala Lumpur, and 4 from Singapore
- None from Johor Baru

MRTT Measurements to e-root in Malaysia (4)



[RTT Map Result]

Which e-root responds to the query?

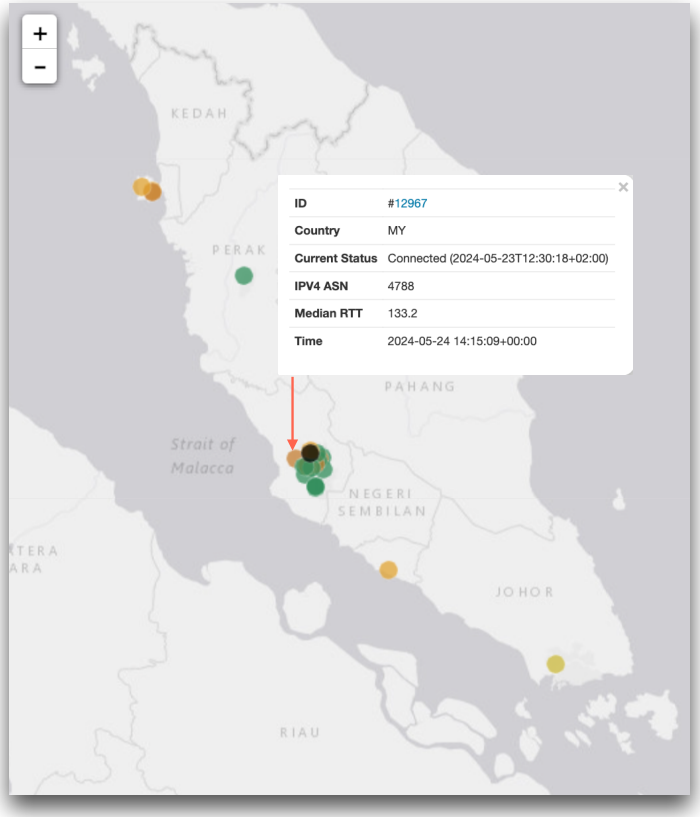


[DNS Root Instances]

ID	#1007977
Country	MY
Current Status	Connected (2024-05-24T12:59:01+02:00)
IPV4 ASN	45960
Response Time	30.138
Data	p01.kul.eroot
Time	2024-05-24 14:16:44+00:00

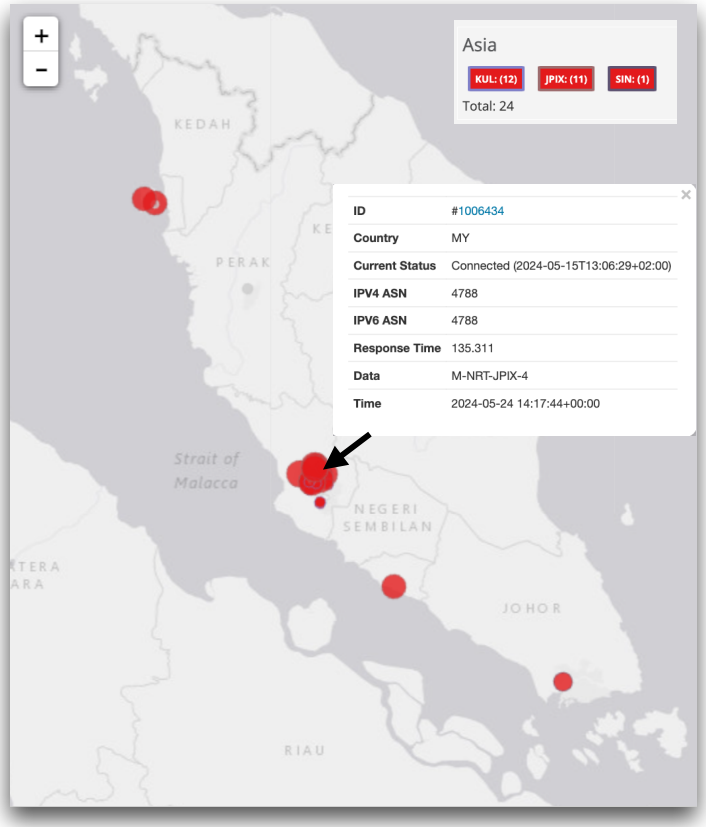
- 4 e-root in Malaysia
  - 2 in Kuala Lumpur
  - 2 in Johor Baru
- MRTT 0-40ms
- 26 probes received answers from e-root in Kuala Lumpur

MRTT Measurements to m-root in Malaysia (1)



RTT Map Result

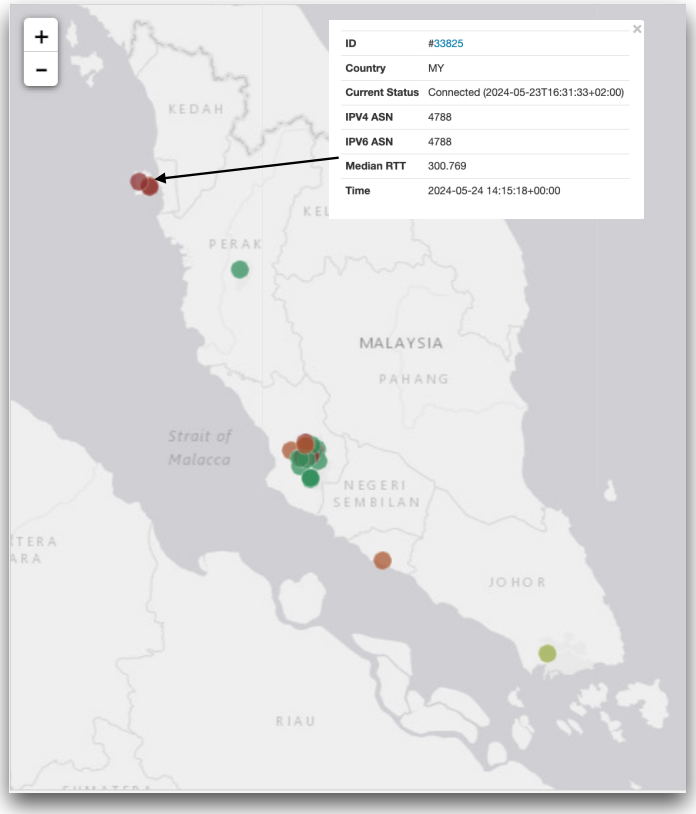
Which m-root responds to the query?



DNS Root Instances

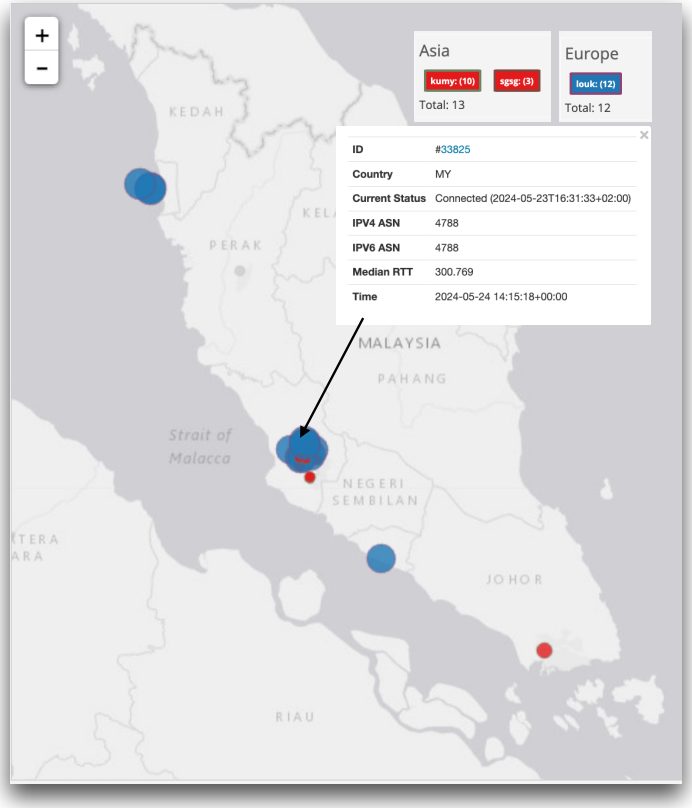
- 1 m-root in Kuala Lumpur
- MRTT 0-150ms
- 11 probes got an answer from m-root in Japan IX
- 1 probe got an answer from Singapore

MRTT Measurements to d-root in Malaysia (3)



[RTT Map Results]

Which d-root responds to the query?



[DNS Root Instances]

- 3 d-root in Malaysia
- MRTT 0-300ms
- 12 probes got an answer from d-root London, UK

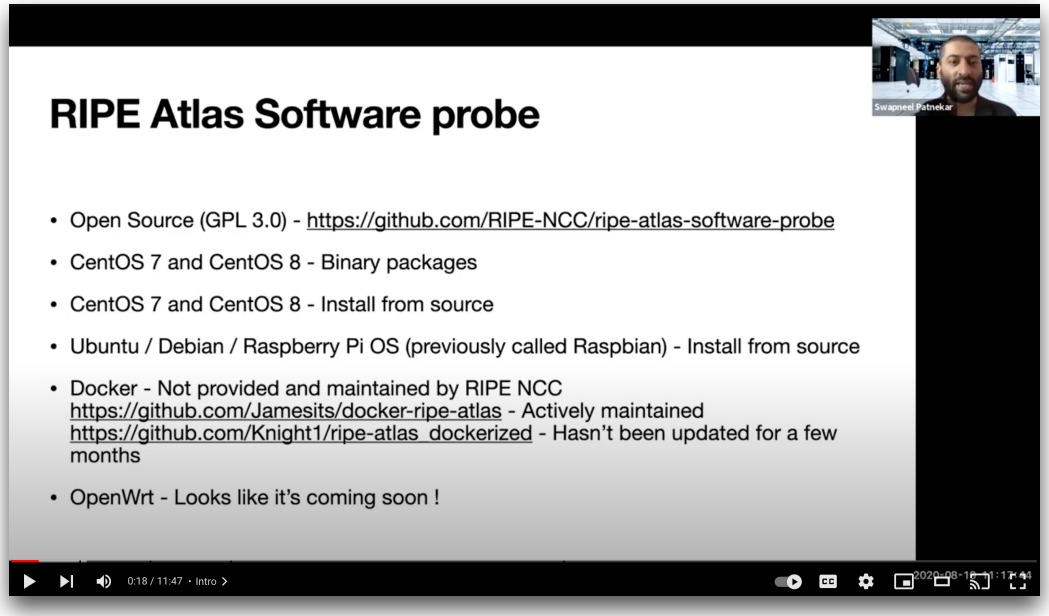
Authoritative DNS (AuthDNS)

- We’re seeking a partner to host AuthDNS in an ***interconnected*** location in Malaysia.
- Reduced dependency on external DNS Services
  - Minimise exposure to potential disruptions from international events
  - Greater control over Internet infrastructure
- Enhanced local Internet infrastructure
  - Hosting AuthDNS servers locally can improve the overall reliability and performance of DNS services for local users.

Install SW Probes Now in These Platforms

- Software packages that work like regular probes
- Most installation instructions are available in 8 languages

Platform	Support	Installation Videos	Installation Manuals
CentOS 7 (binary)	RIPE NCC	✅	✅
CentOS 8 (binary).	RIPE NCC	✅	✅
CentOS 7 & 8 (source)	RIPE NCC		✅
Debian 9 (source)	Community		✅
Debian 10 (source)	Community	✅	✅
Raspbian (source)	Community	✅	✅
Docker	Community	✅	✅
OpenWRT	Community		✅
Turris	Vendor (NIC.CZ)	✅	✅



YouTube Video: Install the RIPE Atlas Software Probe

How to: RIPE Atlas Software Probes

Reasons to Love RIPE Atlas

12,000 Probes	Global Coverage
Trusted Source	Non-profit organisationVolunteers: End Users
Safe & Secure	Regular third-party security review
Open Data	Measurement results open to all
Community Driven	By the community for the community

Fair Use/
Non Monetary

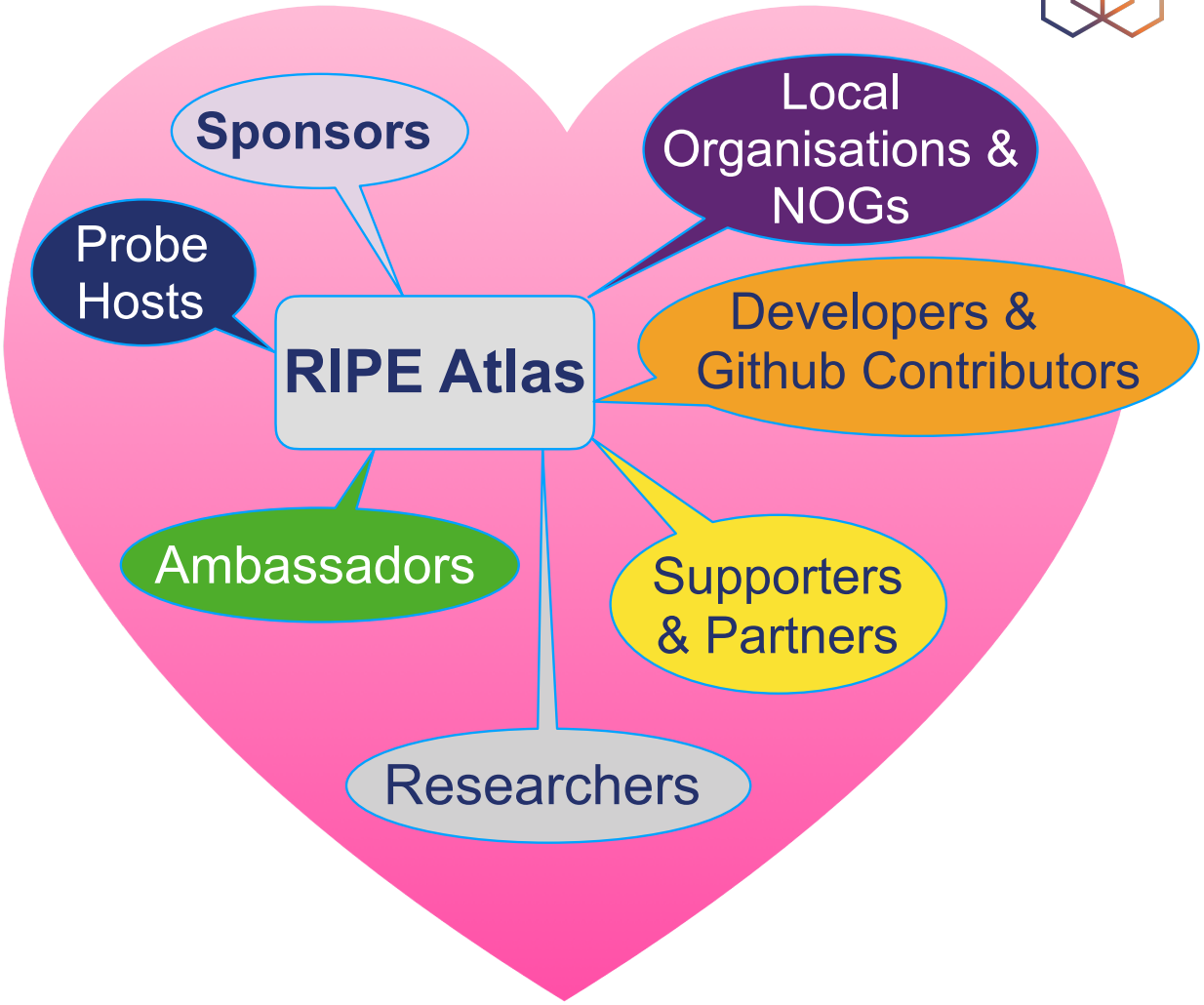
What's Next?

- Create a RIPE NCC Access ACCOUNT ✓
- INSTALL RIPE Atlas strategically ✓
- Start testing, MONITOR your network performance ✓
- Did your probe disconnect? Reconnect it! ✓

Redeem This Voucher
MYNOG11

Thank you!

- Within Asia Pacific (APAC) region we work closely with APNIC, ISOC, NSRC and many local ambassadors.
- Interested in a webinar?
- Contact: https://academy.apnic.net/en/contact



Questions

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atlas@ripe.net

Use Cases

A distributed view of the Internet

The Kazakhstan outage as seen from RIPE Atlas

Detecting DNS root manipulation

DNS vulnerability, configuration errors that can cause DDoS