More Measurements: Expanding RIPE Atlas Anchors

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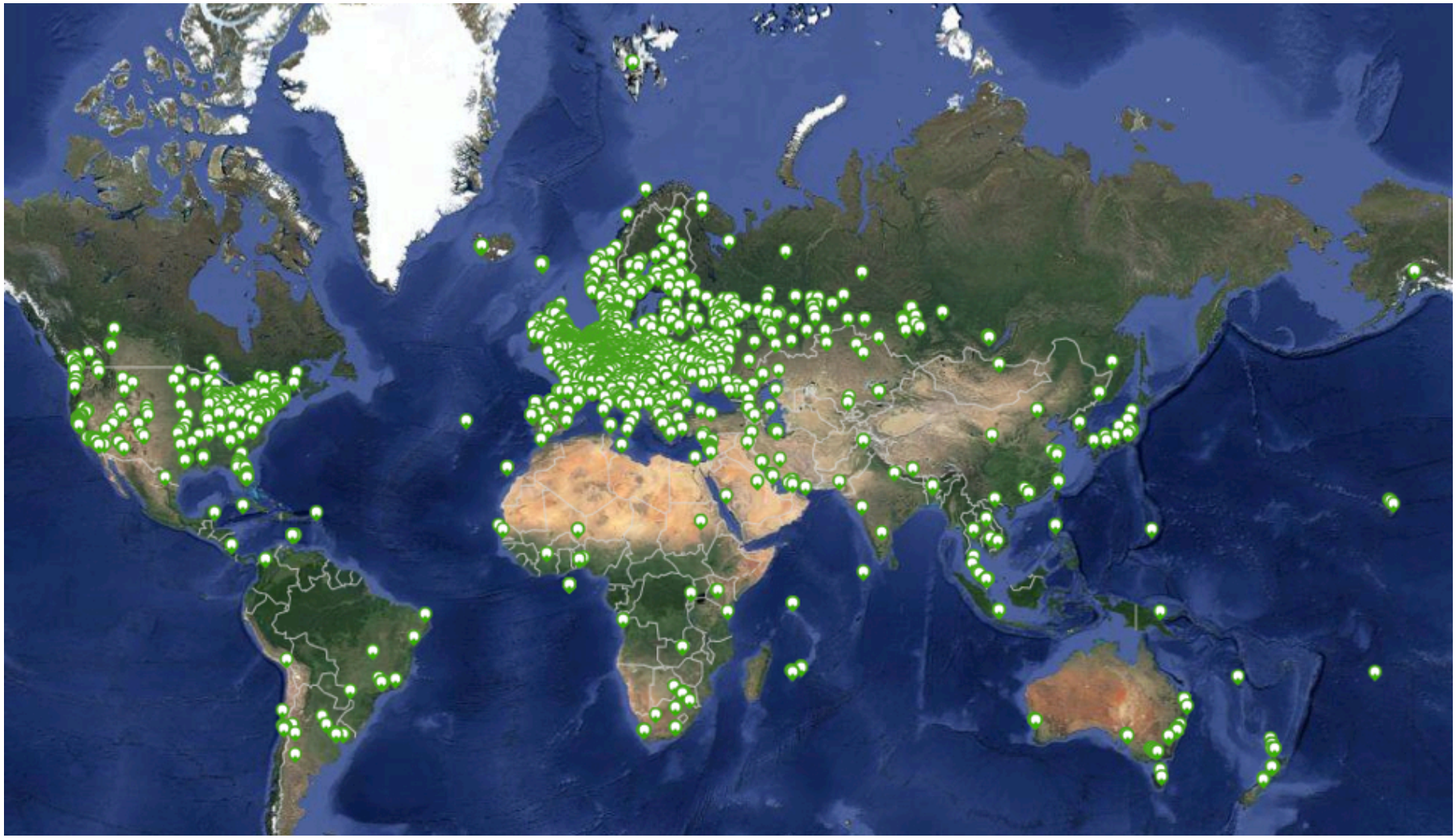
Measurements Community Building

MORE-IP, May 2014, Amsterdam

RIPE Atlas Deployment



RIPE Atlas

- RIPE Atlas is a global network for active measurements
- Hardware probes measure Internet connectivity and reachability
- RIPE Atlas provides an unprecedented understanding of the state of the Internet in real time

https://atlas.ripe.net

Participation and Benefits

- Anyone can become a RIPE Atlas probe host
  - https://atlas.ripe.net/apply
- Built-in measurements performed by RIPE NCC
  - Data available to everyone
  - Maps, data from public probes, API to download raw data
- Major personal and operational benefit:
  See your network from the outside!

Probes Photos

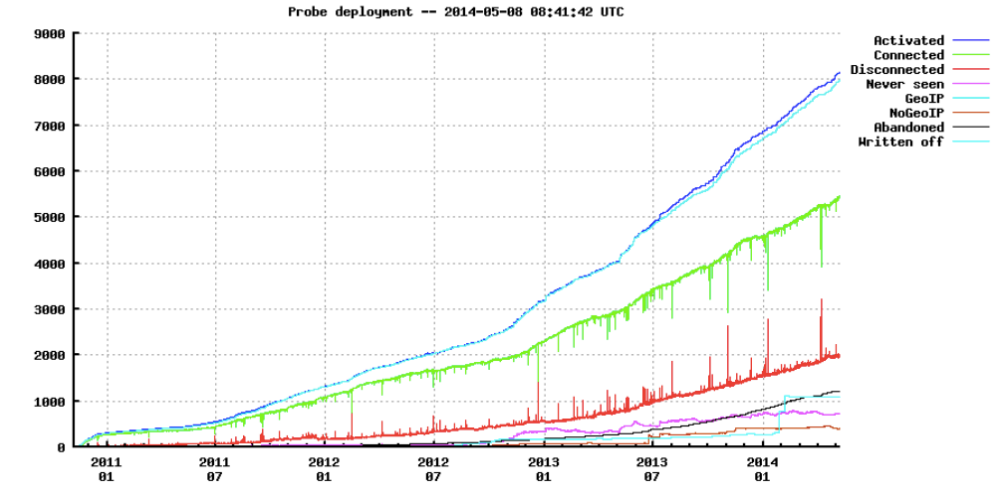
RIPE Atlas in Numbers: May 2014

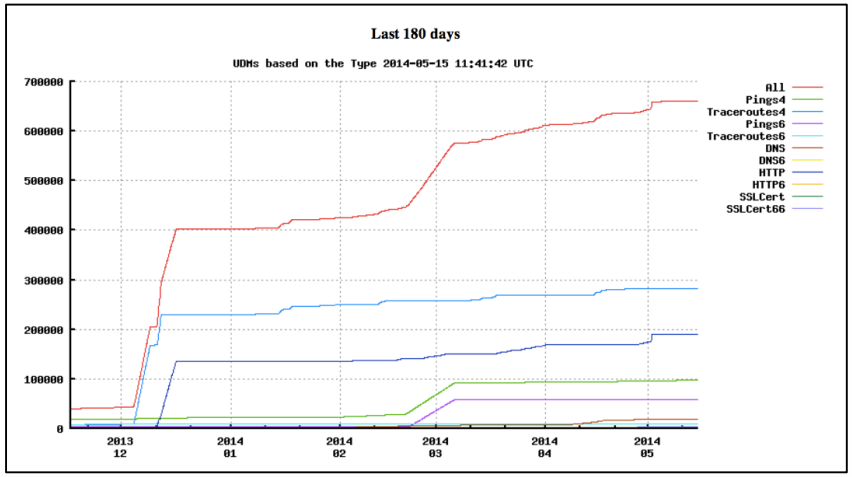
- 5,600+ probes connected
- 8,000+ active users this year
- 5,000+ built-in measurements daily
- 5,000+ user-defined measurements daily
  - Four types of user-defined measurements available to probe hosts and RIPE NCC members: ping, traceroute, DNS, SSL
- Goal by end 2014:
  - 10,000 connected probes

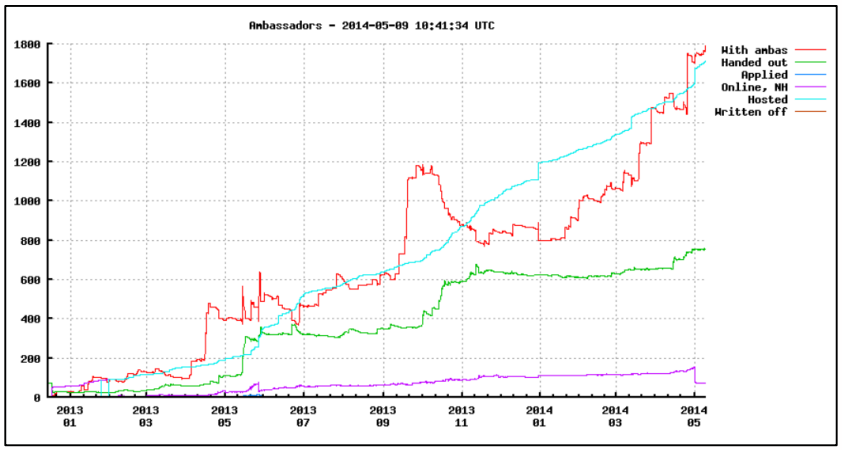
Country	Probes
United States	876
Germany	846
Russian Federation	726
United Kingdom	600
Netherlands	475
France	418
Ukraine	369
Belgium	194
Italy	179
Czech Republic	169

Growth Graphs

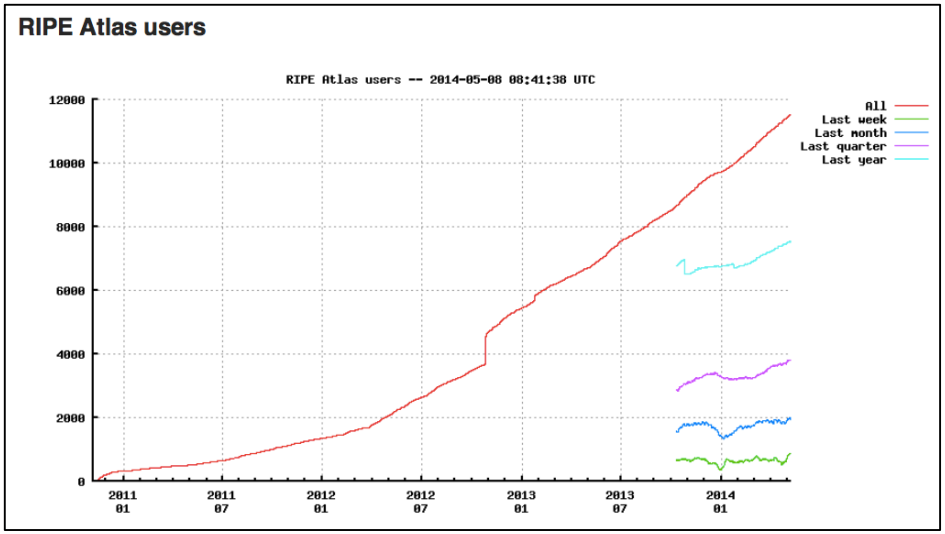
Probe deployment



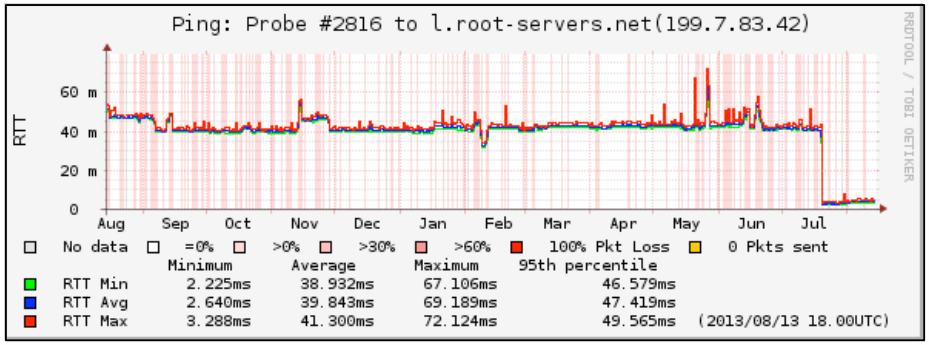


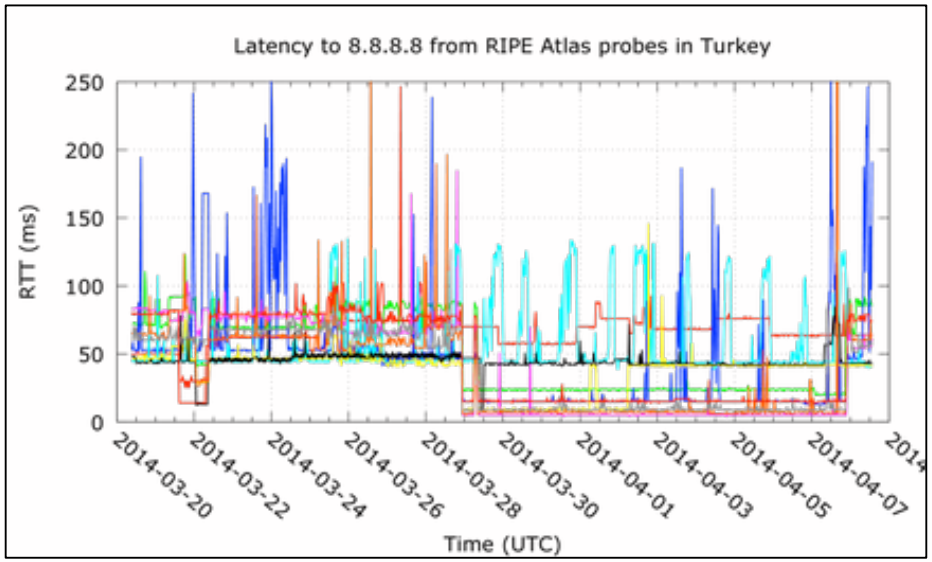


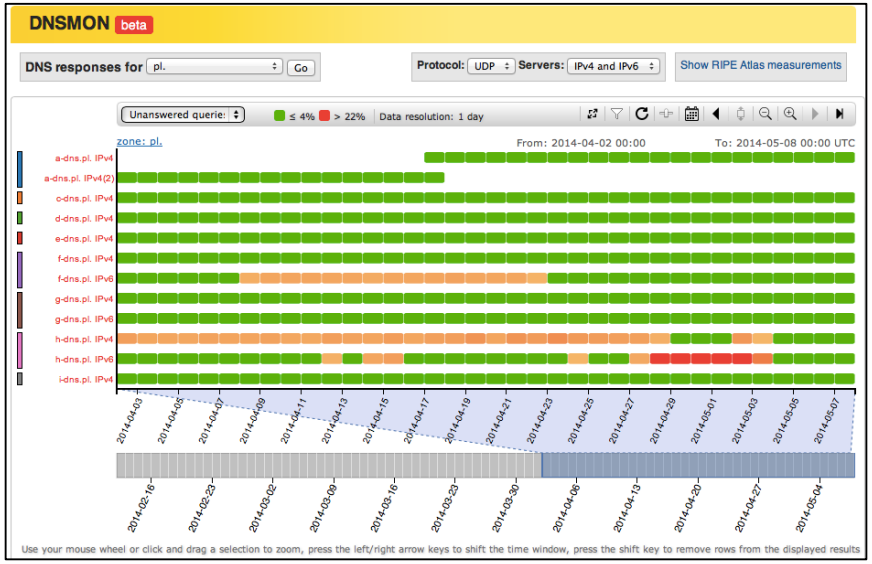
RIPE Atlas users



Success Stories

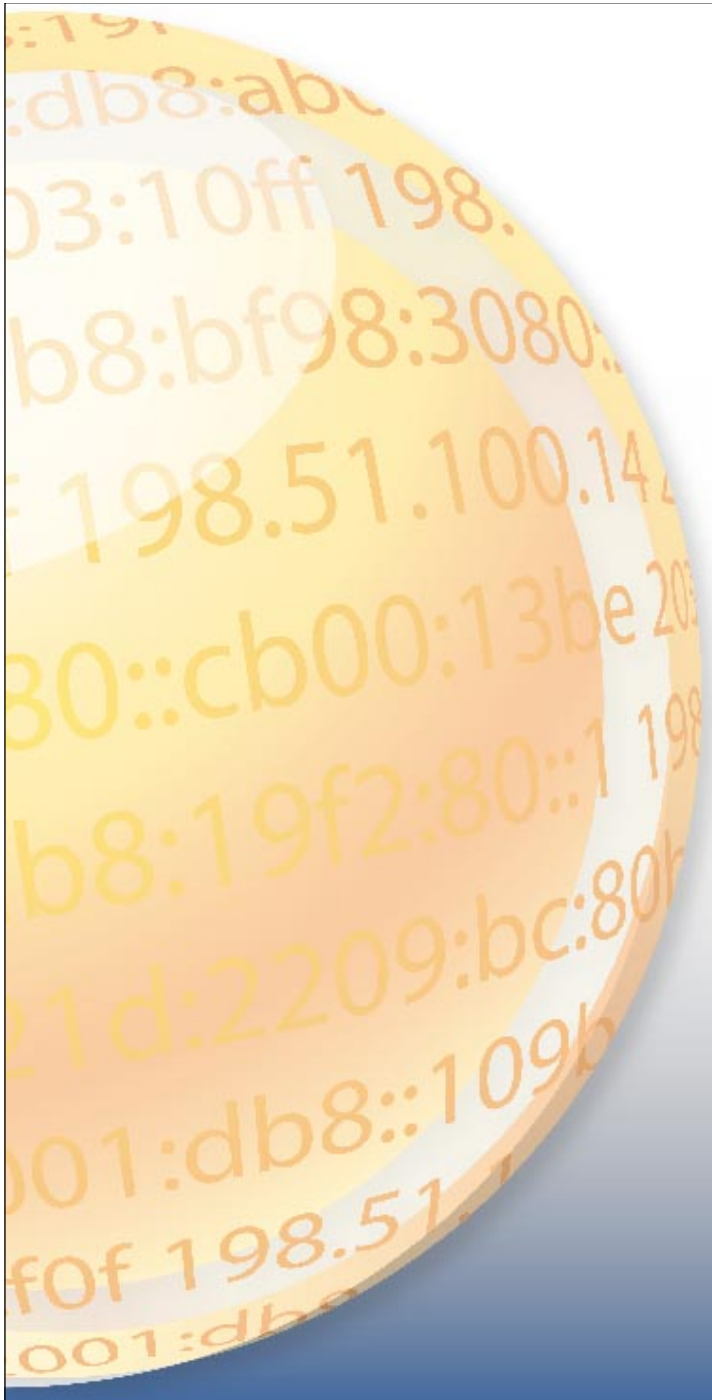






More Use Cases

- Investigating problems of slow servers:
  - http://engineering.freeagent.com/2014/01/24/atlas-probes/
- Measuring packet loss to determine congested networks
- Selective blackholing (examples based on RIPE Atlas)
  - https://ripe68.ripe.net/presentations/176-RIPE68_JSnijders_DDoS_Damage_Control.pdf
- Anycast analysis:
  - https://labs.ripe.net/Members/stephane_bortzmeyer/the-many-instances-of-the-l-root-name-server



RIPE Atlas Anchors

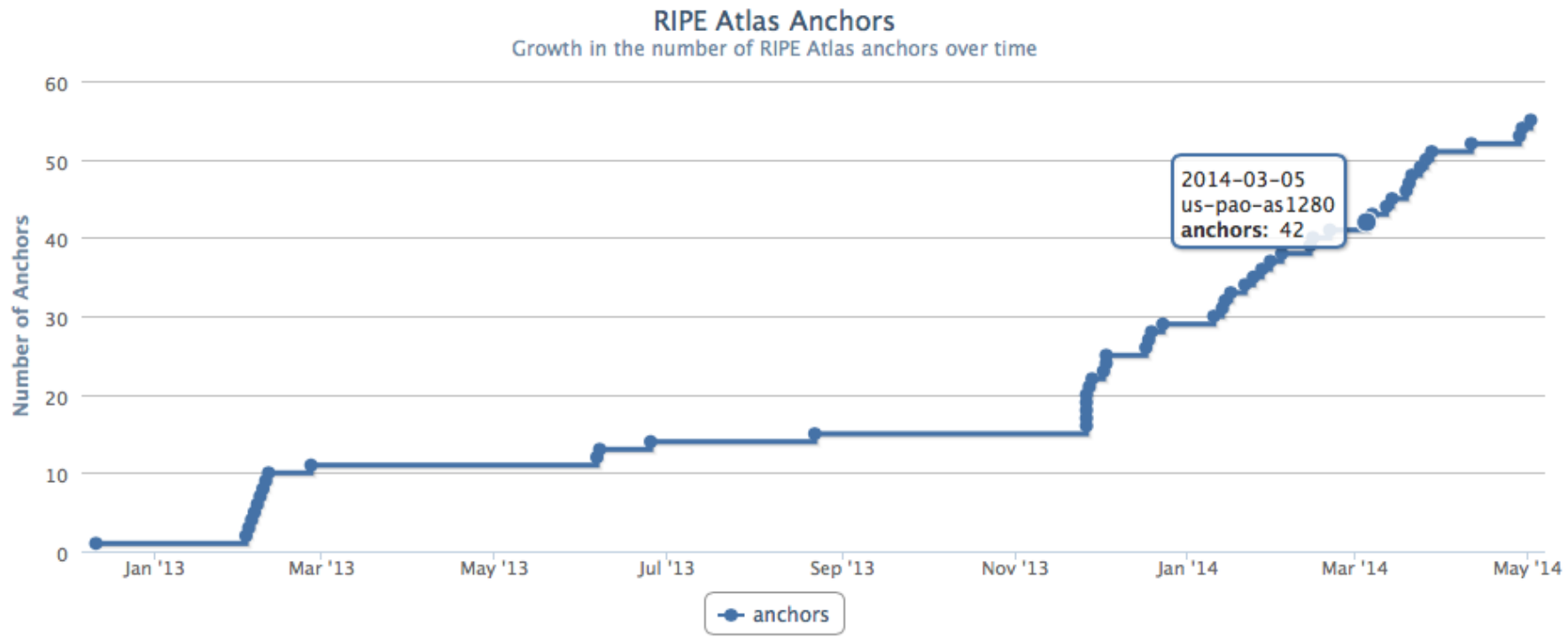
RIPE Atlas Anchors

RIPE Atlas Anchors

- Anchors: well-known targets and powerful probes
  - Regional baseline & “future history”
- Anchoring measurements
  - Measurements between anchors
  - 200 probes targeting each anchor with measurements
  - Each probe measures 4-5 anchors
- Vantage points for new DNSMON service
- 58 RIPE Atlas anchors
  - Goal for 2014: 100 active anchors worldwide

Growth in Anchors

RIPE Atlas anchors



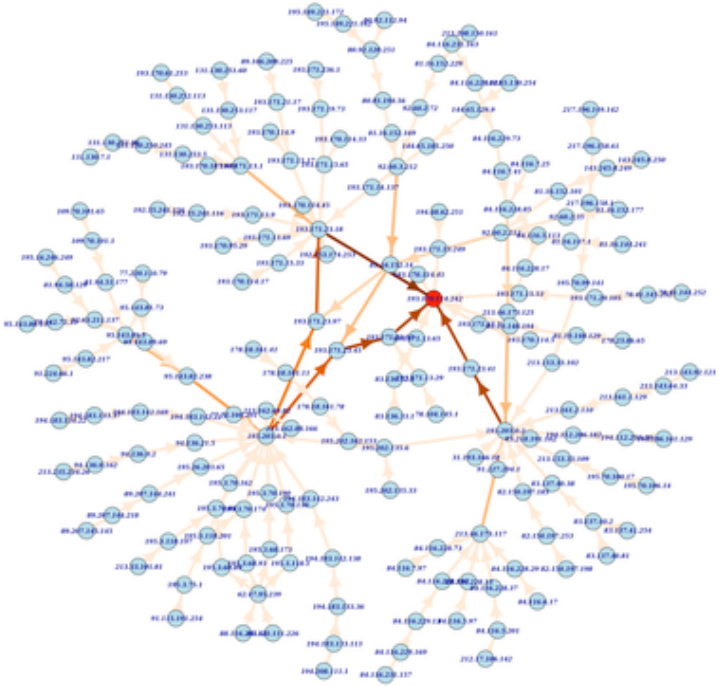
Reasons to Celebrate...

RIPE Atlas Anchor Hosts (part 1)

RIPE Atlas Anchor Hosts (part 2)

Mapping an Anchor

- Exploring the potential of RIPE Atlas for mapping the packet layer topology
- Using the example of RIPE Atlas Anchor at VIX (Vienna)
- Pretty graphs, useful info

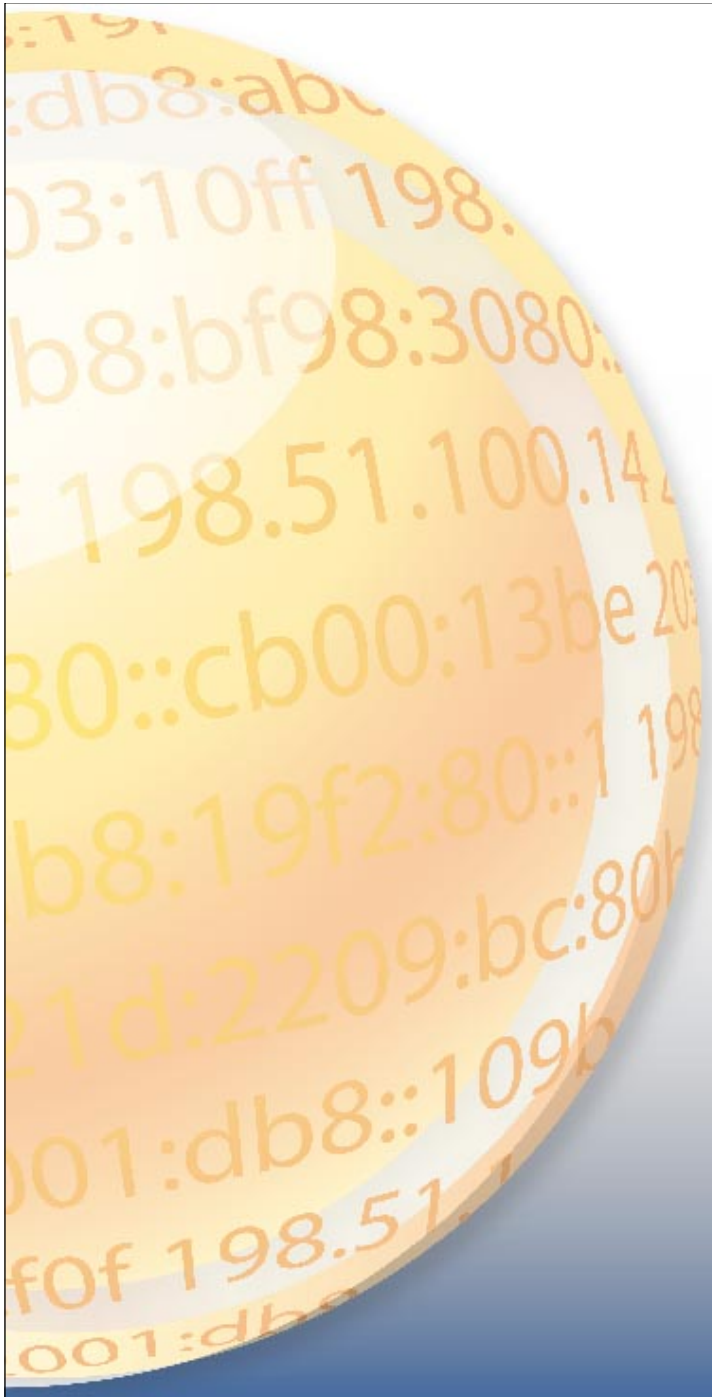


https://labs.ripe.net/Members/dfk/map-a-ripe-atlas-anchor

Become a host of an Anchor!

- Benefits:
  - Measuring impact of anycast services deployment
  - Troubleshooting connectivity quirkiness
  - Mostly deployed at IXPs, ccTLDs, larger data centres
- Requirements
  - Host are responsible for the hardware: Soekris box
  - IPv4, and native IPv6 connectivity
  - 10 MB bandwidth (currently use 200 kB, on average)
  - Needs unfiltered access (placed in front of the firewall)

https://atlas.ripe.net/about/anchors/



Get Involved

Join the RIPE Atlas Community

Community Information

Find out more about the RIPE Atlas community, their contributions, and the hosts who stand out in the RIPE Atlas network.

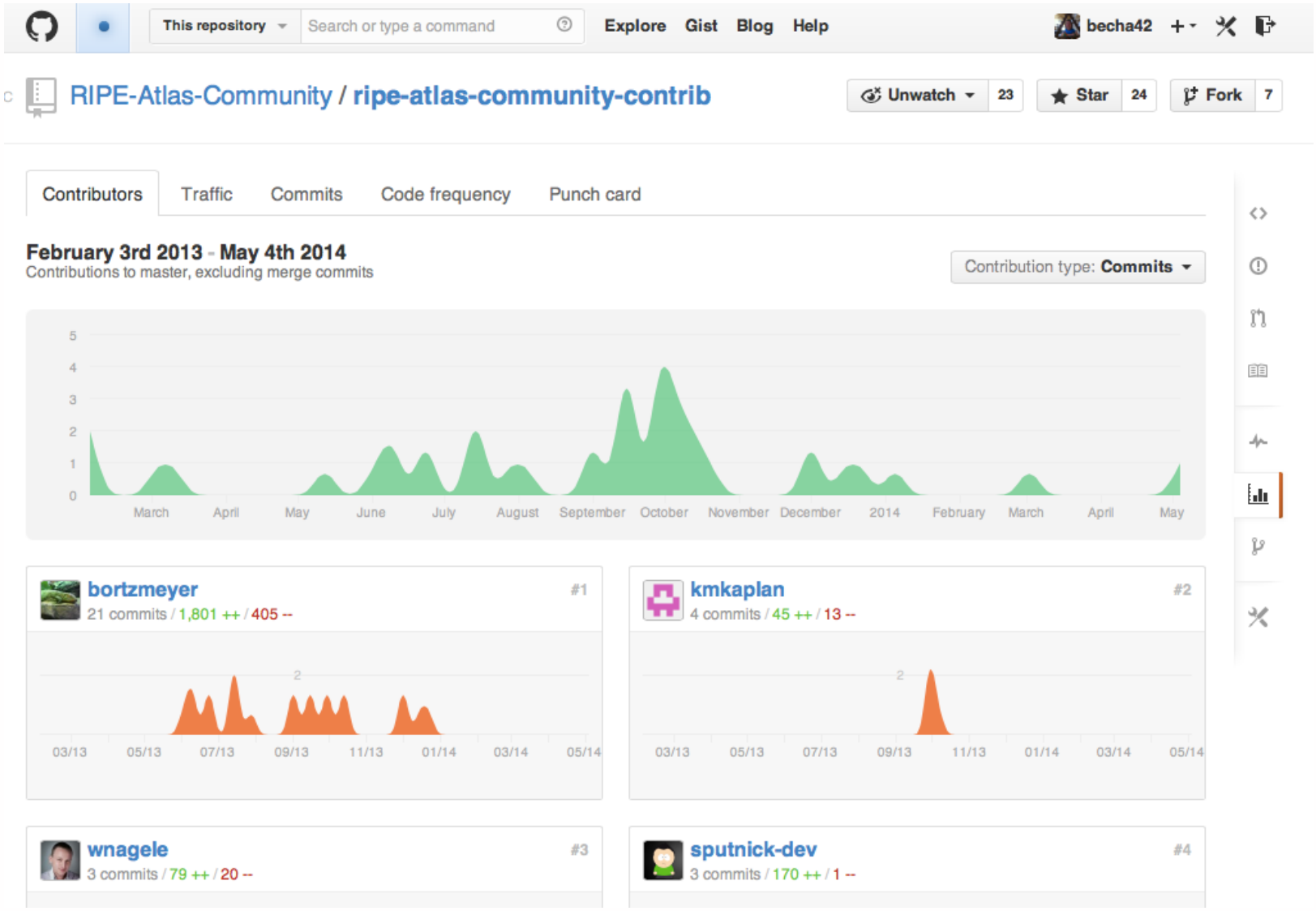
Always Up | Big Spenders | **New Arrivals** | Sponsors | Anchor Hosts | Photos

New Arrivals are new hosts who connected a RIPE Atlas probe in the last ten days. (Note that the flags are representative of their probe locations and not necessarily their nationality.)

- Andrea Speranza
- herdir anon
- Ferdinand BOISSIER
- Arky R
- Andre Els
- Angus Hay
- Pop Marcel Marcel
- Marc Lagrange
- mwizu sikanyika
- fernando aversa
- Mark Campbell
- Jean Welman
- Jeff Fletcher
- Diederik Vandevenne
- Marty Strong
- Geert Jan de Groot
- Rhys Smith
- Sysadmin VRVis
- Trevor Warwick
- Pierre-Yves Gillier
- Marc Chabrol
- Lorenzo Cafaro
- CERT SWITCH
- Marko Eling
- Ulrik Johansen
- Roar Idsøe
- Rafael Oliwa
- Lukas Vescicik
- Václav Hořejší
- Tomas Pristach
- Andrew Orange
- Piotr Burzyński
- Giulia Di Rienzo
- Lucas Braga
- Anibal Cañada
- Martin Prager
- Tomas Simonaitis
- Steffie Jacob Eravuchira
- Chris Russell

Become an Ambassador

Contribute to the GitHub Repository



We Are Grateful to Our Sponsors!

Roadmap for the Future

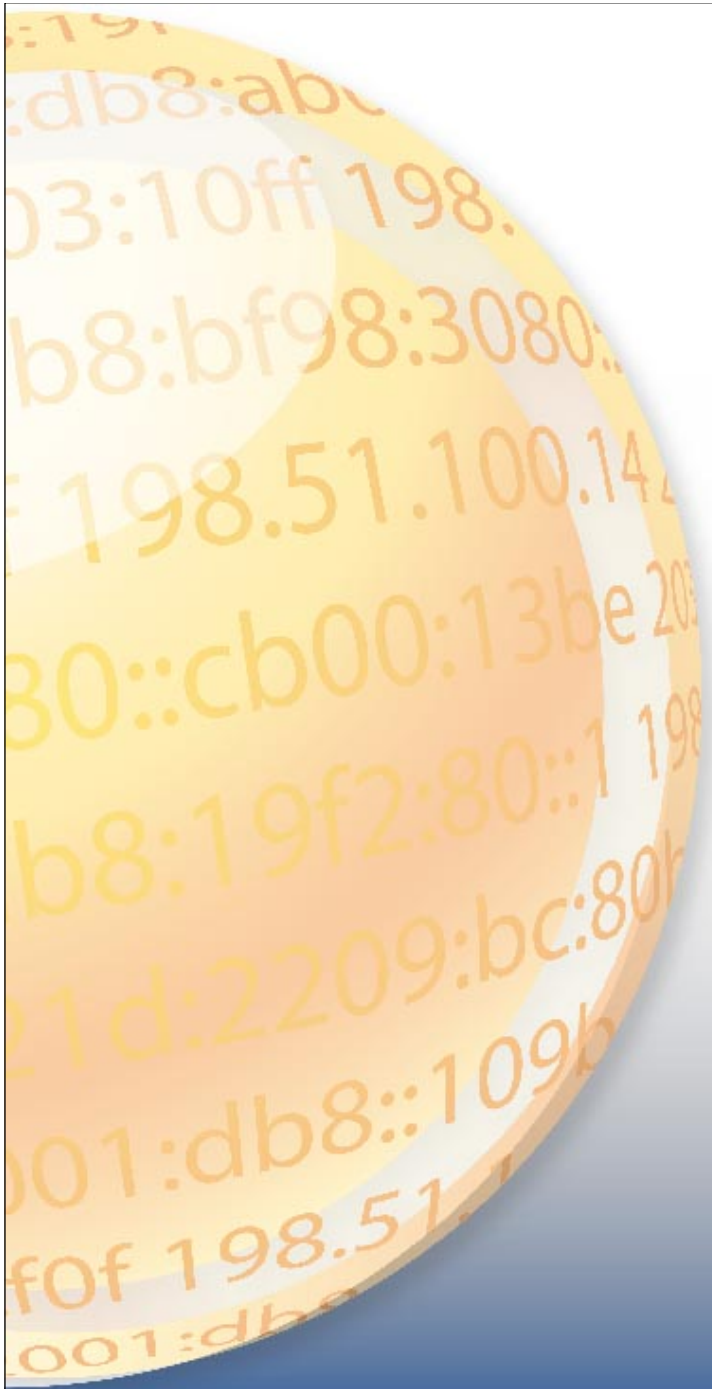
Planned	In Progress
Additional features for RIPE Atlas anchors	Improve procedure for probe distribution by RIPE Atlas ambassadors
WiFi Measurements	Regularly publish metadata
Share my probe with a custom-made group	Regularly publish Names
Sharing credits with colleagues	Improved Measurements Pages
Restarting previous measurements	Improve number of connected probes
Vantage points dropping out of existing user-defined measurements	Increase number of active RIPE Atlas anchors
	Improve IPv6 probe selection

Connect with RIPE Atlas

- RIPE Atlas website: https://atlas.ripe.net
- Mailing list for active users: ripe-atlas@ripe.net
- Articles on RIPE Labs: https://labs.ripe.net/atlas
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas

Questions?

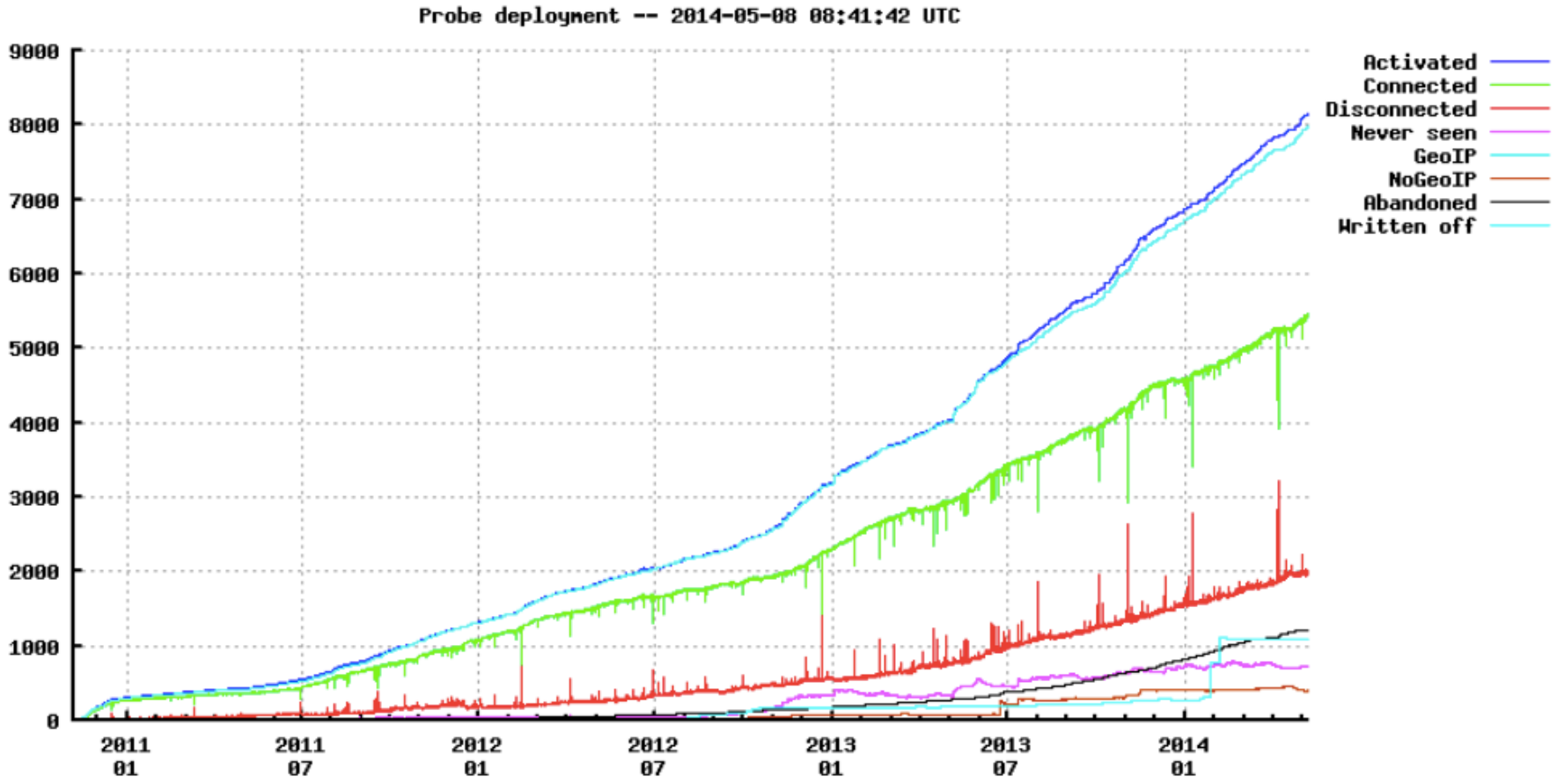
RIPE NCC



Additional Information

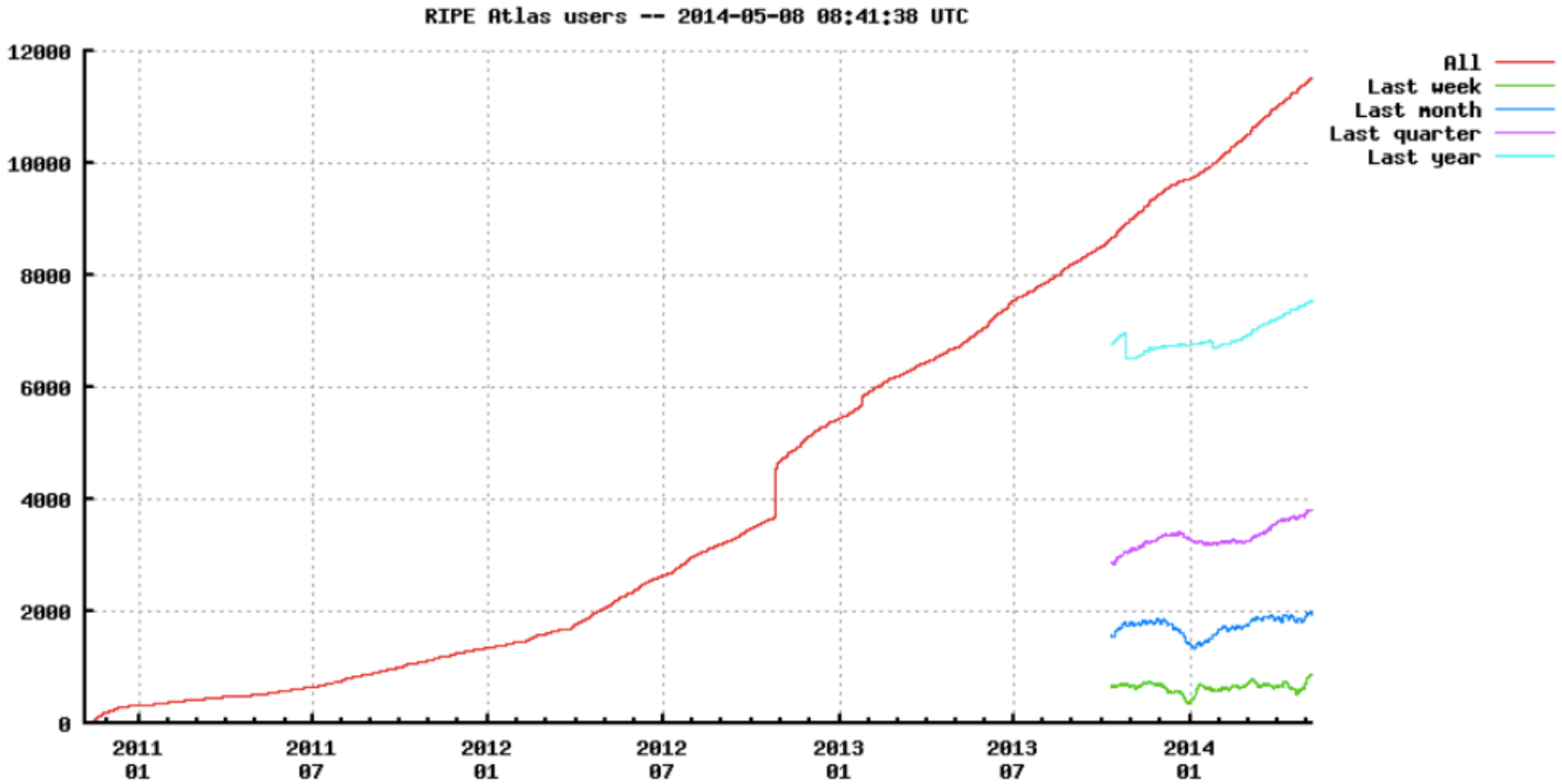
Growth of the Network

Probe deployment

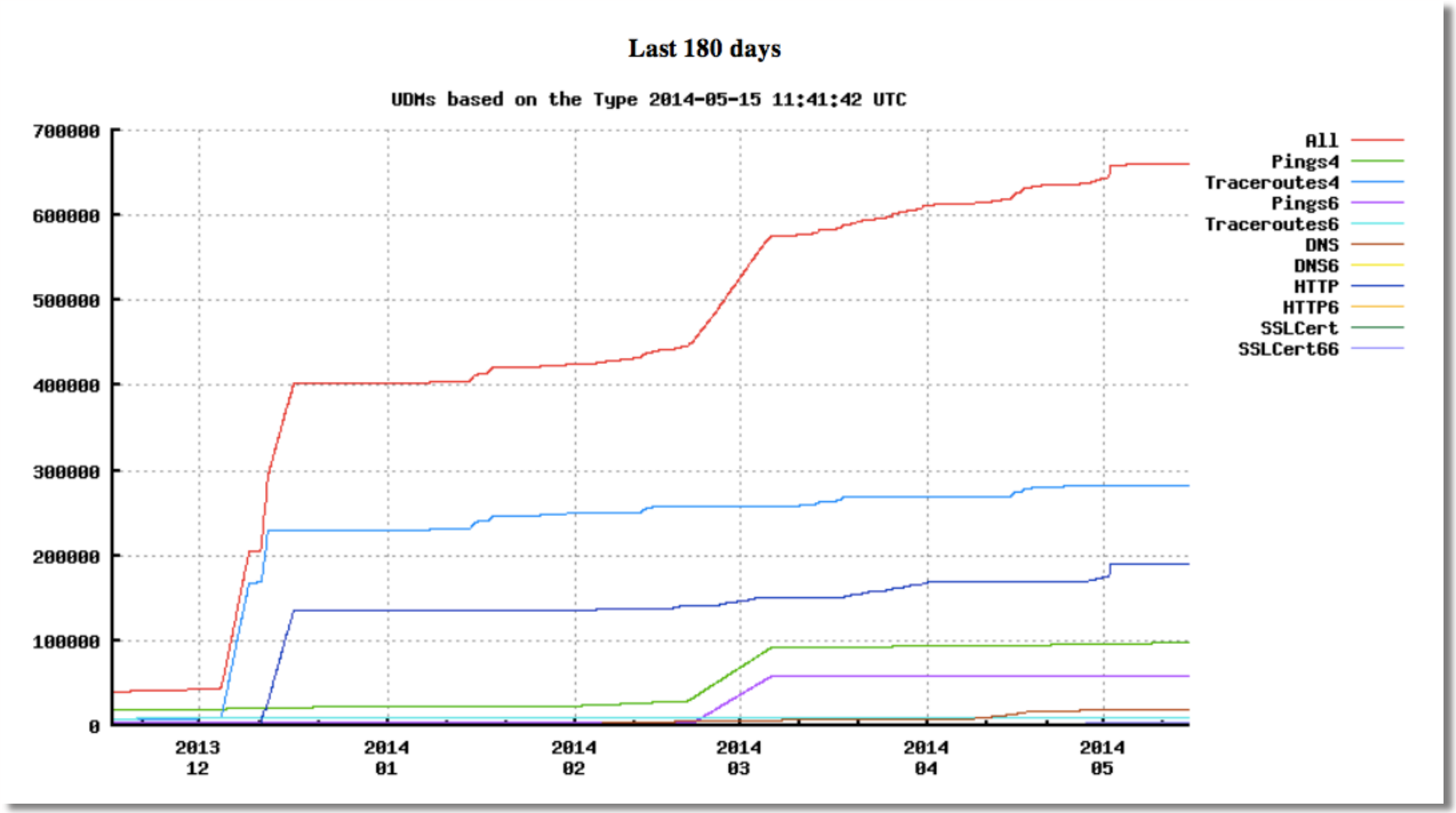


Growth in Users

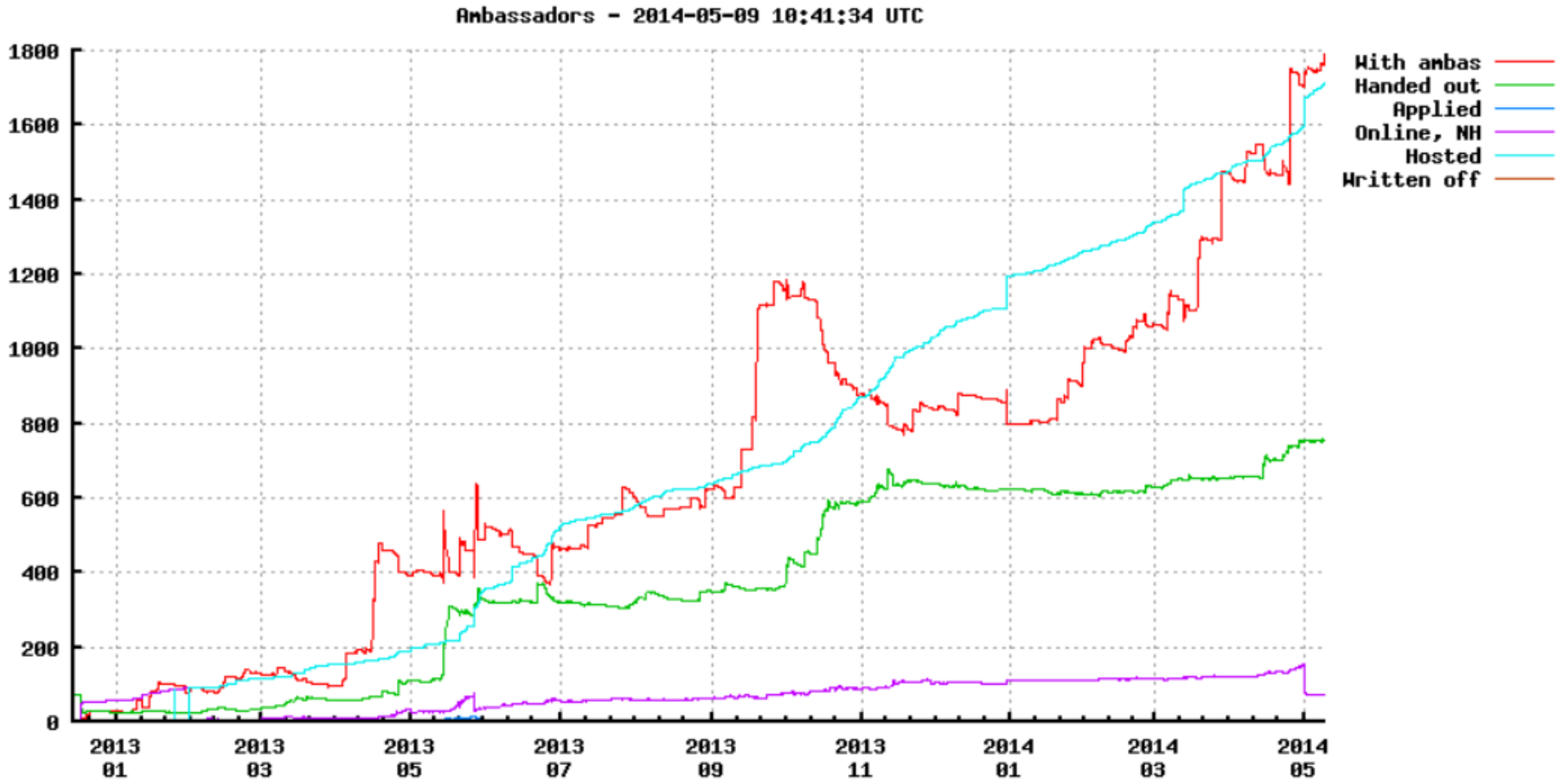
RIPE Atlas users



Number of User-Defined Measurements



Probes Distributed by Ambassadors



RIPE Atlas Use Cases

Integration with Monitoring Systems

- Benefits of using RIPE Atlas for monitoring:
  - Doing pings from 1,000 out of 5,000+ probes around the world
  - Looking at your network from the outside
  - Plug into your existing practices
- Three easy steps for automatic alarms:
  1. Create a RIPE Atlas ping measurement
  2. Go to “Status Checks” URL
  3. Add your alerts in Icinga or Nagios

1. How to Schedule a Measurement

- General case - applicable for ping, too!
- Log in to atlas.ripe.net
- Go to “My Atlas” and “Measurements”
- Choose “New Measurement” or “One-off”
  - Most measurements are periodic & last a long time
  - Choose type, target, frequency, # of probes, region...
  - You will spend credits (next slides)
- More details: https://atlas.ripe.net/doc/udm
- Or use the API:

  https://atlas.ripe.net/docs/measurement-creation-api/

1.5 Credit System

- By hosting a probe, you earn credits
- To perform measurements, you spend credits
  - pings cost 10 credits, traceroutes cost 20, etc.
- Credit system introduced to ensure fairness and protect system from overload
- Extra credits can be earned by:
  - Being a RIPE NCC member
  - Hosting a RIPE Atlas anchor
  - Sponsoring multiple probes
- More details: https://atlas.ripe.net/doc/credits

2. Creating Status Checks

- Status Checks work via RIPE Atlas' RESTful API
  - https://atlas.ripe.net/api/v1/status-checks/MEASUREMENT_ID/
- You define the alert parameters, for example:
  - Threshold for the % of probes that successfully received a reply
  - How many most recent measurements to base the status on
  - Maximum packet loss acceptable
- Documentation:
  - https://atlas.ripe.net/docs/status-checks/

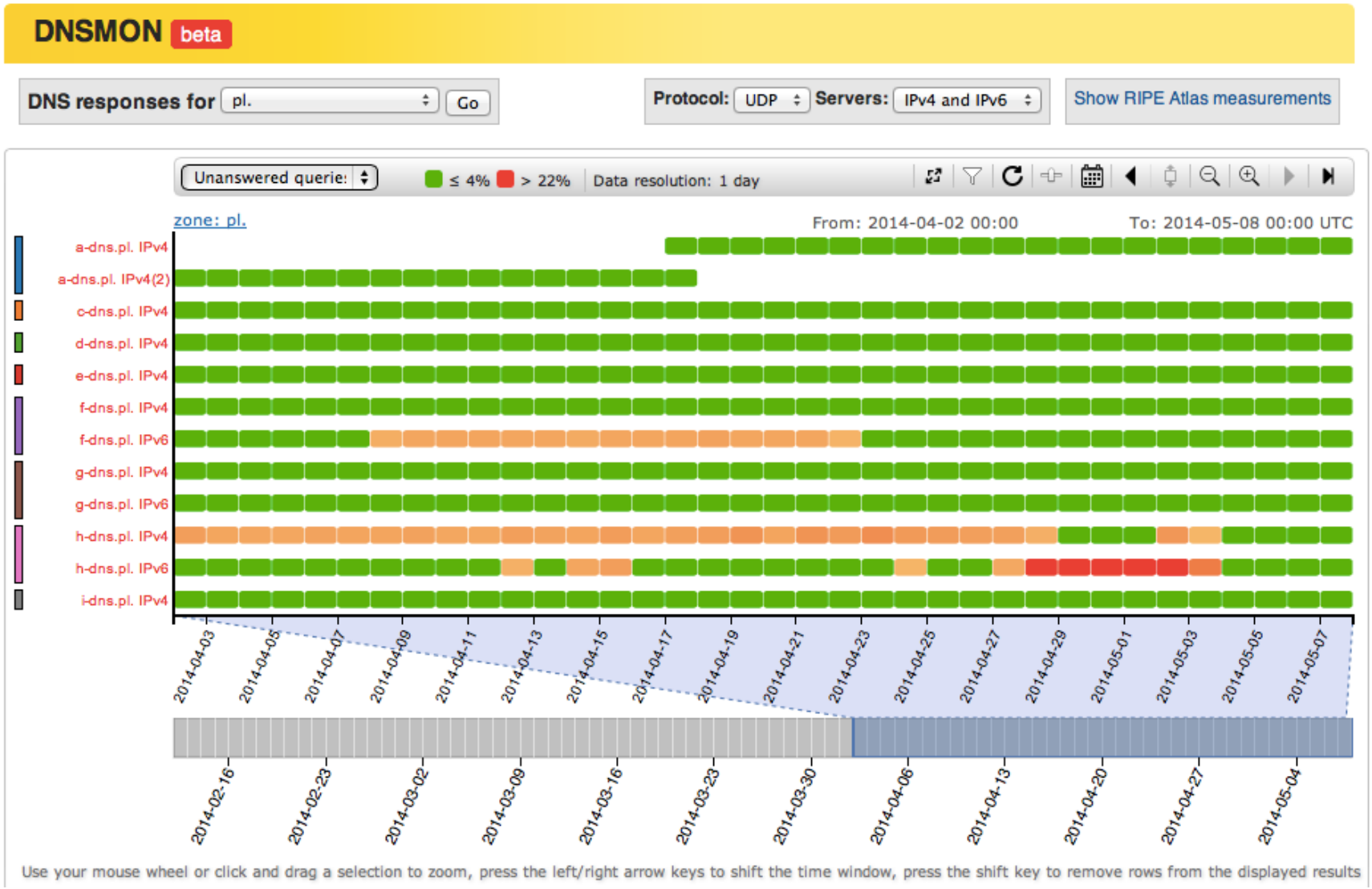
3. Icinga Examples

- Community of operators contributed configuration code!
  - Making use of the built-in “check_http” plugin

- GitHub repo examples:
  - https://github.com/RIPE-Atlas-Community/ripe-atlas-community-contrib/blob/master/scripts_for_nagios_icinga_alerts

- Post on Icinga blog:
  - https://www.icinga.org/2014/03/05/monitoring-ripe-atlas-status-with-icinga-2/

Monitoring for DNS TLD operators

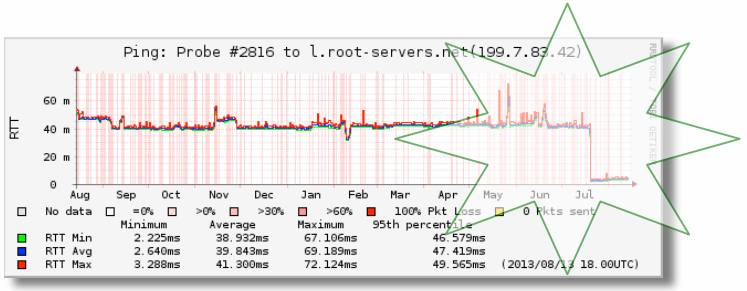


Monitoring DNS

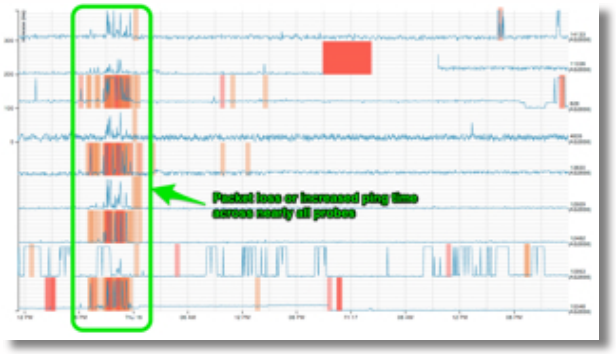
- “Old” DNSMON service migrated to RIPE Atlas
- RIPE Atlas anchors used as vantage points
  - Replacing TTM boxes
- Currently monitoring small selection of zones
  - Root name servers
  - 30 ccTLDs and few gTLDs
- New zones will be added next year
- Give us feedback about DNS alerts!
- https://labs.ripe.net/Members/fatemah_mafi/an-updated-dns-monitoring-service

Success Stories

- IXP: Measuring the effect of installing L-root in Belgrade / SOX



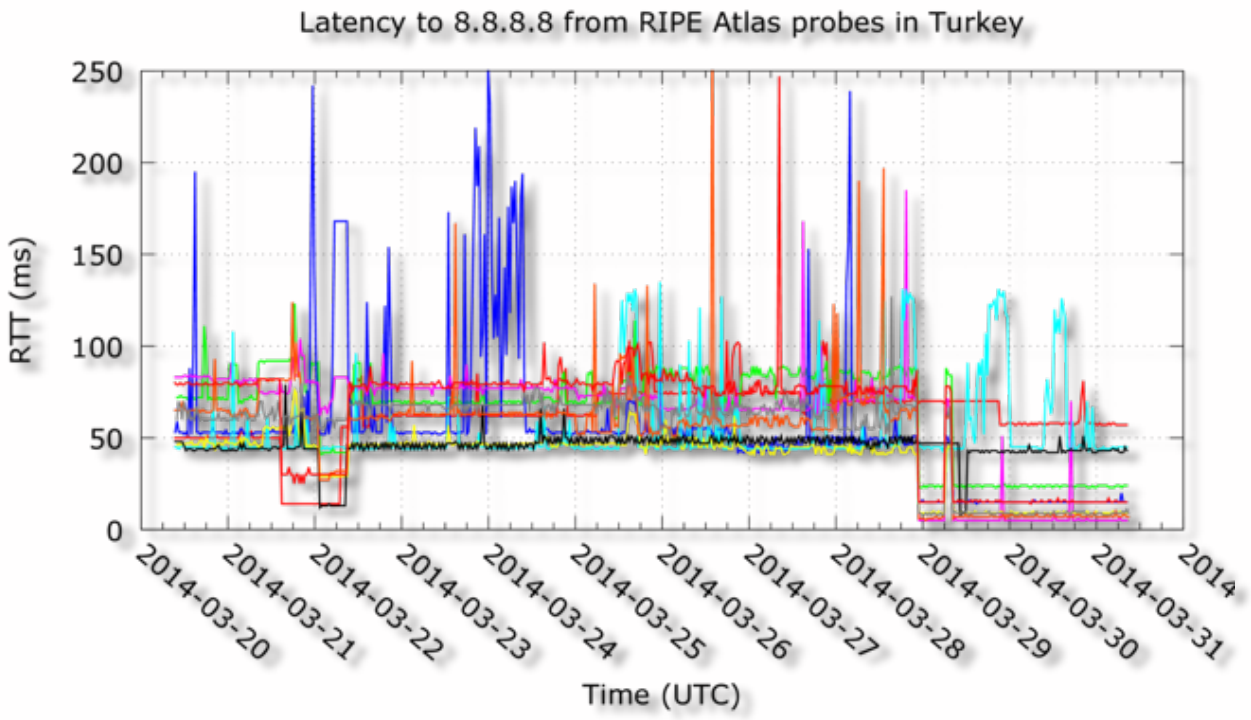
- DNS: Looking for most popular instances of .FR anycast servers



- Operators: investigating network disruptions

  http://engineering.freeagent.com/2014/01/24/atlas-probes/

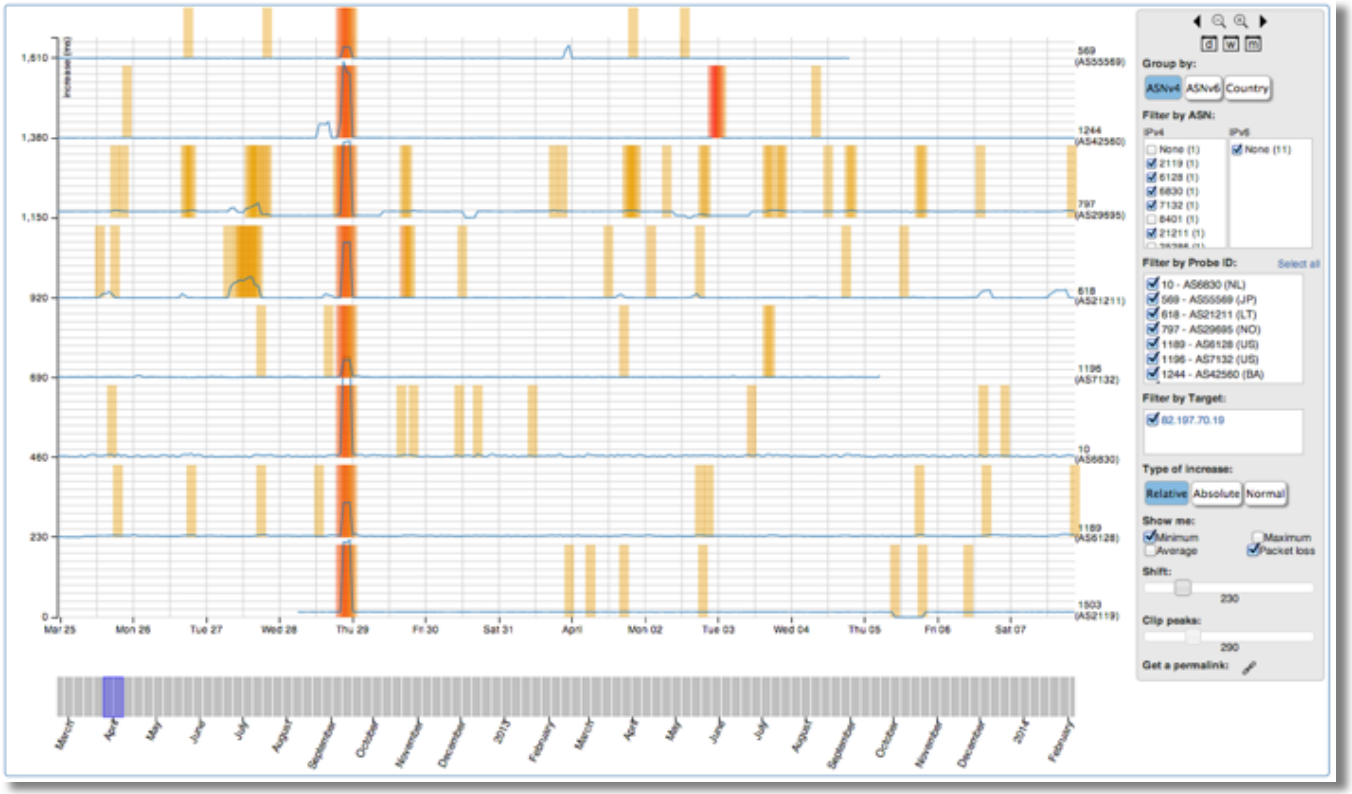
Research Impact of Significant Events



A RIPE Atlas View of Internet Meddling in Turkey

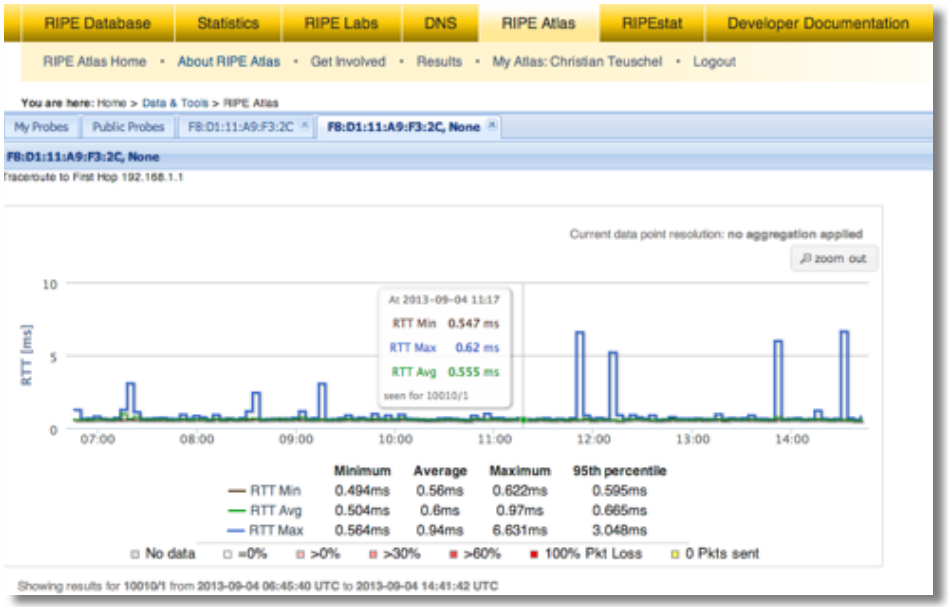
Visualization: Seismograph

- Seismograph
  - Multiple ping measurements in one view
  - Stacked chart and interactive control panel



Visualization: Zoomable ping graph

- Zoomable ping graph
  - Replacing multiple RRDs graphs: zoom in/out in time, in the same graph
  - Easier visualisation of an event's details
  - Selection of RTT class (max, min, average)



The RIPE Atlas Community GitHub

- If you are a programmer: contribute your code:
  - https://github.com/RIPE-Atlas-Community/
- If you are researcher, look & contribute here:
  - https://github.com/RIPE-Atlas-Community/RIPE-Atlas-data-analysis
- Measurements source code available:
  - https://labs.ripe.net/Members/philip_homburg/ripe-atlas-measurements-source-code
- New! Parsing library:
  - https://github.com/RIPE-NCC/ripe.atlas.sagan

RIPE Atlas User Experiences

- Find a collection of use cases, analyses, scientific papers and presentations/tutorials on RIPE Labs:

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

Become an Ambassador

- We’re looking for volunteers to help us:
  - Distribute probes
  - Give workshops, tutorials and promote RIPE Atlas
- To become an ambassador:
  - https://atlas.ripe.net/get-involved/become-a-ripe-atlas-ambassador/
  - email mcb@ripe.net to find out how to obtain some probes
- Or become a sponsor:
  - https://atlas.ripe.net/get-involved/become-a-sponsor/

Contact RIPE Atlas

- https://atlas.ripe.net
- Apply for a probe: https://atlas.ripe.net/apply
- Apply for an anchor: https://atlas.ripe.net/anchors/apply/
- Mailing list for active users: ripe-atlas@ripe.net
- https://atlas.ripe.net/get-involved/community/
- Articles & updates on RIPE Labs: https://labs.ripe.net/atlas
- Roadmap: http://roadmap.ripe.net/ripe-atlas/
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas