RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE Atlas Intro & Use Cases

Philip Smith | SANOG 29 | 23-30 January 2017

Ever Wonder How To…

- Monitor the performance of your network in real time from thousands of vantage points
- Troubleshoot problems close to your customers
- Validate your peering strategies
- Plan your content distribution
- Demonstrate performance to your customers

RIPE Atlas

- RIPE Atlas is a global active measurements platform
- Probes hosted by volunteers
- Data publicly available

"RIPE Atlas: A Global Internet Measurement Network" (PDF). Internet Protocol Journal 18. September 2015. ISSN 1944-1134.

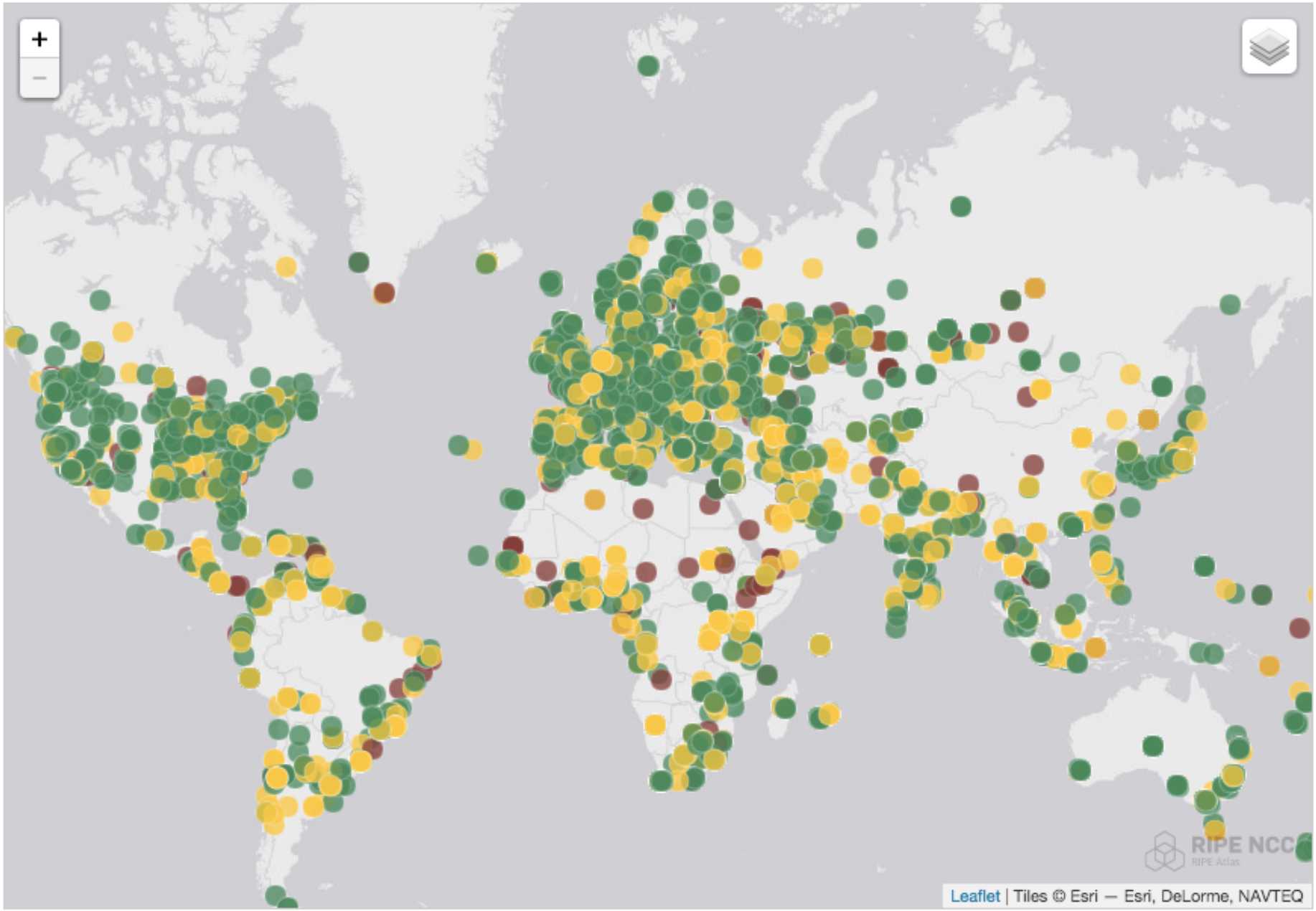
RIPE Atlas Numbers

- 9,200+ probes connected (240+ Anchors)
- 4,000+ results collected per second
- 35,000+ user-defined measurements weekly
  - Seven types of user-defined measurements available to probe hosts and RIPE NCC members: ping, traceroute, DNS, SSL, NTP, HTTP, Wifi

APNIC - RIPE NCC

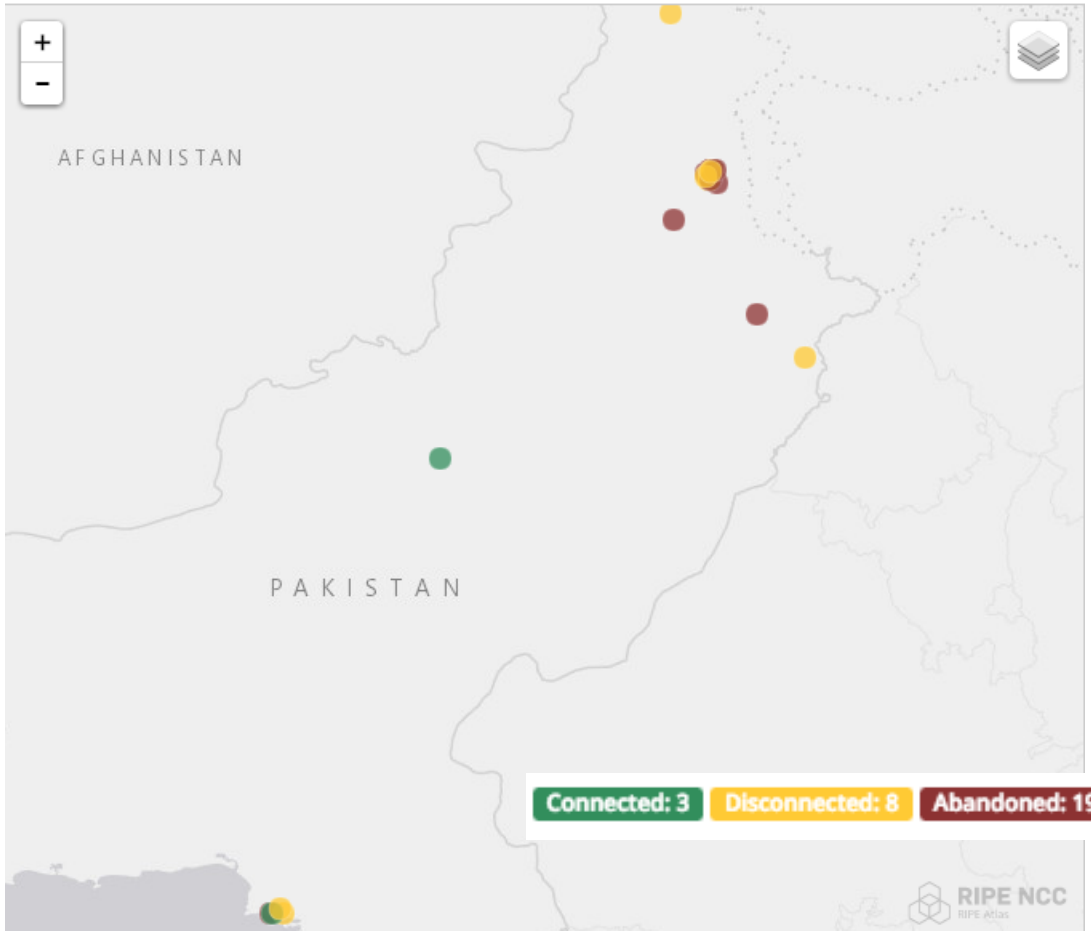
- Collaboration to deploy RIPE Atlas and sponsored Anchors in APNIC's region
  - 250 RIPE Atlas
  - RIPE Atlas Anchors in each economy (13 active more to come)
- Want to host (sponsored) RIPE Atlas Anchor?
  - Contact APNIC staff or
  - Apply directly to host your own RIPE Atlas Anchor

RIPE Atlas Coverage



RIPE Atlas (Anchors) in PK

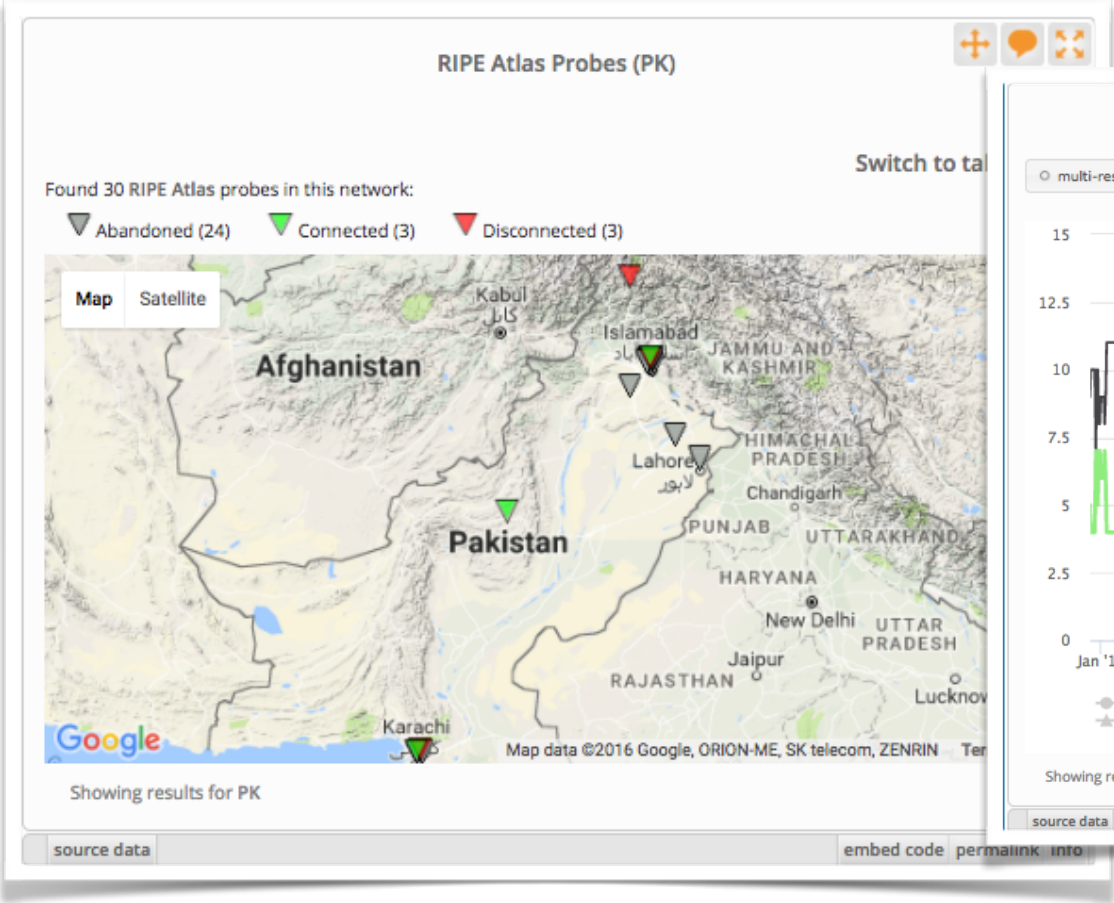
- Four active probes
- One RIPE Atlas Anchor in Pakistan



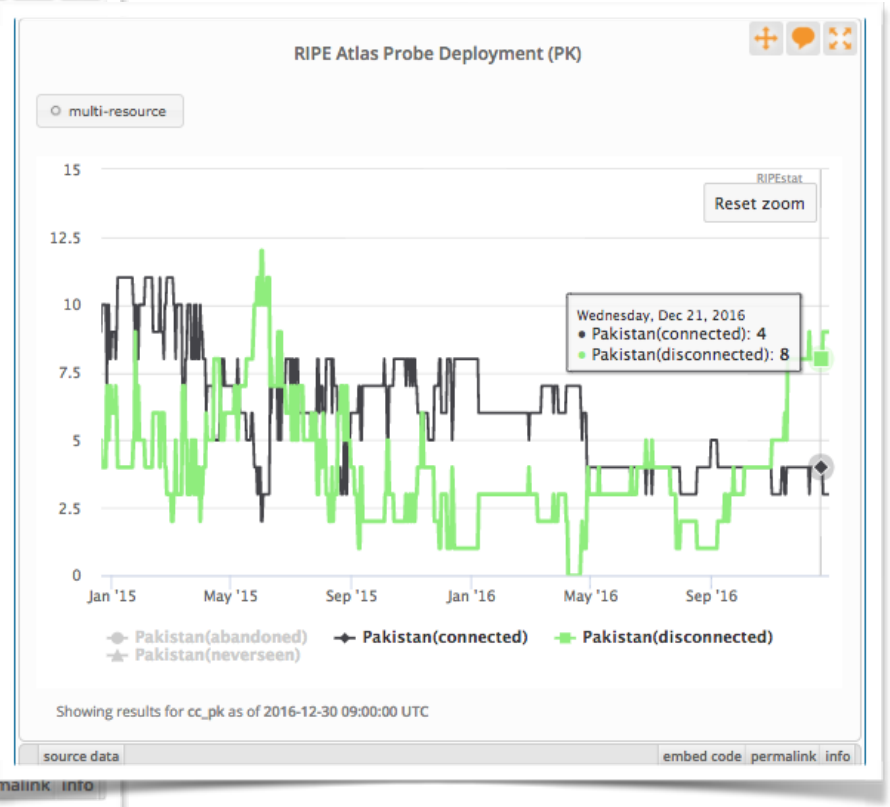
pk-isb-as7590	6128	COMSATS Internet Services *Sponsored by: APNIC*	Islamabad	Pakistan	ping IPv4 IPv6 traceroute IPv4 IPv6 http IPv4 IPv6

RIPEstat Country Statistics

Probe status map



Probe status number



- We want more in Pakistan

Hosting a Probe

1. Create a RIPE NCC Access account
2. Apply here: https://atlas.ripe.net/apply/ or from local RIPE Atlas ambassadors:
   - Phillip Smith(NSRC) - Matsuzaki Yoshinobu(IIJ)
   - APNIC staff and many more…
3. Register your probe: https://atlas.ripe.net/register
4. Plug in your probe

Creating a Measurement

Credit System

- Running your own measurements cost credits
  - e.g. a ping costs 10 credits
- Reason: fairness; to avoid overload
- Earn credits by:
  - Hosting a RIPE Atlas
  - Hosting an RIPE Atlas Anchor
  - Being a RIPE NCC member
  - Sponsoring RIPE Atlas

Create a New Measurement

Step 1 Definitions

Please select the type of measurement you want to create

+ Ping | + Traceroute | + DNS | + SSL | + HTTP | + NTP | + WiFi

Step 2 Probe Selection

Worldwide 10 ×

+ New Set - wizard | +New Set - manual | + IDs List | + Reuse a set from a measurement

Step 3 Timing

This is a One-off: ☐

Start time: As soon as possible

Stop time: Never

Measurement API Compatible Specification

Create My Measurement(s)

Costs summary

Please define a measurement

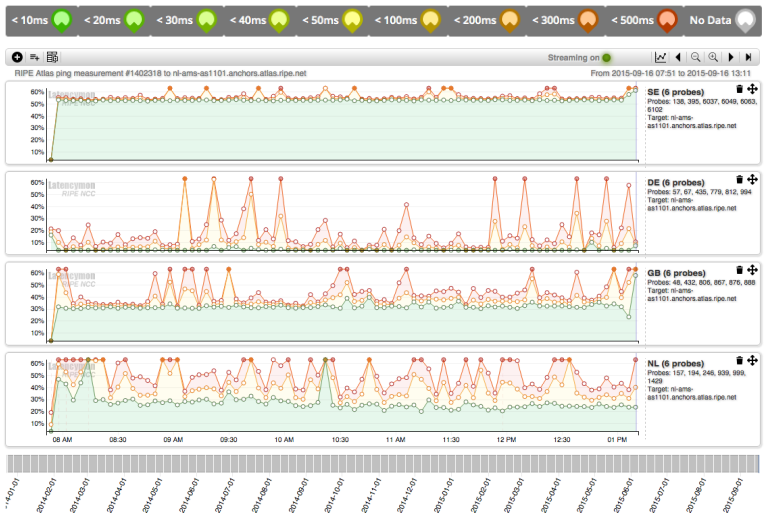
Users who will supply credits for this measurement:

mcandela@ripe.net

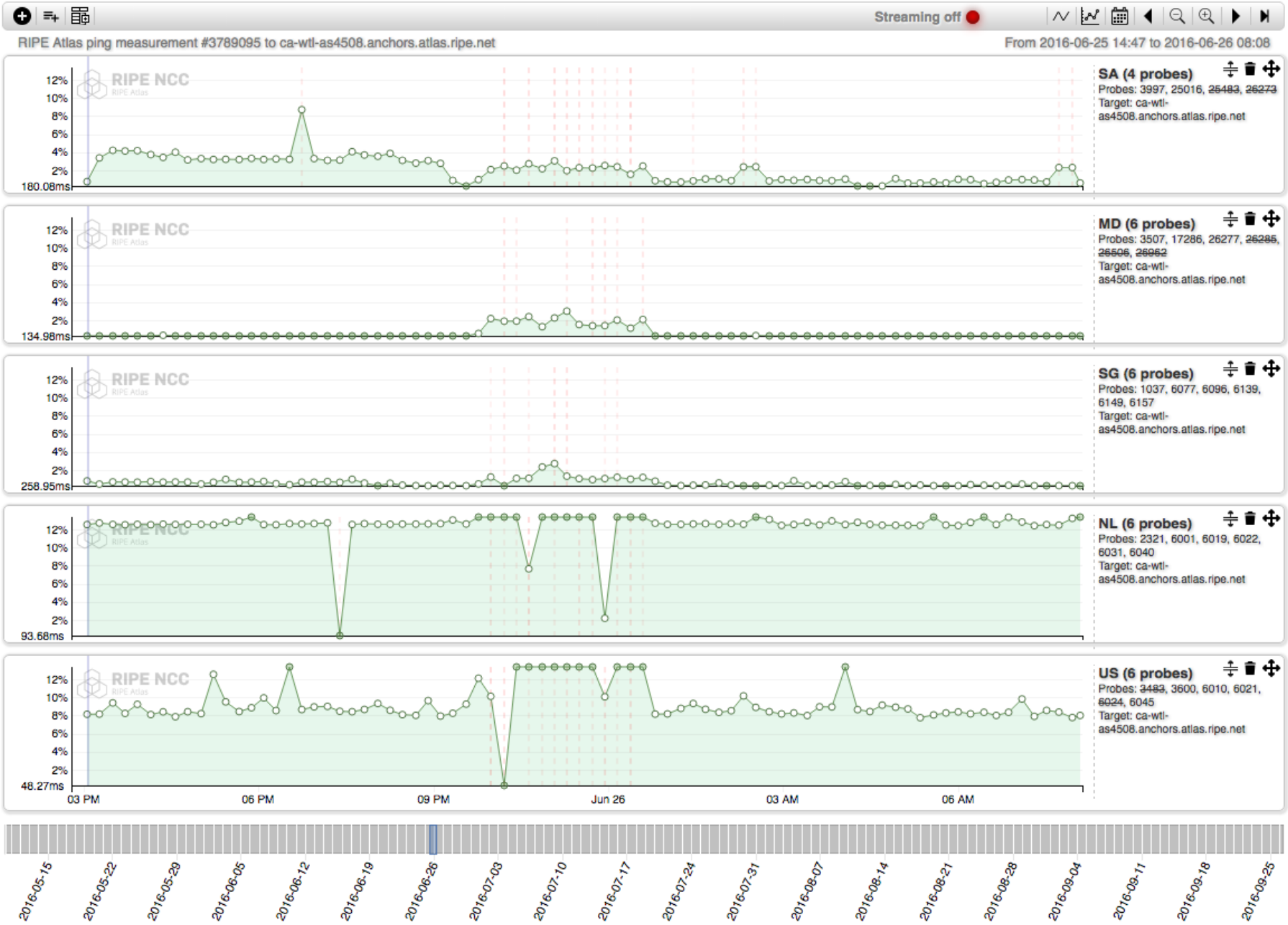
Visualisations

- List of probes: Sortable by RTT
- Map: Colour-coded by RTT
- LatencyMON: Compare multiple latency trends

Probe	ASN (v4)	ASN (v6)	Time	RTT
6019	3333	3333	2015-05-19 09:23	1.157
6069	59469	59469	2015-05-19 09:23	15.253
6111	198068	198068	2015-05-19 09:23	37.760
6112	197216	197216	2015-05-19 09:23	35.494
10008	3851		2015-05-19 09:23	24.664
10218	6876		2015-05-19 09:23	37.952
10246	39608		2015-05-19 09:23	36.313
10252	50288		2015-05-19 09:23	62.441
10267	12322		2015-05-19 09:23	31.498
10296	51214		2015-05-19 09:23	✖ Unreachable



LatencyMON


Streaming off
RIPE Atlas ping measurement #3789095 to ca-wtl-as4508.anchors.atlas.ripe.net
From 2016-06-25 14:47 to 2016-06-26 08:08
SA (4 probes)
Probes: 3997, 25016, 25483, 26273
Target: ca-wtl-as4508.anchors.atlas.ripe.net
MD (6 probes)
Probes: 3507, 17286, 26277, 26285, 26506, 26962
Target: ca-wtl-as4508.anchors.atlas.ripe.net
SG (6 probes)
Probes: 1037, 6077, 6096, 6139, 6149, 6157
Target: ca-wtl-as4508.anchors.atlas.ripe.net
NL (6 probes)
Probes: 2321, 6001, 6019, 6022, 6031, 6040
Target: ca-wtl-as4508.anchors.atlas.ripe.net
US (6 probes)
Probes: 3483, 3600, 6010, 6021, 6024, 6045
Target: ca-wtl-as4508.anchors.atlas.ripe.net
RIPE NCC
12%
10%
8%
6%
4%
2%
180.08ms
134.98ms
258.95ms
93.68ms
48.27ms
03 PM
06 PM
09 PM
Jun 26
03 AM
06 AM
2016-05-15
2016-05-22
2016-05-29
2016-06-05
2016-06-12
2016-06-19
2016-06-26
2016-07-03
2016-07-10
2016-07-17
2016-07-24
2016-07-31
2016-08-07
2016-08-14
2016-08-21
2016-08-28
2016-09-04
2016-09-11
2016-09-18
2016-09-25

View Your Network from the Outside

- Integrate “status checks” with existing monitoring tools (such as Icinga)

- Uses real-time data streaming
  - Server monitoring
  - Detecting and visualising outages
  - Filtering and re-using measurement results

Use Cases

How RIPE Atlas has been Used

- Using RIPE Atlas to Monitor Game Service Connectivity
  - https://labs.ripe.net/Members/annika_wickert/using-ripe-atlas-to-monitor-game-service-connectivity
- Using RIPE Atlas to Measure Cloud Connectivity
  - https://labs.ripe.net/Members/jason_read/using-ripe-atlas-to-measure-cloud-connectivity
- Using RIPE Atlas to Debug Network Connectivity Problems
  - https://labs.ripe.net/Members/stephane_bortzmeyer/using-ripe-atlas-to-debug-network-connectivity-problems

How RIPE Atlas has been Used

- Internet Access Disruption In Turkey - July 2016
  - https://labs.ripe.net/Members/emileaben/internet-access-disruption-in-turkey
- Operator Level DNS Hijacking
  - https://labs.ripe.net/Members/babak_farrokhi/operator-level-dns-redirection

IXP Country Jedi

Pakistan as Seen by RIPE Atlas

RIPE Atlas IXP Country Jedi

- Do paths between ASes stay in country?
- Any difference between IPv4 and IPv6?
- How many paths go via local IXP?
- Could adding peers improve reachability?

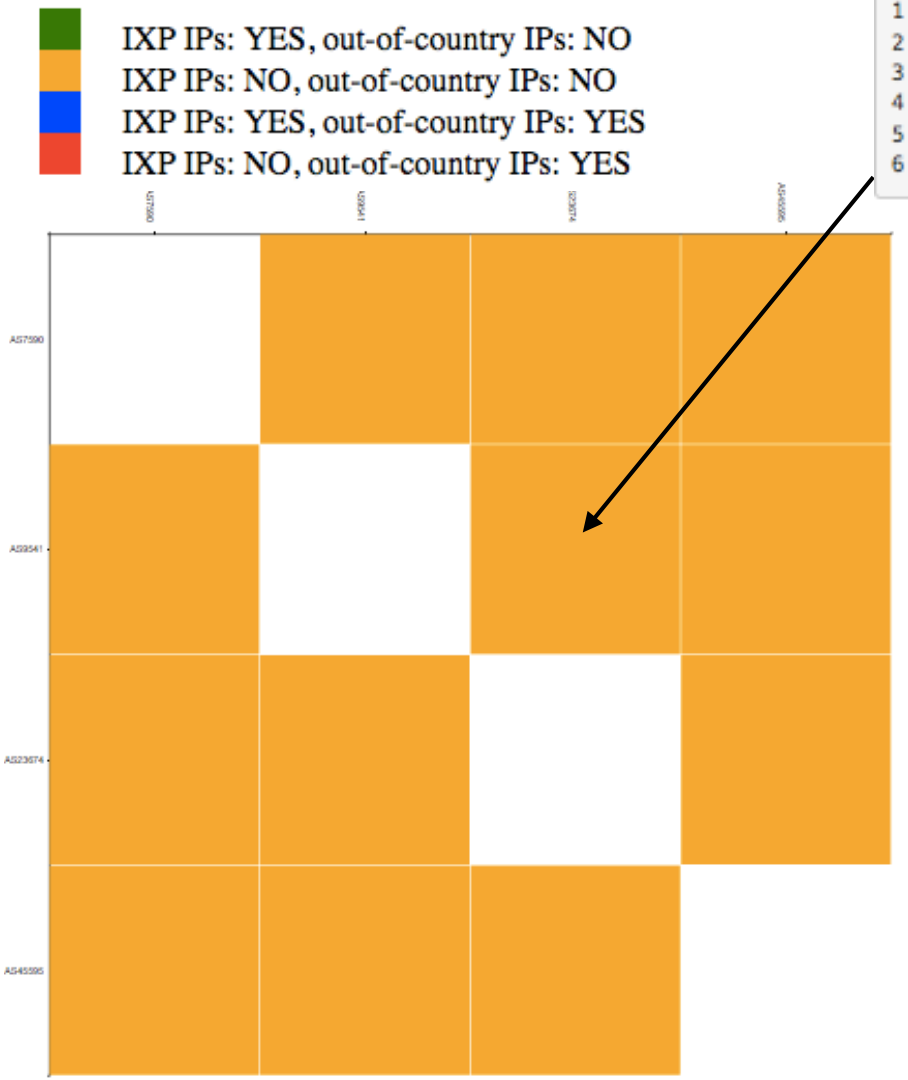
- Experimental tool
  - Feature requests welcome!
  - Depends on probe distribution in country

Methodology

- Trace route mesh between RIPE Atlas probes
- Identifying ASNs in country using RIPEstat
  - Using a maximum of two probes per AS
- Identifying IXP and IXP LANs in PeeringDB

http://sg-pub.ripe.net/emile/ixp-country-jedi/latest/MU/index.html

Which Paths go via IXPs in Pakistan?




```
## msm_id:6945472 prb_id:6128 dst:58.65.173.134 ts:2016-12-01 16:05:34 -00:00
1 (AS7590) 210.56.11.201 [0.4, 0.508, 0.647] ||
2 (AS7590) isbgw130.comsats.net.pk [0.891, 0.95, 1.838] |Islamabad,Isl?m?b?d,PK|
3 (AS23674) mbl-109-47-225.dsl.net.pk [1.372, 1.47, 1.565] ||
4 (AS23674) 58-65-175-61.nayatel.pk [1.986, 2.055, 2.13] ||
5 (AS23674) 58-65-175-125.nayatel.pk [1.786, 1.799, 2.034] ||
6 (AS23674) 58-65-173-134.nayatel.pk [1.695, 1.749, 1.868] ||
```

RIPE Atlas IXP Geo-Path

IPv4

IPv6

Action for Pakistan

- Deploy more RIPE Atlas probes
  - To try to improve and monitor connectivity, latency and reachability
- Talk to each other and peer!
  - To keep traffic local
- Register the local IXP in PeeringDB
  - Don’t forget to list Peering LAN

Contact Us

- Mailing list for users: ripe-atlas@ripe.net
- Articles and updates: https://labs.ripe.net/atlas
- Questions and bugs: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas
- GitHub: https://github.com/RIPE-Atlas-Community
- Roadmap: https://atlas.ripe.net/docs/roadmap/

Questions