RIPEstat, RIPE Atlas

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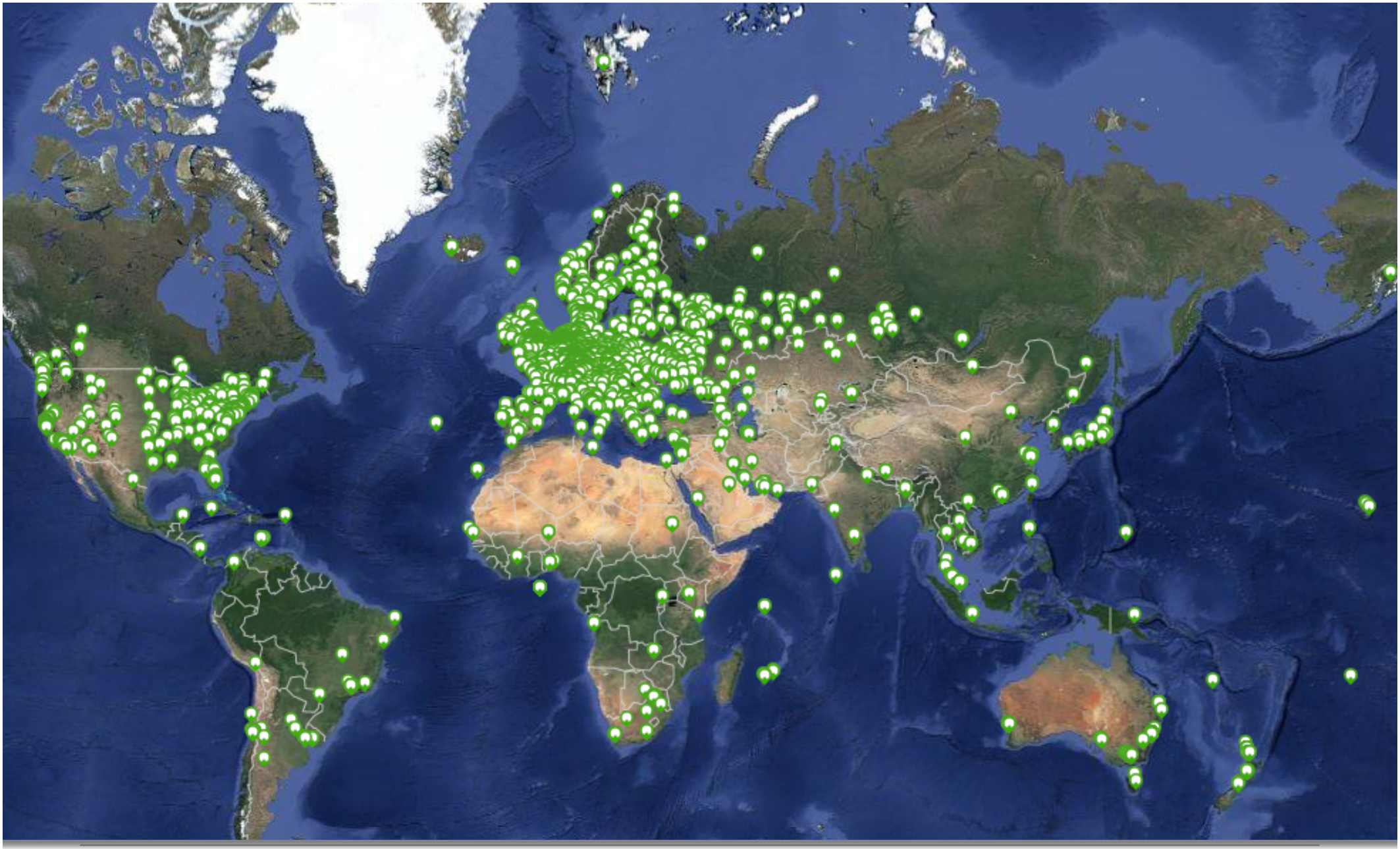
(retired from RIPE NCC)

EU SMART workshop, April 2015,
Barcelona



Network Monitoring

- Network operators use tools for monitoring health of networks
  - Ex: Nagios & Icinga
- Tools can receive input from RIPE Atlas, via API
- Benefits:
  - Pings from 1,000 out of 5,000+ 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

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

1.5 Credit System

- To perform measurements, you spend credits
  - Ping costs 10 credits, traceroute costs 20, etc.
- Credits ensure fairness and protect from overload
- By hosting a probe, you earn credits
- Extra credits can be earned by:
  - Being a RIPE NCC member
  - Hosting a RIPE Atlas anchor or probe
  - Sponsoring RIPE Atlas
- 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:
  - Threshold for % of probes that successfully received reply
  - How many most recent measurements to base the status on
  - Maximum acceptable packet loss
- 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 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 DNS

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

RIPE Atlas Update

RIPE Atlas: April 2014

- 8000+ active probes
- 7,000+ active users
- 52+ active RIPE Atlas anchors

- Four types of customised measurements available to probe hosts and RIPE NCC members: Ping, Traceroute, DNS, SSL

Country	Probes
United States	855
Germany	819
Russian Federation	724
United Kingdom	604
Netherlands	458
France	398
Ukraine	364
Belgium	184
Italy	166
Czech Republic	161

- see: https://atlas.ripe.net/

Welcome to RIPE Atlas!

With your help, the RIPE NCC is building the largest Internet measurement network ever made. RIPE Atlas employs a global network of probes that measure Internet connectivity and reachability, providing an unprecedented understanding of the state of the Internet in real time.

Find out how to get involved →

System Statistics

Probes connected to RIPE Atlas	8146
Measurements currently running	8094
Results collected per second	2638

Current Sponsors

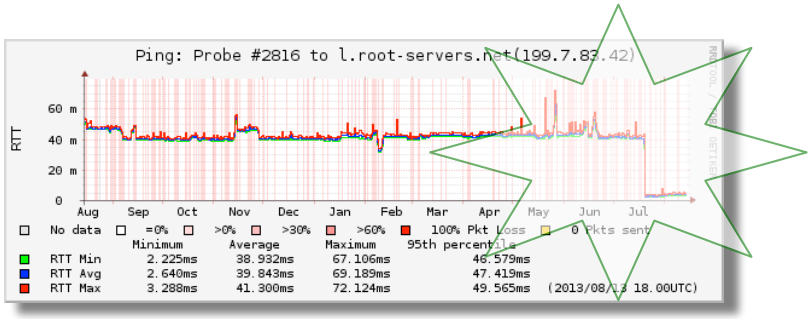
Measurement Devices

- 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

RIPE Atlas Anchors

- Anchors: well-known targets and powerful probes
  - Regional baseline & “future history”
- Anchoring measurements
  - Measurements between anchors
  - 200 probes target each anchor with measurements
  - Each probe measures 4-5 anchors
- Vantage points for new DNSMON service
- Host are responsible for the hardware
- Benefits: https://atlas.ripe.net/about/anchors/

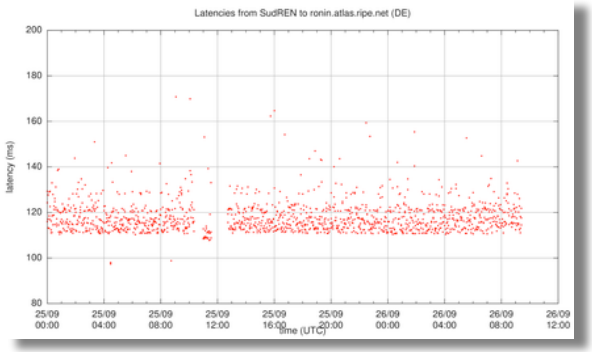
- IXP: Measuring the effect of installing L-root in Belgrade/SOX



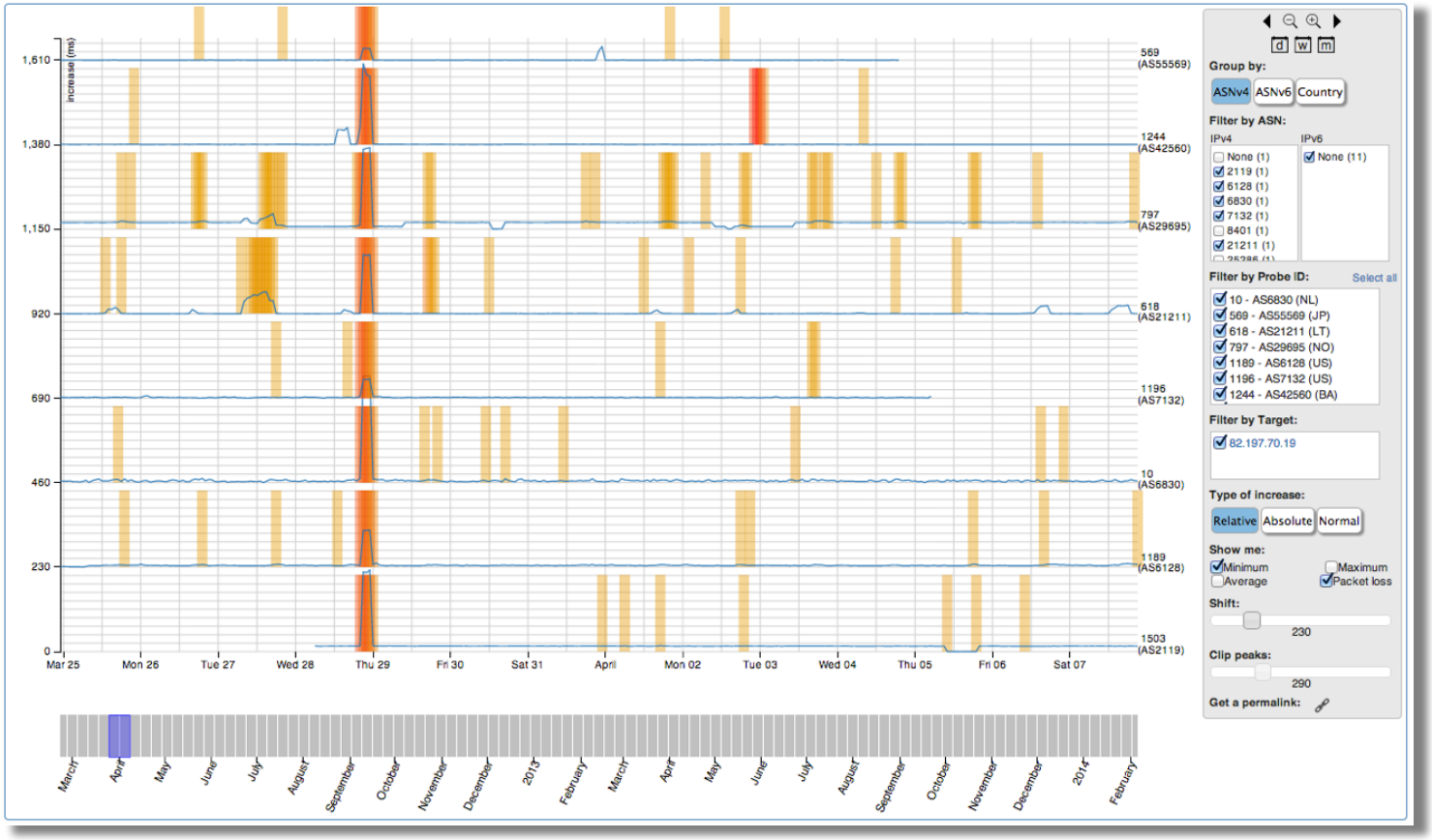
- DNS: Looking for most popular instances of .FR anycast servers

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%

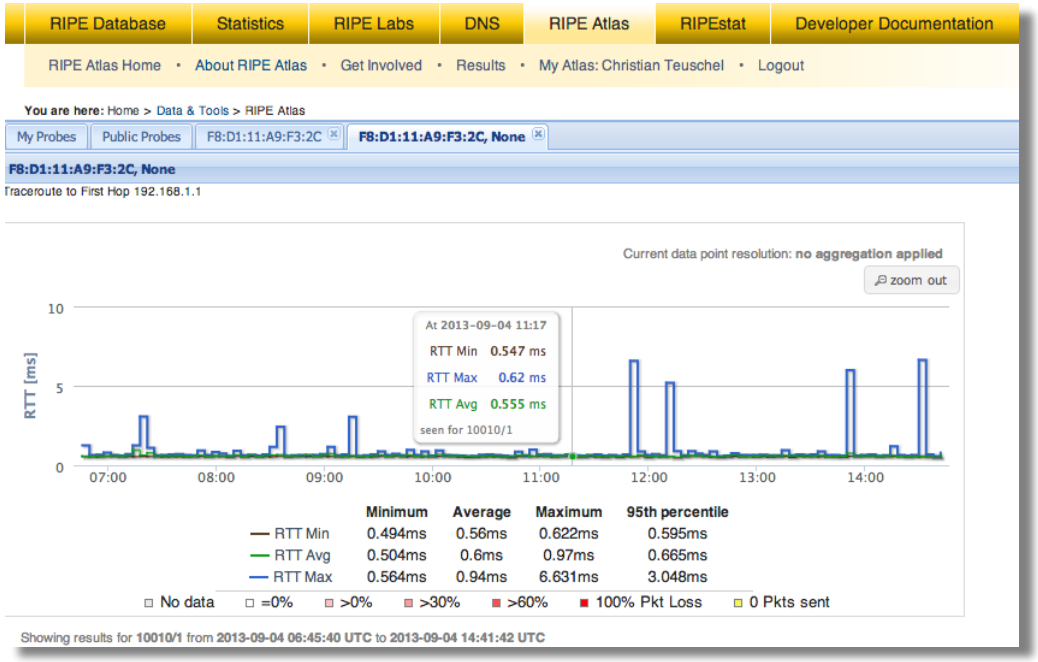
- Events: Measuring Internet outage in Sudan



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



- 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)



Plans For The Future

- Tagging probes and measurements as “My Favourites” for easy viewing and selection
- More IPv6-related features
- Increasing probe distribution via RIR cooperation
- Tell us your feature requests:
  - http://roadmap.ripe.net/ripe-atlas/

RIPE Atlas Community

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

Become an Ambassador

- If you want to...
  - Help distribute probes
  - Give workshops, tutorials and promote RIPE Atlas
- To become an ambassador:
  - email mcb@ripe.net and we'll ship you some probes
  - https://atlas.ripe.net/go/ambassadors
- Or consider becoming a sponsor:
  - https://atlas.ripe.net/go/sponsors

RIPE Atlas 2013 Sponsors

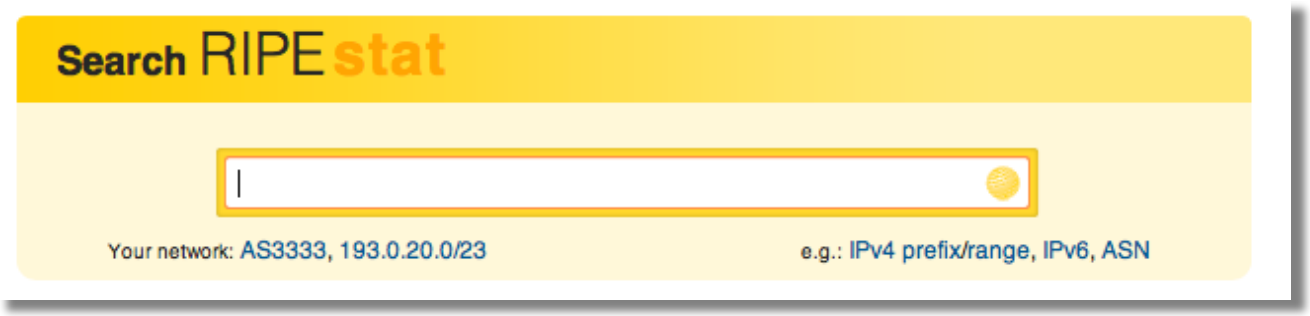
RIPE NCC


:db8:abc
03:10ff 198.
b8:bf98:3080:
198.51.100.14
80::cb00:13be
b8:19f2:80::1
21d:2209:bc:80
001:db8::109
fof 198.51.
001:db

RIPEstat

https://stat.ripe.net

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



- Search by:
  - IPv4 or IPv6 address/prefix
  - AS Number
  - Hostname
  - Country
  - Keywords (new)
- Data includes:
  - RIPE NCC: registration data and RIPE Database, routing (RIS), reverse DNS, RIPE Atlas measurements
  - External sources: IRR, RIRs, geolocation, blacklists, M-Lab network activity
- Web, widgets, data API, text service, mobile app

Other features:

- BGPlay2
- Abuse Finder
- Customisable “My Views”
- History view for RIPE NCC members
- Embed widgets on your site

New Features

- Multiple widget and resource comparison
- In-widget comparison and monitoring
- Visualising bandwidth capacity and network activity using M-Lab data
- Main old RIS interfaces integrated into RIPEstat
- Tighter integration with RIPE Atlas
  - Zoomable ping graph, Seismograph
- Used extensively for Assisted Registry Checks by Registration Services and LIRs

RIPEstat - Data API

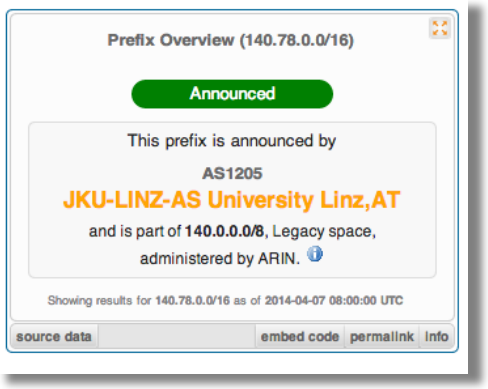
- RESTful API
- Output: JSON, YAML

```
- data: {
  - first_seen: {
        origin: "39556",
        prefix: "2001:67c:b0::/48",
        time: "2009-12-11T16:00:00"
    },
  - last_seen: {
        origin: "5580",
        prefix: "2001:67c:b0::/48",
        time: "2014-05-14T16:00:00"
    },
    less_specifics: [ ],
    more_specifics: [ ],
  - origins: [
      - {
            origin: 5580,
          - route_objects: [
                "RIPE"
            ]
        }
    ],
    query_time: "2014-05-14T16:00:00",
    resource: "2001:67c:b0::/48",
```

- Documentation:
  - https://stat.ripe.net/docs/data_api.html

RIPEstat - Widget API

- “Graphical UI for Data API”
- Build on web standards (HTML, CSS & Javascript)



- Documentation:
  - https://stat.ripe.net/docs/widget_api.html

Questions & Feedback

- https://stat.ripe.net/index/about-ripestat
- Email:
  - stat@ripe.net
- RIPE Labs:
  - https://labs.ripe.net/ripestat

Contact Us

- 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
- Articles & updates on RIPE Labs: https://labs.ripe.net/atlas
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas

Questions?