



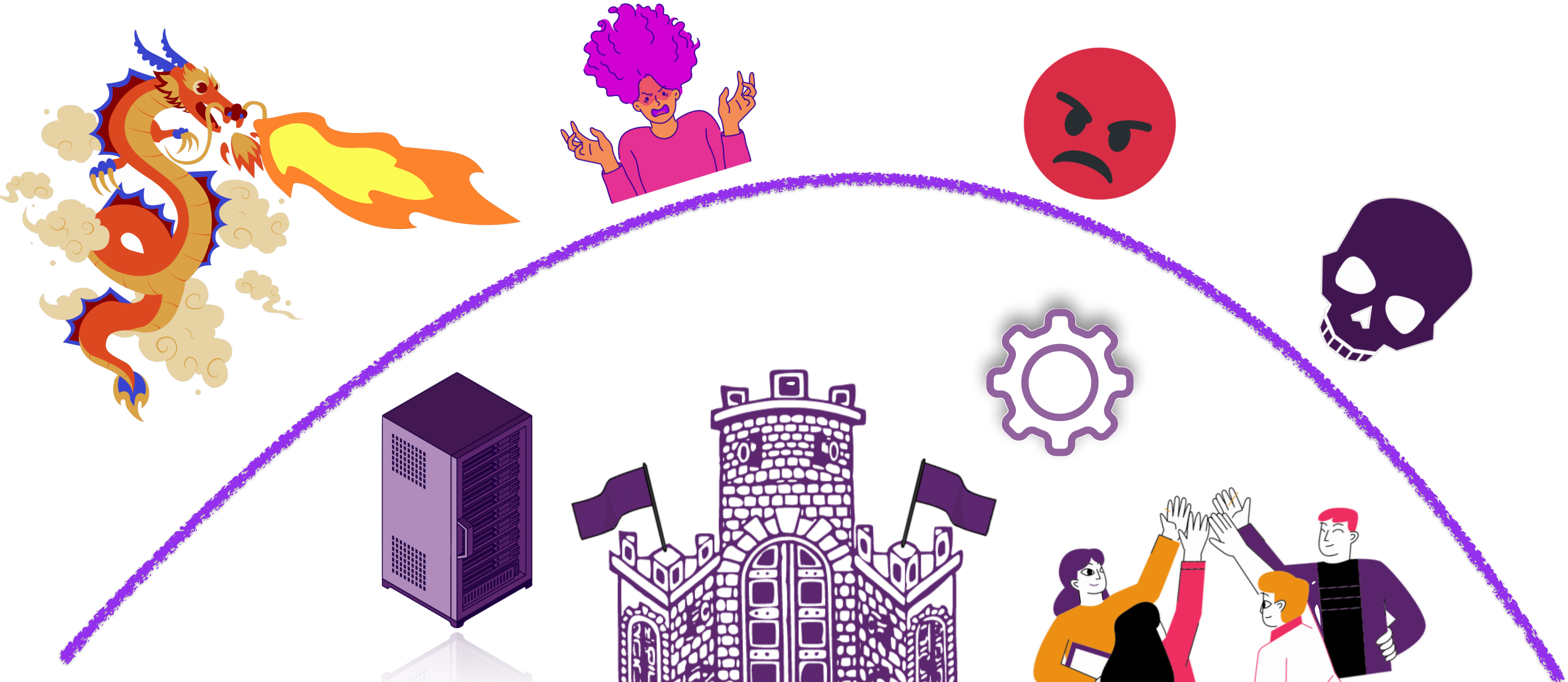
RIPE NCC

RIPE NETWORK COORDINATION CENTRE

Minimising Impact Before Incidents Occur

Xin chào!

The World Outside is Pretty Dark...



How Do You Minimise the Impact?



Escape



Gear up

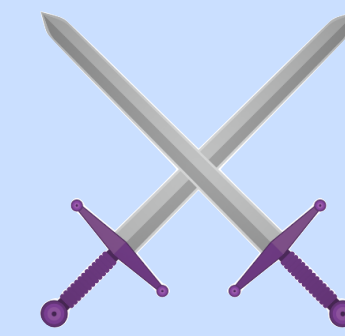


Action

How Do You Minimise the Impact?



Gear up



Action

1. Strategic Deployment:

- Install **RIPE Atlas** probes and anchor strategically

- **Continuous Monitoring:** Conduct ongoing measurements

2. Peer with **RIS** for more visibility

- Set up alerts for deviations from normal measurements

- Detect route hijacks, unauthorised/incorrect announcement with **RIS LIVE**

3. Continuous Monitoring: Conduct ongoing measurements

- **Latency Assurance:** Debug and maintain low latency

4. Performance Showcase: Impress customers with network performance

RIPE Atlas



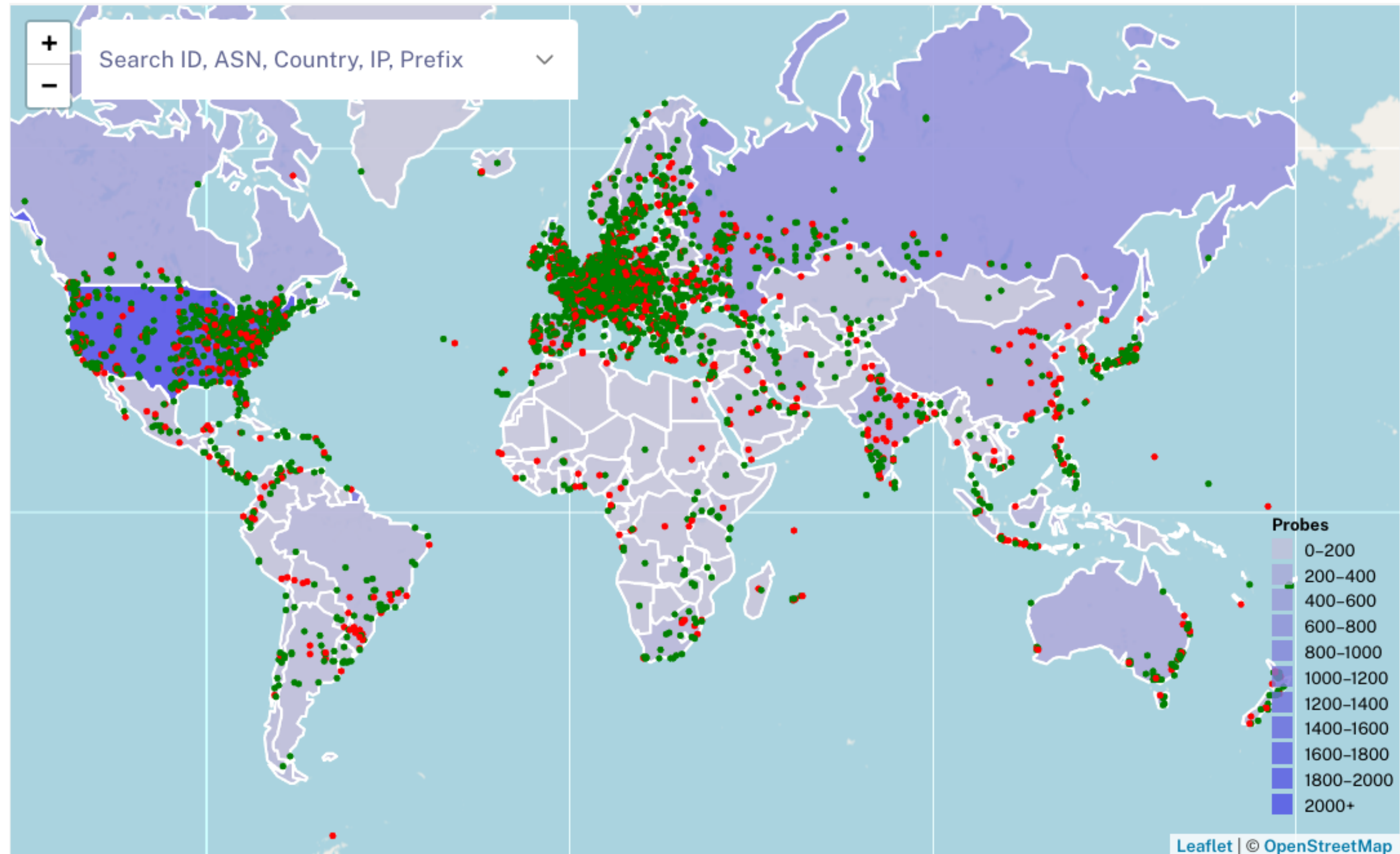
- RIPE Atlas is a global active measurements platform, funded by RIPE NCC members and sponsors
- Goal: view Internet reachability
- Probes hosted by volunteers, using a credits system
- Data is publicly available
- atlas.ripe.net
- www.ripe.net/ripe-atlas/



Run RIPE Atlas Tests



- More than **12,000** probes connected globally



RIPE Atlas



Accessible via

GUI

API

CLI TOOL

Types of measurements

PING

TRACEROUTE

DNS

NTP

SSL/TLS

HTTP (anchors)

Security and Privacy



Probes

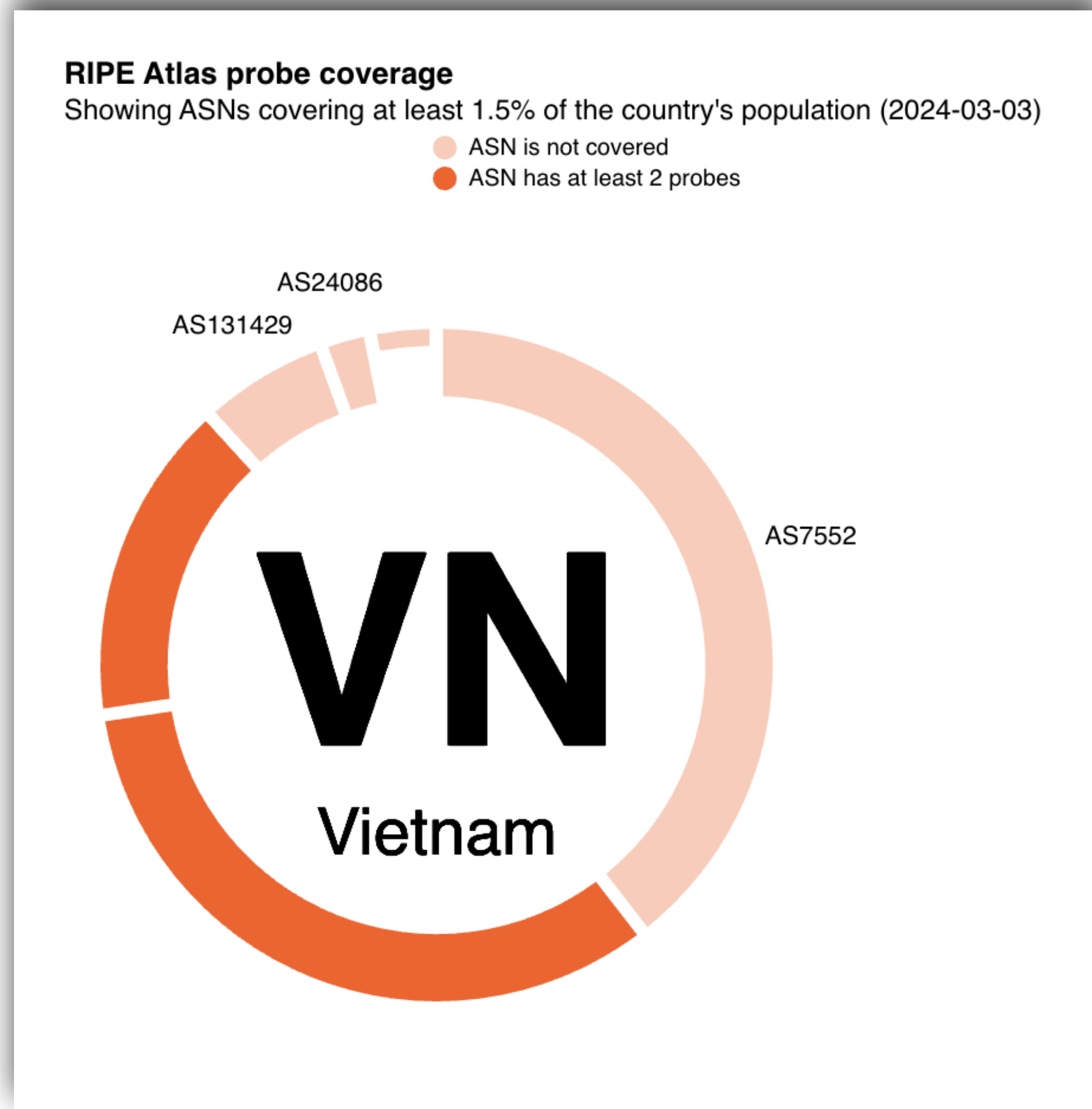
- Trusted Material (regular server address, keys)
- NO open ports; initiate connection; NAT is OK
- Don't listen to local traffic/ no snooping

Measurements

- No passive measurements
- Probe initiates SSH connections to server
- Code of measurements publicly available



1. Strategic Deployment: Install RIPE Atlas (software)



List of ASN per Economy that has < 2 probes

ASN	Network Name	Yes please: Need one
7552	VIETEL-AS-AP	Vietnam
131429	MOBIFONE-AS-VN	Vietnam
24086	VIETTEL-AS-VN	Vietnam
45543	SCTV-AS-VN	Vietnam
38247	VIETNAMOBILE-AS-VN	Vietnam
13335	CLOUDFLARENET	Vietnam

Network Coverage



2. Peer with RIS for more Visibility



- RIS is a routing data collection platform
- Collecting BGP data since 1999
- Up-to-date routing information, as opposed to information in databases and routing registries
- Information includes:
 - What is being announced
 - Which prefixes are seen and where
 - Which prefixes are not seen

THANK YOU TO OUR COMMUNITY



23 collectors




1,377 global peers

Problems



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



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

3. Monitor Your Network Performance



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

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

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

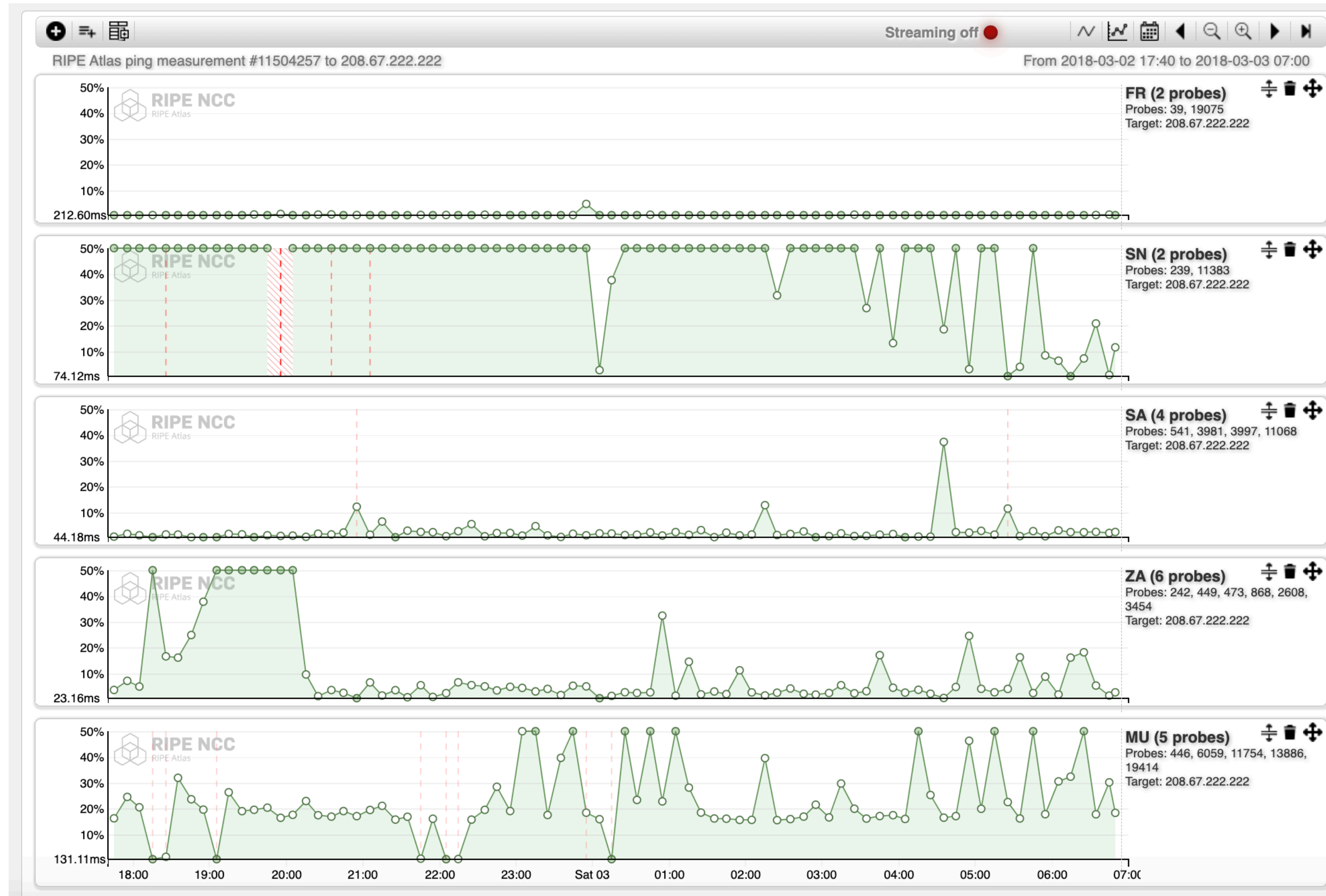
Settings & Status | Latest Results | Map | Tracemon | IPMap | Downloads

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**



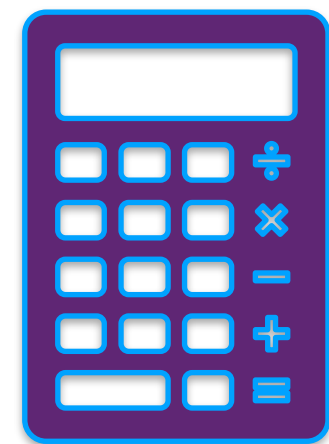
LatencyMON - Monitoring your Latency



4. Showcase Your Network Performance



Action



For YOU

Control and Flexibility

Repeat tests as much as you need!

For your clients

Improve Performance

Shorter path is selected, better latency, reliability and security.



For your staff

Service desks ♥

RIPE Atlas GUI to validate findings.





A view into Vietnam and South East Asia

Using RIPE NCC Tools for Network Operators

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



Fullscreen +
-

Origin (ASN or ix-ID)
7552

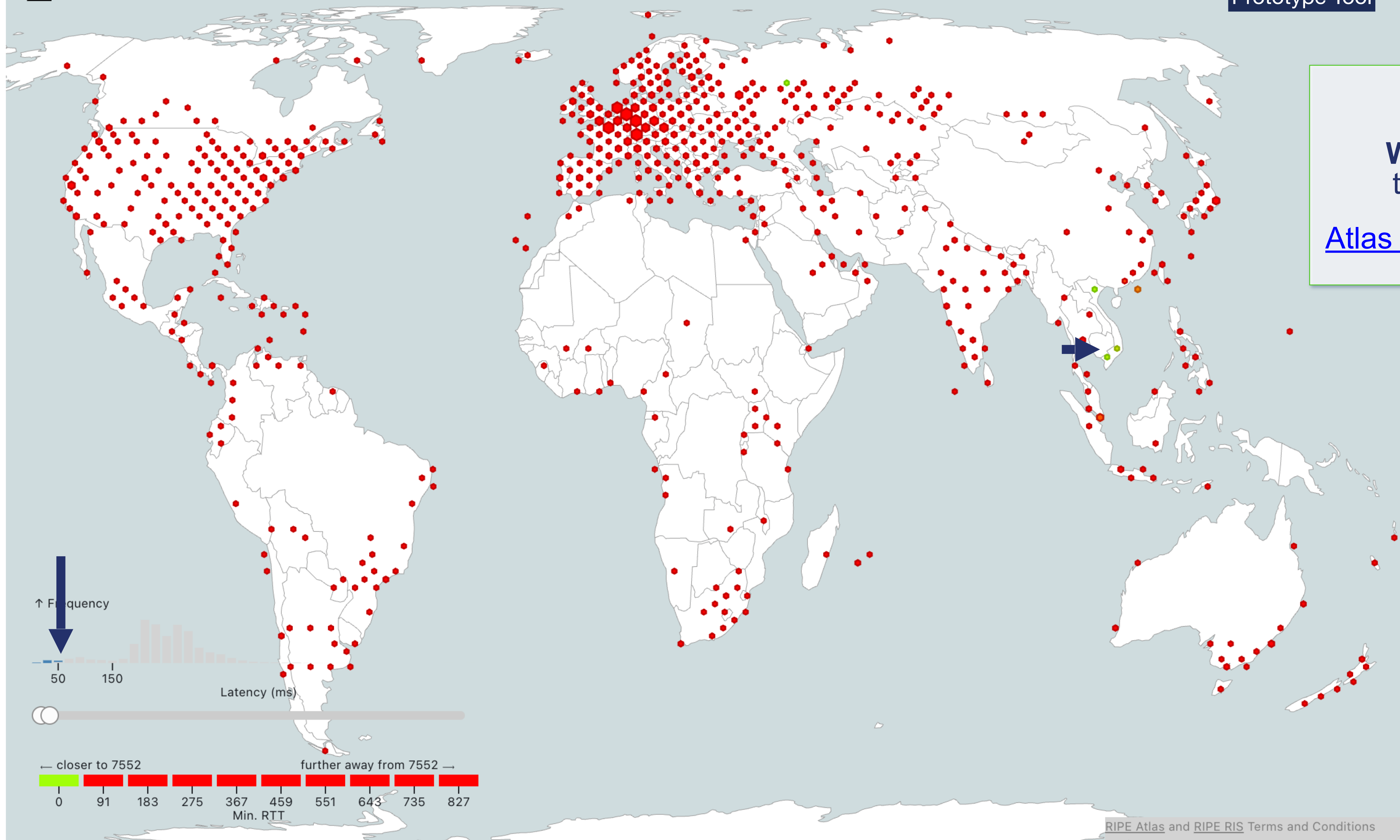
Date
08/03/2024

Address Family
IPv4

Protocol
Any

Aggregate function
Median

Prototype Tool

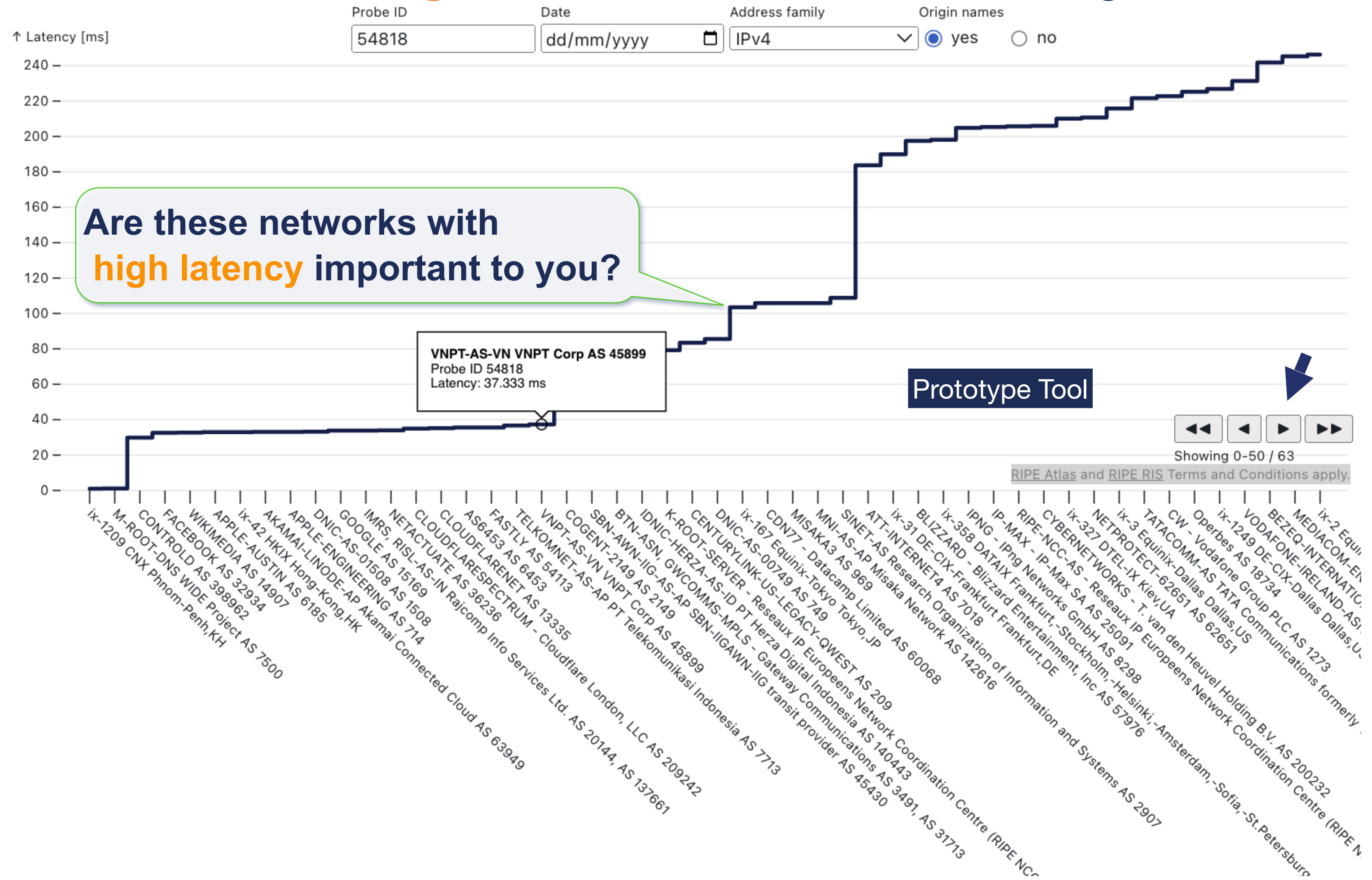


MinRTT
World Latency Map
to AS7552 Vietnam
Within 50 ms
[Atlas Latency World Map](#)



MinRTT

Your network neighbourhood as seen through RIPE Atlas



Try your probe here

[Atlas probe neighbourhood](#)

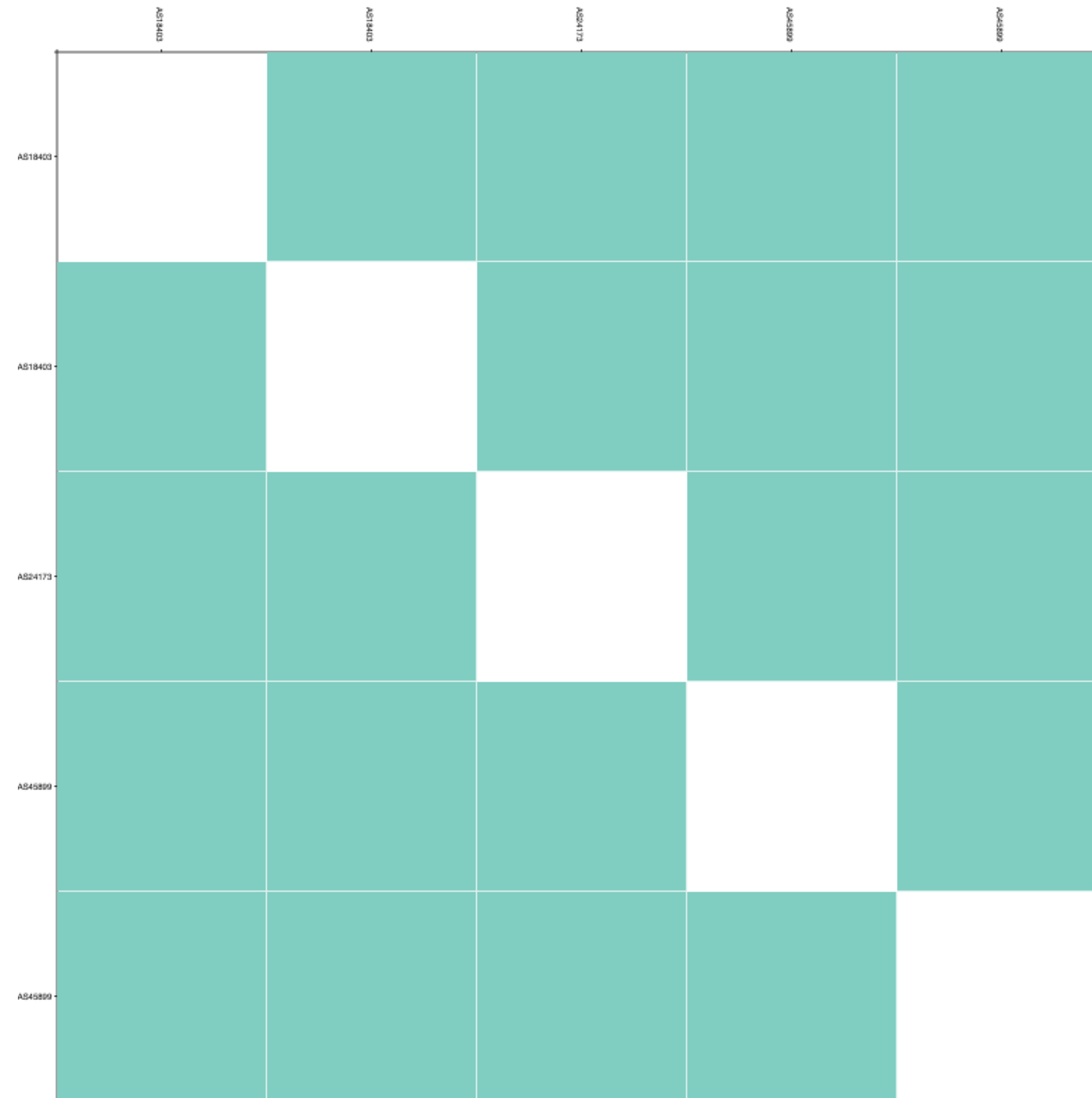


Do the Paths Remain Local?

IXP Country JEDI shows whether your traffic stays **LOCAL**.

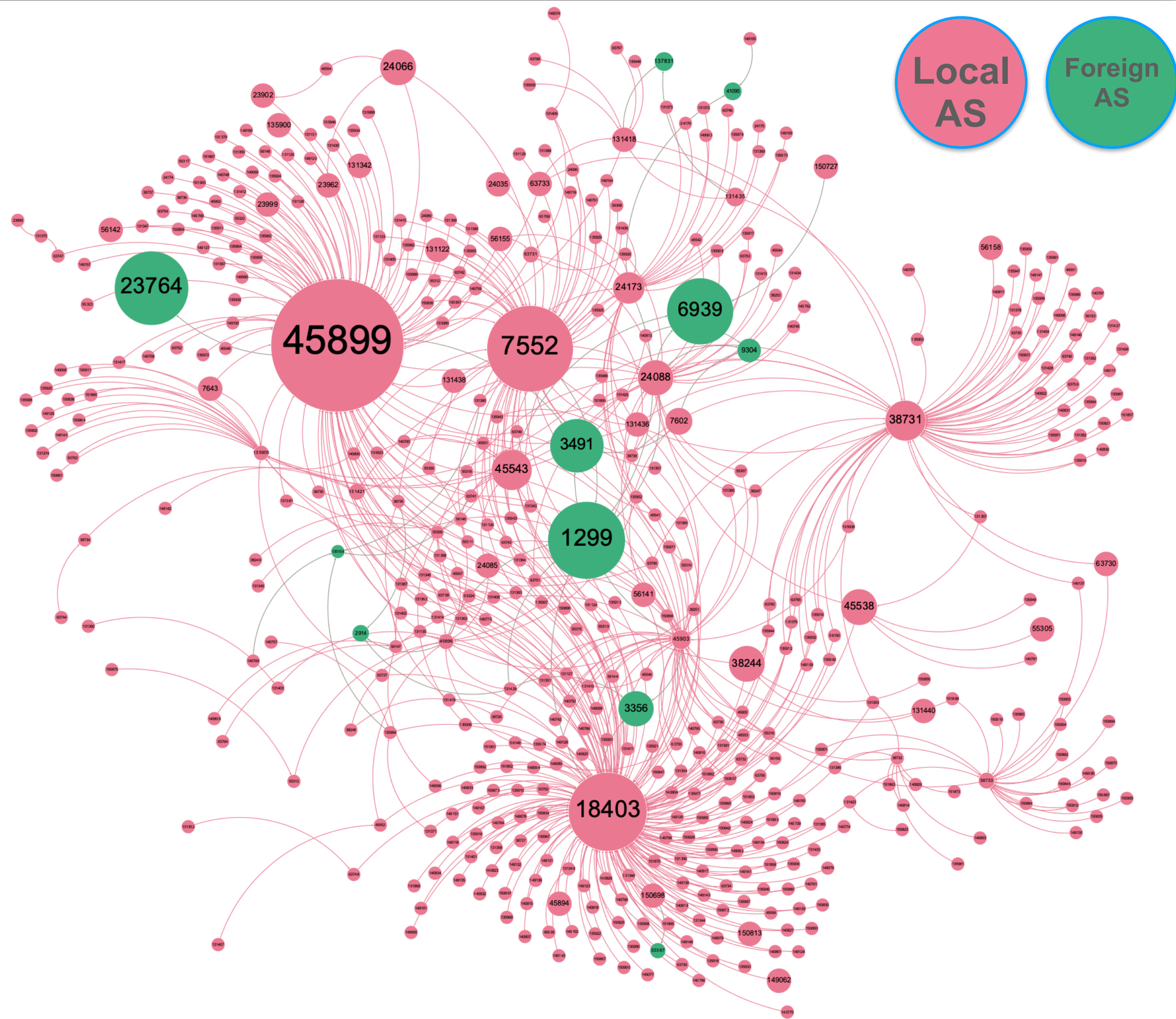
[IXP Country Jedi](#)

Data: 1 February 2024



Prototype Tool

AS Hegemony in Vietnam - RIS Data

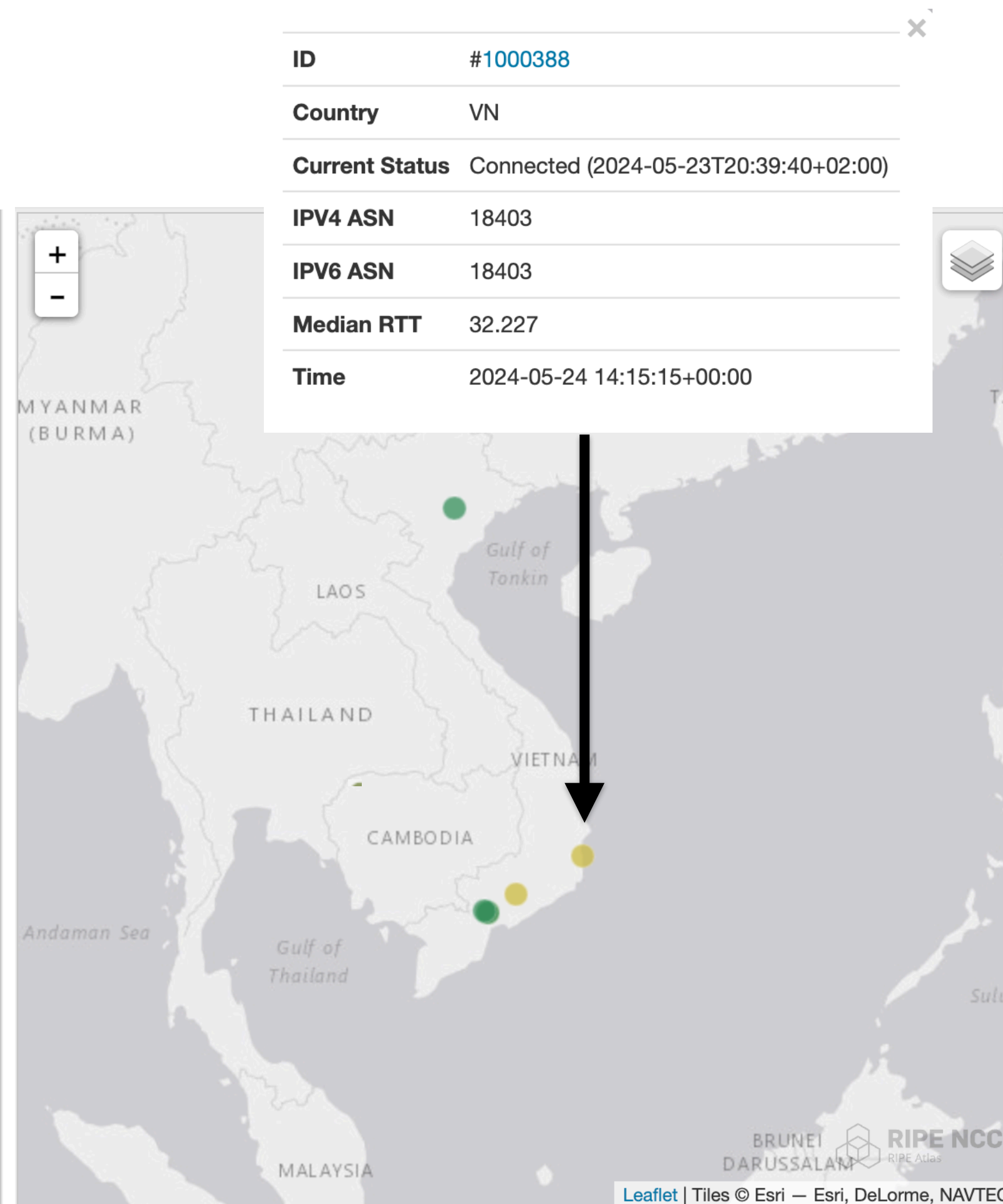
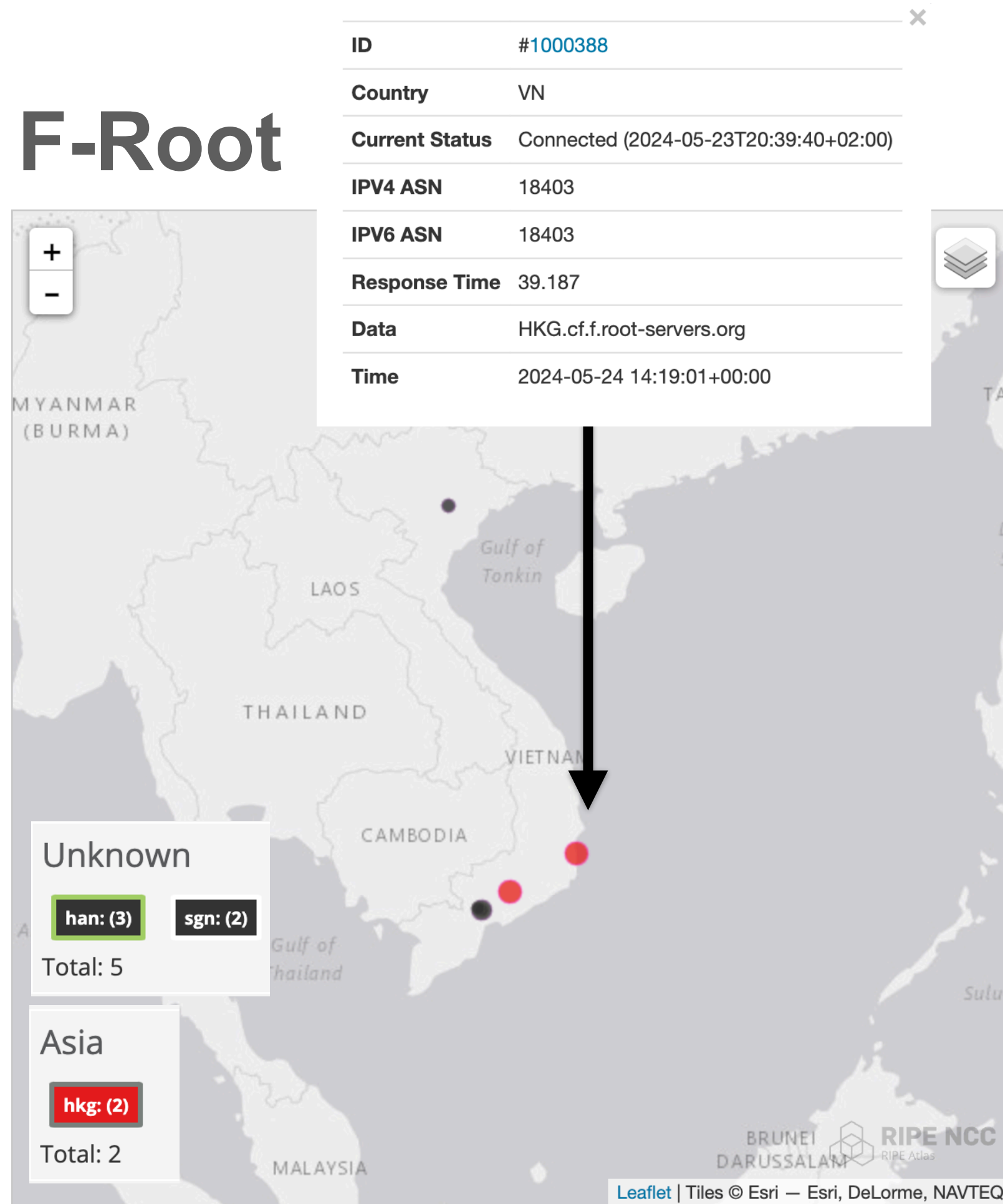


- As seen by BGP data
- Size shows the importance of the network
- Many networks in Vietnam are connected to AS45899
- Data based on the [Hegemony method](#)

DNS Root Instances as Seen by RIPE Atlas and MRTT



F-Root



Measurement: f.root-servers.net

Filter by ASN, prefix, or country: Vietnam (vn)

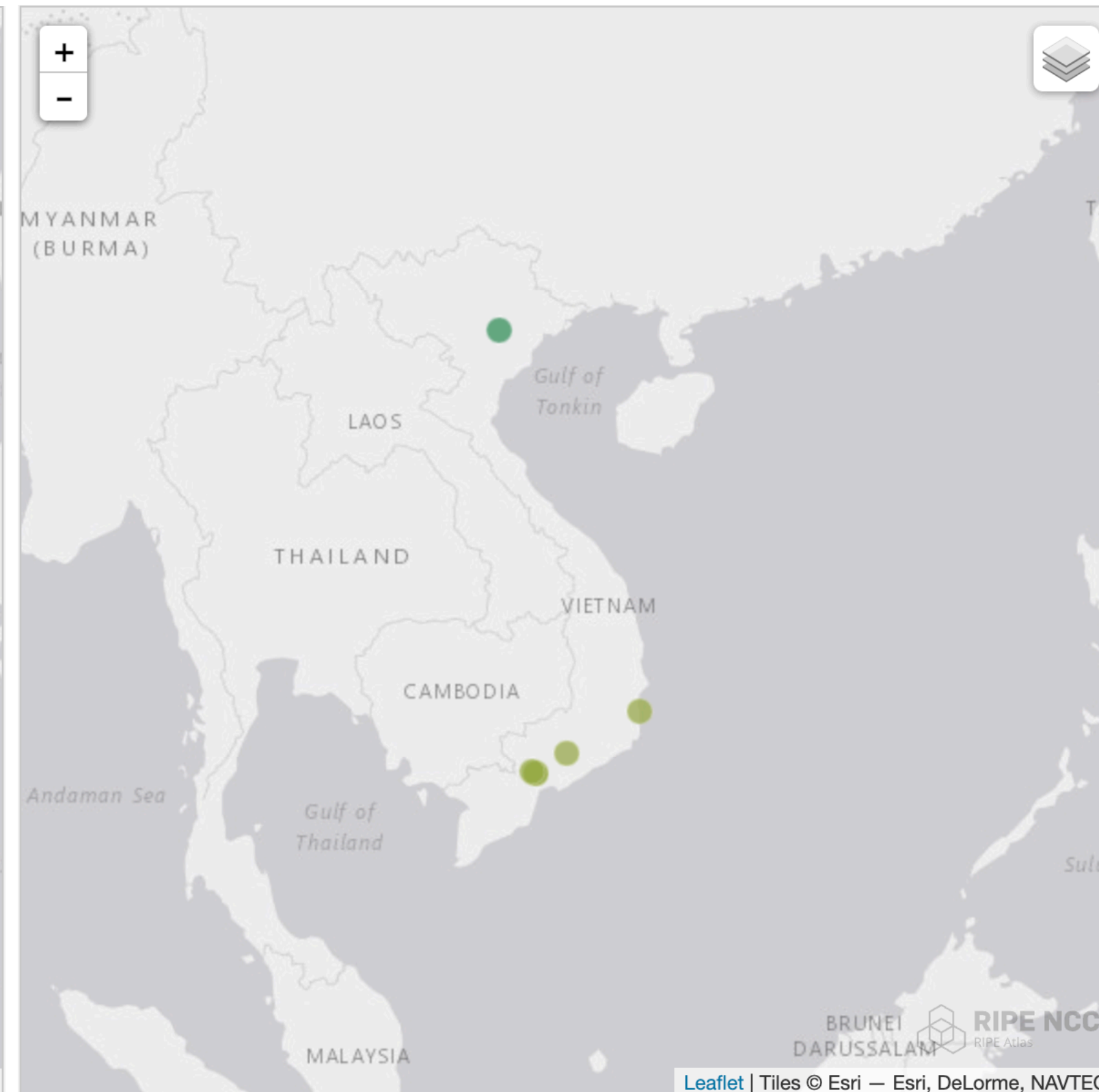
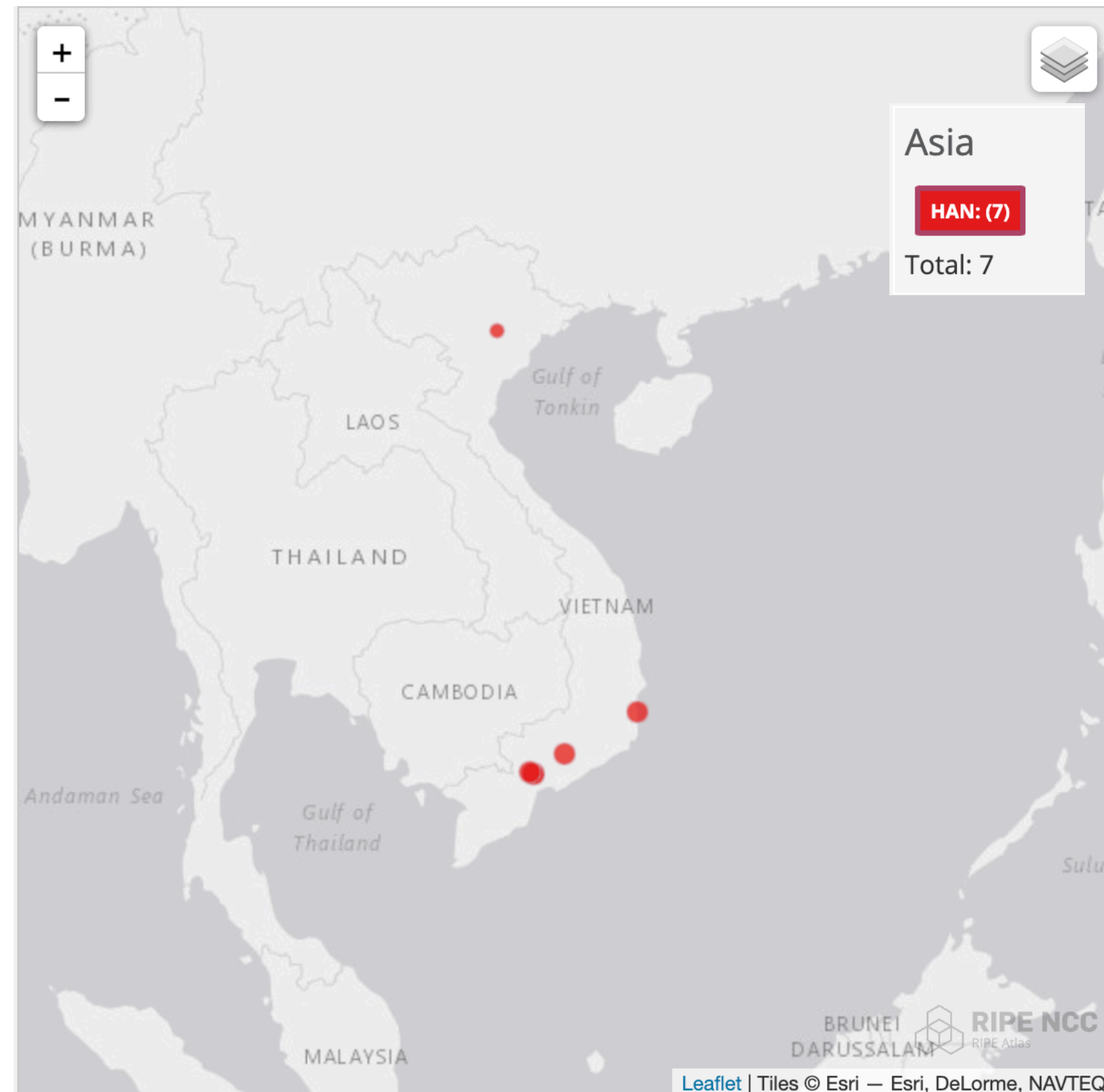
- 4 F-root instances in Vietnam
 - Thủ Đức (2), Da Nang (1) and Hanoi (1)
- 2 probes received an answer from Hong Kong, 2 from Singapore and 3 from Hanoi
- MRTT is below 40ms



DNS Root Instances as Seen by RIPE Atlas and MRTT



M-Root



Measurement: m.root-servers.net

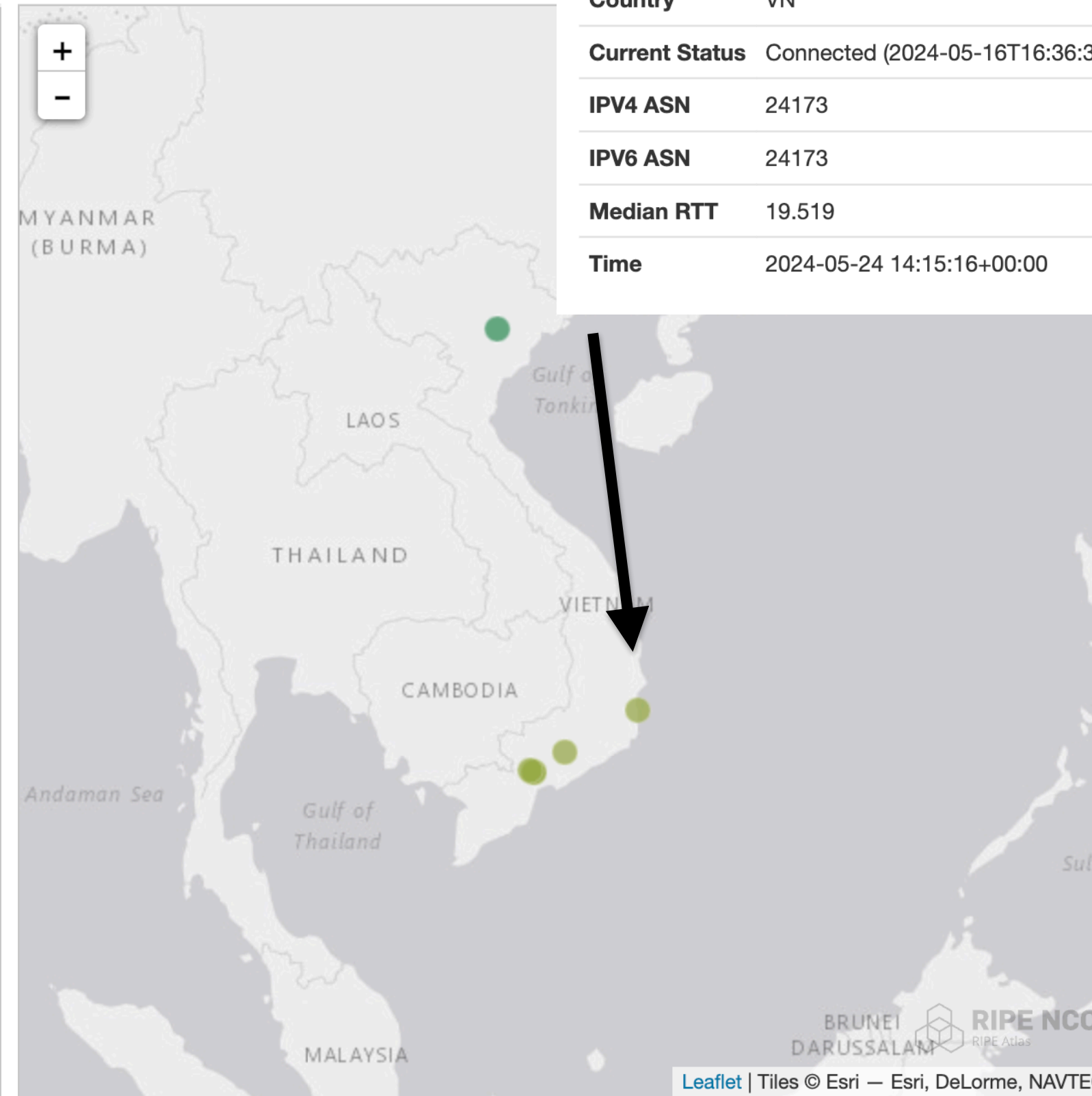
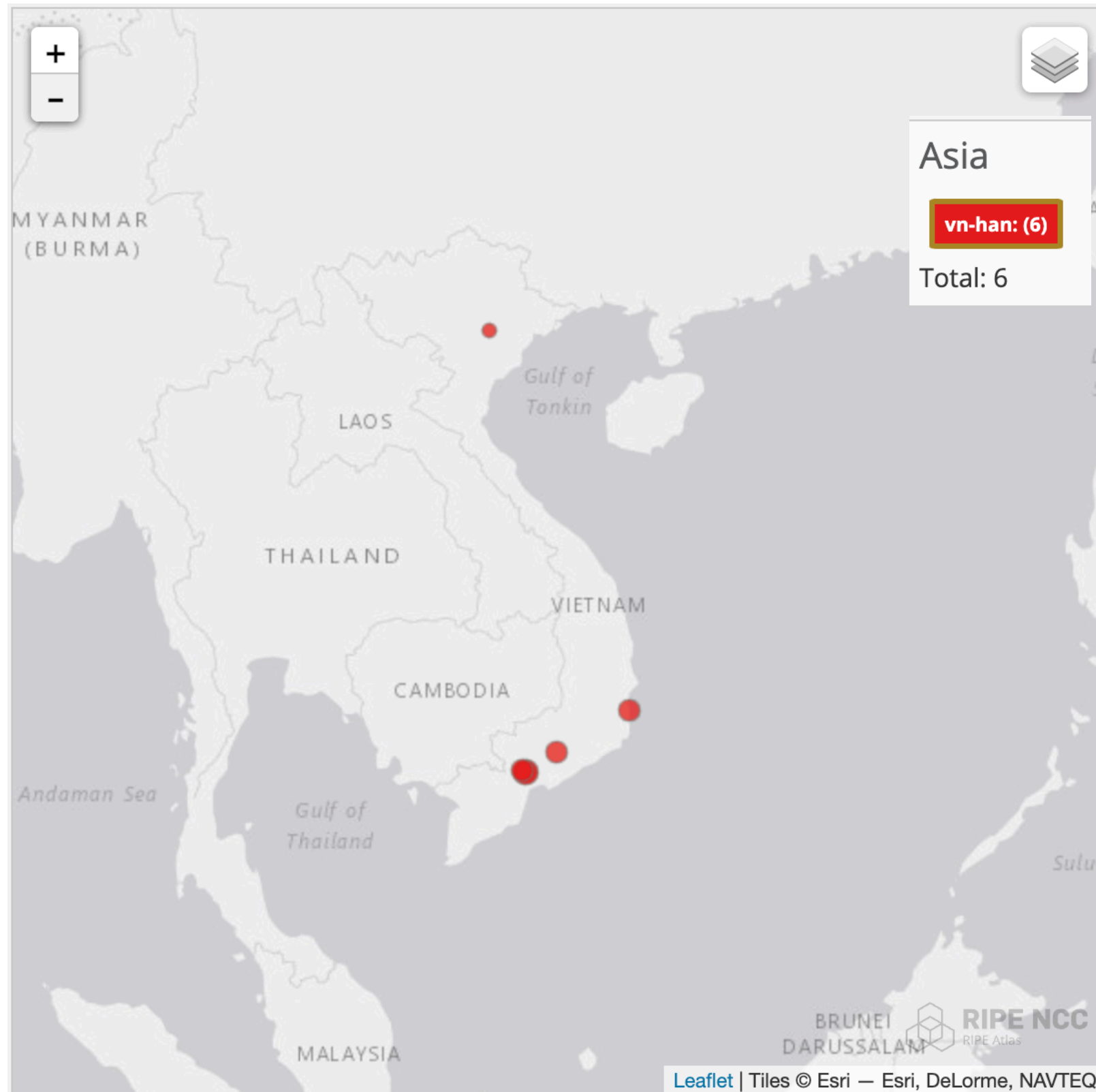
Filter by ASN, prefix, or country: Vietnam (vn)

- 1 M-Root instance in Hanoi
- All 7 probes received an answer from an instance in Hanoi
- MRTT is below 50ms

DNS Root Instances as Seen by RIPE Atlas and MRTT



K-root



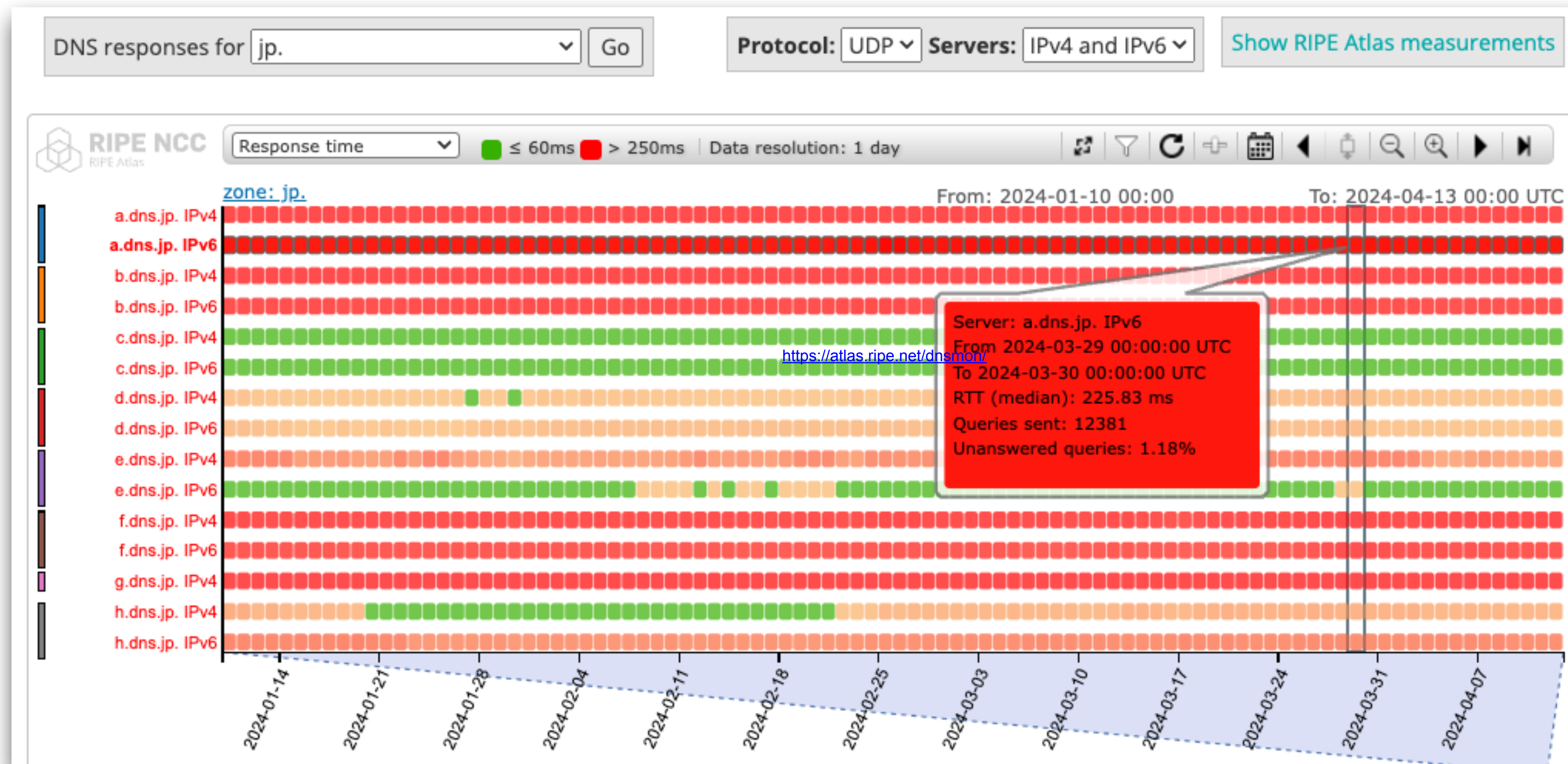
ID	#6718
Country	VN
Current Status	Connected (2024-05-16T16:36:31+02:00)
IPV4 ASN	24173
IPV6 ASN	24173
Median RTT	19.519
Time	2024-05-24 14:15:16+00:00

Measurement:
k.root-servers.net

Filter by ASN, prefix, or country:
Vietnam (vn)

- 1 K-root instance in Hanoi
- All 6 probes got answer from instance in Hanoi
- MRTT is below 30ms

RIPE Atlas Monitoring DNS .jp



<https://atlas.ripe.net/dnsmon/>

Authoritative DNS (AuthDNS)



- We're seeking a partner to host AuthDNS in an *interconnected* location in Vietnam.
- Reduced dependency on external DNS Services
 - Minimises 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.

Want to host AuthDNS?

Network Name	Country
VIETTELTIMORLESTE	Timor Leste
AIS3G-2100-AS-AP	Thailand
CLOUDFLARENET	Myanmar
VIETEL-AS-AP	Vietnam

More Reasons to Love RIPE Atlas



12,000 Probes

Global coverage

Trusted Source

Non-profit organisation
Volunteers: End Users

Safe and Secure

Regular third-party security review

Open Data

Measurement results open to all

Community Driven

For the community

Fair Use/
NON Monetary



What do you do now?



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

Redeem This Voucher
VNNIC24

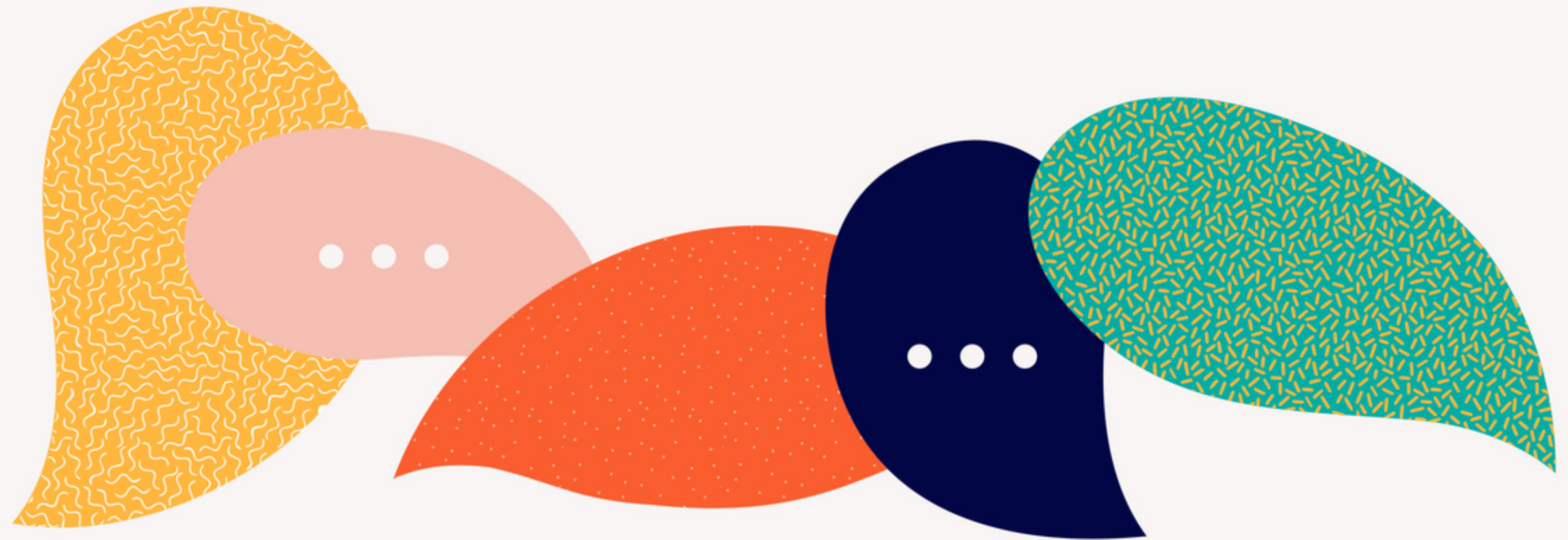


Let's Talk...



Tell us what's
important to you!

We can develop
new **prototypes!**





Questions



lhestina@ripe.net
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](#)