



RIPE NCC

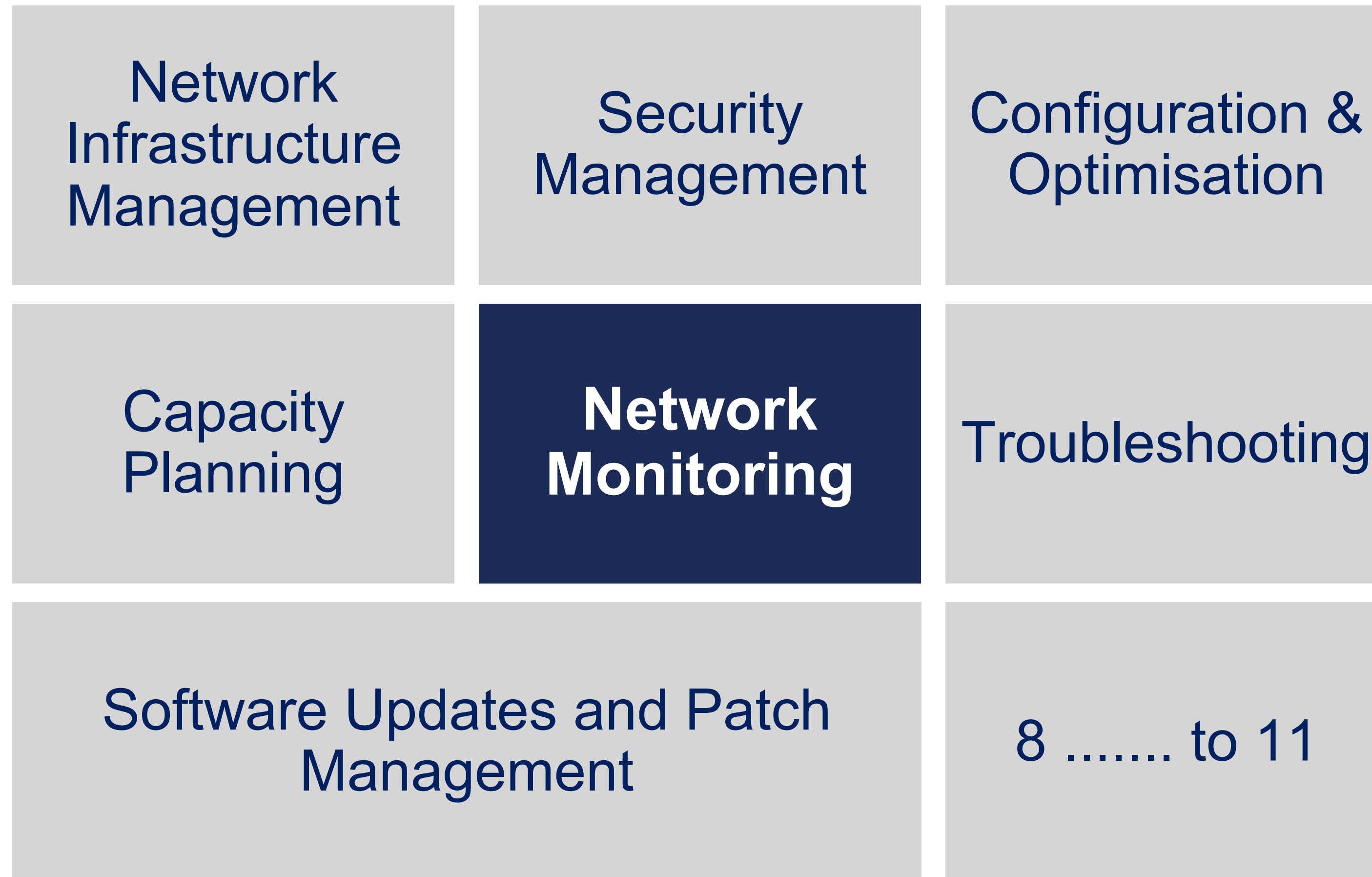
RIPE NETWORK COORDINATION CENTRE

Know Your Network

Why every network operator should
host a RIPE Atlas probe

Lia Hestina | SANOG 41 - INNOG 7 | Mumbai

11 Things Network Operators Do



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



Accessible via

GUI

API

CLI TOOL

Measurement Types

PING

TRACEROUTE

DNS

NTP

SSL/TLS

HTTP (anchors)

Run RIPE Atlas tests

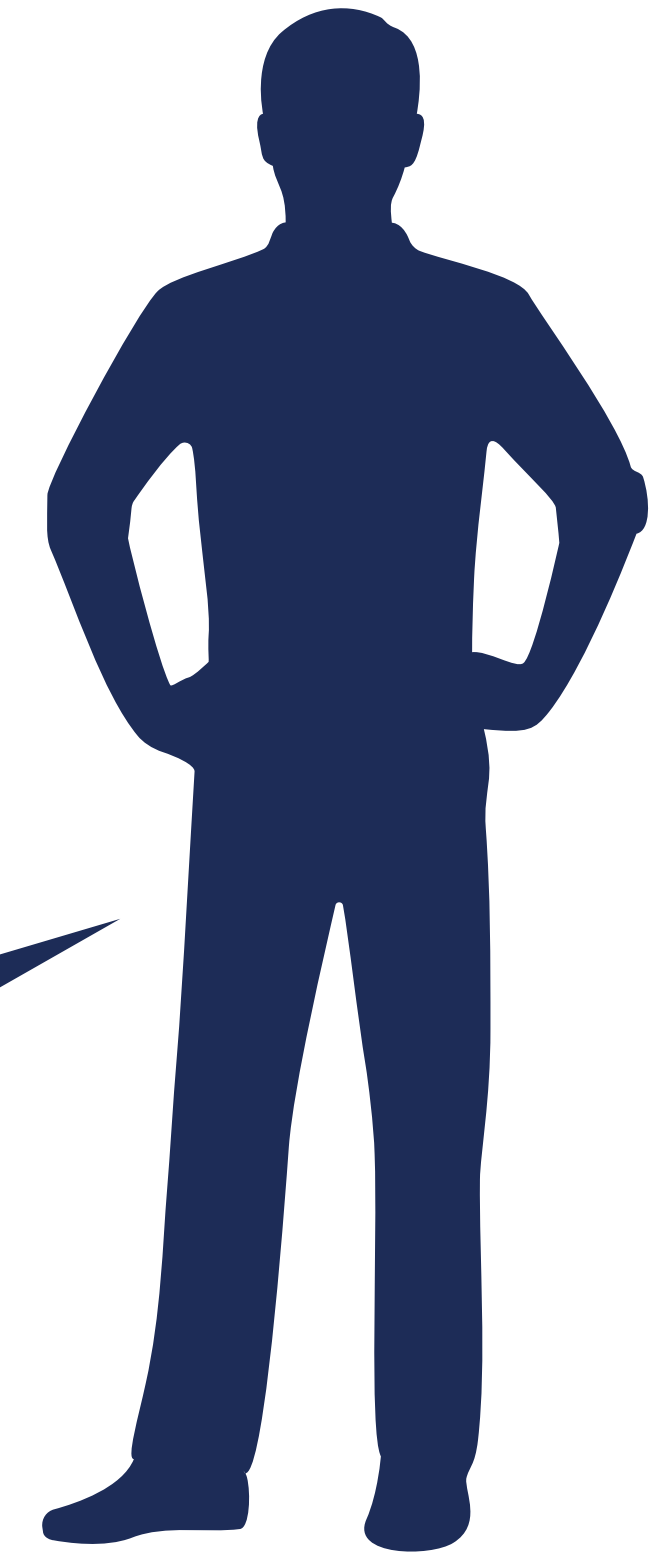


- More than 12,000 probes connected
- More than 3,000 ASNs globally
- 195 in South Asia



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

RIPE Atlas Impact

A Global Network of Internet Measurements



Probe	ASN (IPv4)	ASN (IPv6)		Time (UTC)	RTT		Hops	Success	
4429	55430			2020-05-13 19:02	270.039				
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	ip1s-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

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	<div></div>	14	✓			
14042	55430					2020-05-13 20:17	3.042	<div></div>	14	✓			
22798	55430	55430				2020-05-13 20:17	3.336	<div></div>	14	✓			
24422	55430					2020-05-13 20:17	3.993	<div></div>	15	✓			
25828	4788					2020-05-13 20:17	3.158	<div></div>	14	✓			
28850	4844					2020-05-13 20:17	3.127	<div></div>	14	✓			
31918	55430					2020-05-13 20:17	5.194	<div></div>	15	✓			
54623	4773	4773				2020-05-13 20:17	4.505	<div></div>	14	✓			
55415	55430	55430				2020-05-13 20:17	3.508	<div></div>	14	✓			



Hooray Moments!

Improve Performance

Shorter path is selected, better latency, reliability & security

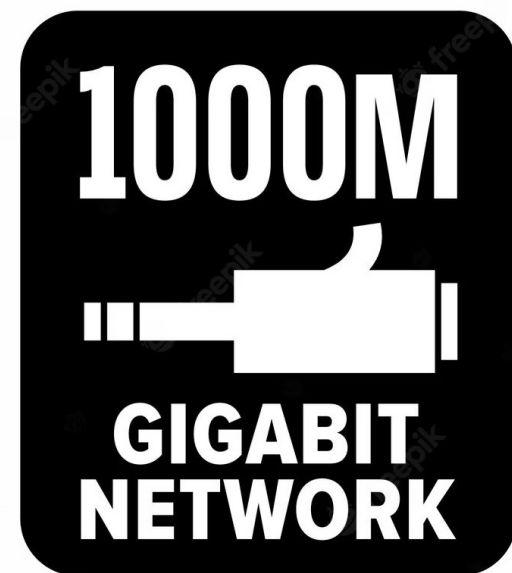
Control & Flexibility

Repeat tests as much as you need!

Service desks RIPE Atlas ❤️ GUI

To validate findings

What It Isn't



Traffic Volume



Bandwidth



WIFI



Making your Coffee



Dare to Take a Risk?



Try it Wisely

- ☒ Who uses the platform?
- ☒ What do people say?
- ☒ Search for BAD review/BAD experience in Google
- ☒ 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
- ☒ Don't listen to local traffic/ No snooping

Measurements

- ☒ No passive measurements
- ☒ Initiated by probes via SSH connections from probe to server
- ☒ Code of measurements publicly available



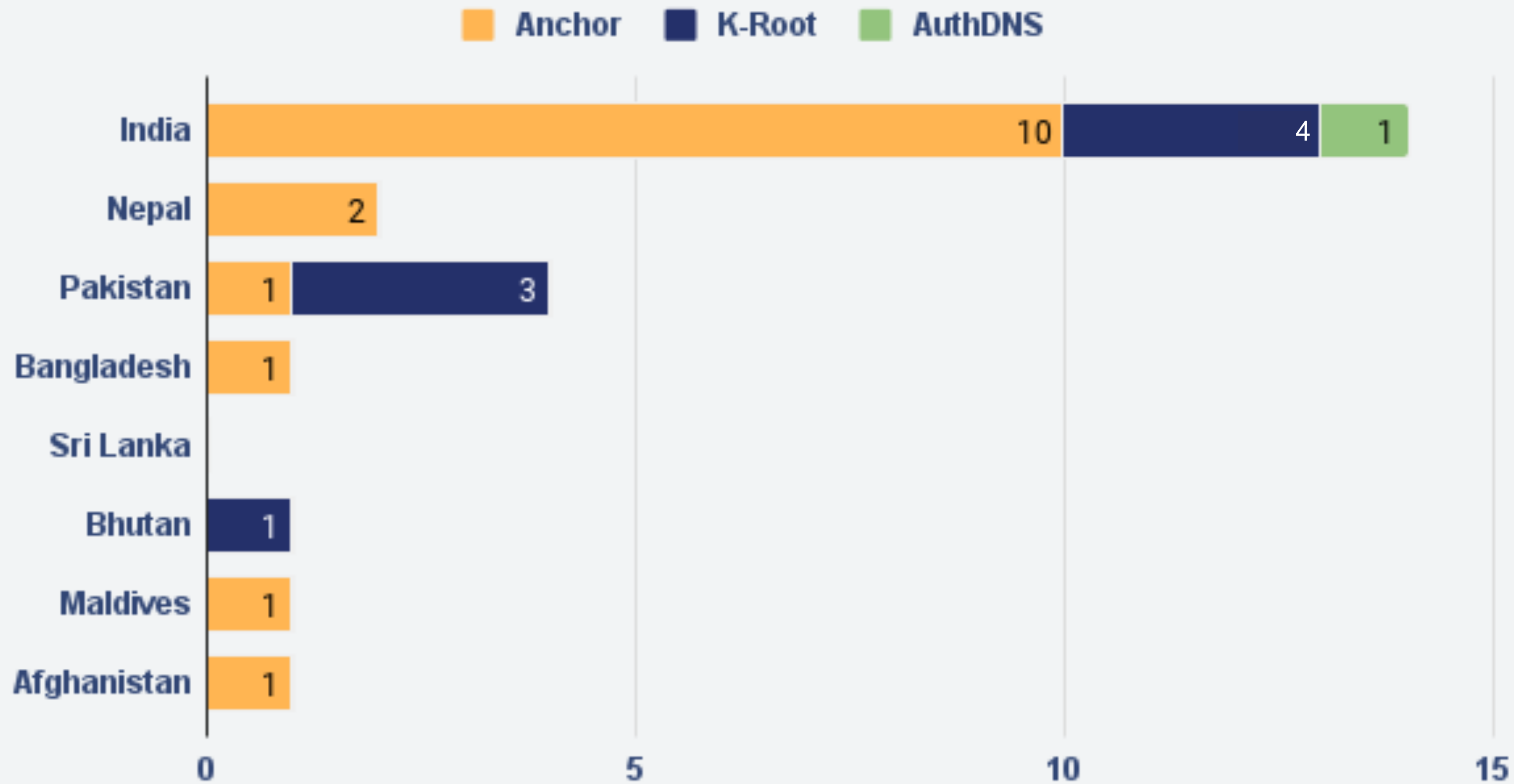


A View Into South Asia

RIPE NCC Tools and Services



South Asia



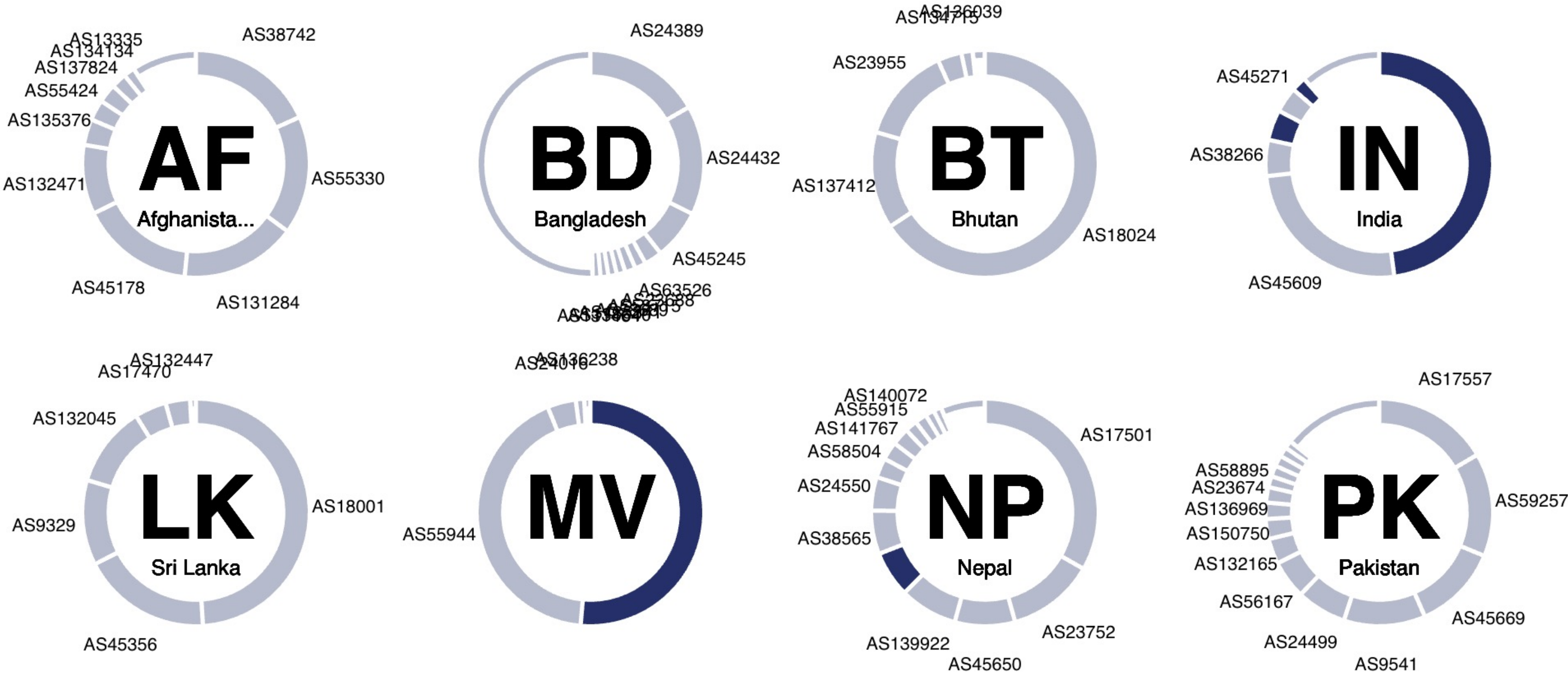
Top 10 Eyeball Networks in South Asia With No/Low Coverage



RIPE Atlas probe coverage

Showing ASNs covering at least 1% of the country's population (2024-03-19)

- ASN is not covered
- ASN has at least 3 probes

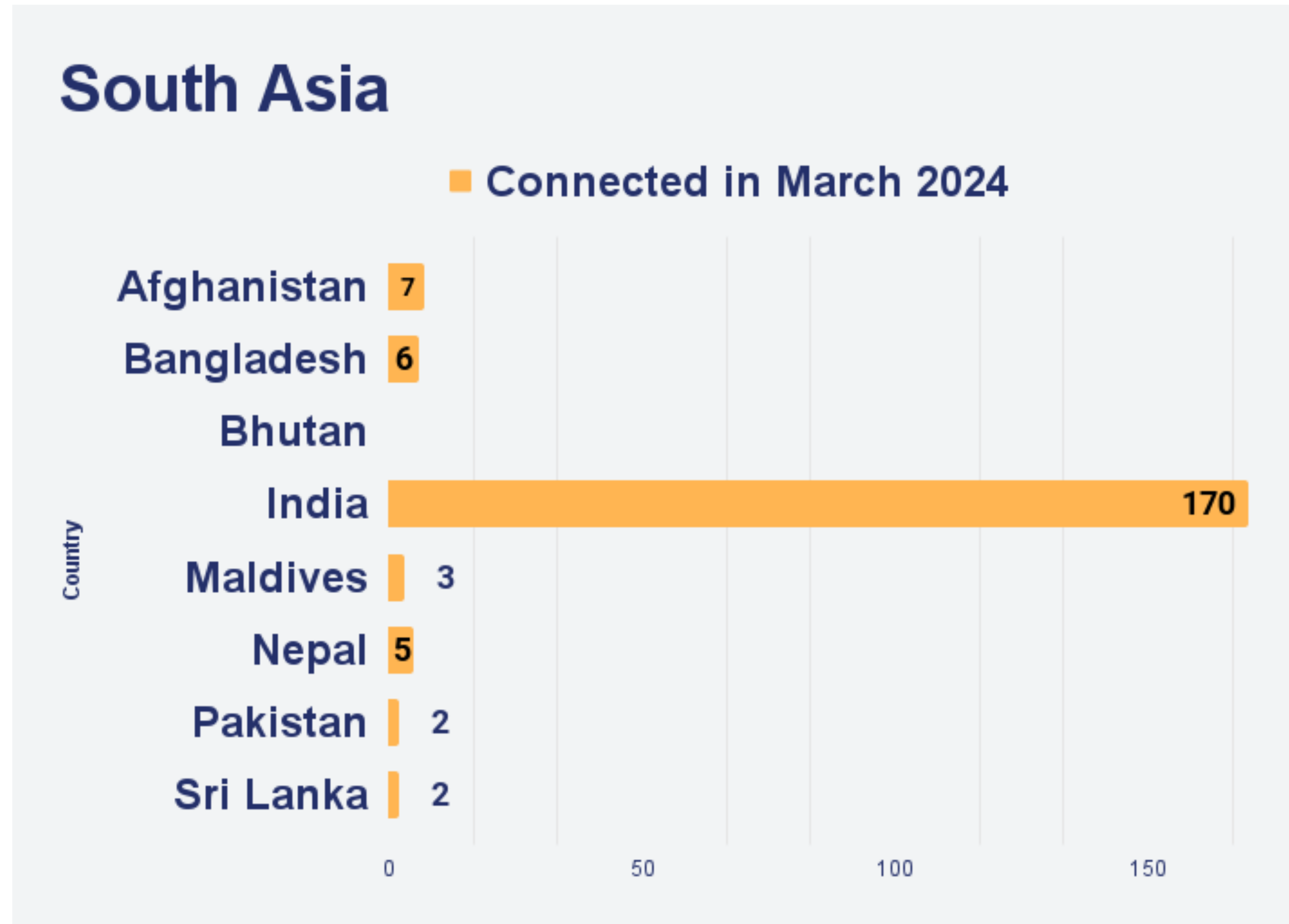


Prototype Tool

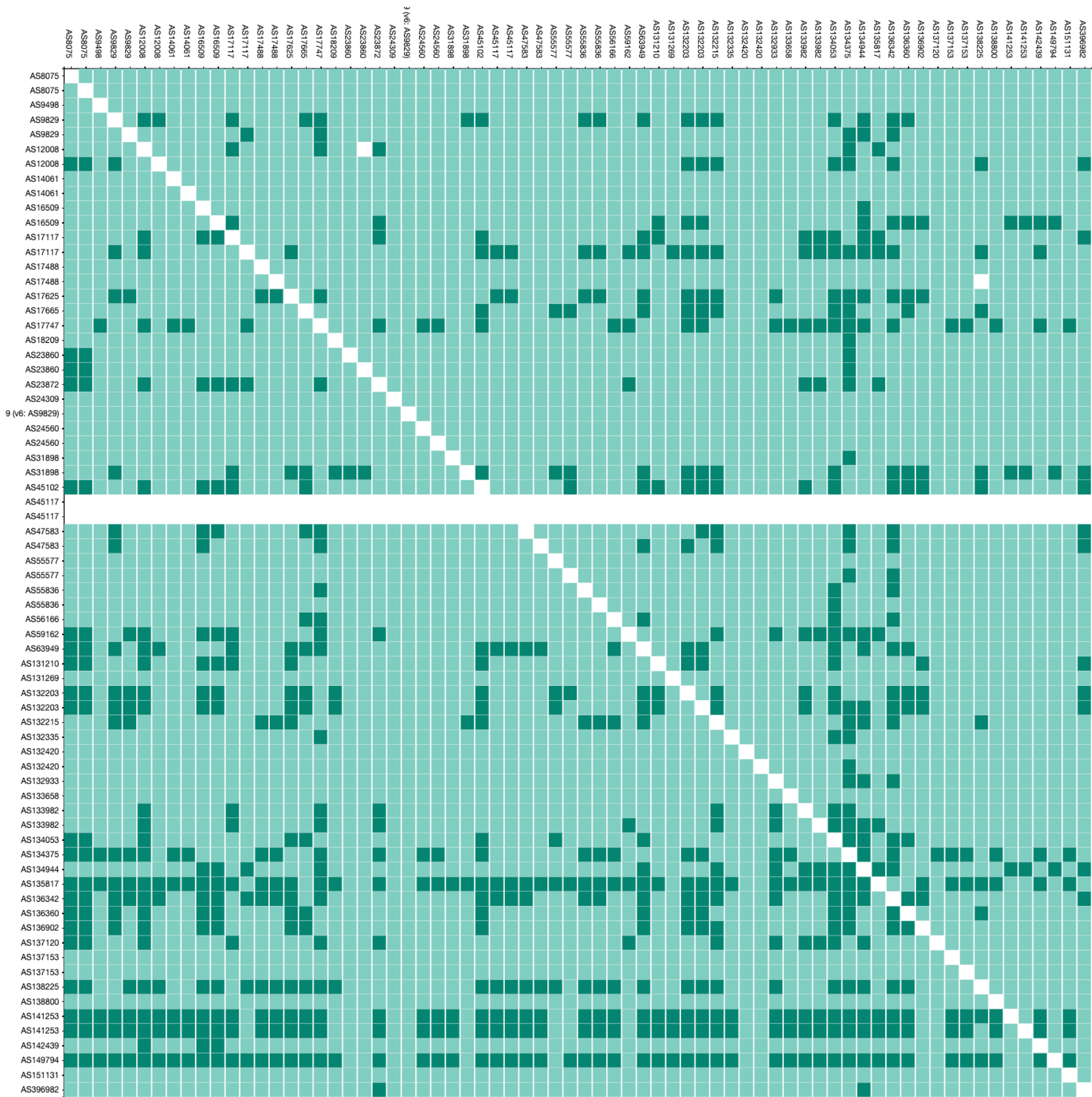
<https://observablehq.com/@ripenc/ripe-atlas-network-coverage?country=IN,PK,NP,LK,BT,BD,MV,AF&countrynames=yes&labels=notCovered&columns=4&spacing=4&radius=68>



Probes in South Asia

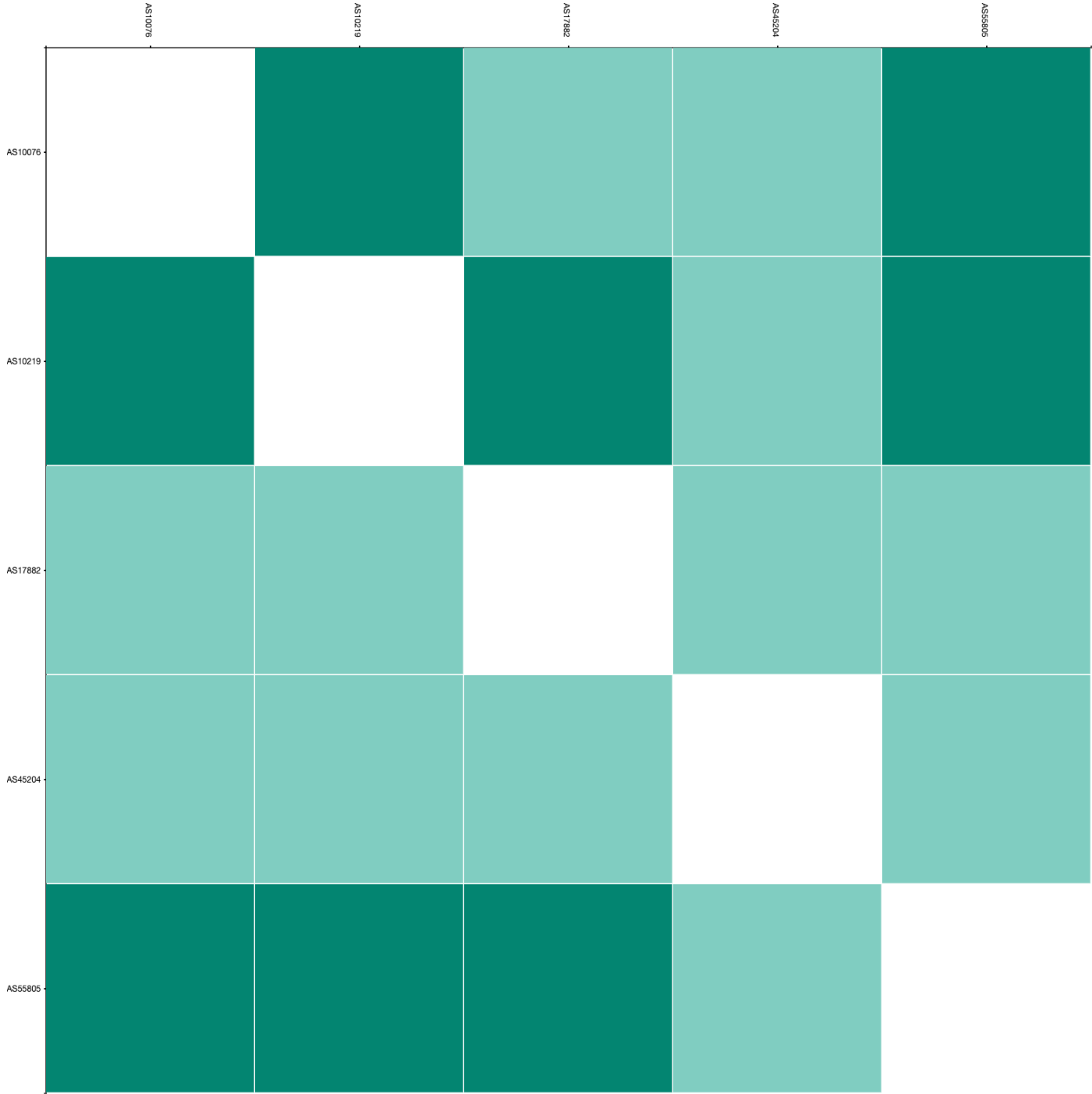
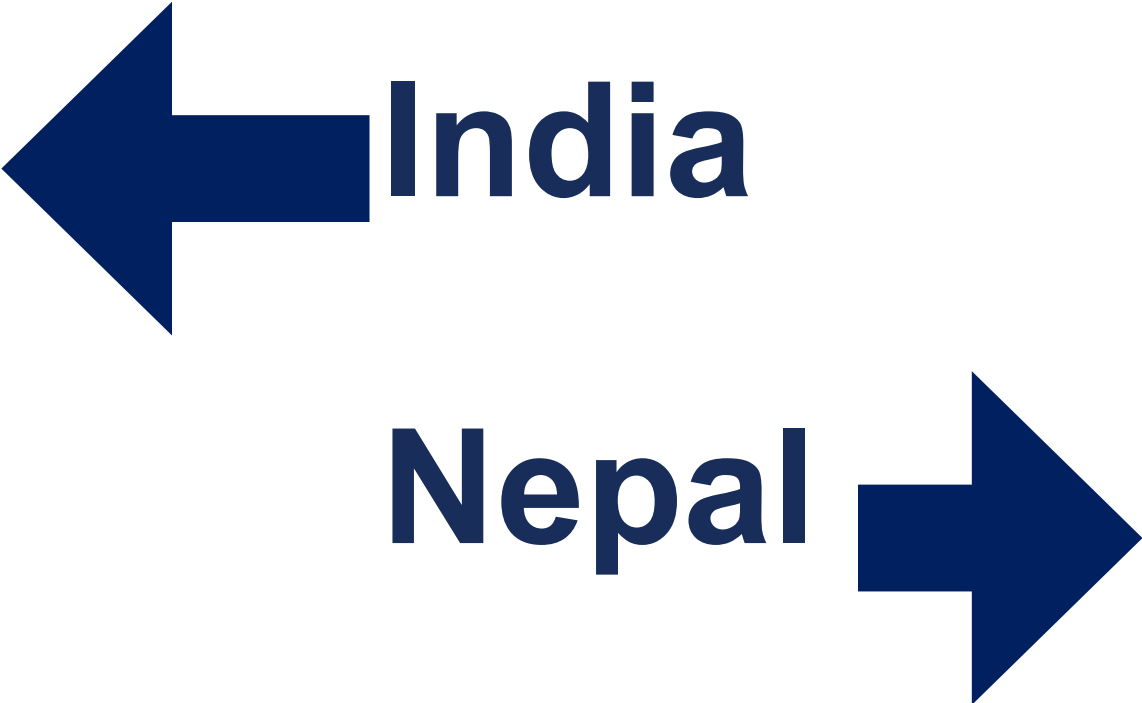


3. Finding Anomalies in Country IXP JEDI



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

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



Not enough probes to show other countries in South Asia, data is per Jan '24

Prototype Tool

Fullscreen

+

-

Origin (ASN or ix-ID)

13335

Date

01/03/2024

Address Family

IPv4

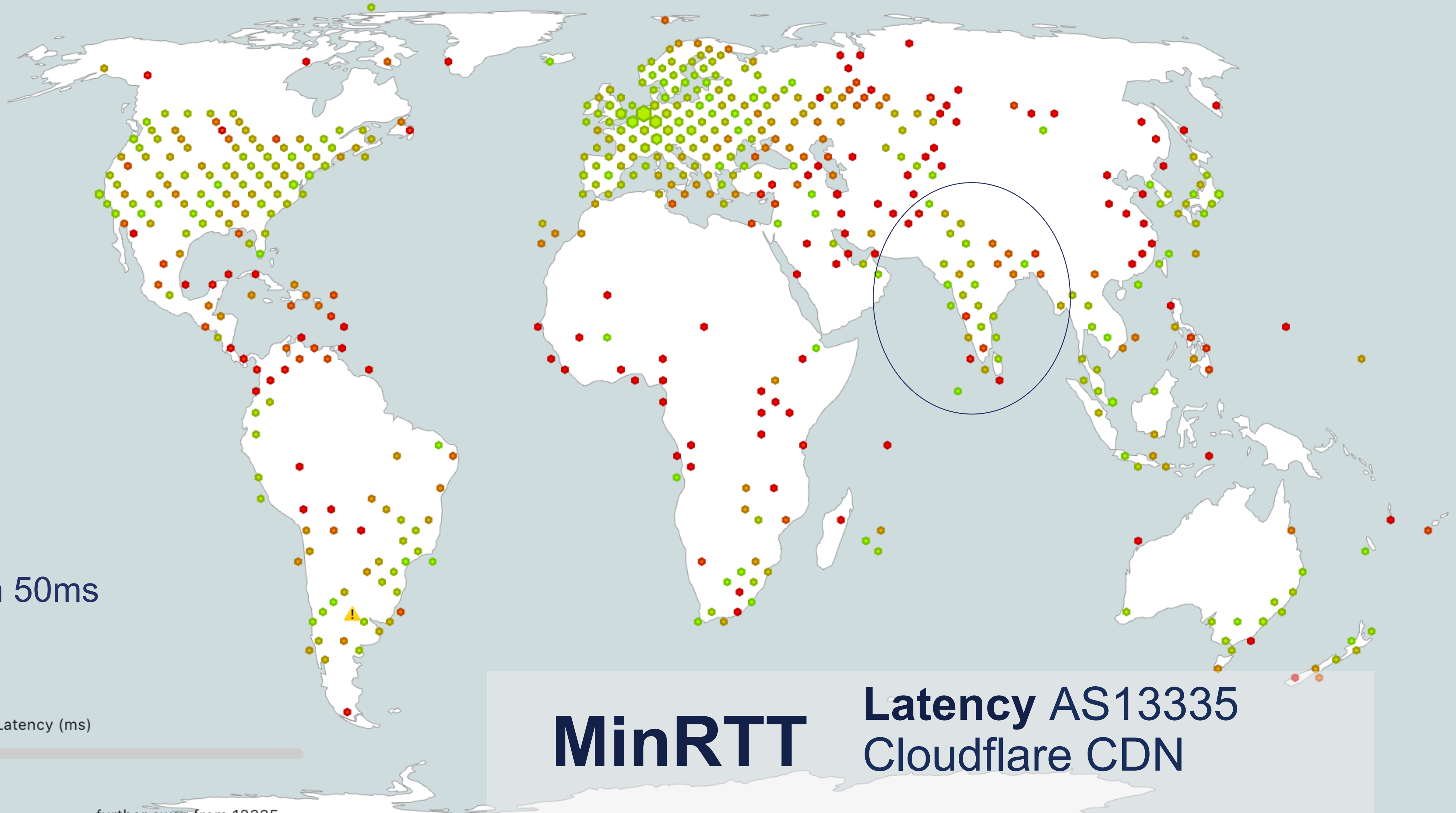
Protocol

Any

Aggregate function

Median

Prototype Tool



Latency within 50ms

Frequency

Latency (ms)

← closer to 13335

further away from 13335 →



0 84 168 252 336 420 504 588 672 756

Min. RTT

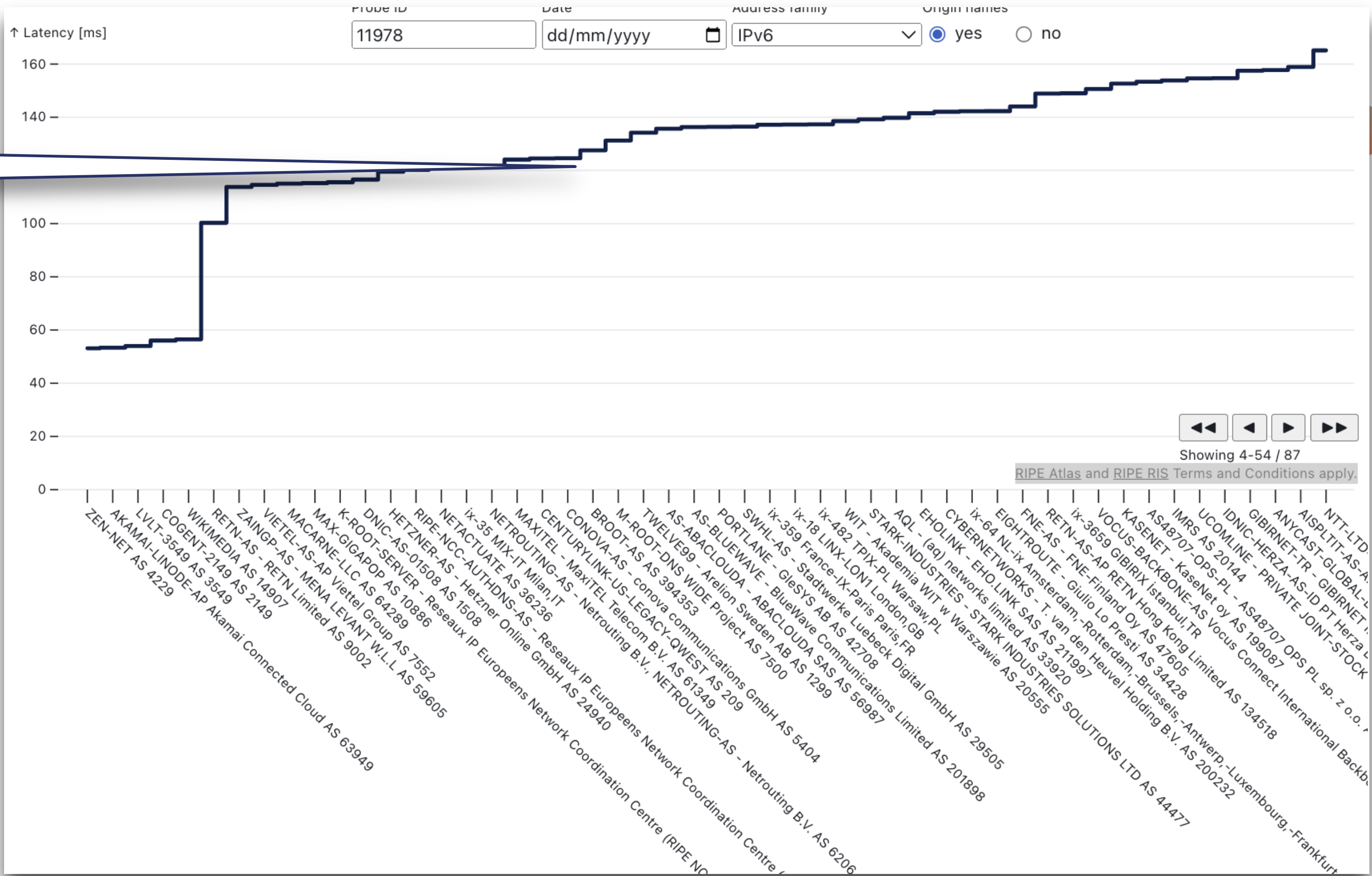
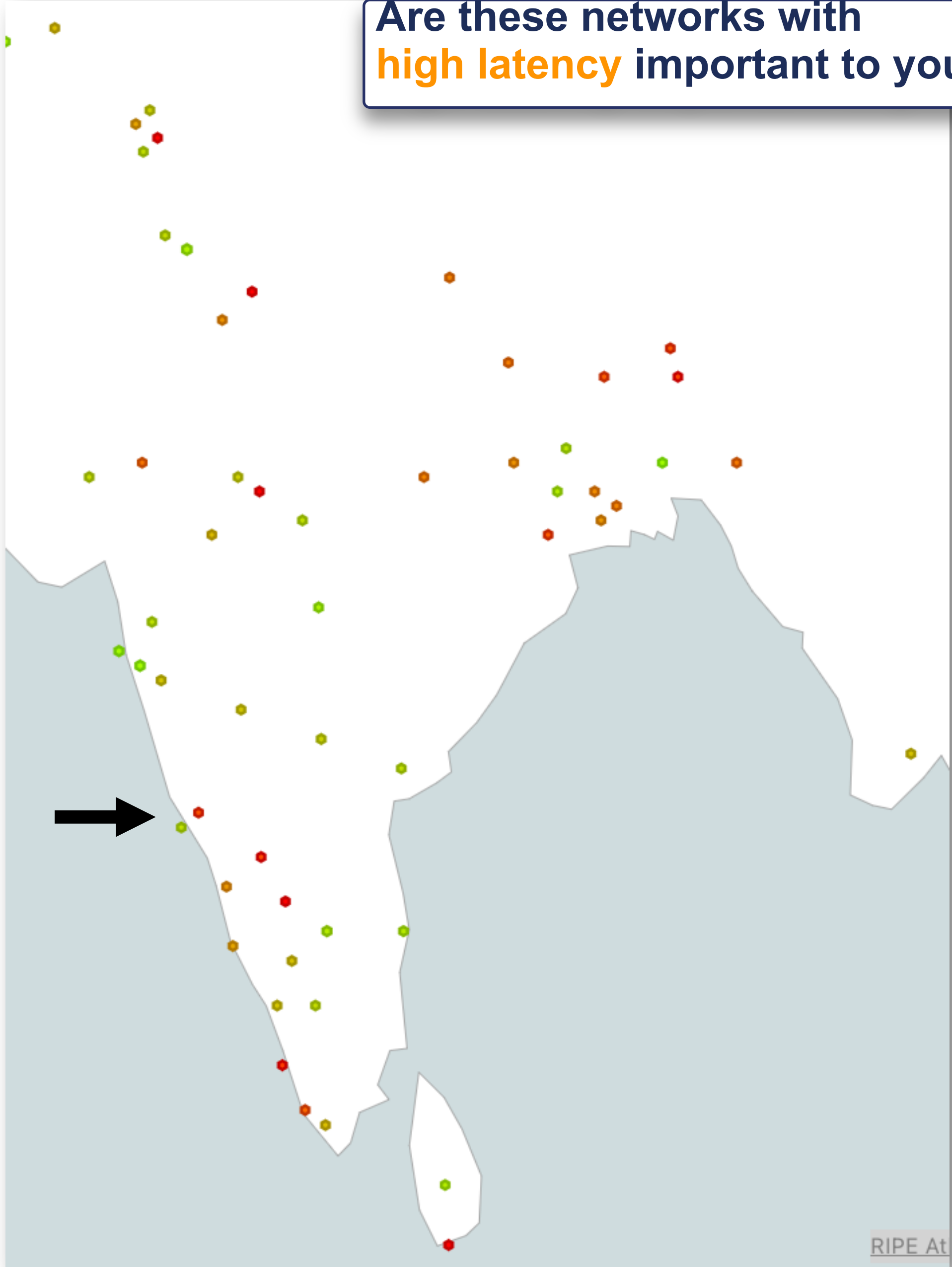
MinRTT

Latency AS13335
Cloudflare CDN

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

Let's zoom in

Are these networks with **high latency** important to you?



RB01-HOME-Airtel

General

Network

Built-ins

UDMs

IPv4

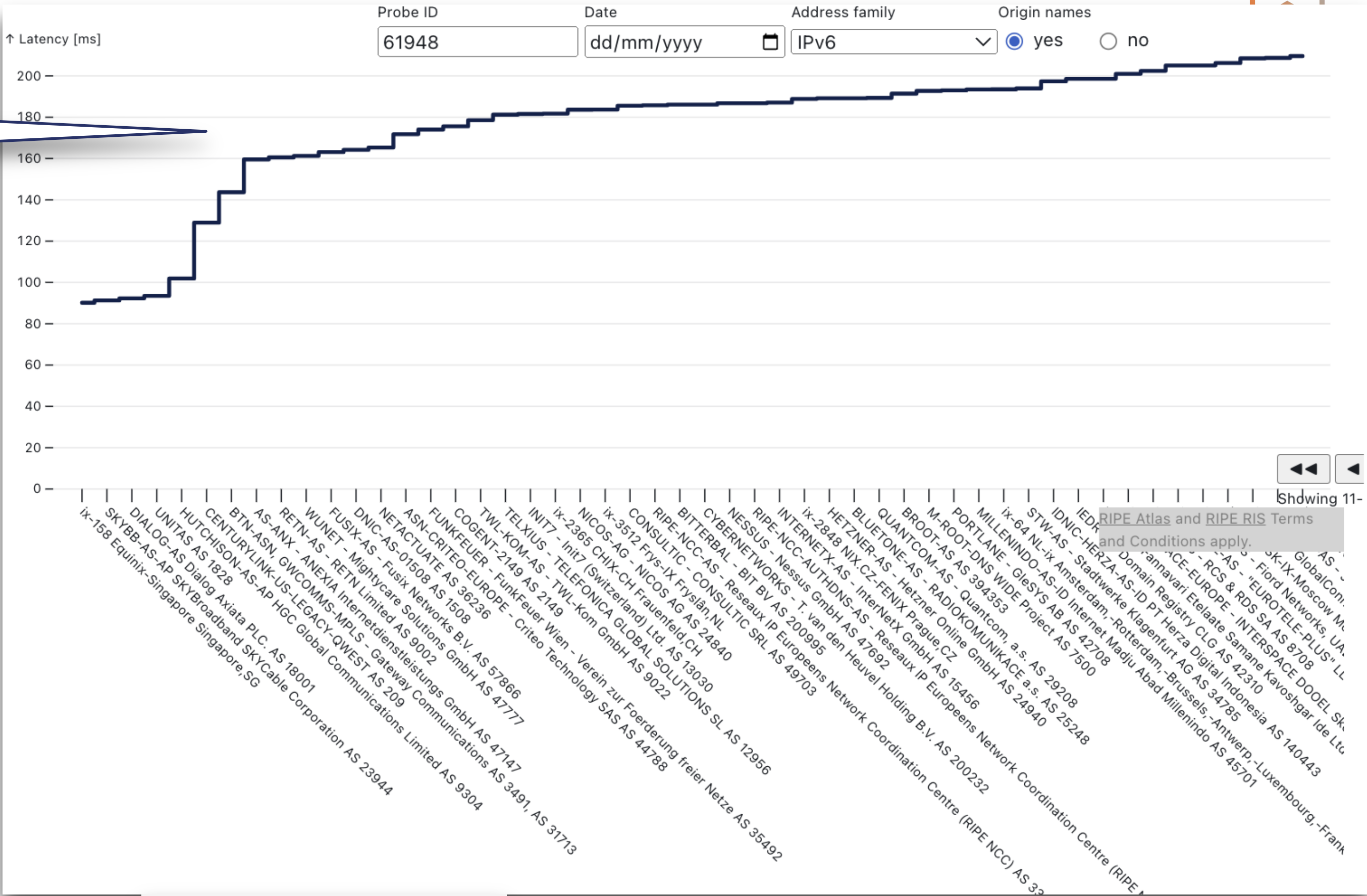
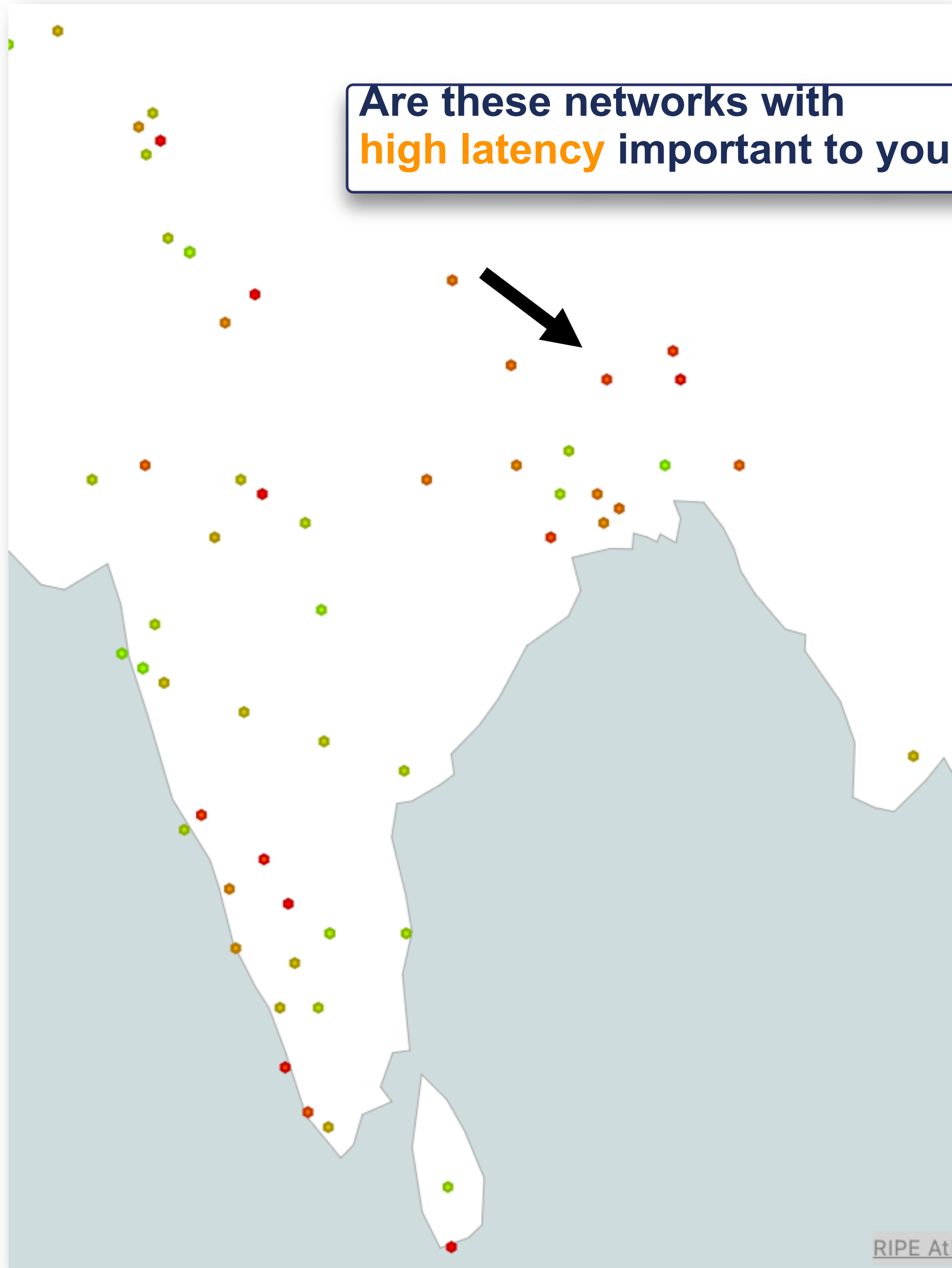
Internet Address

Prefix

ASN

24560 (AIRTELBBROADBAND-AS-AP Bharti Airtel Ltd.)

<https://atlas.ripe.net/probes/11978/#tab-network>
ProbeID 11978
India



SpeedLinks

General Network Built-ins

IPv4

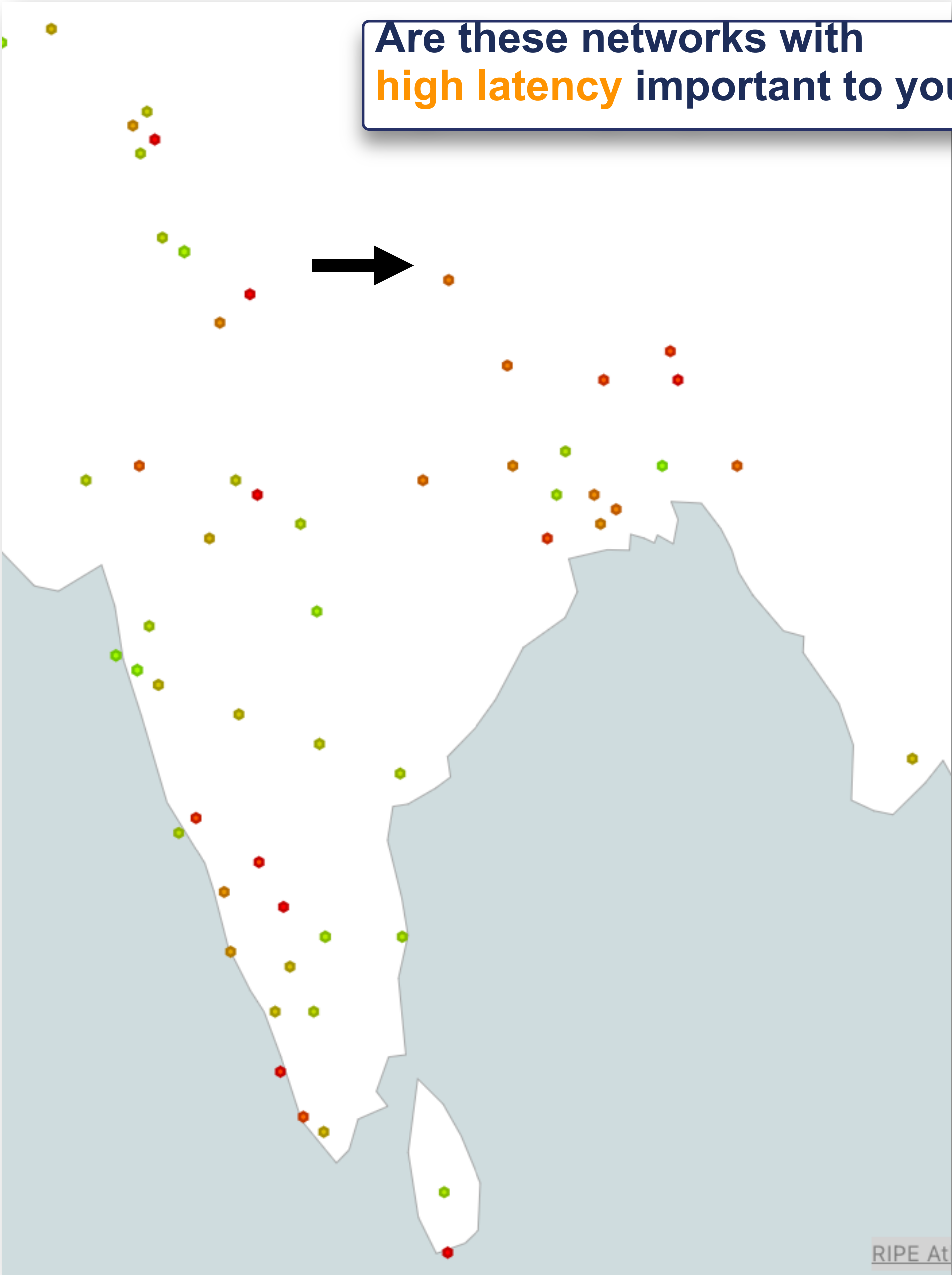
Internet Address

Prefix

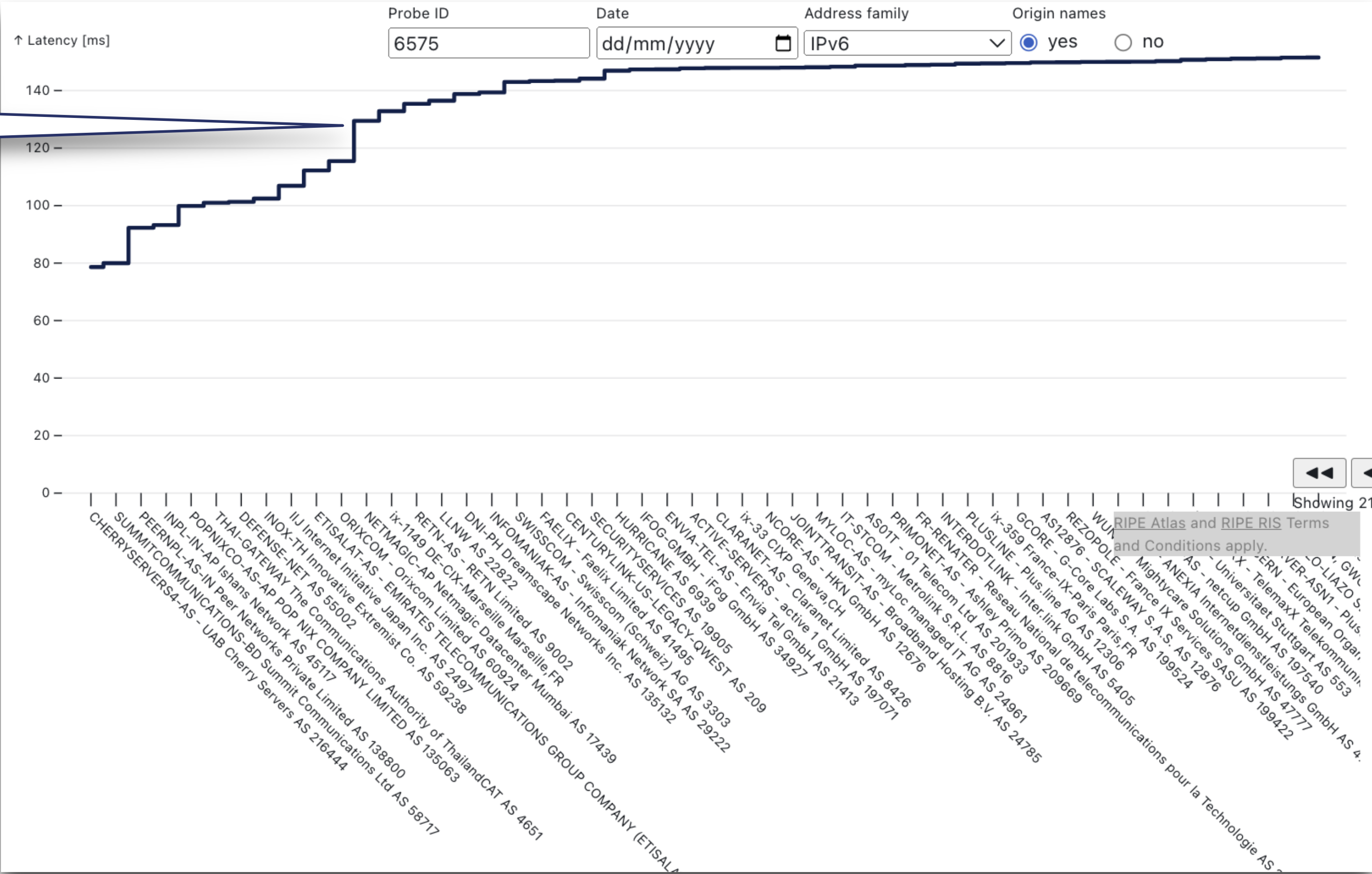
ASN 149058 (SPEEDLINKS-AS-AP Speed Links)

ProbeID 61948 Bangladesh

<https://atlas.ripe.net/probes/61948/#tab-network>



Are these networks with **high latency** important to you?



Anchor

NPIX

General

Network

Built-ins

IPv4

Internet Address

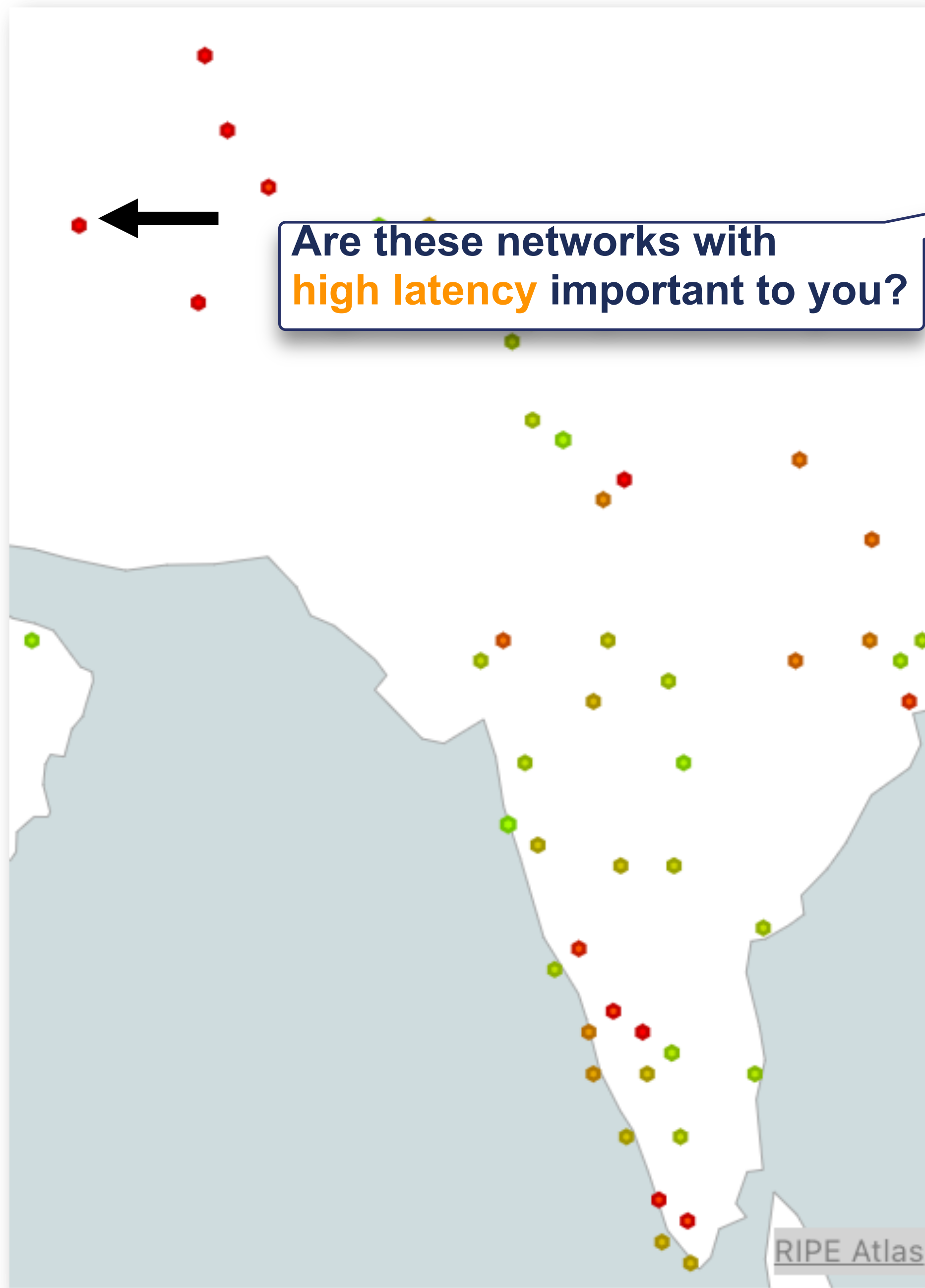
Prefix

ASN

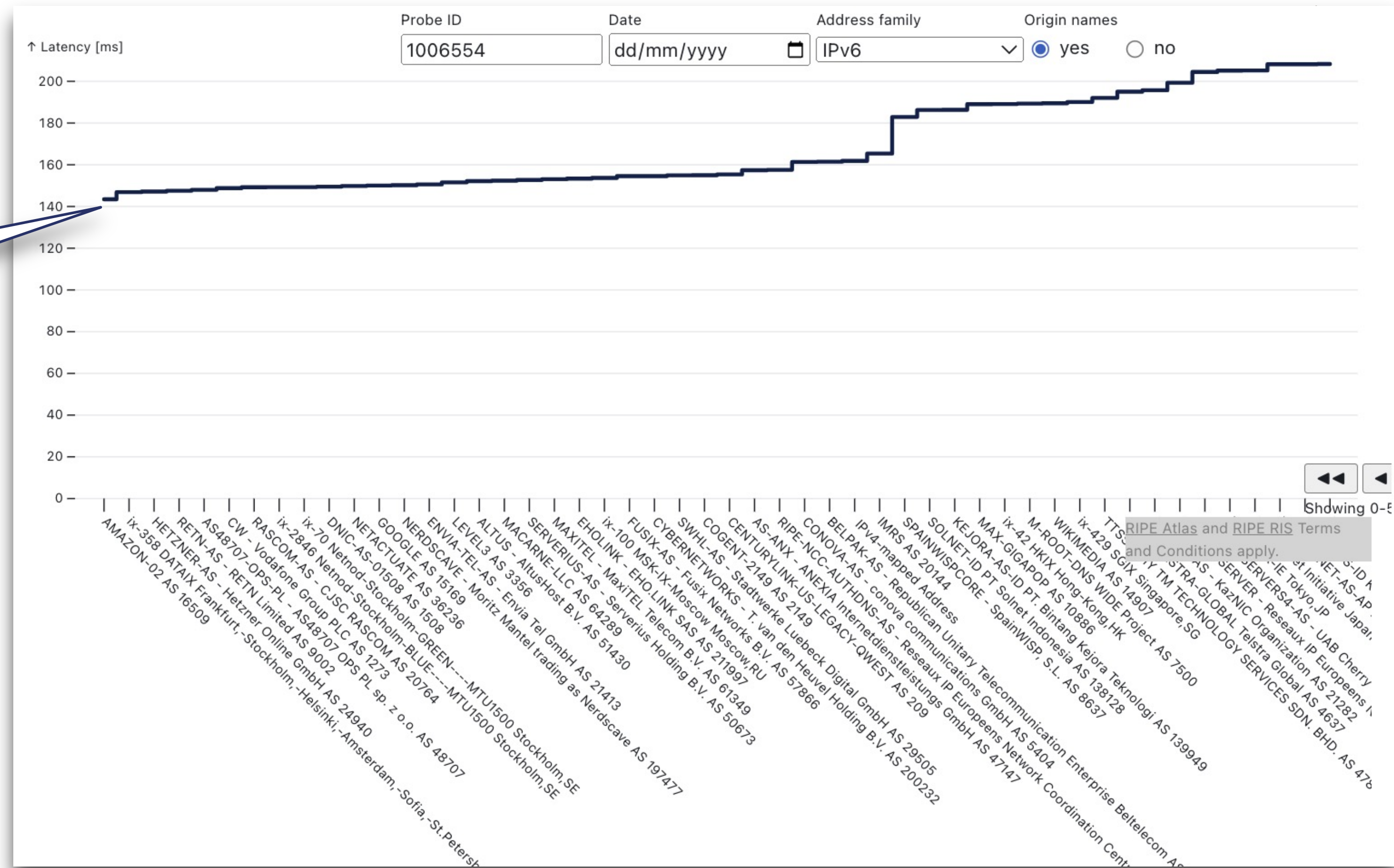
45170 (NREN-AS-NP
Nepal Research and
Education Network)

AnchorID 6575
Nepal

<https://atlas.ripe.net/probes/6575/#tab-network>



Are these networks with high latency important to you?



ripe-atlas-hrt

General

Network

Built-ins

IPv4

Internet Address

Prefix

ASN

138322 (AWCC-AS-AP
Afghan Wireless
Communication
Company)

SW ProbeID 1006554 Afghanistan

<https://atlas.ripe.net/probes/1006554/#tab-network>

MinRTT

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



Try your probe here



[https://observablehq.com/
@ripencc/atlas-probe-
neighbourhood?](https://observablehq.com/@ripencc/atlas-probe-neighbourhood?)

NOTE: As MinRTT tool, AS13335 is not seen in Pakistan and Bhutan
Possibly because there are not enough probes within the economies and/or other reasons

****This is a prototype****

Install software probes now and see the difference

We'd love to install probes in these ASNs



Target ASN per country that has < 3 probes		
ASN	Network Name	es please: Need one Count
45609	BHARTI-MOBILITY-AS-AP	India
38266	VIL-AS-AP	India
45271	ICLNET-AS-AP	India
138754	KVBPL-AS-IN	India
24309	CABLELITE-AS-AP	India
24186	RAILTEL-AS-IN	India
4755	M-AS TATA Communications forr	India
9498	BBIL-AP BHARTI Airtel Ltd.	India
24389	GRAMEENPHONE-AS-AP	Bangladesh
24432	AXIATA-ROBI-AS-AP	Bangladesh
45245	banglalink-AS	Bangladesh
63526	SSDTL-BD	Bangladesh
23688	LINK3-TECH-AS-BD-AP	Bangladesh
58715	ARTHTELECOMMUNICATION-A	Bangladesh
58689	ICCNET-DHK-BD	Bangladesh
131464	DJBL-AS-AP	Bangladesh
23956	AMBERIT-BD-AS	Bangladesh
138640	HELLOTECHLIMITED-AS-AP	Bangladesh
58717	MUNICATIONS-BD Summit Comn	Bangladesh
17557	PKTELECOM-AS-PK	Pakistan
59257	CMPAKLIMITED-AS-AP	Pakistan
45669	Mobilink-AS-PK	Pakistan

Target ASN per country that has < 3 probes		
ASN	Network Name	es please: Need one Count
9541	CYBERNET-AP	Pakistan
24499	TPP-AS-PK	Pakistan
56167	PTML-PK	Pakistan
132165	CONNECT-AS-AP	Pakistan
136969	KKNETWROK-AS-AP	Pakistan
23674	NAYATEL-PK	Pakistan
150750	ICIL-AS-AP	Pakistan
17501	WLINK-NEPAL-AS-AP	Nepal
23752	NPTELECOM-NP-AS	Nepal
45650	VIANET-NP	Nepal
139922	DMNPL-AS-AP	Nepal
4007	SUBISU-CABLENET-AS-AP	Nepal
38565	NCELL-AS-NP	Nepal
24550	WEBSURFERNP-AS-NP	Nepal
58504	TECHMINDS-NP	Nepal
141767	CG-COMMUNICATION-AS-AP	Nepal
55915	CLASSIC-NP	Nepal
140072	FWCPL-AS-AP	Nepal
55427	BROADLINK-AS-AP	Nepal
13335	CLOUDFLARENET	Nepal
18024	BTTELECOM-AS-AP	Bhutan
23955	TASHICELL-DOMESTIC-AS	Bhutan

Target ASN per country that has < 3 probes		
ASN	Network Name	es please: Need one Count
23955	TASHICELL-DOMESTIC-AS	Bhutan
137412	TASHICELL-MOBILE-AS	Bhutan
134715	GTA-AS-AP	Bhutan
136039	NANO-AS-AP	Bhutan
138529	DATANET-AS-AP	Bhutan
18001	DIALOG-AS	Sri Lanka
45356	MOBITEL-LK	Sri Lanka
9329	SLTINT-AS-AP	Sri Lanka
132045	AIRTEL-AS-ISP	Sri Lanka
17470	HUTCHISON-LK	Sri Lanka
132447	HUTCHISON-LK	Sri Lanka
7642	DHIRAAGU-MV-AP	Maldives
55944	OOREDOO-MV	Maldives
24016	RaajjeOnline-AS	Maldives
136238	SATLINKPVTLTLD-AS-AP	Maldives
38742	AWCC-AS-AP	Afghanistan
131284	ETISALATAFG-AS-AP	Afghanistan
55330	GCN-DCN-AS	Afghanistan
45178	ROSHAN-AF	Afghanistan
132471	MTNAFGHANISTAN-AS-AP	Afghanistan
135376	RAHANET-ISP-AS-AP	Afghanistan
55424	INSTATELECOM-AS-AP	Afghanistan
137824	VNT-ISP-AS-AP	Afghanistan
134134	NORTHTELECOM-AF	Afghanistan
13335	CLOUDFLARENET	Afghanistan

<https://observablehq.com/@ripenc/ripe-atlas-networkcoverage?country=BD,IN,MN,NP,PK&search=38742&labels=notCovered&columns=4&spacing=4&radius=90>

Some Reasons to Love RIPE Atlas



12,000 Probes

Global Coverage

Trusted Source

Non-profit organisation
Volunteers: 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 Access **ACCOUNT** ✓

INSTALL RIPE Atlas (SW) probes strategically ✓

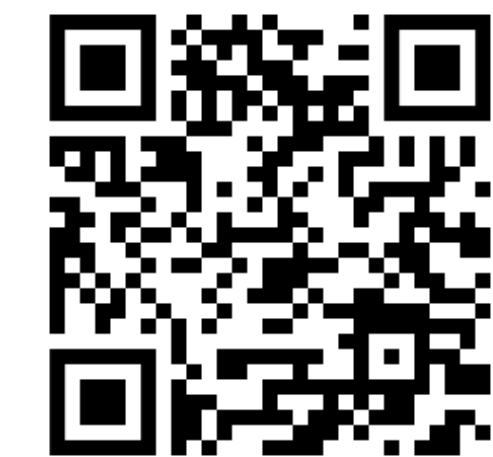
PEER with RIS* ✓

Start testing, **MONITOR** your network performance ✓

Did your probe disconnect? **Reconnect it!** ✓

Redeem This Voucher

SANOG41



RIPE Atlas Community and Supporters in South Asia



- RIPE Atlas Ambassadors
- Probe Hosts
- Sponsors
- And many more.....



- Supporters and all the local NOGs



What is RIS?

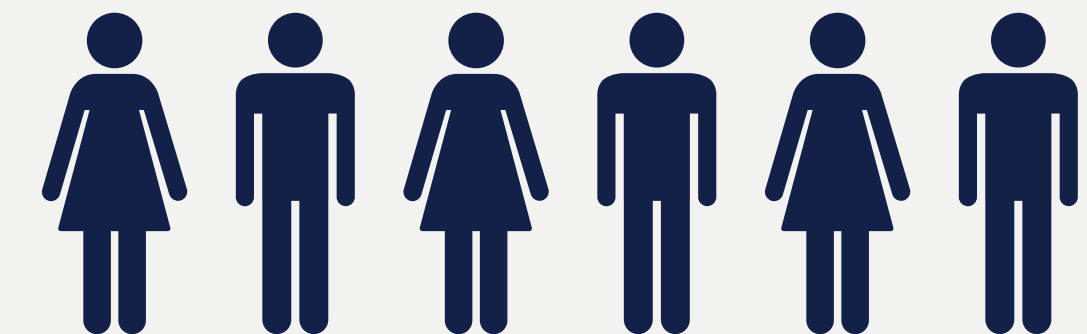


- RIS is a routing data collection platform
- Collecting BGP data since 1999
- Up-to-date routing information, as opposed to information in databases and routing registries, such as:
 - What is being announced
 - Which prefixes are seen and where
 - Which prefixes are not seen

THANK YOU TO OUR COMMUNITY



23 collectors



1377 global peers

How Can RIS Help Network Operators?

- Is your prefix getting announced?
 - RIS Live (<https://ris-live.ripe.net/>)
 - RIPEstat (<https://stat.ripe.net/app/launchpad>)
- Tools developed by others allow you to set an alert
 - Try out **BGP Alerter** (powered by RIS Live)
 - PacketVis <https://packetvis.com/>



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/