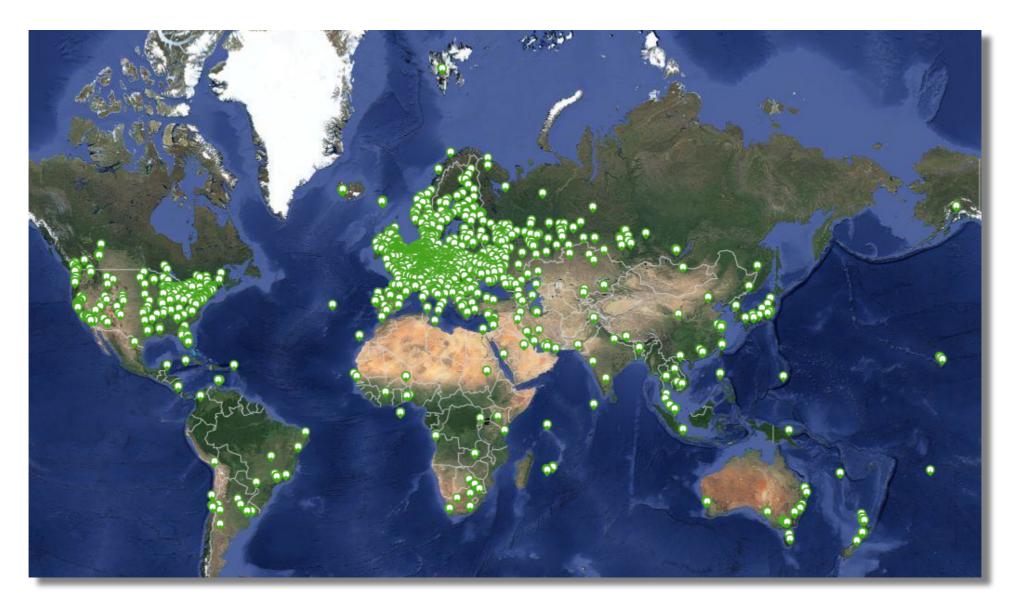# RIPE Atlas (Update)

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Mumbai - India | August 2015

RIPE Atlas

A measurement network of 8,300+ devices

For the community, **by** the community

https://atlas.ripe.net

Definition

- RIPE Atlas is a global active measurements platform

- Goal: Improve the Internet through measurement

- Measurement devices hosted by volunteers

    - Users can run customised measurements

- Ping, traceroute, DNS, SSL/TLS and NTP

    - Ongoing global measurements towards root name servers

    - Visualised as Internet maps

    - Ongoing regional measurements towards "anchors"

- Data publicly available

Measurement devices: probes

- Install-and-forget, USB powered

- Hosted and sponsored by organisations (e.g. ISPs) and individual end users

- Probes given out free of charge

- Active measurements: ping, traceroute, etc.

Measurement devices: anchors

- "Super probes", as well as willing targets
- 1U server (Soekris), mostly in data centres
- Inbound "anchoring" measurements
  - From ~400 RIPE Atlas probes (includes all other anchors)
  - Local connectivity / "future history"

Why host a RIPE Atlas probe/anchor?

- For the good of the Internet

- Earn credits: Allow you to troubleshoot your network issues from 8,300+ devices worldwide!

- Measurements from a neutral third party

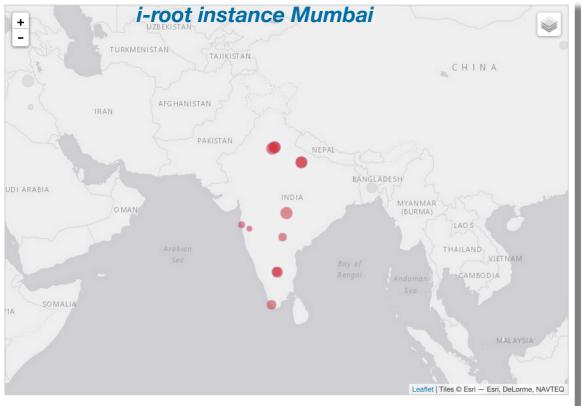- Allows others to optimise latency towards you

- "What gets measured, improves"

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RIPE Atlas public results

- **Global** Internet maps: from every probe, automatic

  - Targeting root name servers

  - Latency to anycasted and fixed destinations

  - Comparing anycast instances

- RIPE Atlas **regional** anchoring measurements

  - Anchors mesh and from 300 probes to each anchor

  - Ping, traceroute, and HTTP

- Public user-defined measurements

  - From up to 500 probes to a target of users's choice
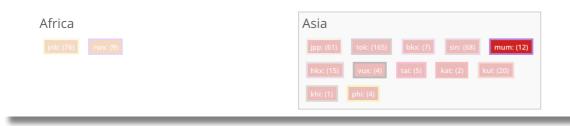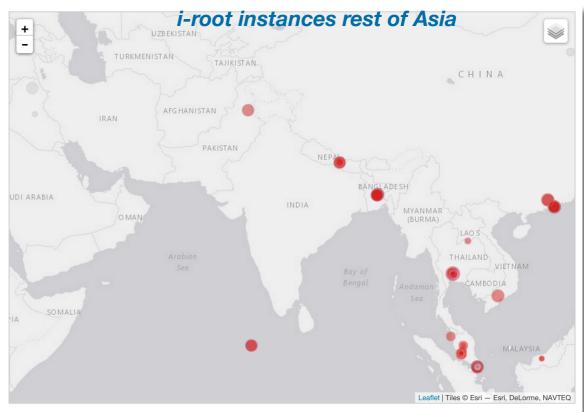
  - Visualisations provided

- Sources: RIPE Atlas probes (red dots)

- Destination: anycast i-root DNS server

RIPE Atlas use cases and analyses

- Lots of use cases and experiences on RIPE Labs:

    - Use cases and analyses

    - Presentations, tutorials, workshops

    - Scientific articles and research papers

    - https://labs.ripe.net/atlas/user-experiences

A few examples of analyses

- How RIPE Atlas Helped Wikipedia Users

    - https://labs.ripe.net/Members/emileaben/how-ripe-atlas-
      helped-wikipedia-users

- #facebookdown? What Internet Measurement Data Shows

    - https://labs.ripe.net/Members/emileaben/facebookdown-
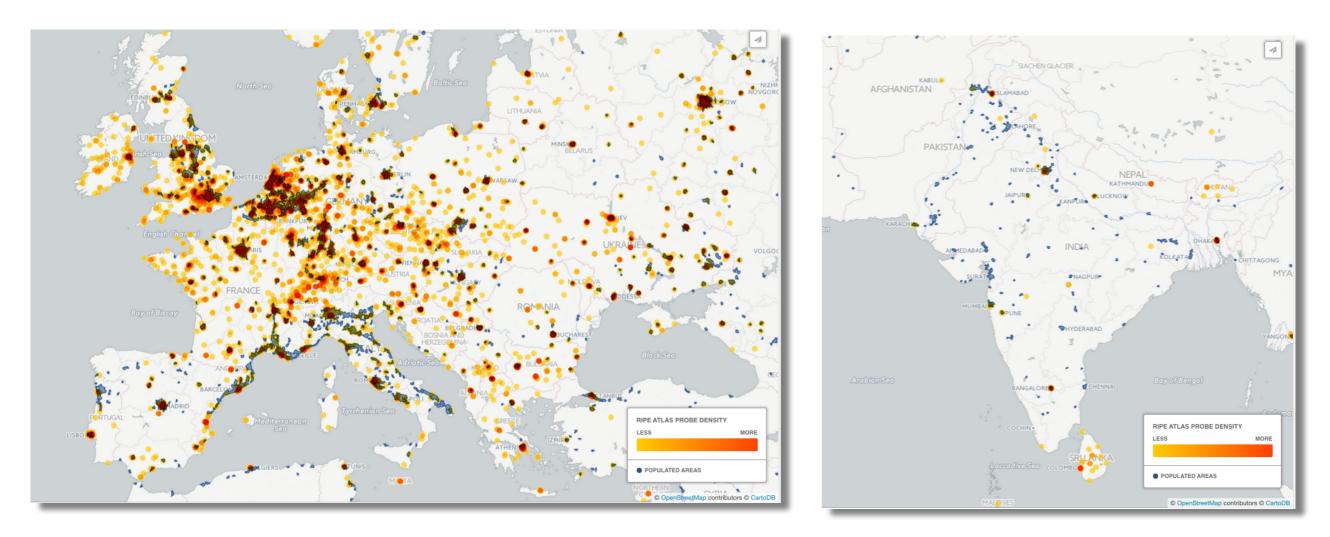   and-what-internet-data

Where Are RIPE Atlas Probes?

Probe distribution vs population

- Stark difference between coverage in Europe and SANOG region

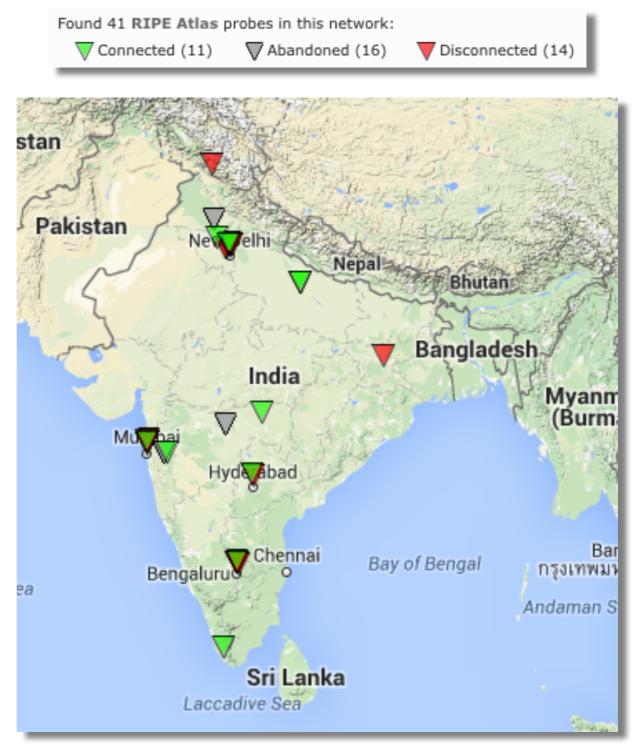*Data: Dec 2014 / urban areas data from naturalearthdata.com*

Example: Top 10 cities in India

- Mumbai   YES
- Delhi   YES
- Bangalore   YES
- Hyderabad   YES
- Ahmedabad   NO!
- Chennai   NO!
- Kolkata   NO!
- Surat   NO!
- Pune   YES
- Jaipur   NO!

Found 41 **RIPE Atlas** probes in this network:
Connected (11)   Abandoned (16)   Disconnected (14)

SANOG region status

Country	Probes up / total	ASNs covered / Total ASNs	Population (world bank 2014)
Afghanistan	**0** / 1	0 / 35	31M
Bangladesh	**18** / 26	15 / 235	159M
Bhutan	**2** / 3	1 / 5	765k
India	**11** / 25	9 / 516	1.2G
Maldives	**2** / 2	1 / 3	351k
Nepal	**8** / 10	6 / 36	28M
Pakistan	**7** / 19	4 / 78	185M
Sri Lanka	**26** / 36	8 / 15	20M

Prototype Applications On Top of RIPE Atlas

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IXP-Country-Jedi

- Exploring "keeping local traffic local"

- Mesh of traceroutes between RIPE Atlas probes in a country

- Needs more AS diversity in RIPE Atlas deployment in India

Example output for India / NIXI

https://labs.ripe.net/Members/emileaben/measuring-ixps-with-ripe-atlas

http://sg-pub.ripe.net/emile/ixp-country-jedi/IN-2015-07-31/ixpcountry/

- **Idea:** What if I could do a **traceroute** from all of the major **"eyeball" networks in a country**?

- **Hurdle:** How to determine these networks?
  - APNIC Labs (Geoff Huston, George Michaelson) have data

- **Workflow:**
  - Extract list of ASNs with > 1% market share
  - Check whether RIPE Atlas probes in these ASNs and perform traceroutes
  - Provide text-based, annotated output: hostnames, ASN for hops, location from OpenIPMap

eyeballtrace example

- $ eyeballtrace -c IN flipkart.com

```
## AS9829/BSNL-NIB - National Internet Backbone (23.6% of market in IN)
#prb:17011 dst:flipkart.com
1  ()  10.10.10.1 [0.377, 0.4, 0.574]
2  ()  192.168.1.1 [1.055, 1.142, 1.212]
3  (AS9829)  117.206.176.1 [22.017, 22.512, 22.771]
4  (AS9829)  218.248.171.158 [39.914, 142.812, 188.124]
5  (AS9829)  218.248.235.130 [29.958, 30.113, 31.221]
6  (AS9498)  aes-static-233.134.23.125.airtel.in [101.072, 101.42, 102.495]
7  (AS9498)  aes-static-021.37.144.59.airtel.in [97.964, 99.393, 117.358]
8  err:{u'x': u'*'}
8  (AS9498)  aes-static-138.126.17.125.airtel.in [73.969]
9  (AS17439)  180.179.165.186 [74.373, 74.472, 76.232]
10 (AS17439)  m200.flipkart.com [74.383, 74.604, 74.65]
11 (AS17439)  m200.flipkart.com [75.563, 75.934, 141.835]
12 (AS9752)  163.53.76.21 [75.184, 75.495, 76.207]
```

```
## AS17813/MTNL-AP - Mahanagar Telephone Nigam Ltd. (3.1% of market in IN)
NO RIPE Atlas coverage!!
If you are in a position to put a probe in this network: https://atlas.ripe.net/get-involved/become-a-host/
```

https://github.com/emileaben/eyeballtrace

Take Part and Keep in Touch

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How to take part

- For individuals: host a probe (one per ASN!)

- For organisations:

    - Host an anchor

    - Sponsor RIPE Atlas

- Help us distribute probes: become an ambassador

- For developers:

    - Contribute to community code on GitHub

    - https://github.com/emileaben/ixp-country-jedi

- Network operators:

    - Use RIPE Atlas and let us know your feedback

- https://atlas.ripe.net

- Mailing list for active users: ripe-atlas@ripe.net

- Articles and updates: https://labs.ripe.net/atlas

- Questions: atlas@ripe.net

- Twitter: @RIPE_Atlas and #RIPEAtlas

- Want to learn more?

SANOG 26 - Tutorial Program Outline - 5-6 August, 2015

Type	Date	Time	Track: Transport	Track: Operations and Security	Track: Management, Operations and DNS
Tutorials	5th August	09:00 - 10:30			RIPE Atlas Tutorial - Emile Aben

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