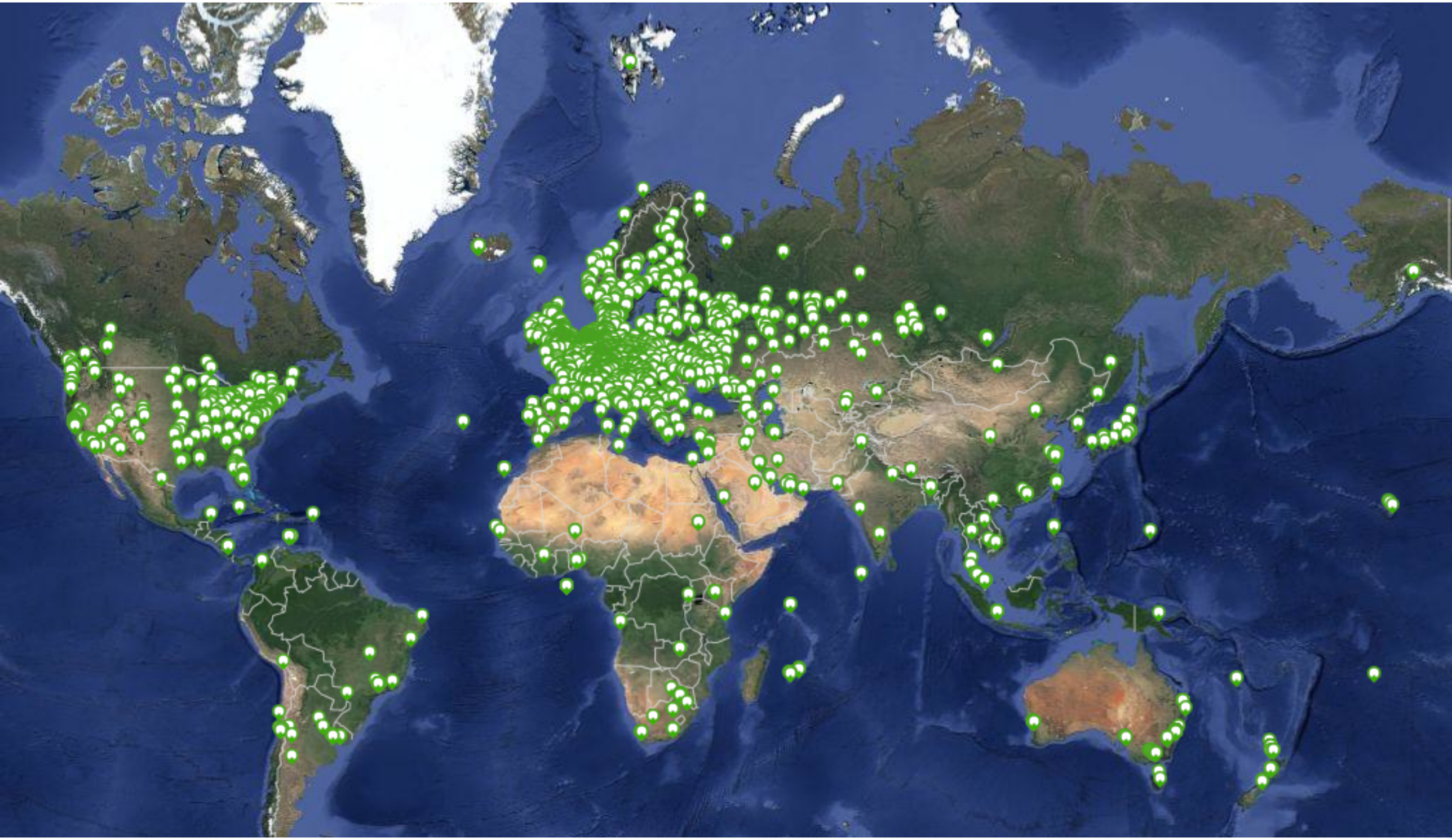
RIPE Atlas

Overview

- What is RIPE Atlas
- How to use measurements
- How to take part in the RIPE Atlas community
- What is RIPEstat

RIPE Atlas Probe Deployment



RIPE Atlas September 2014

- 6,600+ active probes
    - 2,050+ probes do IPv6
- 12,500+ registered users (3,000 active monthly)
- Four types of customised measurements available to probe hosts: ping, traceroute, DNS, SSL
    - And of course, ping6 and traceroute6 :-)

RIPE Atlas Participation and Benefits

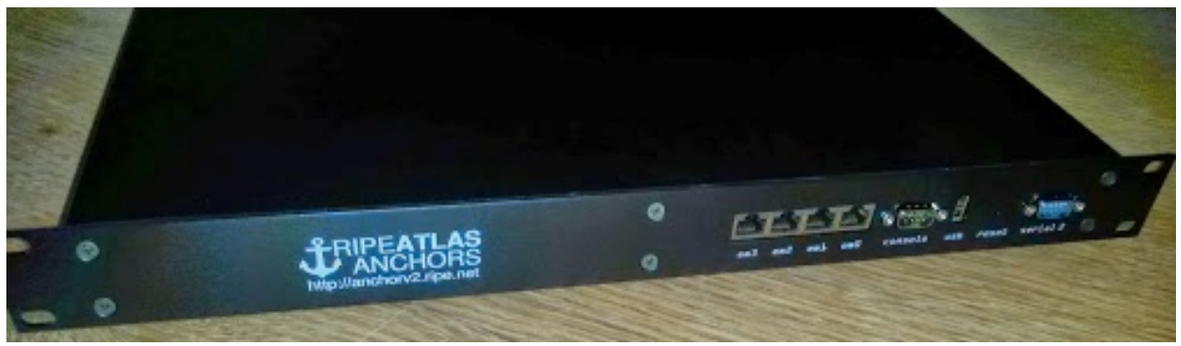
- Anyone can become a RIPE Atlas probe host
- Major personal and operational benefits:
  - See your network from the outside!
  - Have ~6,500 external vantage points to do customised measurements towards the destination of your choice
- Data of built-in measurements available to everyone
- Maps, data from public probes, API to download raw data

Measurement Devices

- v1 & v2: Lantronix XPort Pro

- v3: TP-Link TL-MR3020 powered from USB port
  - Does not work as a wireless router!

- RIPE Atlas anchor: Soekris net6501-70



RIPE NCC

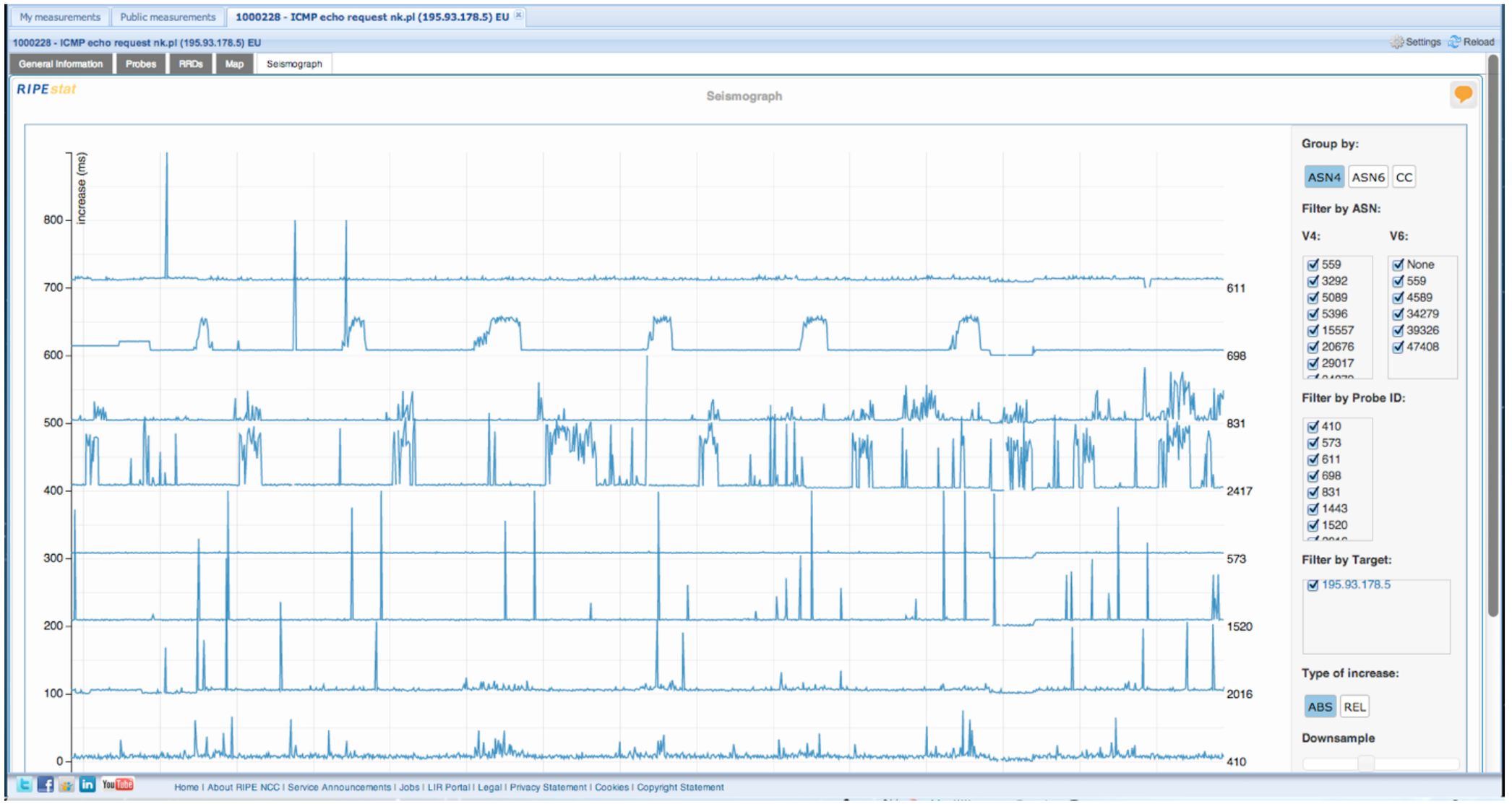
RIPE Atlas Anchors

- Anchors: well-known targets and powerful probes
  - Regional baseline & “future history”
- 73 anchors installed
- Anchoring measurements
- Measurements between anchors
- 200 probes targeting each anchor with measurements
- Each probe measures four to five anchors
- Apply to host an anchor: https://atlas.ripe.net/about/anchors/

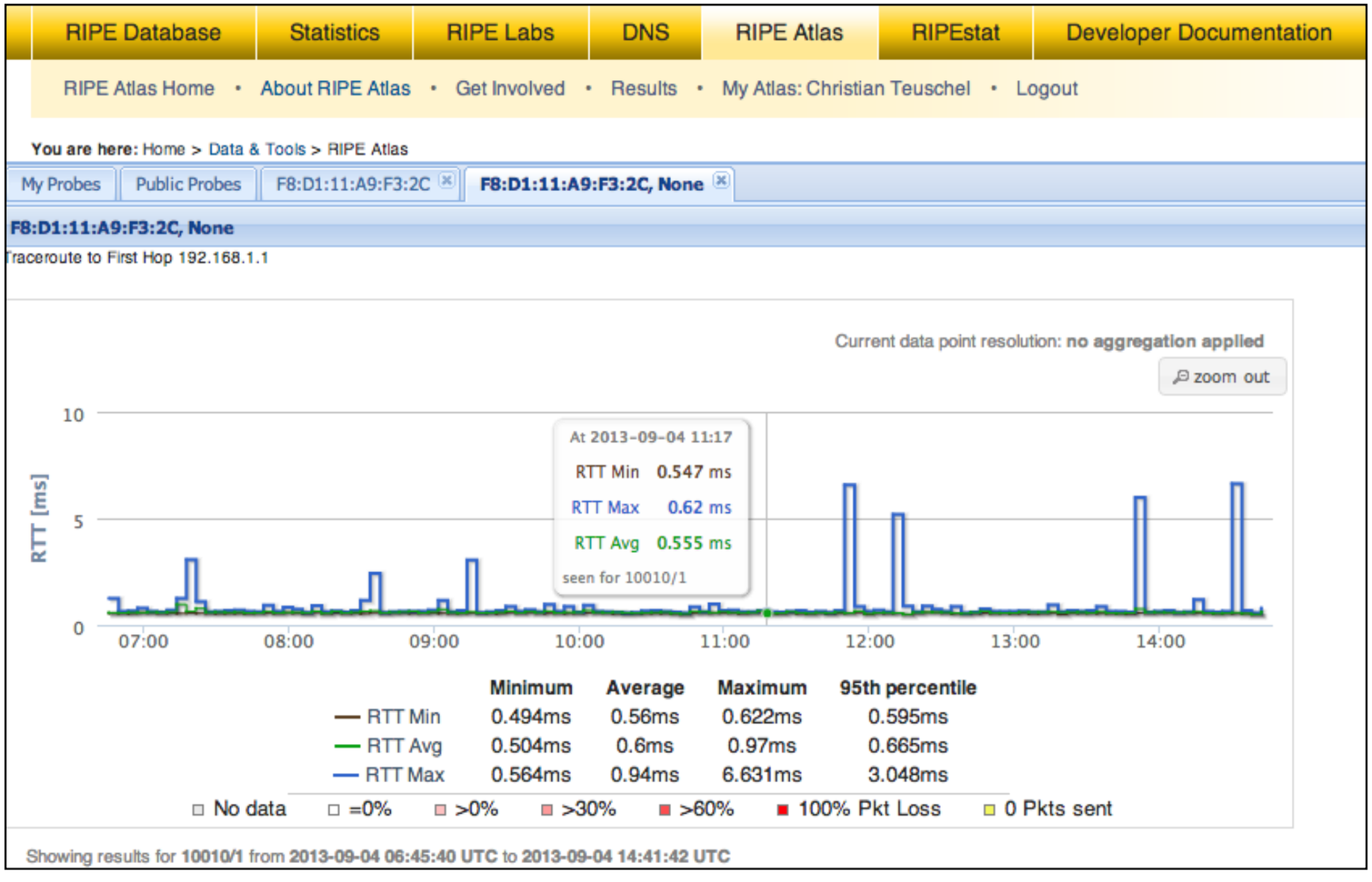
RIPE Atlas Features

- Seismograph
  - Multiple ping measurements in one view
  - Stacked chart and interactive control panel
  - Based on RIPEstat widget framework
- Zoomable ping graph
  - Replacing multiple RRDs graphs: zoom in/out in time, in the same graph, without loss of detail
  - Easier visualisation of an event's details
  - Selection of RTT class (max, min, average)

The Seismograph

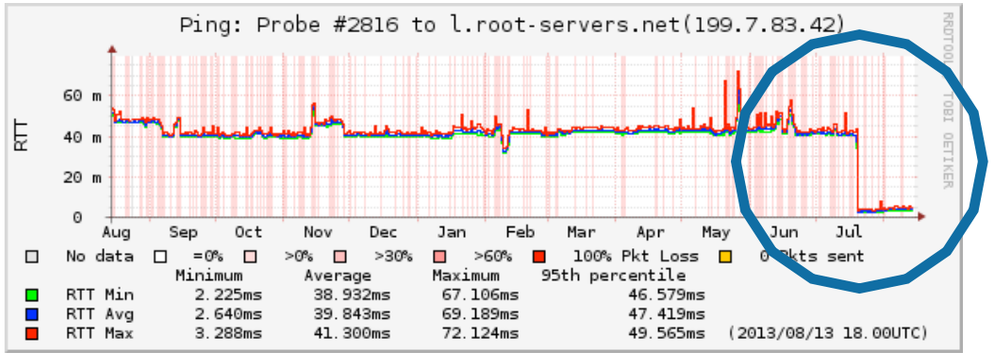


Zoomable Ping Graph



RIPE Atlas Success Stories

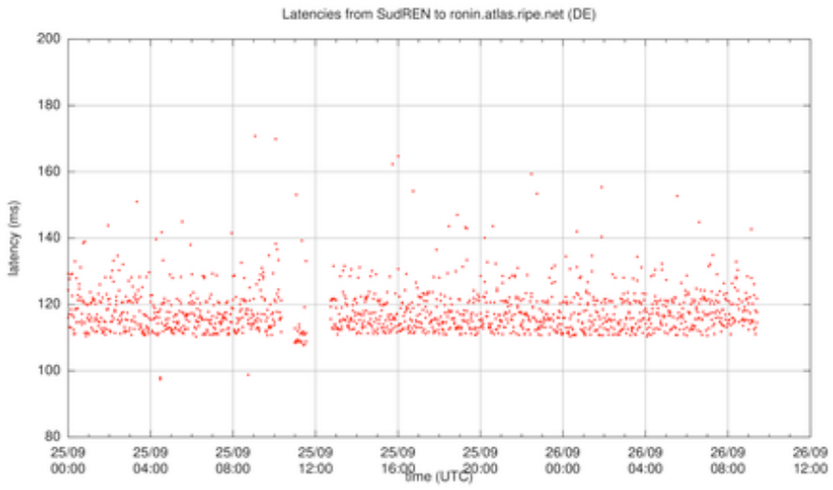
- IXP: Measuring the effect of installing L-root in Belgrade / SOX



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

Name server instance	Nr. of probes connecting to instance	Percentage
dns.th2.nic.fr	173	36%
dns.fra.nic.fr	173	36%
dns.lon.nic.fr	47	10%
dns.lyn2.nic.fr	29	6%
dns.lyn1.nic.fr	25	5%
dns.bru.nic.fr	19	4%
dns.ix1.nic.fr	18	4%

- Events: Measuring Internet outage in Sudan



RIPE NCC

Security Aspects

- Probes have hardwired trust material (registration server addresses / keys)
- The probes don’t have any open ports; they only initiate connections - this works fine with NATs, too
- Measurements are scheduled by centralised “command servers” via reverse ssh tunnels
- Probes don’t listen to local traffic; there are no passive measurements running
- Measurement source code published
- Reported vulnerabilities: https://atlas.ripe.net/docs/security/

RIPE Atlas Plans for the Future

- Integrating DNSMON into RIPE Atlas and RIPEstat
- Tagging probes and measurements as "My Favourites" for easy viewing
- Improving traceroute visualisation: T-play
- Increasing probe distribution via RIR cooperation
- Tell us your feature requests: http://roadmap.ripe.net/ripe-atlas/

How to Use Measurements

RIPE NCC

User-Defined Measurements

- Probe hosts and RIPE NCC members perform customised measurements using the targets and frequency of their choice
- API available for creating measurements
  - https://atlas.ripe.net/docs/measurement-creation-api/
- REST APIs for analysing measurements, too:
  - https://labs.ripe.net/Members/wilhelm/ripe-atlas-code-for-analysis-and-statistics-reporting

Web UI: How to Schedule a Measurement

- Log in to atlas.ripe.net
- Go to “My Atlas” ⟶ “My 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)
- To see results: “My Measurements”
- More details: https://atlas.ripe.net/doc/udm

Credit System

- By hosting a probe, you earn credits as a reward for making your probe available to others
  - Hosts earn 21,600 credits per day, as long as the probe is connected
- To perform customised measurements, you spend credits
  - Use them to perform measurements from your probe towards any target
  - Ping costs 10 credits, traceroute costs 20, etc.
  - Daily limit applies

Credit System (continued)

- Credit system introduced to ensure fairness and protect system from overload
- To use the API, you need keys that identify users:
    - https://atlas.ripe.net/atlas/keys
- 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

Status Checks: Creating Alerts in “Icinga”

Steps:

1. Create a RIPE Atlas ping measurement
   - You can use up to 1,024 probes
2. URL: https://atlas.ripe.net/api/v1/status-checks/MEAUSRMNT_ID/
3. Come back later to see whether anything has changed
4. Define your alerts accordingly

- Icinga:
  - Make use of the built-in check_http plugin
- Documentation and examples:
  - https://atlas.ripe.net/docs/status-checks/

Hands-on Tutorials by the Community

- Nikolay Melnikov, Hands-on: RIPE Atlas - AIMS 2013
  - http://cnds.eecs.jacobs-university.de/users/nmelnikov/aims2013-ripe-atlas.html

- Stéphane Bortzmeyer, Creating and Analysing RIPE Atlas Measurements - RIPE 67
  - https://ripe67.ripe.net/presentations/153-ripe-atlas-udm-api-1.pdf

How to Take Part in the RIPE Atlas Community

RIPE NCC

Contribute to the Community GitHub

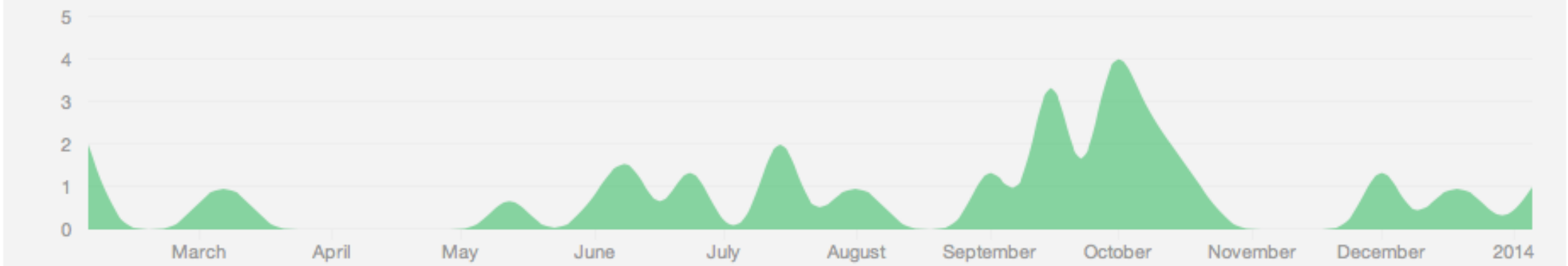
PUBLIC RIPE-Atlas-Community / **ripe-atlas-community-contrib**

Unwatch 21 | Star 19 | Fork 5

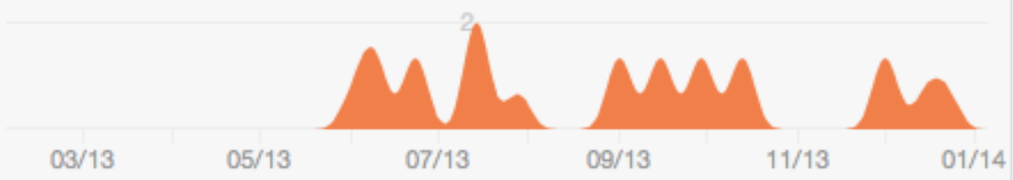
Contributors | Commits | Code Frequency | Punchcard

February 3rd 2013 - January 5th 2014
Commits to master, excluding merge commits

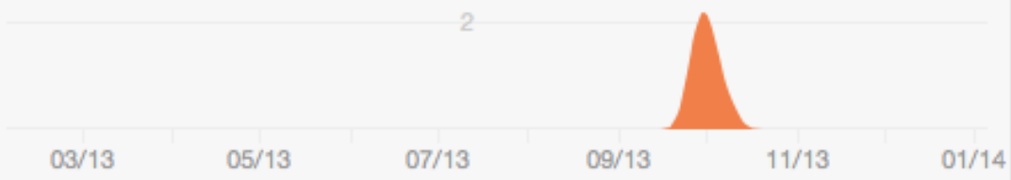
Contribution Type: **Commits**



bortzmeyer #1
21 commits / 1,801 ++ / 405 --



kmkaplan #2
4 commits / 45 ++ / 13 --



RIPE NCC

Also on GitHub

- Measurements source code:
  - https://labs.ripe.net/Members/philip_homburg/ripe-atlas-measurements-source-code
  - https://github.com/RIPE-Atlas-Community/RIPE-Atlas-probe-fw-code-4520
  - https://github.com/RIPE-Atlas-Community/RIPE-Atlas-data-analysis

Become a RIPE Atlas Ambassador

- If you want to...
  - Help distribute probes
  - Give workshops, tutorials, and promote RIPE Atlas
- To become an ambassador:
  - Get in touch; we'll ship you some probes
  - Join the mailing list:
  - https://www.ripe.net/mailman/listinfo/ripe-atlas-ambassadors
- Or become a sponsor:
  - https://atlas.ripe.net/sponsors

RIPE Atlas 2013 Sponsors

France-IX

SIDN

Cable&Wireless Worldwide

ICANN

COMCAST

AS34288 CONNECTING EDUCATION TO THE WORLD

VERISIGN

OpenDNS

Questions to the Community

- HTTP measurements: Limitations and guidelines?
- System Checks: What level of ease or sophistication?
- IPv6: Only for researchers? Operators' needs?
- Open publication of measurement data
  - To have private measurements or not?
  - Testing BCP38 compliance
- Most interesting use cases?
- More success stories? Share them!

RIPE Atlas Contact Information

https://atlas.ripe.net

- Get a probe: https://atlas.ripe.net/apply
- Mailing list for active users: **ripe-atlas@ripe.net**
- Articles and updates on RIPE Labs: https://labs.ripe.net/atlas
- Questions: **atlas@ripe.net**
- Twitter: @RIPE_Atlas and #RIPEAtlas

Questions?

RIPEstat

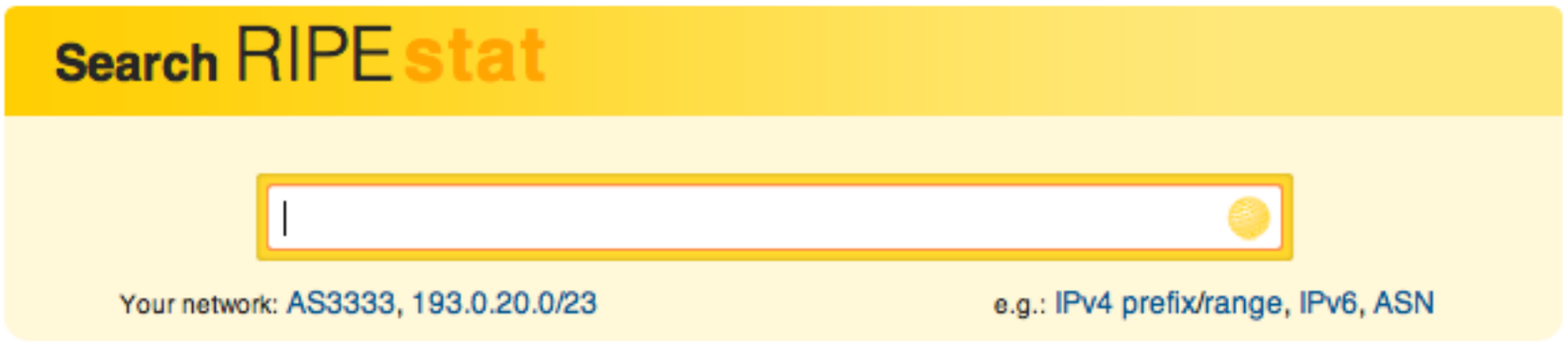
RIPE NCC

RIPEstat Introduction

RIPEstat is a “one-stop shop” for information about

Internet number resources

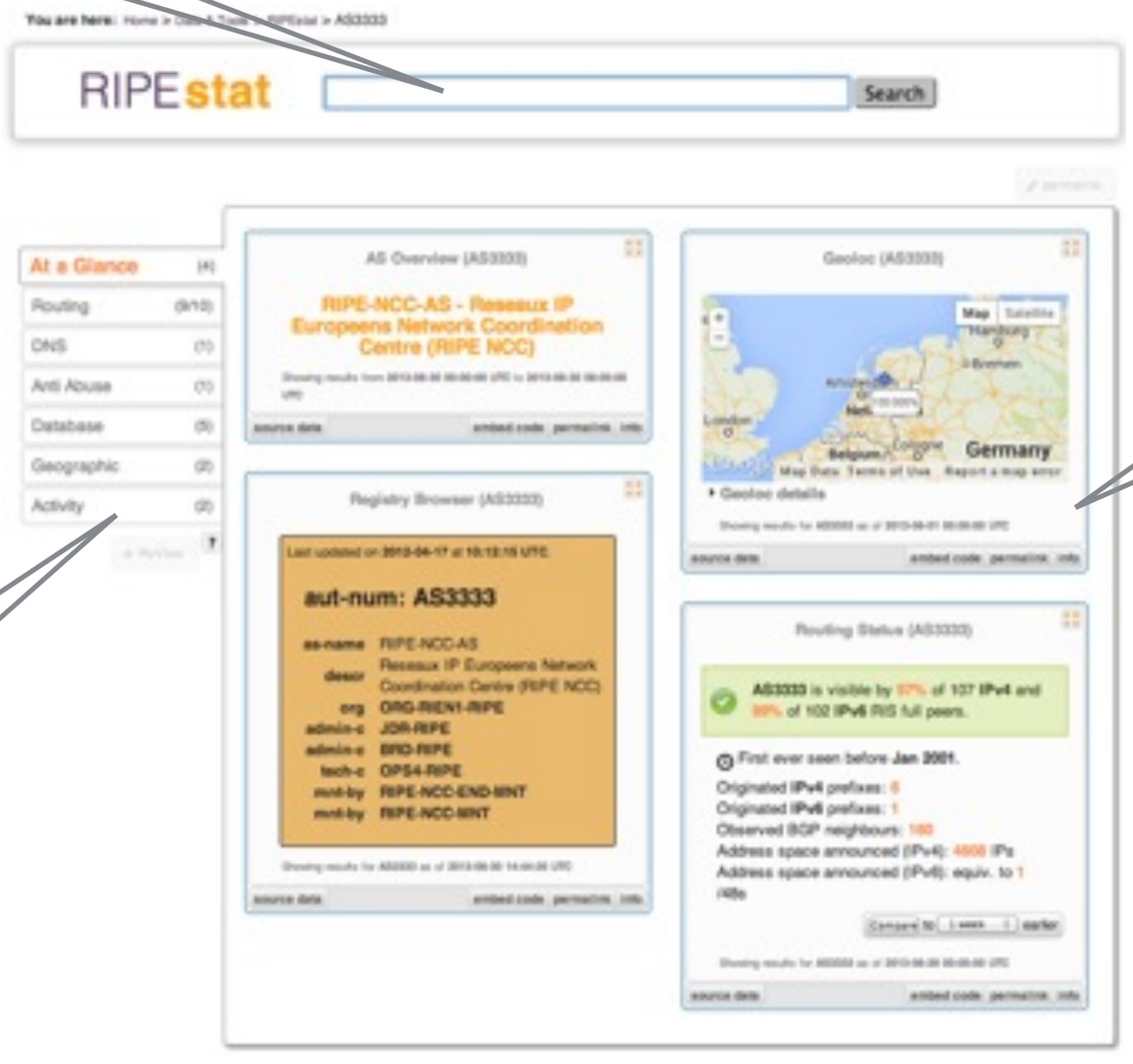
- RIPE NCC: registration data and RIPE Database, routing (RIS), reverse DNS, RIPE Atlas measurements
- External sources: IRR, RIRs, geolocation, blacklists, M-Lab network activity



RIPE NCC

Web Interface: Query Results Page

Search box



Widgets

Widgets grouped into thematic tabs

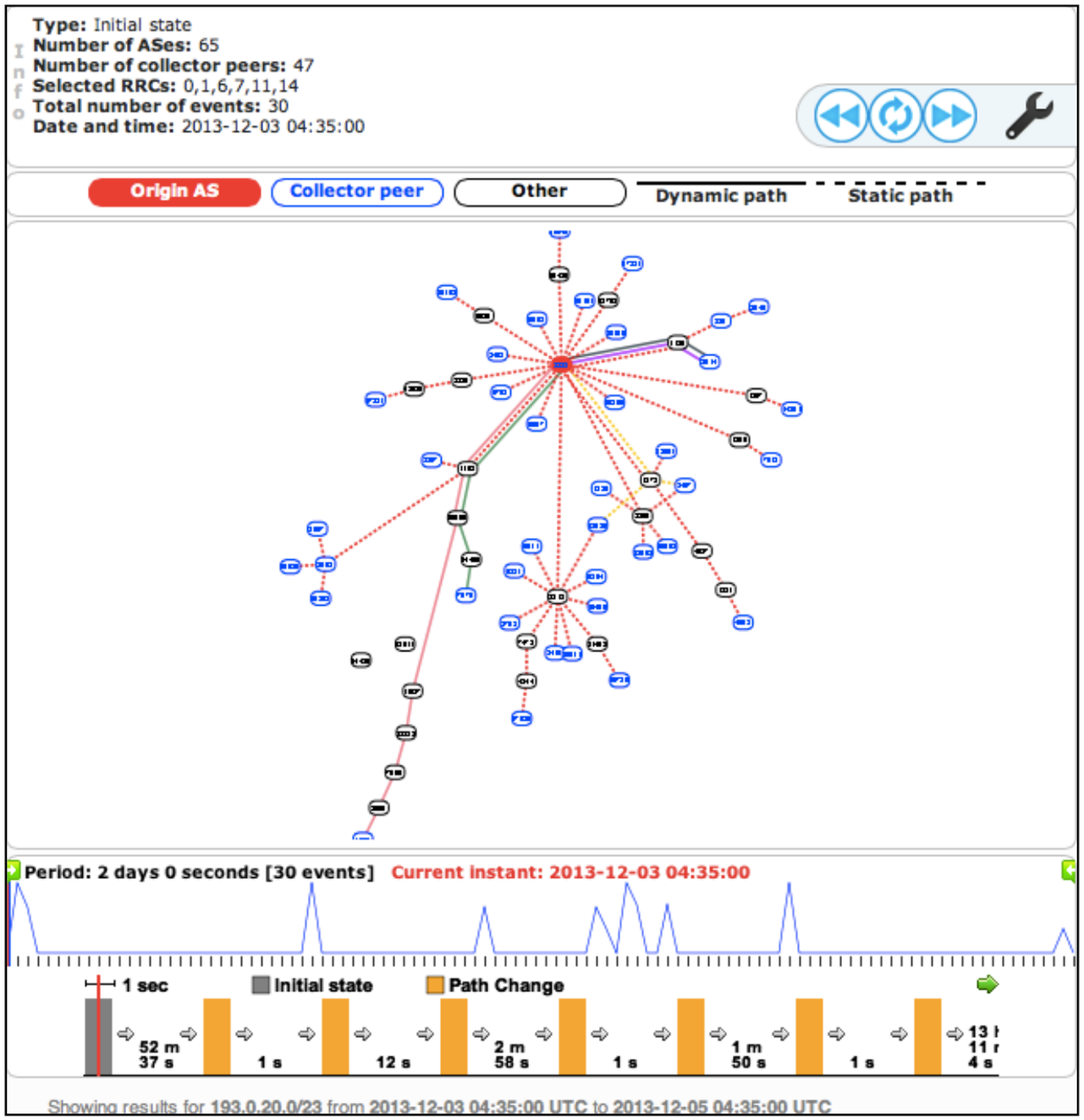
RIPE NCC

RIPEstat Data and Interfaces

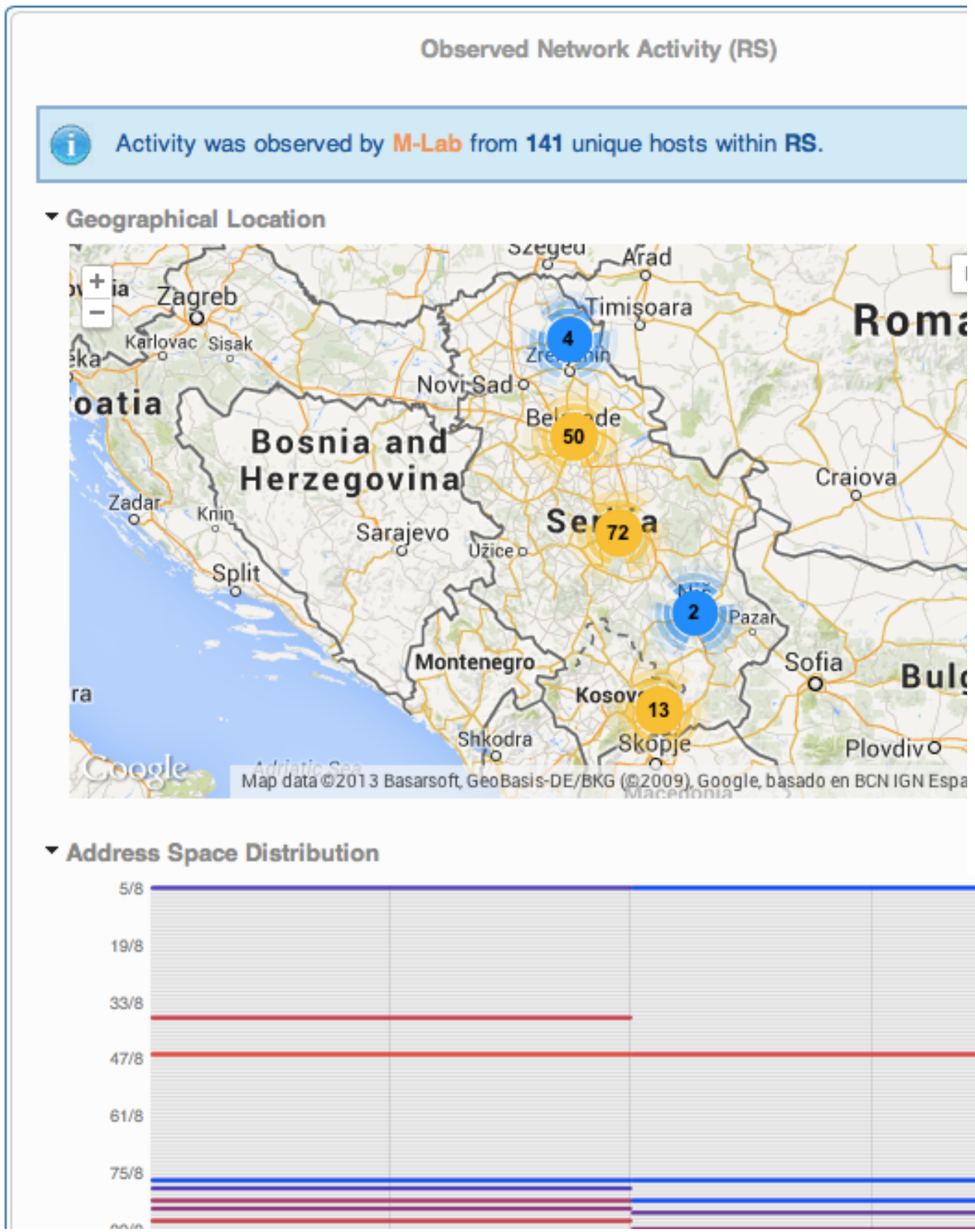
- Search by: IPv4, IPv6 address/prefix, AS Number, hostname, country, keywords (new)
- Web, widgets, data API, text service, mobile app
- Other features:
  - BGPlay2
  - Abuse Finder
  - Customisable “My Views”
  - History view for RIPE NCC members/LIRs
  - Embed widgets on your site

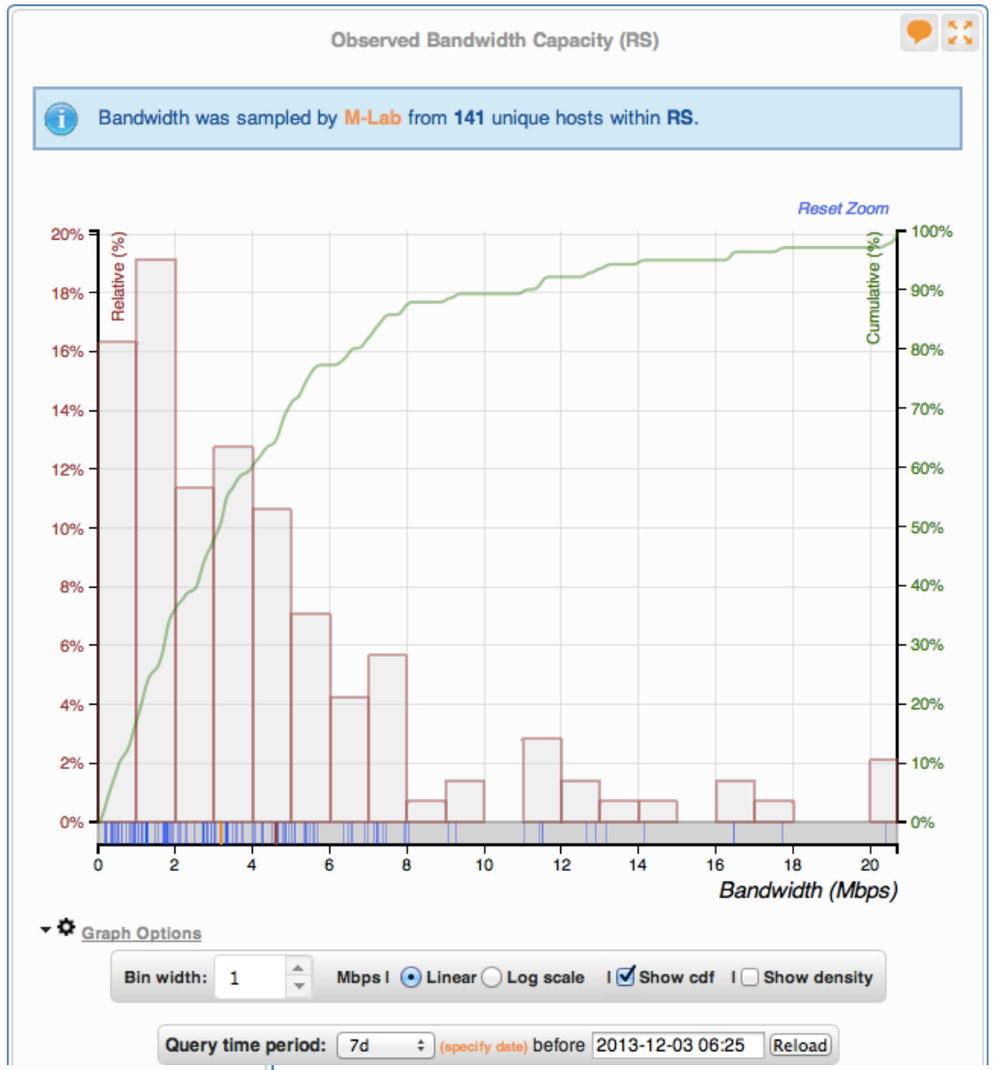
BGPlay is Back!

- The most popular visualisation tool has been revamped and implemented in a state-of-the-art web interface
- The most famous incident: YouTube hijacked by Pakistan Telecom
- https://www.ripe.net/internet-coordination/news/industry-developments/youtube-hijacking-a-ripe-ncc-ris-case-study
- Video: http://www.youtube.com/watch?v=IzLPKuAOe50



M-Labs Data for Serbia





RIPE NCC

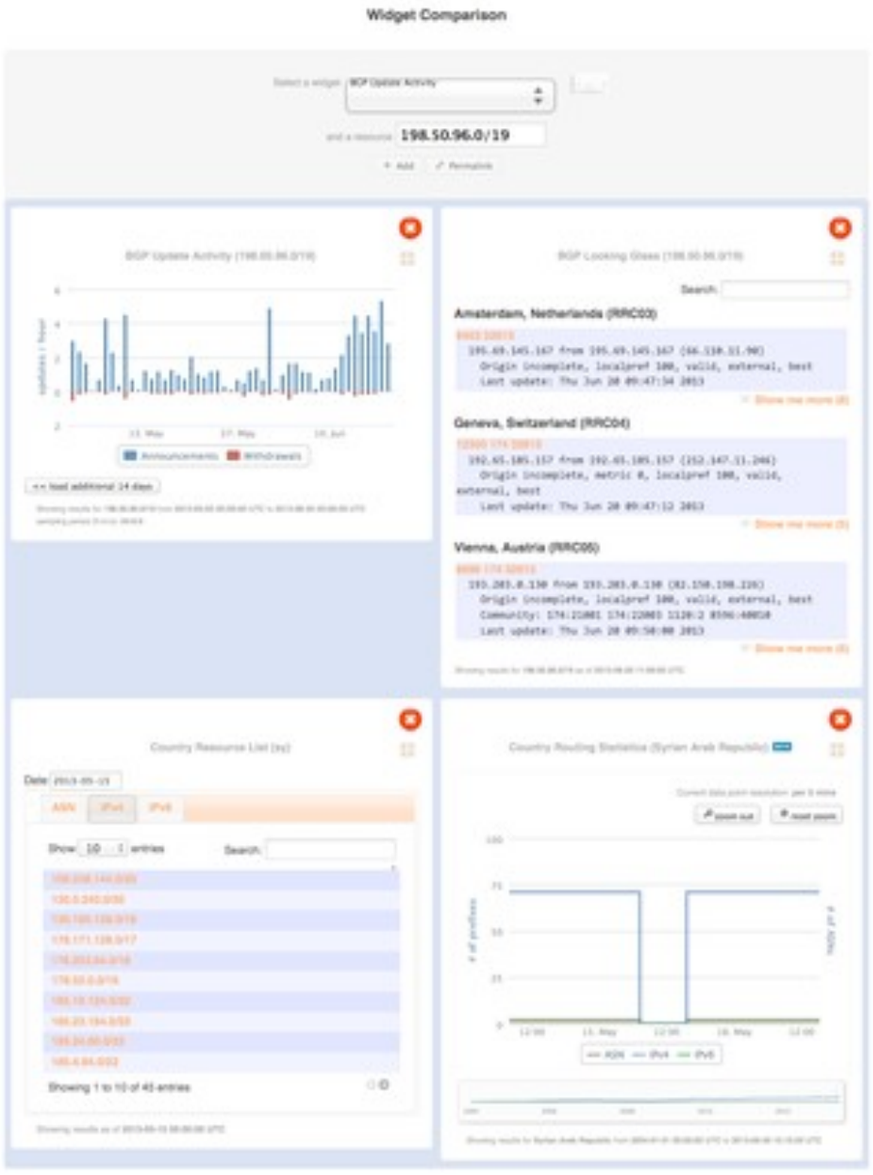
New Features

- Multiple widget and resource comparison
- In-widget comparison and monitoring
- Visualising bandwidth capacity and network activity using M-Lab data
- Old RIS interfaces integrated into RIPEstat
- Tighter integration with RIPE Atlas
  - Zoomable ping graph, Seismograph

Use Cases for Comparing Multple Widgets

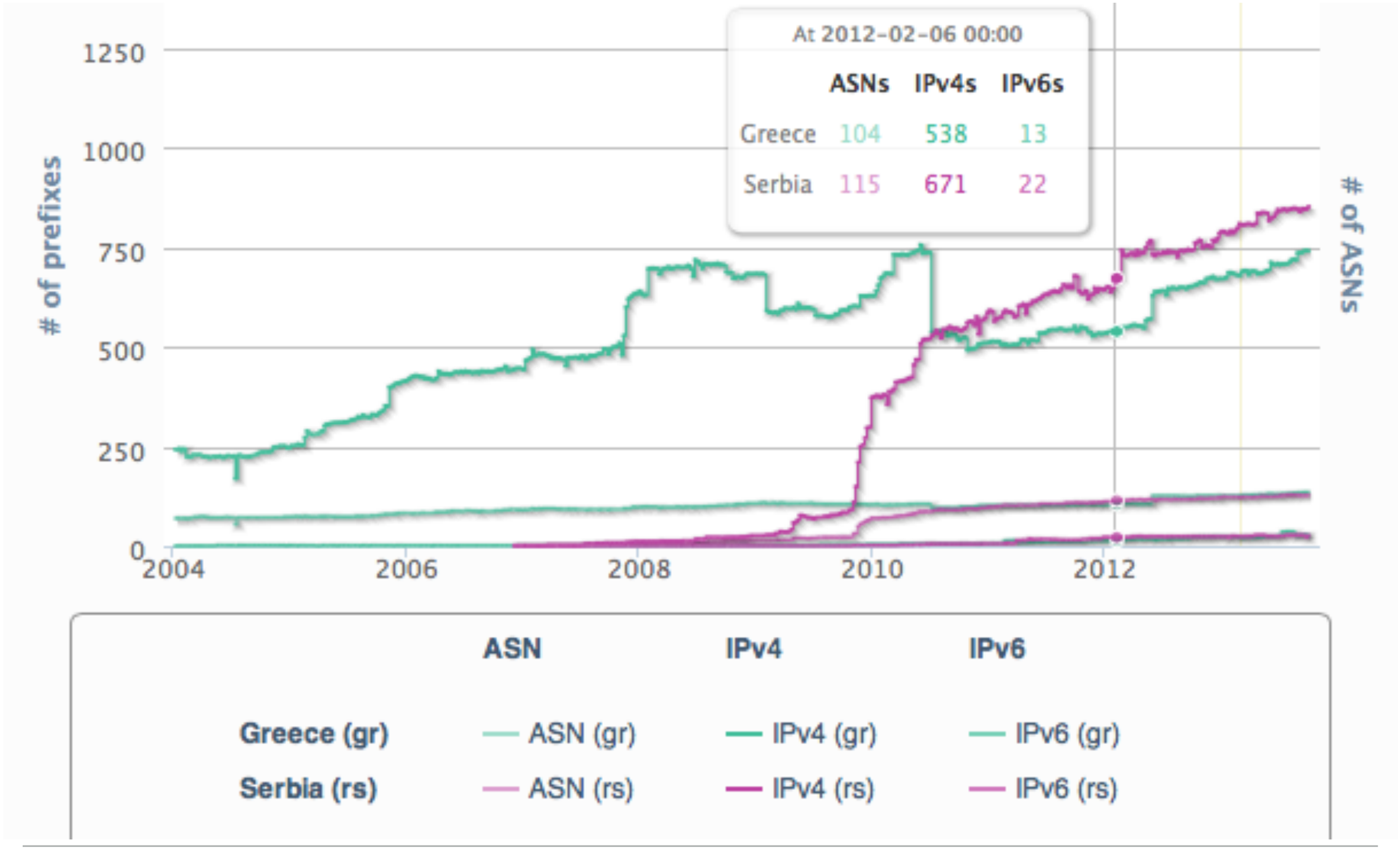
- Making peering decisions

- Country Outage



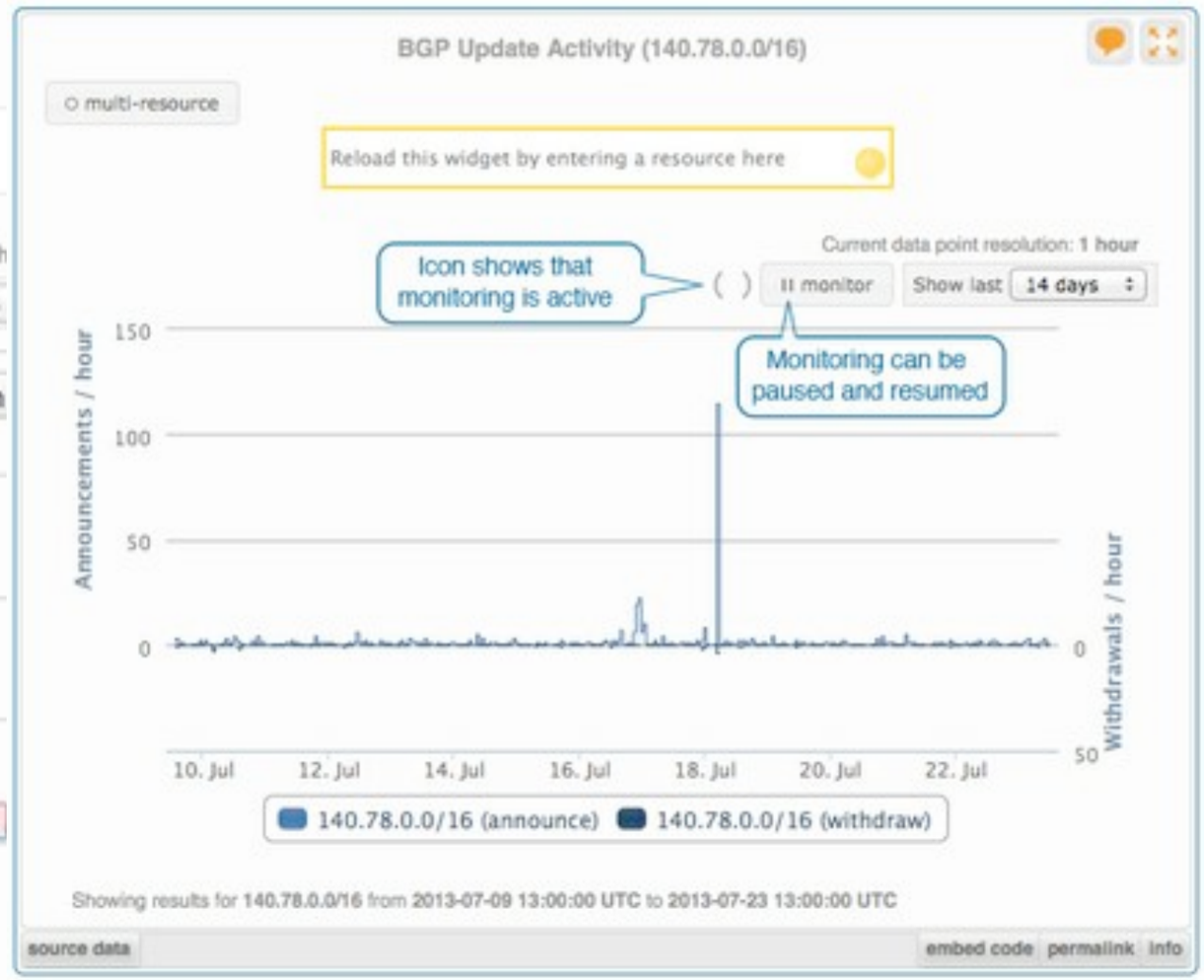
https://labs.ripe.net/Members/suzanne_taylor_muzzin/ripestats-multiple-widget-and-resource-comparison

In-widget Comparison: Serbia and Greece



RIPE NCC

BGP Comparison and Monitoring



RIPEstat Plans for the Future

- Add notable events to BGPlay2
- Improve back-end stability to enable resilience of current services and scale for future growth
- Increase data quality and consistency

- Tell us your feature requests:
  - http://roadmap.ripe.net/ripe-stat/