Using RIPE Atlas and RIPEstat for Network Analysis

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RIPEstat

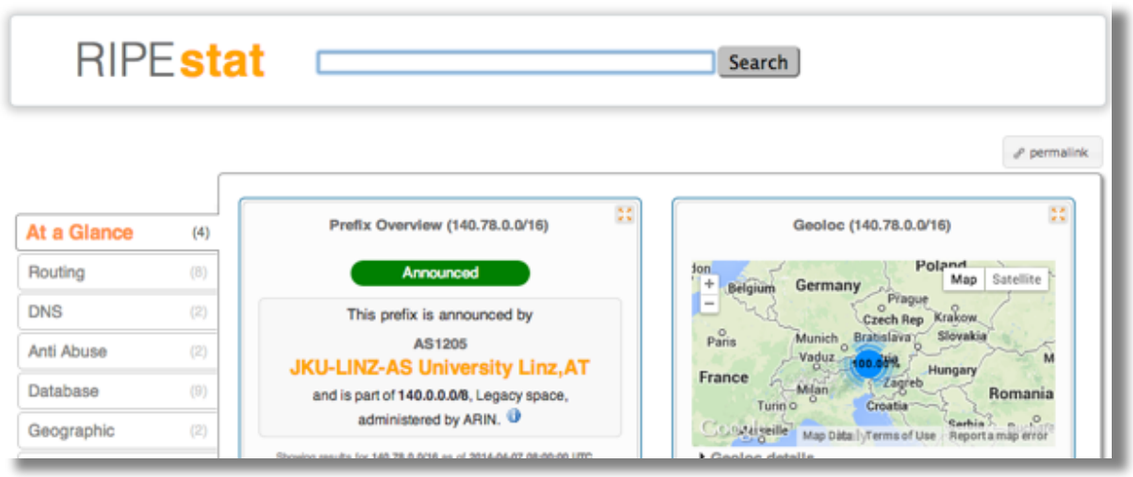
RIPE NCC

What is RIPEstat

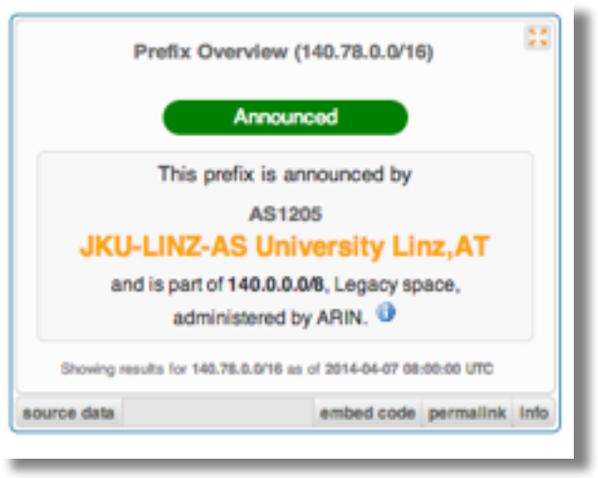
- Information system for Internet number resources
- Data
  - Routing data
    - Collected by RIS: http://ris.ripe.net
  - Registration data (whois)
    - RIPE Database & other RIR databases
  - MaxMind's geolocation data
  - Blacklist data
  - And many more: https://stat.ripe.net/data-sources

Interfaces Provided On RIPEstat

- RIPEstat Web



- RIPEstat Widget API



- RIPEstat Data API / RIPEstat Text API
  - https://stat.ripe.net/data/routing-status/data.json?resource=…

Lookup A Resource

- The result page

Use Case: Network Announced?

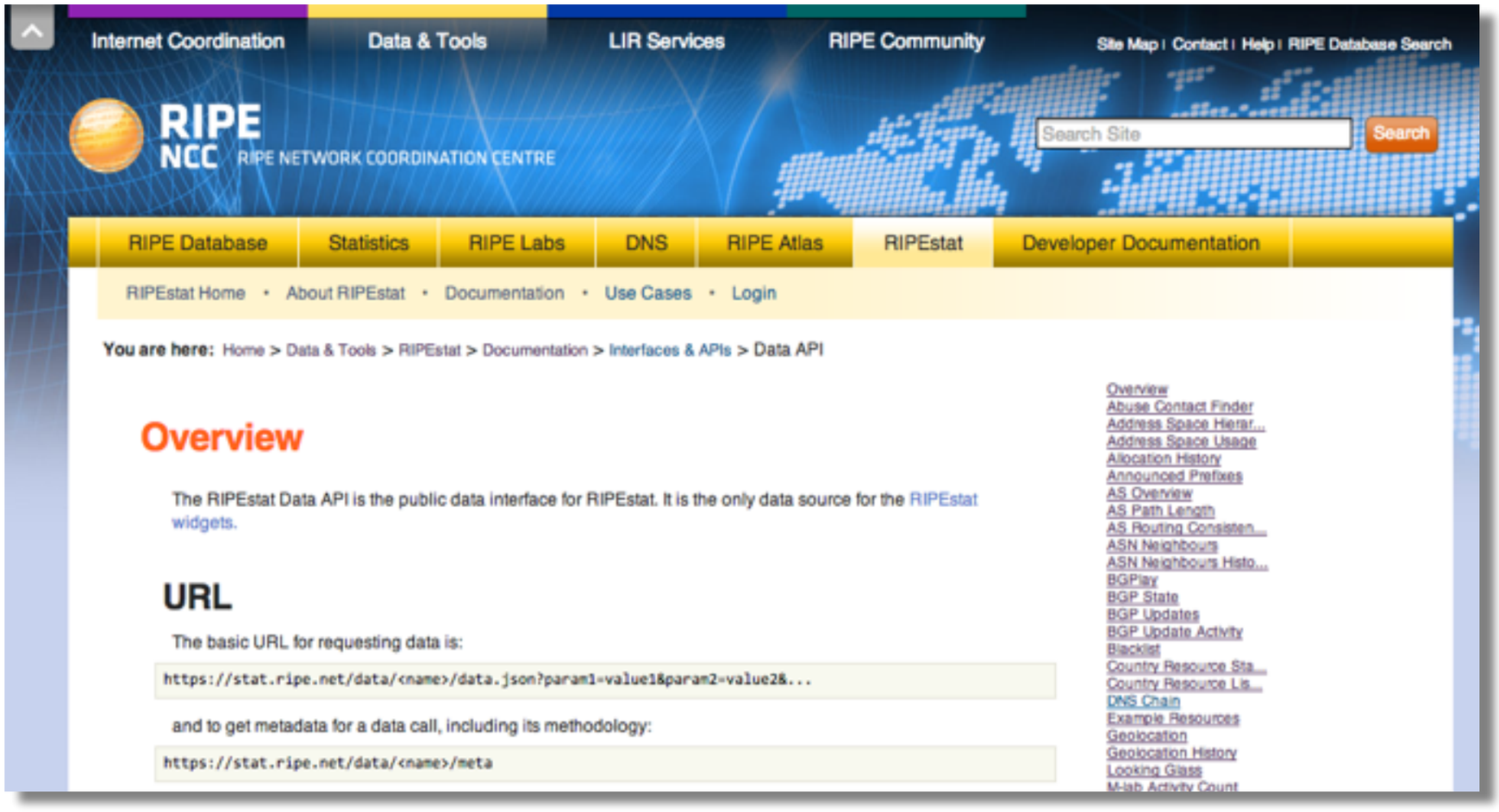
- Is my network announced?
  - https://stat.ripe.net/data/prefix-overview/data.json?resource=193/23


```
"cached": true,
"data": {
    "actual_num_related": 0,
    "announced": true,
    "asns": [
        {
            "asn": 3333,
            "holder": "RIPE-NCC-AS Reseaux IP Europeens Network Coordination Centre (RIPE NCC),NL"
        }
    ],
```


  - Feed it to your monitoring system (e.g. Icinga, Nagios…)
  - Build a custom application

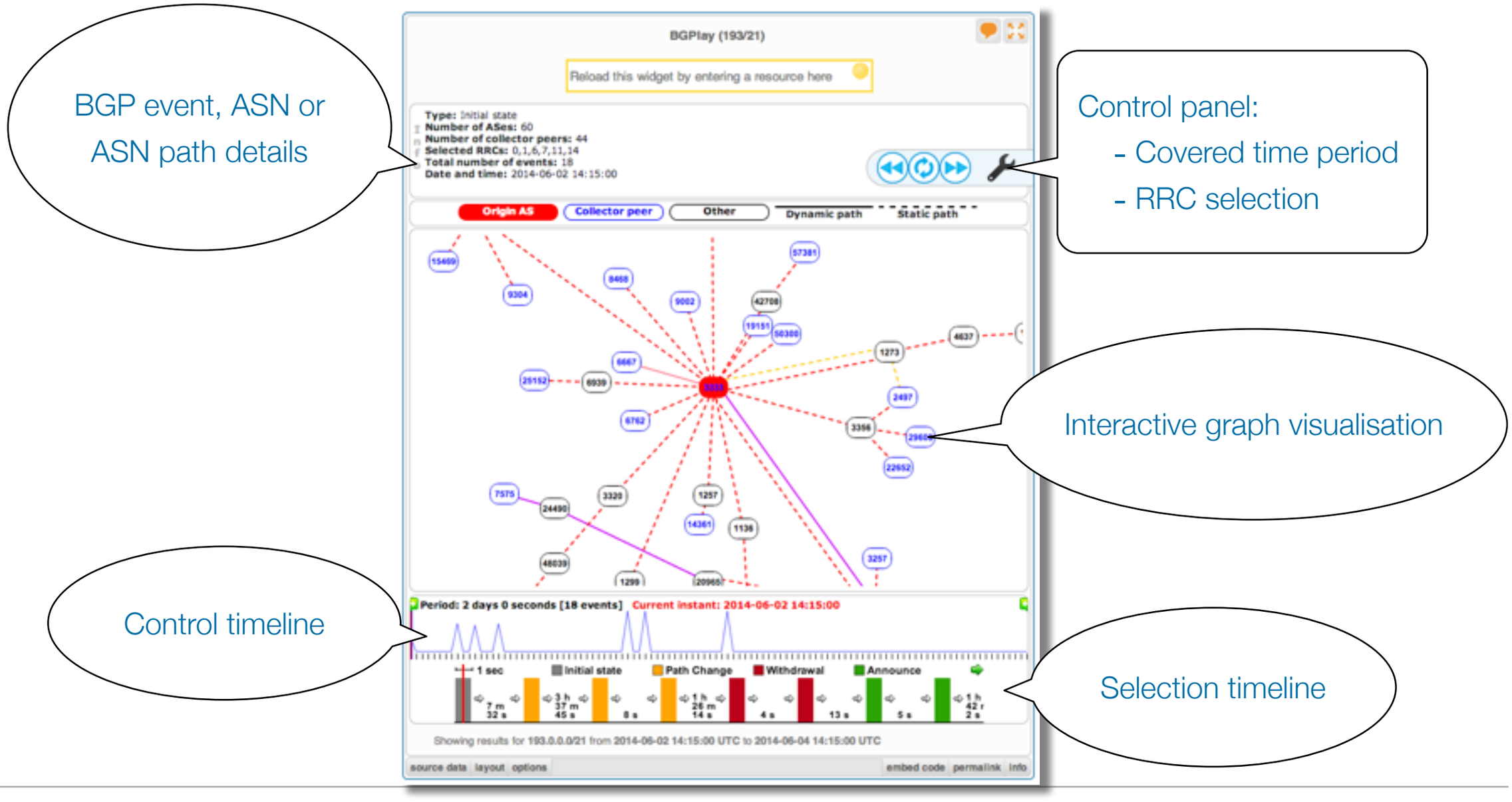
Use Case: Prefix Announced?

- Explore the RIPEstat Data API
  - With 40+ data calls
  - https://stat.ripe.net/docs/data_api



Use Case: BGPlay

- Analyse the routing status for your network!
  - https://stat.ripe.net/bgplay



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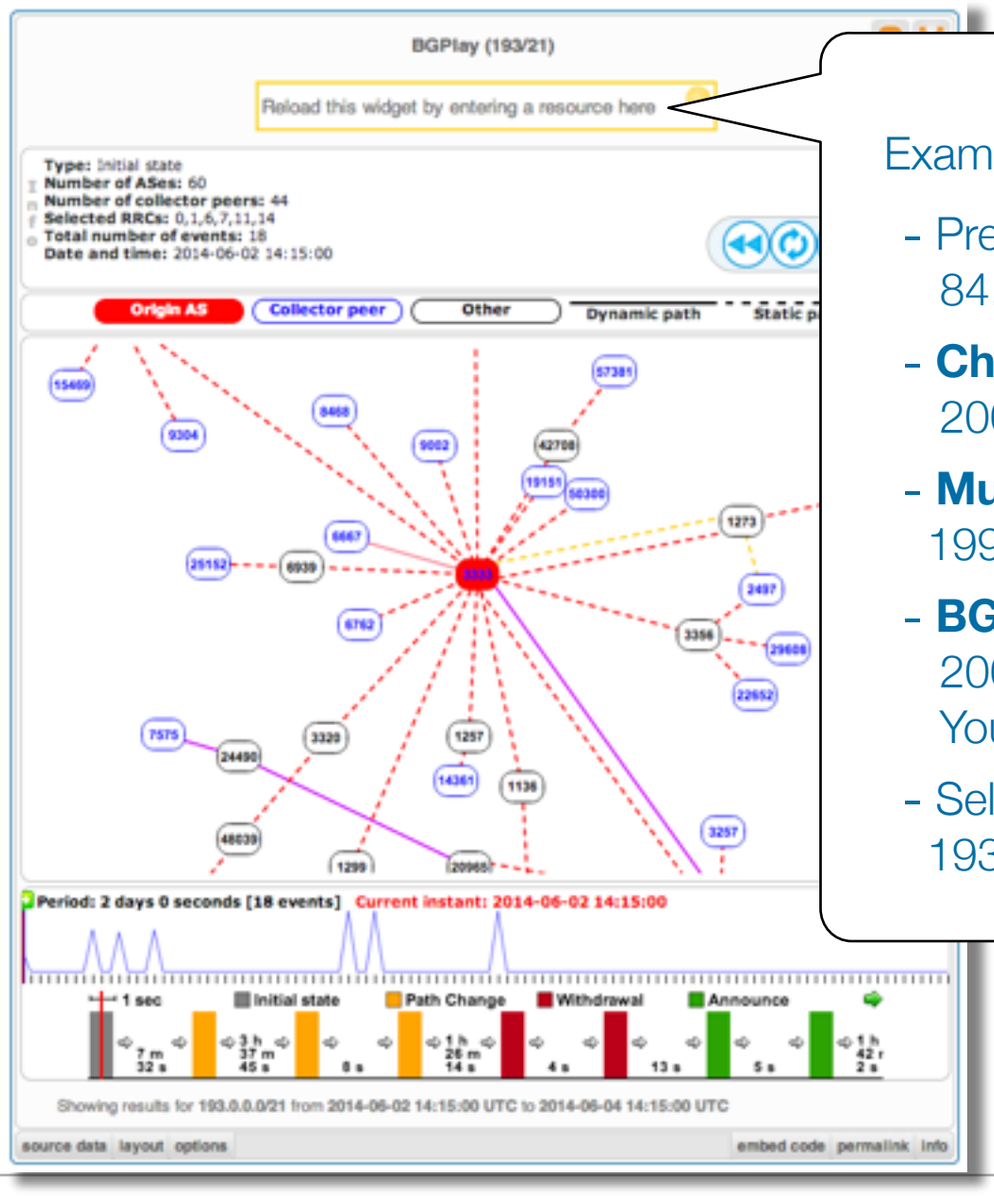


Examples:

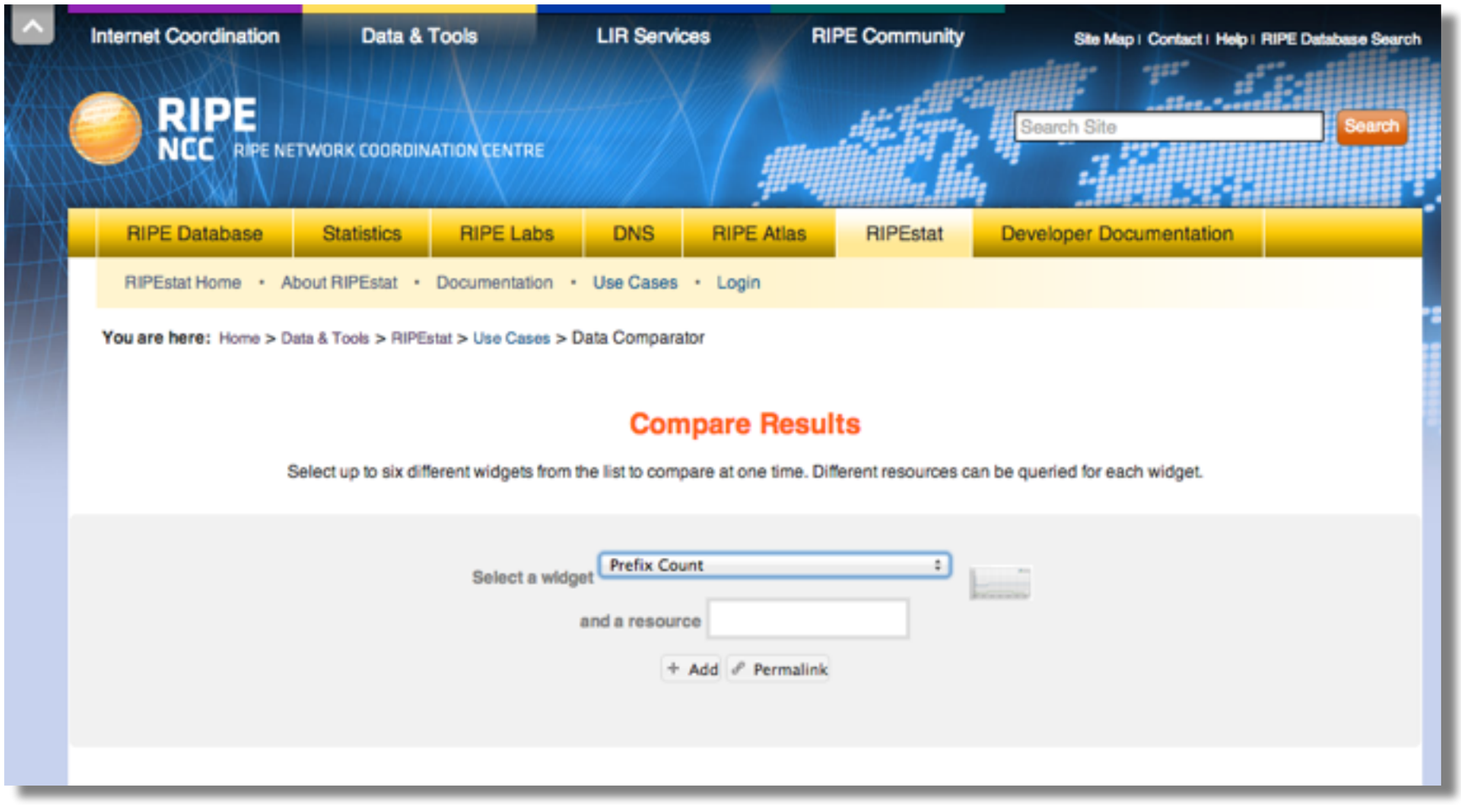
- Prefix with **announcements** & **withdrawals**: 84.205.64.0/24
- **Check IPv6 connectivity**: 2001:67c:2e8::/48
- **Multi-homed** prefix: 199.7.80.0/24
- **BGP-Hijacking**
  2008-02-28: 208.65.153.0/24
  Youtube traffic by Pakistan Telecom AS17557
- Selective BGP **Blackholing** 193.33.96.64

Use Case: Prefix Announced?

- Explore the RIPEstat Widget API
  - With 46 widgets
  - https://stat.ripe.net/widget/list

Use Case: Compare Results

- Compare the number of routed prefixes of two ASNs?
  - https://stat.ripe.net/special/compare-results



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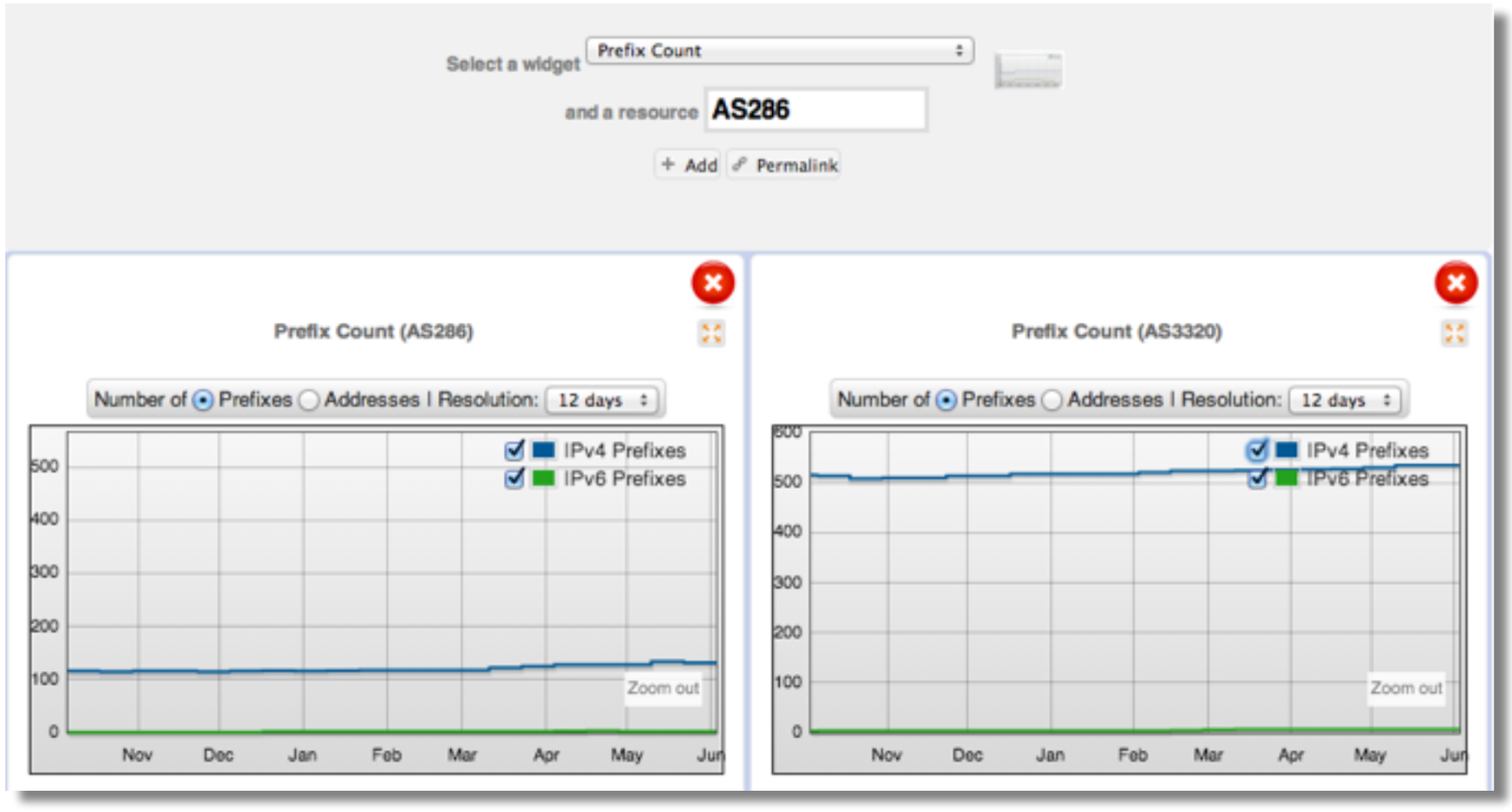

RIPE Atlas

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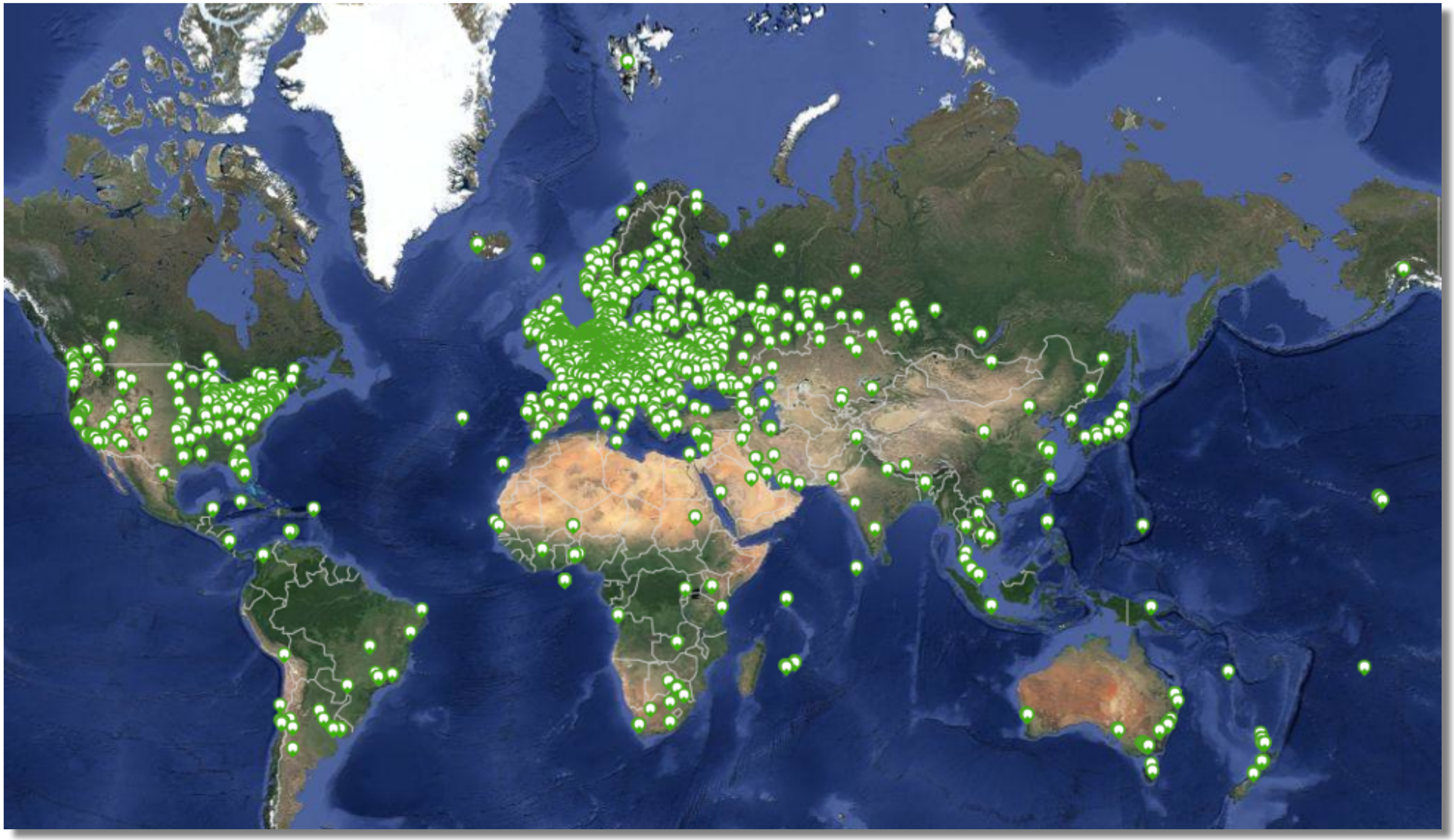
https://atlas.ripe.net



RIPE NCC

Credit System

- By hosting a probe, you earn credits
- To perform measurements, you spend credits
  - pings costs 10 credits, traceroutes costs 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

RIPE Atlas in Numbers: June 2014

- 6,200+ probes connected
- 8,000+ active users this year
- Doing:
  - Built-in measurements
  - User-defined measurements
  - Four types of user-defined measurements available to probe hosts and RIPE NCC members: ping, traceroute, DNS, SSL

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

- Goal by end of 2014:
  - 10,000 connected probes

Measurement Devices

- v1 & v2: Lantronix XPort Pro

- v3: TP-Link TL-MR3020 powered from USB port
  - Does not work as a wireless router
  - Same functionality as the old probe

- RIPE Atlas anchor: Soekris net6501-70

Measurement Devices

- Distribution model changed!
  - https://labs.ripe.net/Members/fatemah_mafi/changes-to-the-distribution-model-for-ripe-atlas-probes

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
- 60 RIPE Atlas anchors
  - Goal for end of 2014: 100 anchors worldwide

Network Monitoring

- Network operators use tools for monitoring health of networks
  - Nagios & Icinga
- Tools can receive input from RIPE Atlas, via API
- Benefits:
  - Doing pings from 1,000 out of 6,000+ probes around the world
  - Looking at your network from the outside
  - Plug into your existing practices

Integration with Monitoring Systems

- Three easy steps:

1. Create a RIPE Atlas ping measurement

2. Go to “Status Checks” URL

3. Add your alerts in Icinga or Nagios

- https://labs.ripe.net/Members/suzanne_taylor_muzzin/introducing-ripe-atlas-status-checks

Monitoring Systems

- Quick-Look Measurement
  - For RIPE NCC members only

Success Stories

- 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

The RIPE Atlas Community GitHub

- Probe code & data analysis:
  - https://github.com/RIPE-Atlas-Community/

- Code to make your analysing life easier:
  - Parser for measurement data
  - https://github.com/RIPE-NCC

Feedback

- RIPEstat
  - stat@ripe.net
  - https://stat.ripe.net
- RIPE Atlas
  - atlas@ripe.net
  - https://atlas.ripe.net
- On Twitter
  - @RIPE_Atlas, #RIPEAtlas & #RIPEstat
- On RIPE Labs (https://labs.ripe.net)
- http://roadmap.ripe.net

Questions?