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RIPE NETWORK COORDINATION CENTRE

Using RIPE Atlas and RIPEstat to detect network outage events

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RIPE Atlas

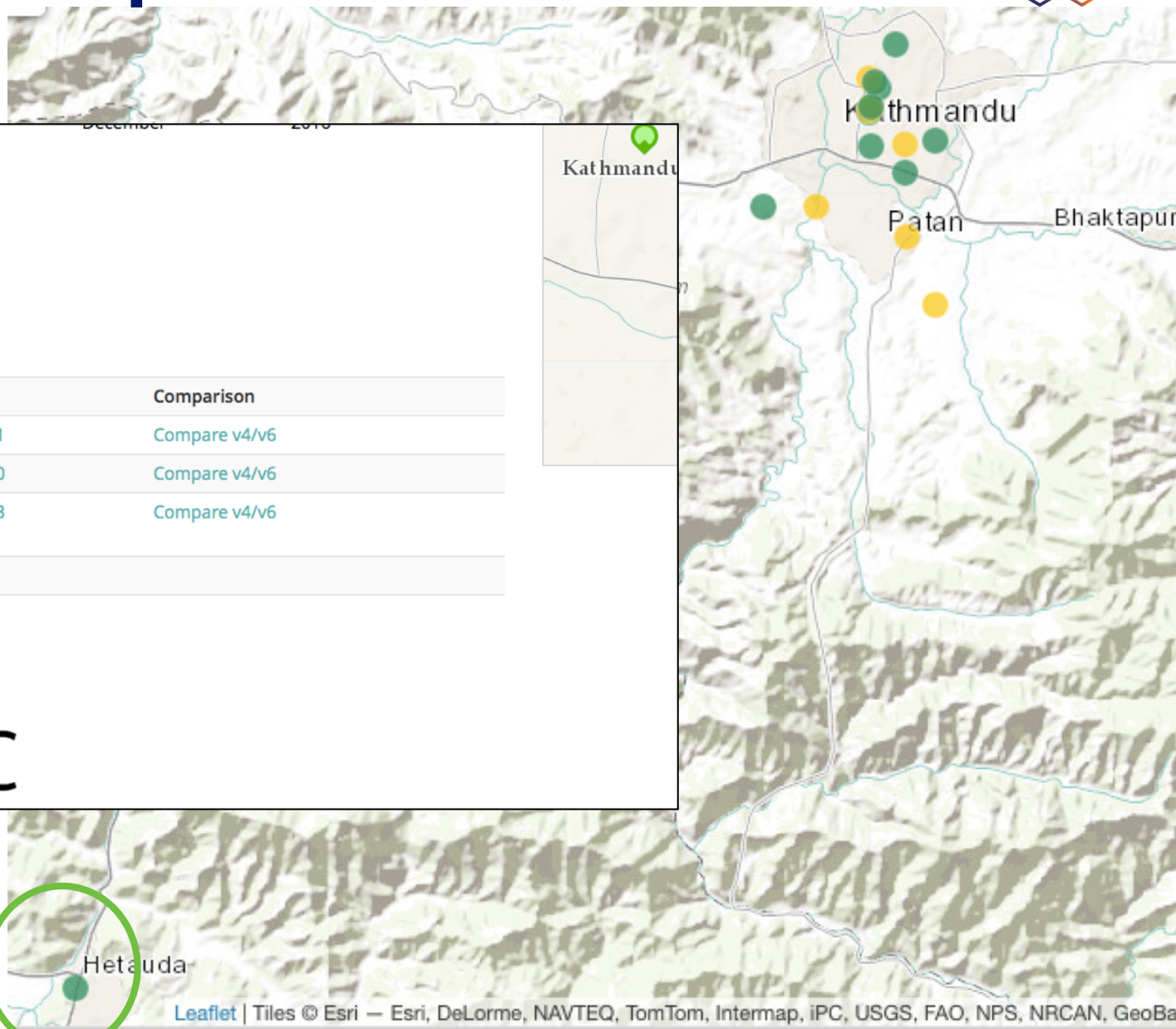
From Wikipedia, the free encyclopedia

RIPE Atlas is a global, open, distributed Internet measurement platform, consisting of thousands of measurement devices that measure Internet connectivity in real time.

Contents [hide]

- History
- Technical details
- Community
- Research papers
- Similar projects
- References
- External links
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RIPE Atlas in Nepal



Anchor Details

Hostname: np-ktm-as45170

Contact details in RIPE Database: [AA28929-RIPE](#)

Anchoring Measurements:

Type	IPv4	IPv6	Comparison
Ping	1891019	1891021	Compare v4/v6
Traceroute	1891018	1891020	Compare v4/v6
HTTP	2841552	2841553	Compare v4/v6
Hosted by:	Sponsored by:		

[NPIX](#)





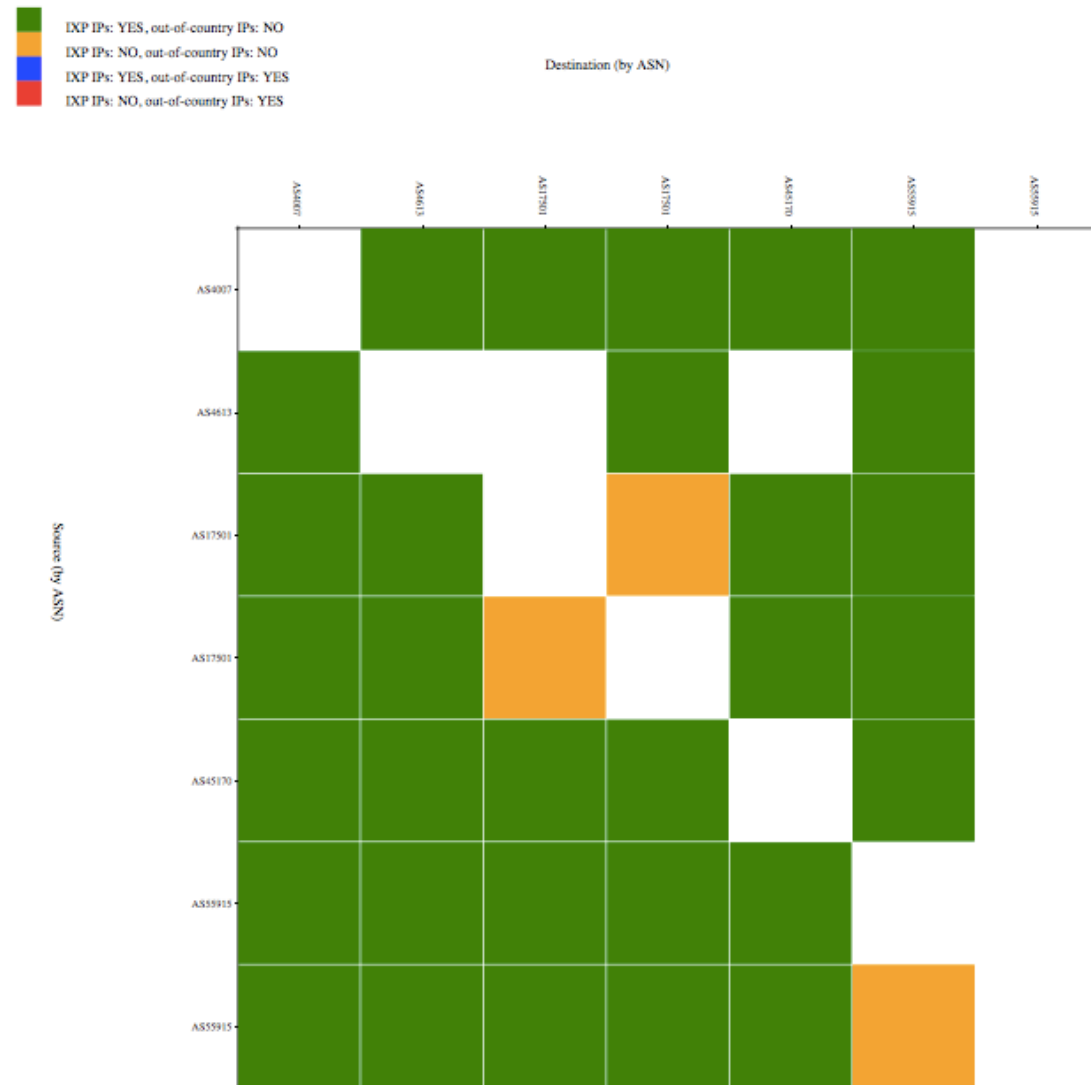
IXP Country Jedi

- Tool & concept by Emile Aben

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

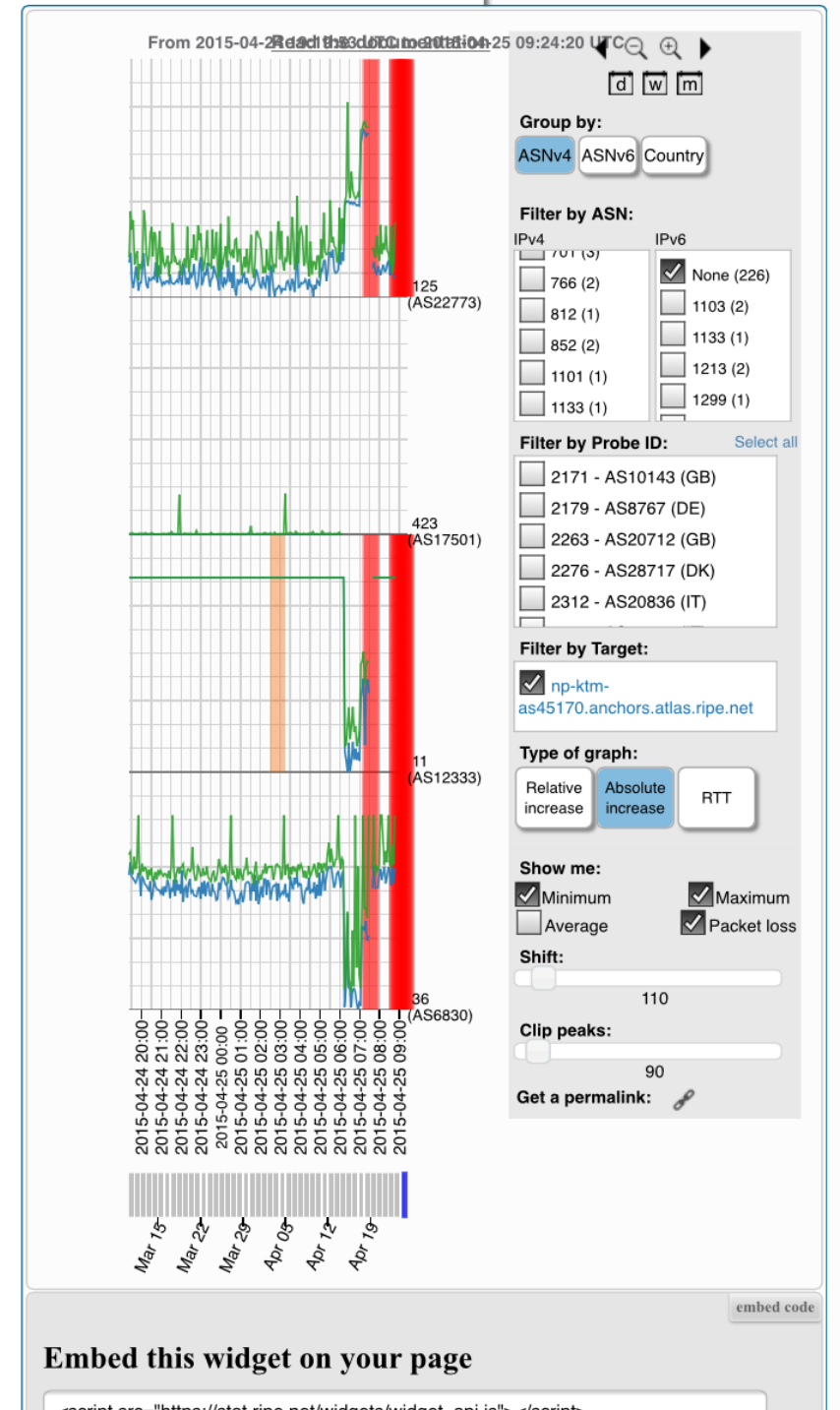
- <https://labs.ripe.net/Members/emileaben/measuring-ixps-with-ripe-atlas>

- traceroute mesh between RIPE Atlas probes



After the quake

- Immediately after the earthquake, Martin Levy looked at the RIPE Atlas anchor in Nepal:
- <https://atlas.ripe.net/measurements/1891019/#!seismograph>
- [How to use this tool](#)



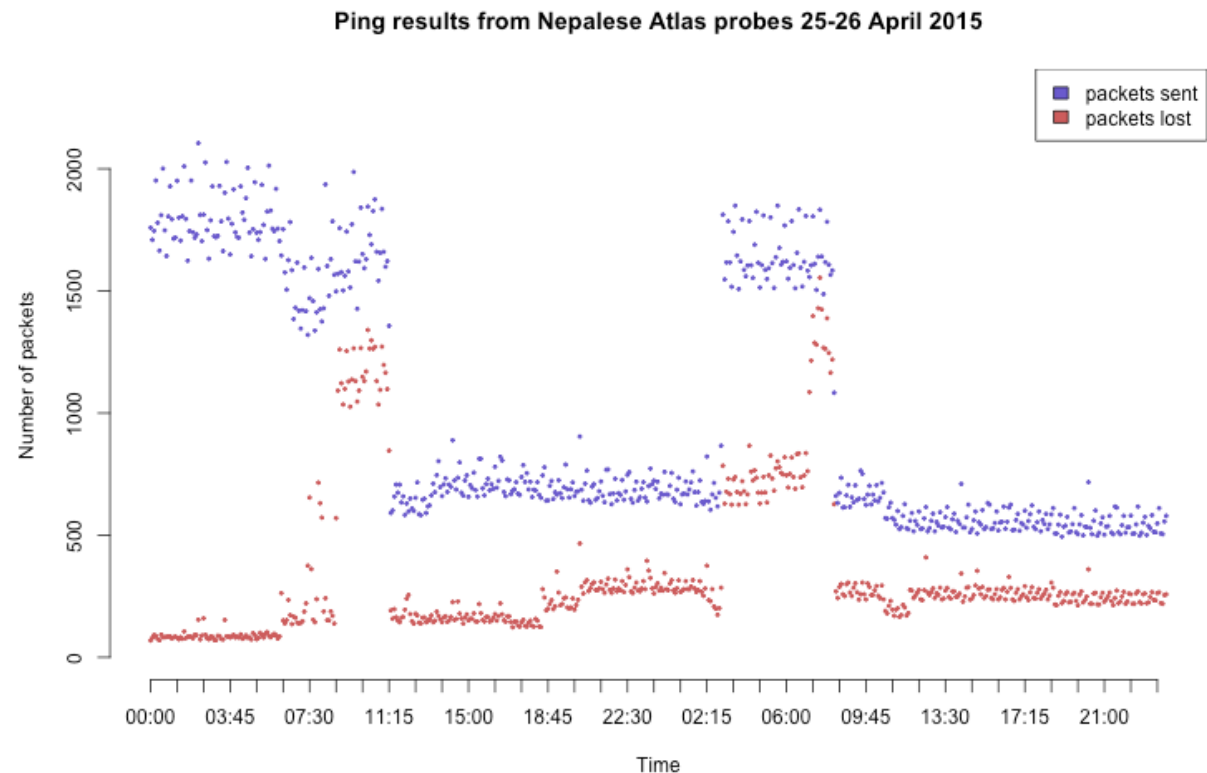


Lessons from ping analysis

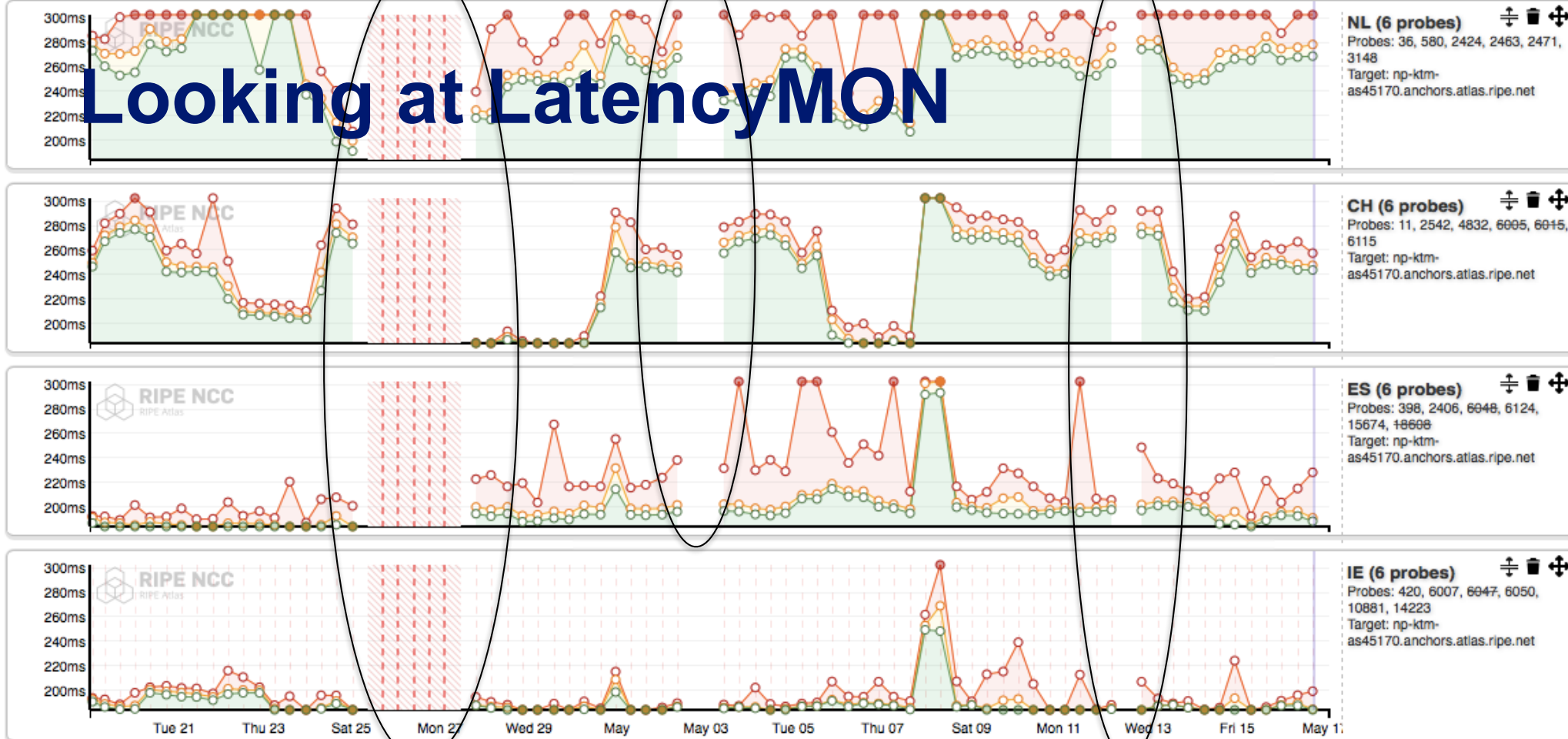
- Two big dips, then recovery
- Conclusion: some probes were offline or lost internet connectivity, others stayed up most of the time and had at least partial connectivity

- Analysis by

Rene Wilhelm



Looking at LatencyMON



- “Anchoring measurement”, historical view
- <https://atlas.ripe.net/probes/6114/>

Three outages & recoveries



- Looking at measurements from local probes to the anchor gives more detailed picture





Historical view, big picture

- Same anchoring msm., different visualization
- 25.May - 1.July, anchor was down?





CartoDB visualization

- https://astrikos.cartodb.com/viz/cb71d3d6-b841-11e5-9f13-0e31c9be1b51/public_map

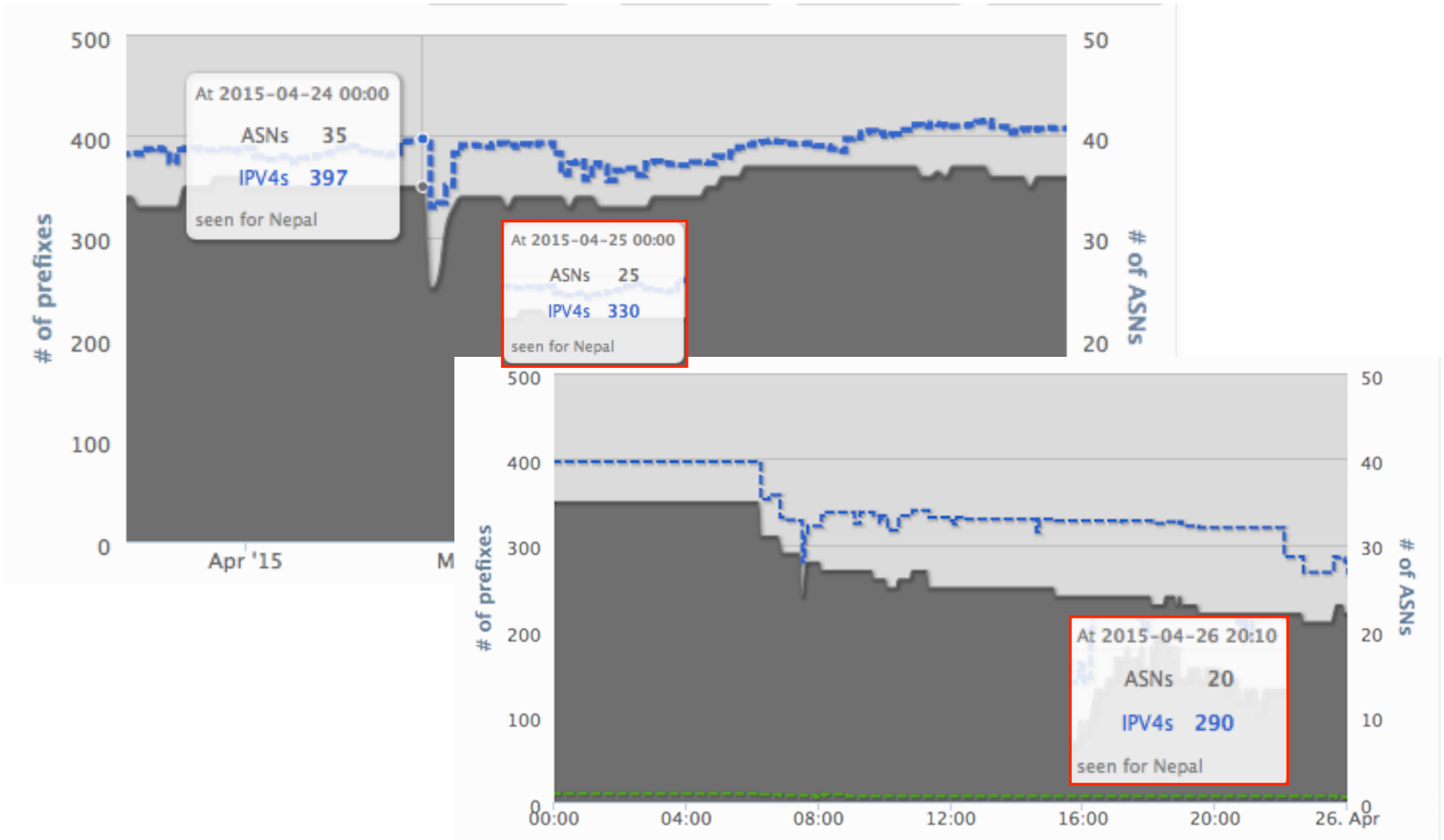




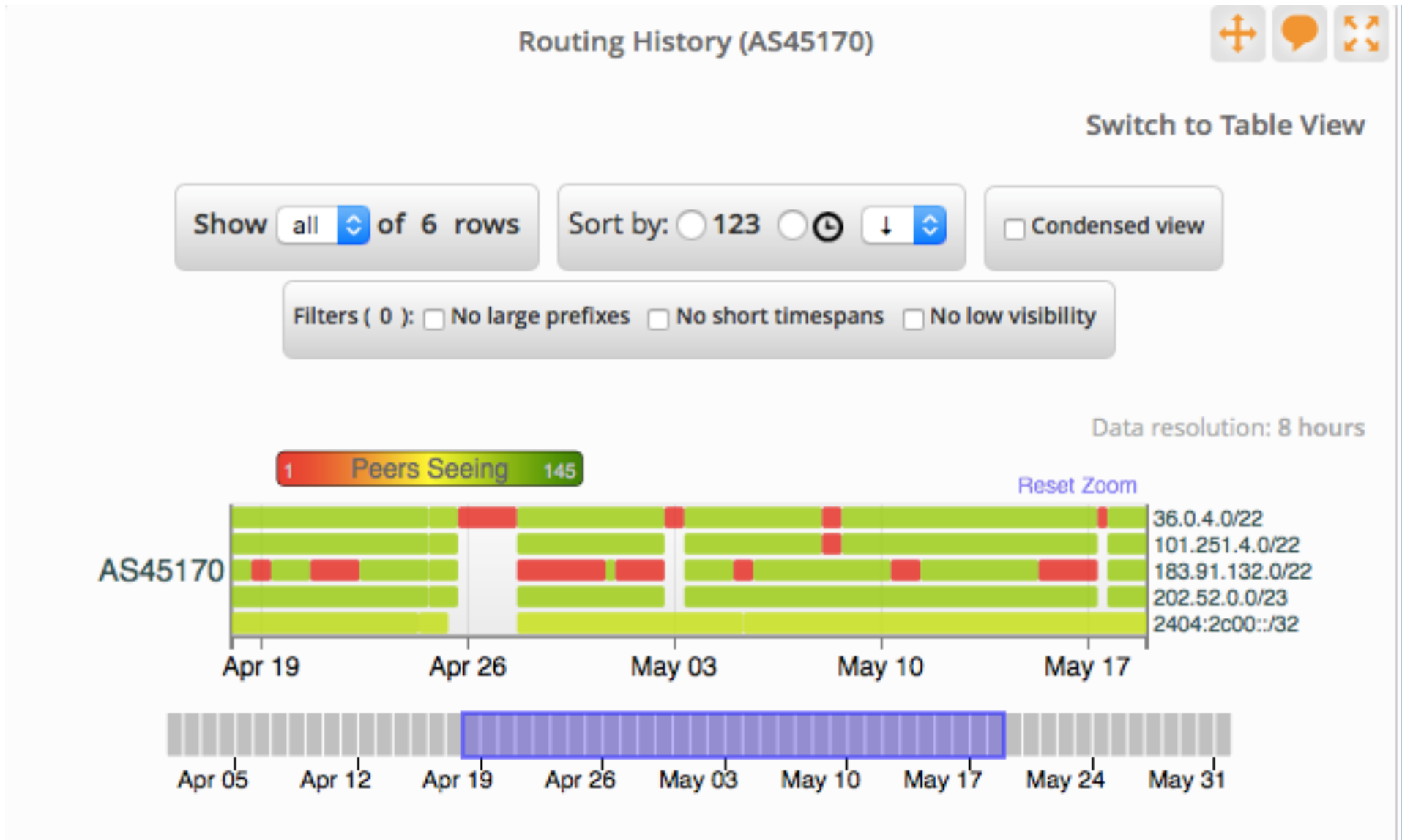
Own service monitoring: Icinga

1. Create a RIPE Atlas ping measurement
2. Go to “Status Checks” URL
 - https://atlas.ripe.net/api/v1/status-checks/MEASUREMENT_ID/
 - configure alert parameters (RESTful API)
 - <https://atlas.ripe.net/docs/status-checks/>
3. Add your alerts in Nagios or Icinga
 - Making use of the built-in “check_http” plugin
 - [Examples on GitHub](#)

Looking at the routing (RIPEstat)

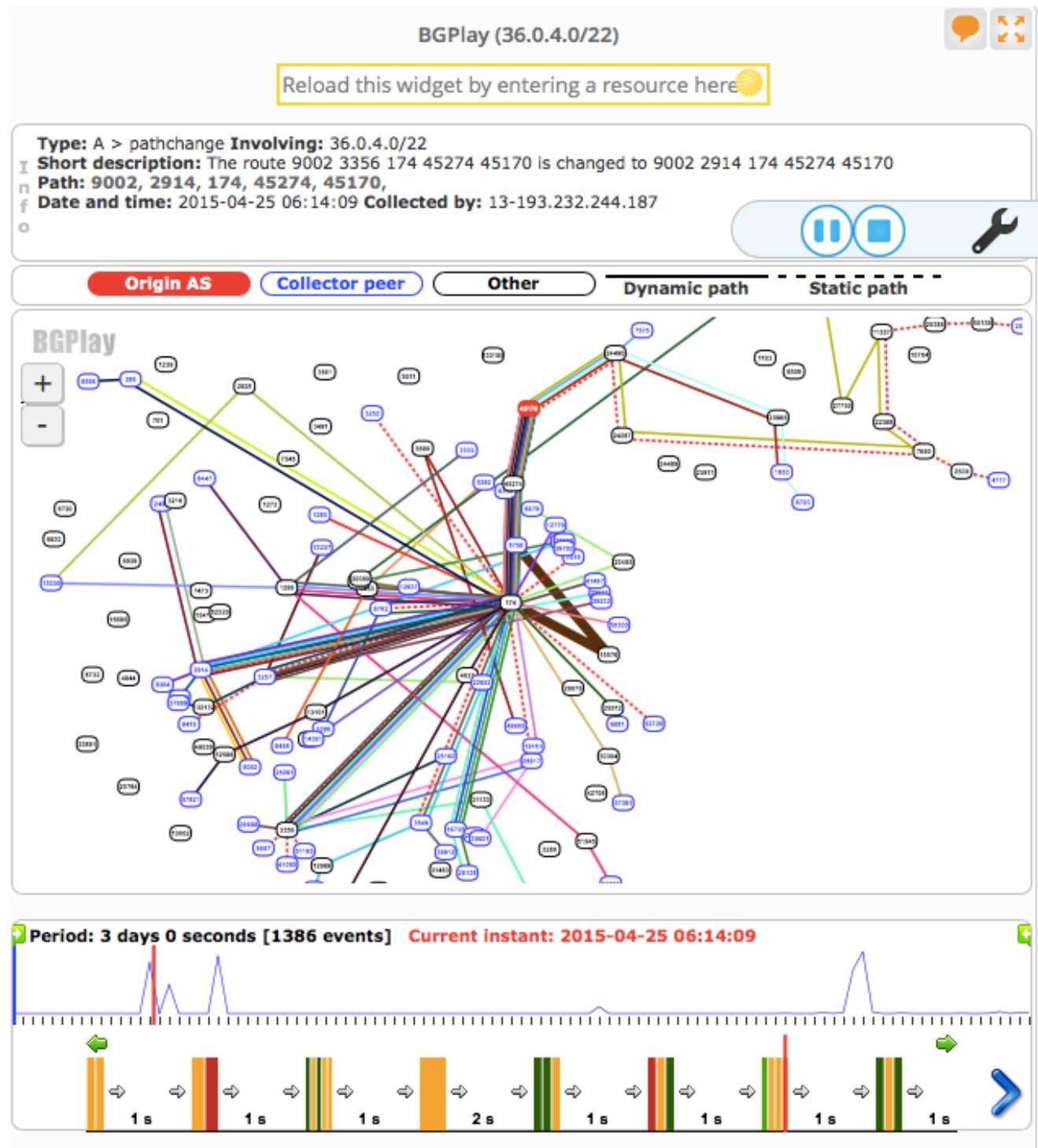


Routing history (RIPEstat)



BGPlay

- Part of RIPEstat
- Based on RIS
- Video of route announcements and withdrawals
- Historical view!
- Link



DNS responses for np.

Go

DNSMON.ripe.net



Response time



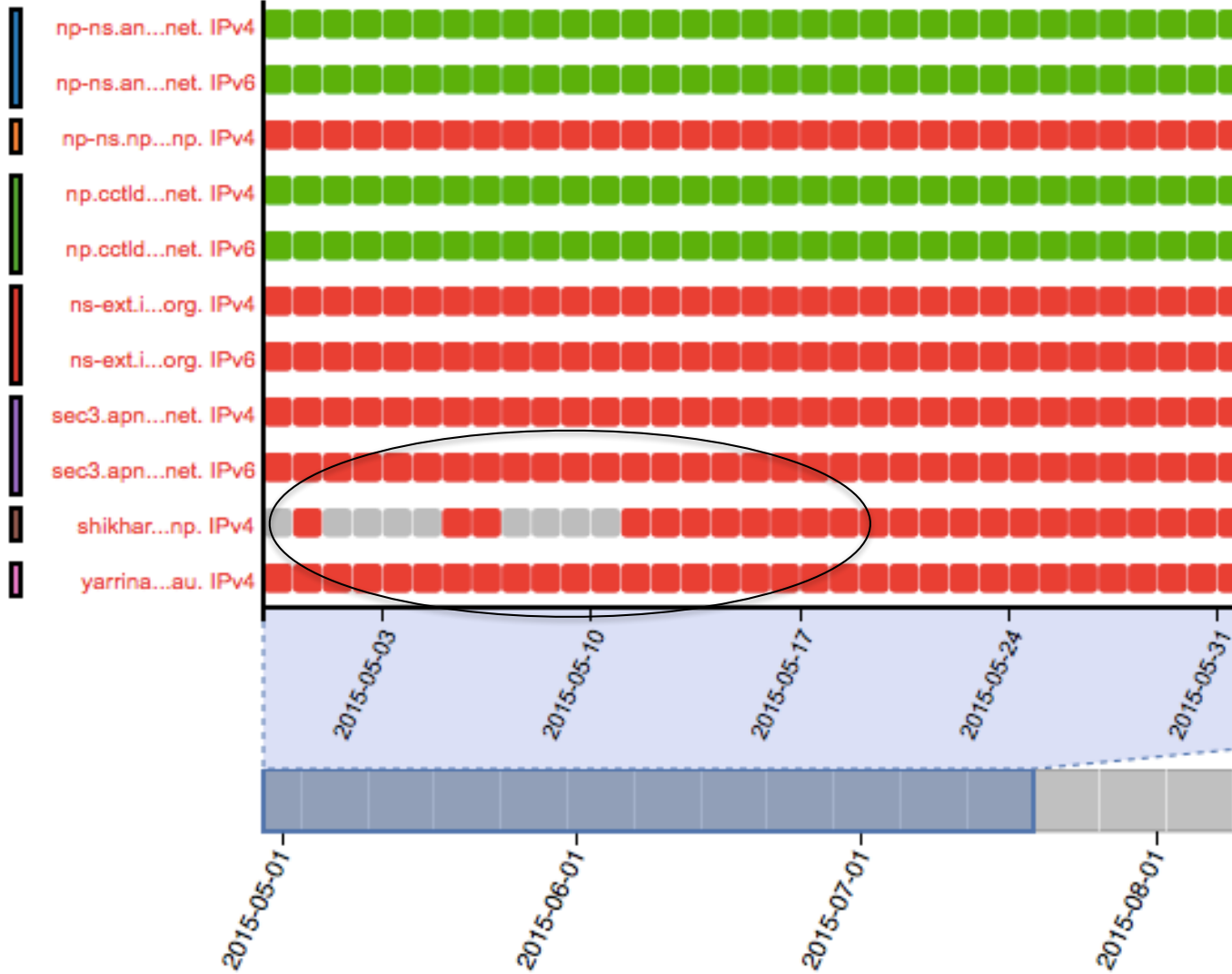
≤ 60ms



> 172ms

Data resolution: 1 day

zone: np.





Conclusions

- You too can do the outage monitoring!
- Global and regional results available to all registered users, free of charge
- Powerful visualizations available
- For customized RIPE Atlas measurements:
spend “credits”
 - earning credits by hosting a probe or an anchor



RIPE Atlas news



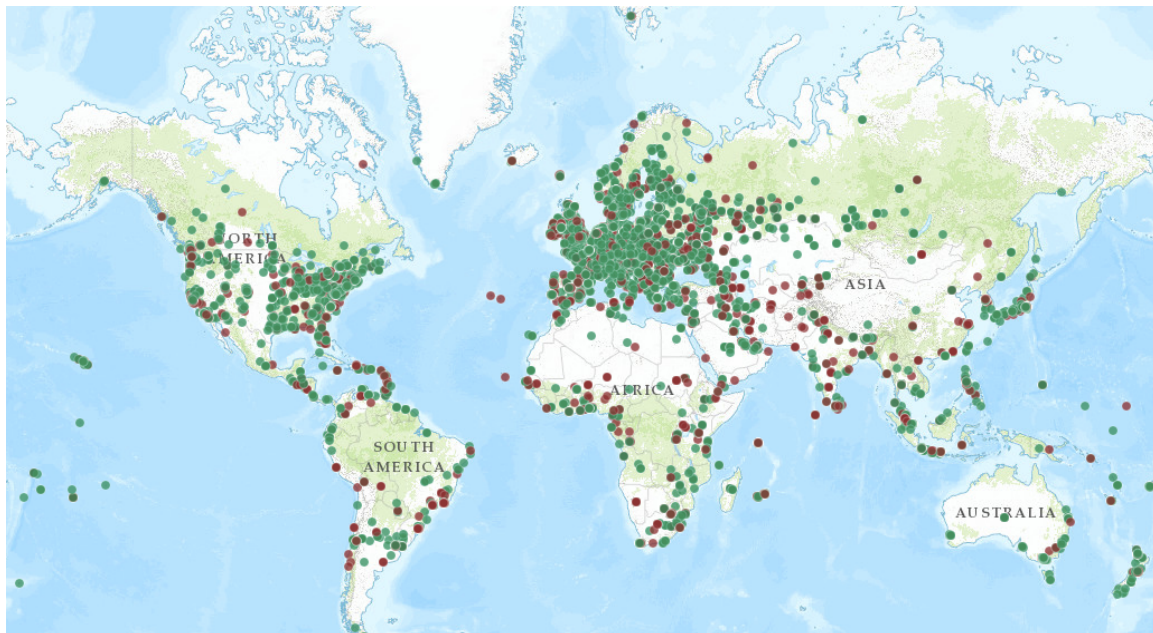
During 2015

- Active probes increased from 7,500 to 9,200
- Probes shipped: 3,500
- RIPE Atlas anchors grew from 100 to 162
- Active users: 10,000 last year, 5,000 last quarter
- Measurements: on average 150,000 per month



RIPE Atlas Coverage

- Countries covered: 181
- Originating ASNs covered:
 - 3,333 (IPv4) = 6,33%
 - 1,212 (IPv6) = 11,22%



Country	Probes
United States of America	1032
Germany	966
France	772
United Kingdom	610
Netherlands	514
Russia	481
Czech Republic	262
Italy	260
Switzerland	256
Ukraine	220

Community News for 2015



- Nine sponsors, one already for 2016
- 300 active ambassadors, at many conferences
- Using GitHub for multilingual documentation
- Introduced webinars: four in total
- IP Journal issue describing RIPE Atlas published
- RIPE Atlas Wikipedia article
- Two hackathons, impressive results
 - <https://labs.ripe.net/Members/becha/ripe-atlas-tools-hackathon-results>



We are Grateful to our Sponsors

2016



2015



Thank You, RIPE Atlas Anchor Hosts!



We appreciate the support of the following RIPE Atlas anchor hosts:





Newest Feature: CLI Tools

- Command-line interface to RIPE Atlas API
 - Simple, familiar usage from the terminal
 - Human-readable results
- Open-source development: code on GitHub
- Documentation: <https://ripe-atlas-tools.readthedocs.org/>
- Included in the Linux / *BSD distributions:
OpenBSD, FreeBSD, Gentoo & Arch
 - in progress: Debian & Fedora
 - join & contribute!



More New Features

- HTTP measurements to anchors
- “Time Travel”
- LatencyMON
- DomainMON
- Sharing your probe with a group
- Whitelisting and blacklisting targets, on request
- Other recent features: RIPE Labs article



Most Popular Features

- Six types of measurements: ping, traceroute, DNS, SSL/TLS, NTP and HTTP
- Streaming data: real-time results available
- Compressed data download available
- APIs for getting results & starting measurements
- Powerful & informative visualizations provided



Famous Use Cases

- DNS
 - Root nameservers performance analysis (F-root, K-root)
 - Monitoring ccTLDs (DSNMON)
 - Censorship
- Visualising impact of IXP on localising paths
- Evidence: peering at IXP improves performance
- Checking connectivity using anchors
- ...and many, many research papers



Upcoming New Features

- Adding more DNSMON zones
- Sharing credits with colleagues
- WiFi measurements
- Testing VM probe
- OpenIPMap-as-a-service
- Roadmap has a new home:
 - <https://atlas.ripe.net/docs/roadmap/>



Take Part!

- Use RIPE Atlas for your operations: monitoring, troubleshooting
- Do scientific research
- Contribute to the code
- Participate in a webinar
- Become an ambassador or a sponsor
- Host a RIPE Atlas anchor, or place a probe in a new exotic location



Moar Hackathons!!!1

- Join the hackathons in 2016
 - Before each RIPE Meeting - save the dates!
 - 21-22 May, Copenhagen
 - 22-23 October, Madrid





RACI

RIPE Academic Cooperation Initiative

- Students & researchers:
 - present your Internet-related research at RIPE Meetings
 - complimentary tickets, travel and accommodation provided
 - topics: network measurement and analysis, security, IPv6 deployment, BGP routing, Internet governance, peering and interconnectivity
- ripe.net/raci



Stay in Touch with RIPE Atlas

- Mailing list: ripe-atlas@ripe.net
- Blog: <https://labs.ripe.net/atlas>
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas / #RIPEAtlas
- <https://atlas.ripe.net>

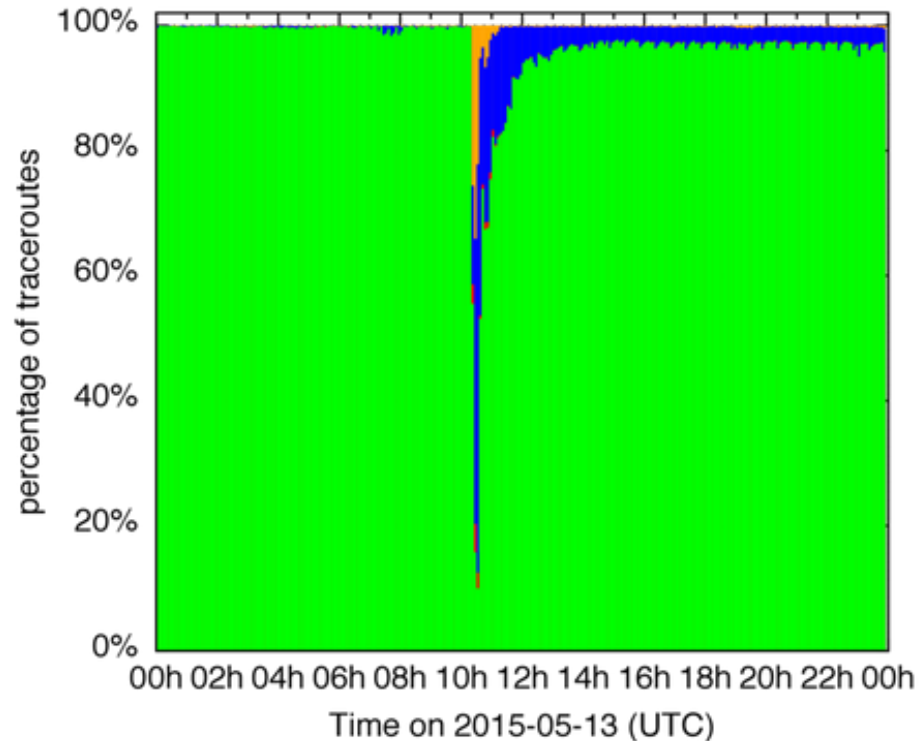


Other outages visualizations

Outages at the core: AMS-IX, Level3

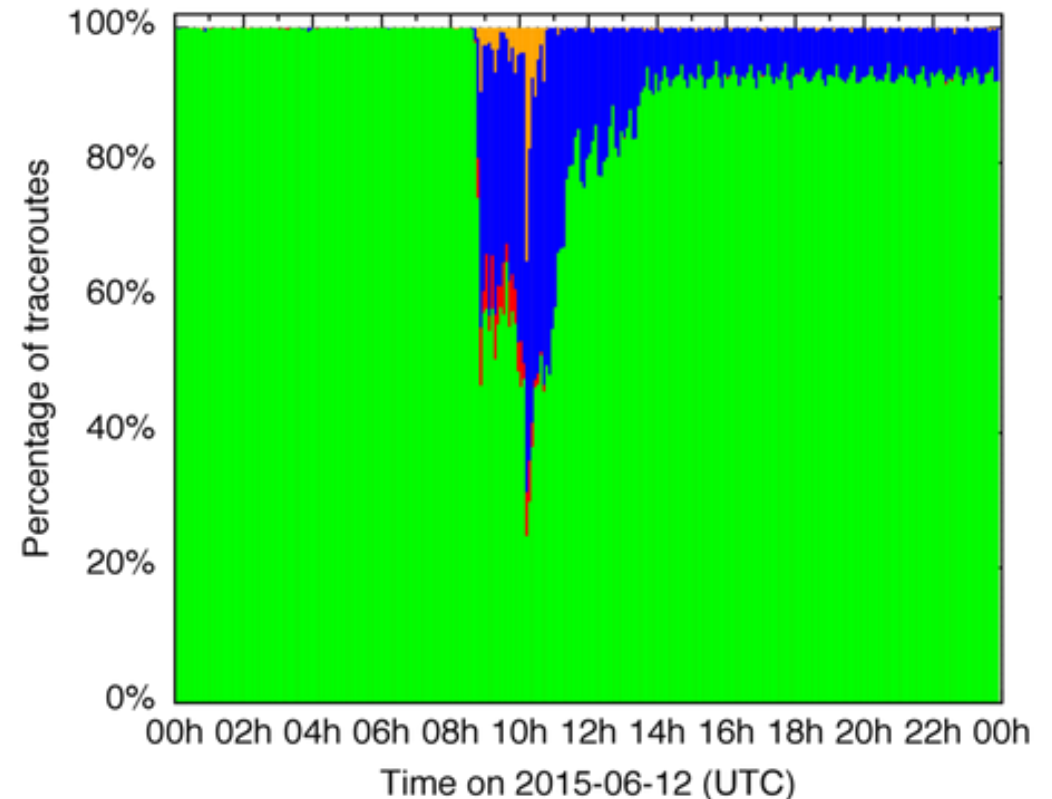


Connectivity between reliable source-destination pairs
as seen in RIPE Atlas traceroutes



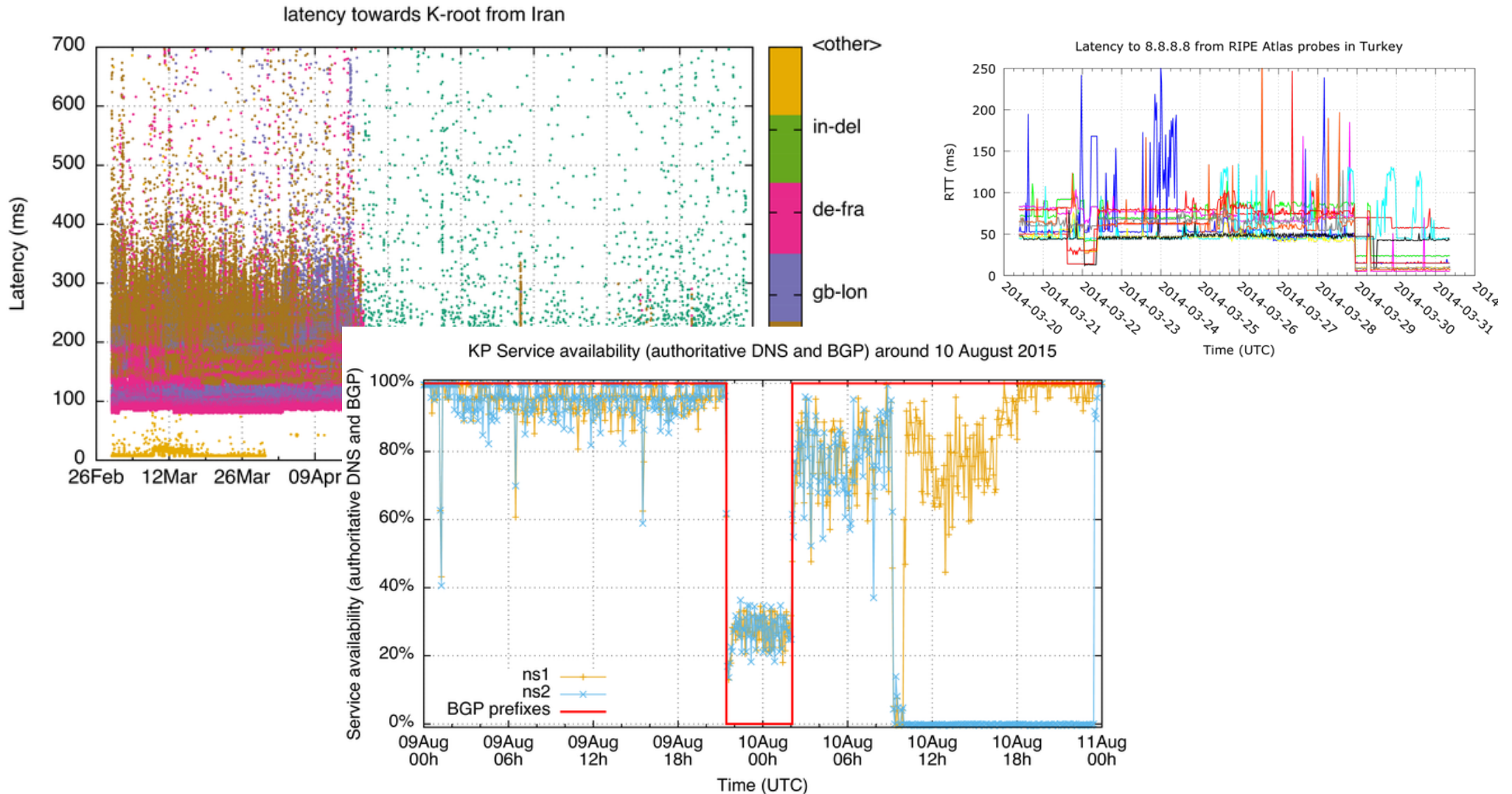
FAILED/AMS-IX not seen (orange)
OK/AMS-IX not seen (blue)
FAILED/AMS-IX seen (red)
OK/AMS-IX seen (green)

Connectivity between reliable source-destination pairs
as seen in RIPE Atlas traceroutes (IPv4)



- <https://labs.ripe.net/Members/emileaben/does-the-internet-route-around-damage>

Countries: .TR, .KP, .IR



<https://labs.ripe.net/Members/emileaben/the-internet-in-north-korea-hanging-by-a-single-thread>

<https://labs.ripe.net/Members/emileaben/iran-and-k-root-the-rest-of-the-story>

<https://labs.ripe.net/Members/emileaben/a-ripe-atlas-view-of-internet-meddling-in-turkey>

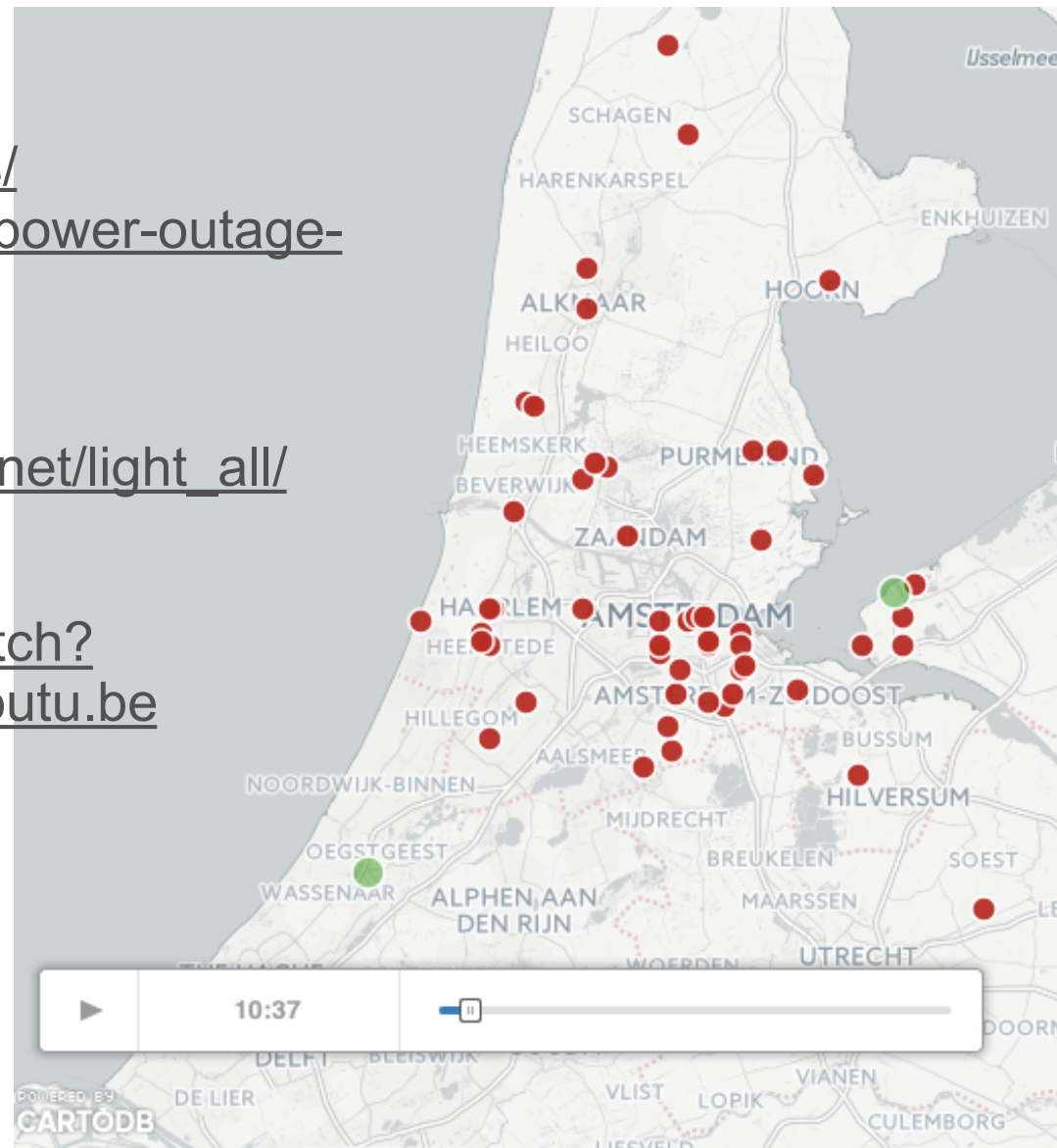
Power outage in Amsterdam



https://labs.ripe.net/Members/andreas_strikos/amsterdam-power-outage-as-seen-by-ripe-atlas

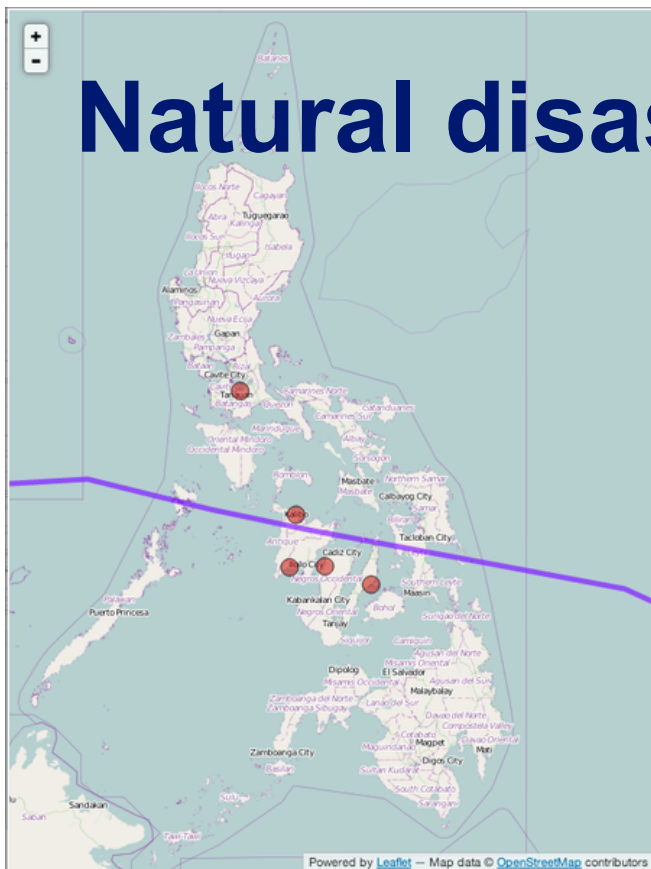
https://cartodb-basemaps-2.global.ssl.fastly.net/light_all/9/261/168.png

<https://www.youtube.com/watch?v=AEje32hQFnU&feature=youtu.be>



Map created by  [astrikos](#)

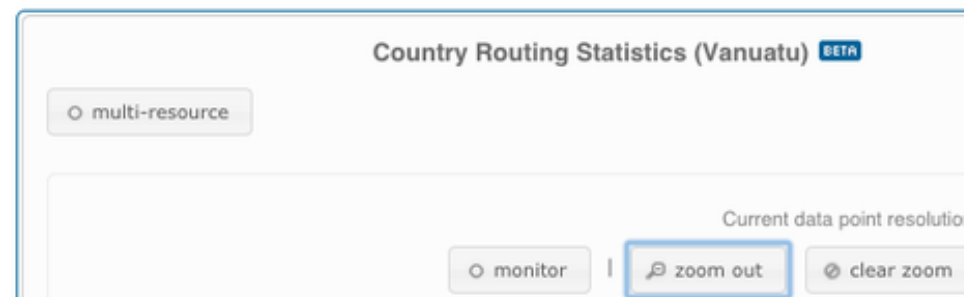
Natural disasters: Haiyan, Sandy, Pam



<https://labs.ripe.net/Members/emileaben/ripe-atlas-hurricane-sandy-global-effects>

<https://labs.ripe.net/Members/emileaben/typhoon-haiyan-what-we-see-in-ripestat-and-ripe-atlas>

<https://labs.ripe.net/Members/wilhelm/cyclone-pam-and-the-internet-in-vanuatu>



Location IDs seen in RIPE Atlas traceroute paths
(target: ronin.atlas.ripe.net / AS24940 / Falkenstein,DE)

