Network Measurements & Tools for Researchers and Operators

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Overview

- What is the RIPE NCC
  - Services, partners, service region
- Network measurements:
  - RIPE Atlas
- Accessing data and statistics:
  - RIPEstat
- Pulling it all together
  - RIPE Labs
- Further reading

Introduction to the RIPE NCC

RIPE NCC

The RIPE Network Coordination Centre

- Established in 1992 by the RIPE community
  - Initially part of the academic network association
  - Since 1997 a membership association under Dutch law
  - Not for profit, independent, neutral, open
  - Main offices in Amsterdam; staff in Dubai and Moscow
- Funded by the membership
  - 11,500 members from 76 countries
  - Initially mostly ISPs and universities
  - Now also traditional industries, small Internet companies
- One of five Regional Internet Registries

RIPE NCC Activities

- Member services
  - Resource distribution (IPv4, IPv6, ASNs)
  - Resource Certification (RPKI)
  - Trainings
- Public services
  - RIPE Database
  - Reverse DNS
  - Operating K-root server
  - Operator tools
  - Data sharing
  - Open meetings

Regional Internet Registries

RIPE Atlas: Active Network Measurements

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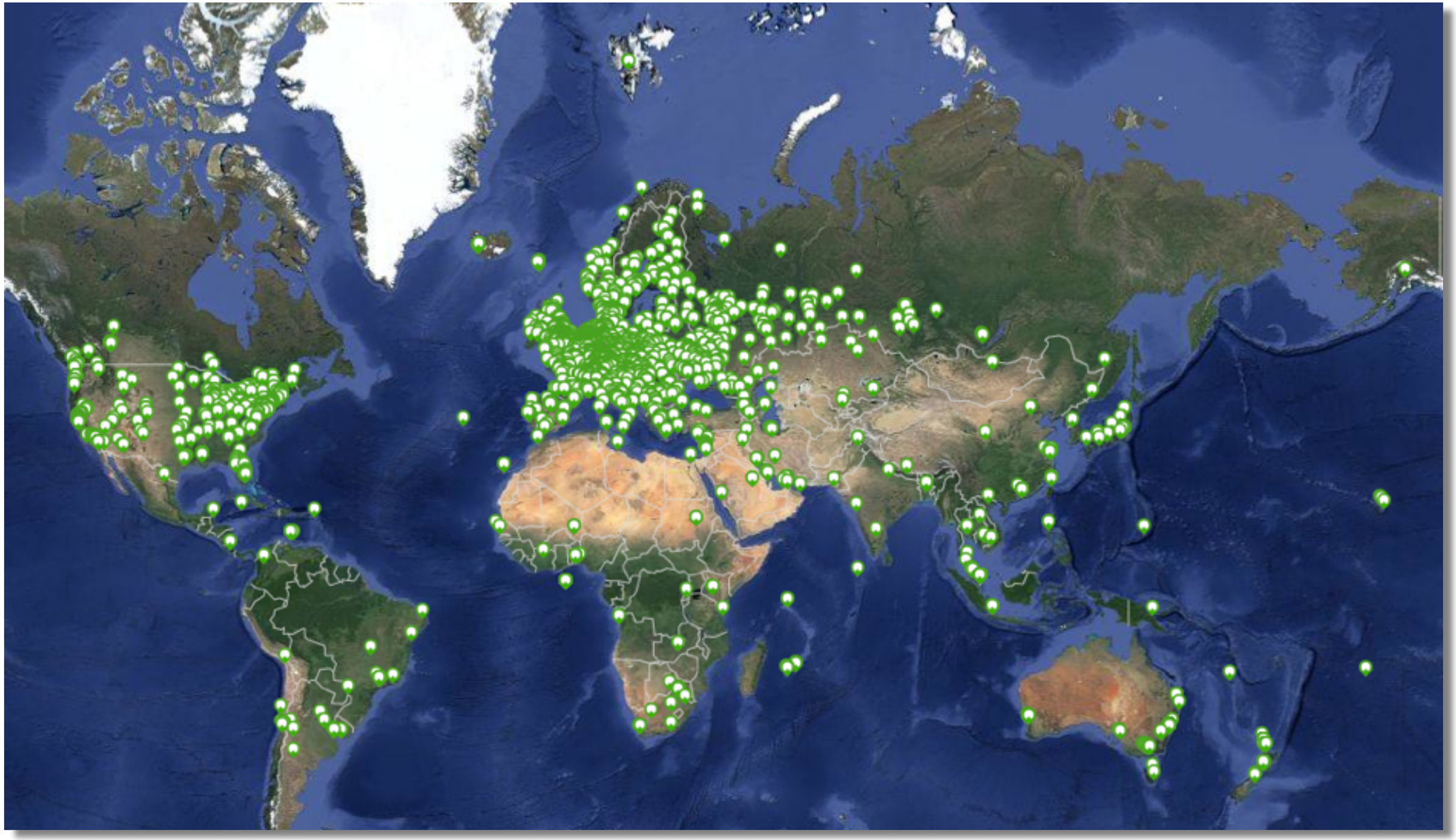
Global Active Measurement Network

- Instead of small individual measurement networks, build one global, common platform
- Thousands of measurement devices (probes)
- Hosted by volunteers
- Probes run difference measurements
  - Ping, traceroute, DNS, SSL/TLS and **NTP** (new)
- Users can run customised measurements
- Data publicly available
  - For research, operations etc.

RIPE Atlas Coverage



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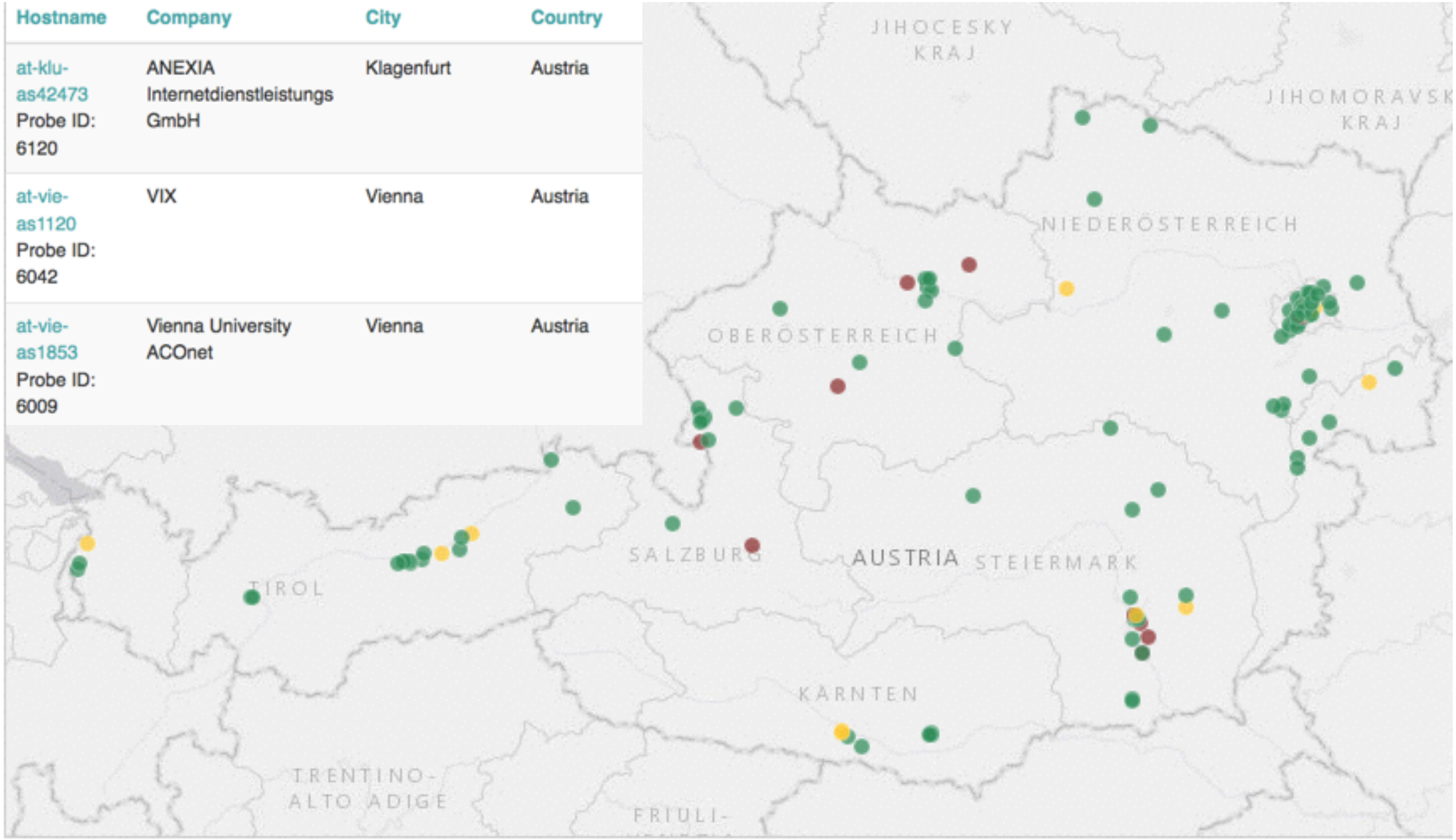
RIPE Atlas in Austria (Probes & Anchors)

Hostname	Company	City	Country
at-klu-as42473 Probe ID: 6120	ANEXIA Internetdienstleistungs GmbH	Klagenfurt	Austria
at-vie-as1120 Probe ID: 6042	VIX	Vienna	Austria
at-vie-as1853 Probe ID: 6009	Vienna University ACOnet	Vienna	Austria



Connected: 158 Disconnected: 18 Abandoned: 17

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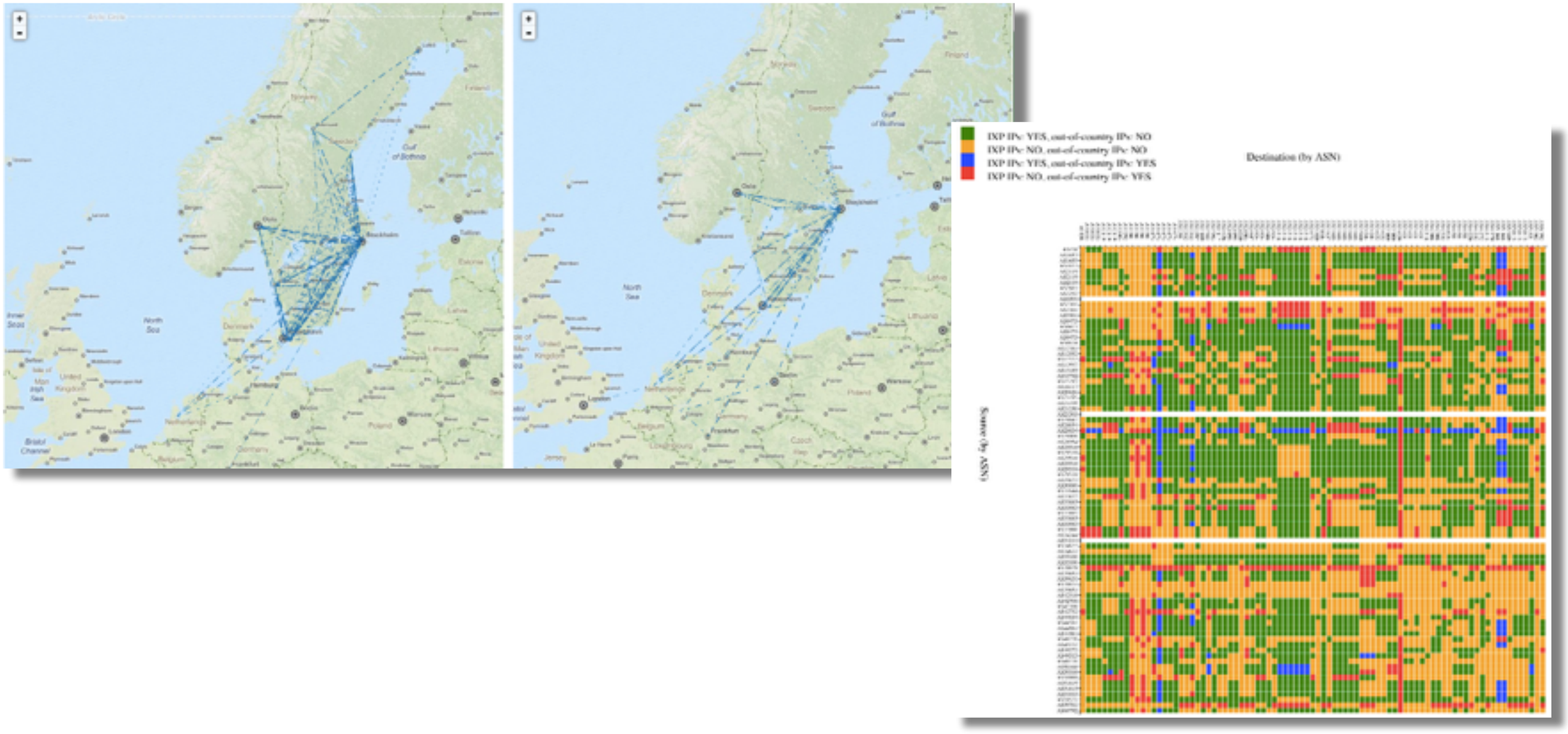
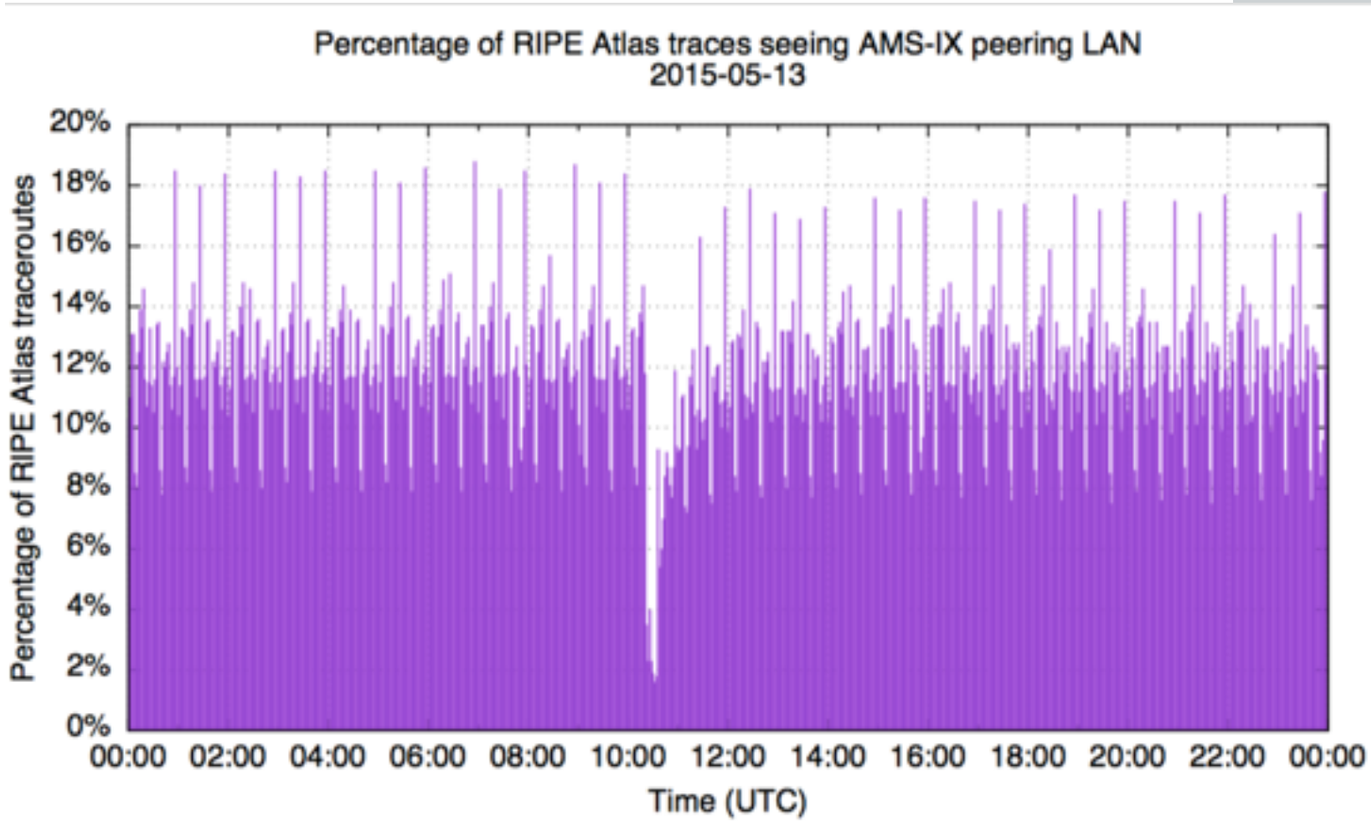
Is Local Traffic Staying Local?

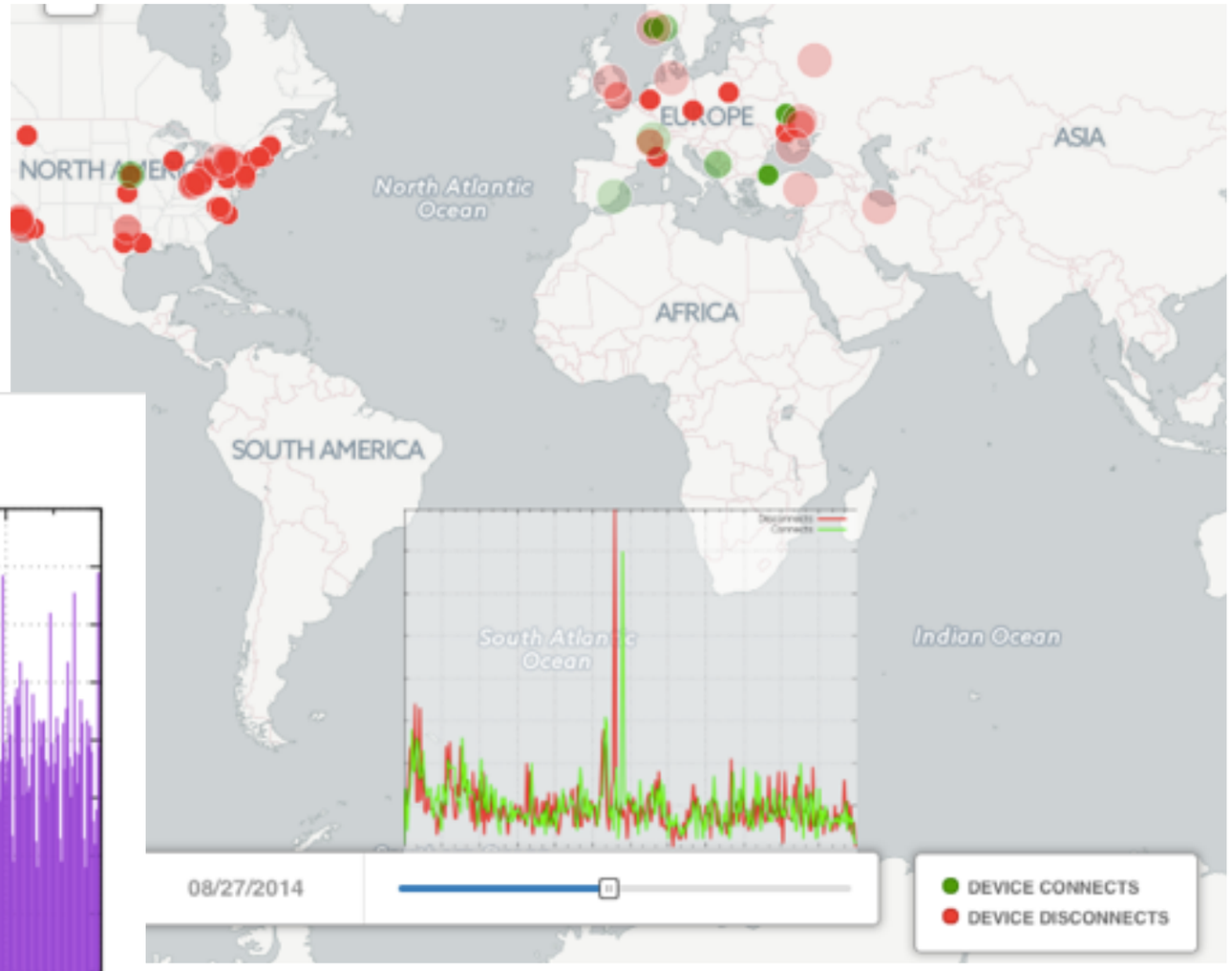
- IXP-Country-Jedi



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

Visualising Network Outages





- https://labs.ripe.net/Members/kistel/the-ams-ix-outage-as-seen-with-ripe-atlas
- https://labs.ripe.net/Members/andreas_strikos/amsterdam-power-outage-as-seen-by-ripe-atlas

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RIPEstat: Accessing Data and Providing Statistics

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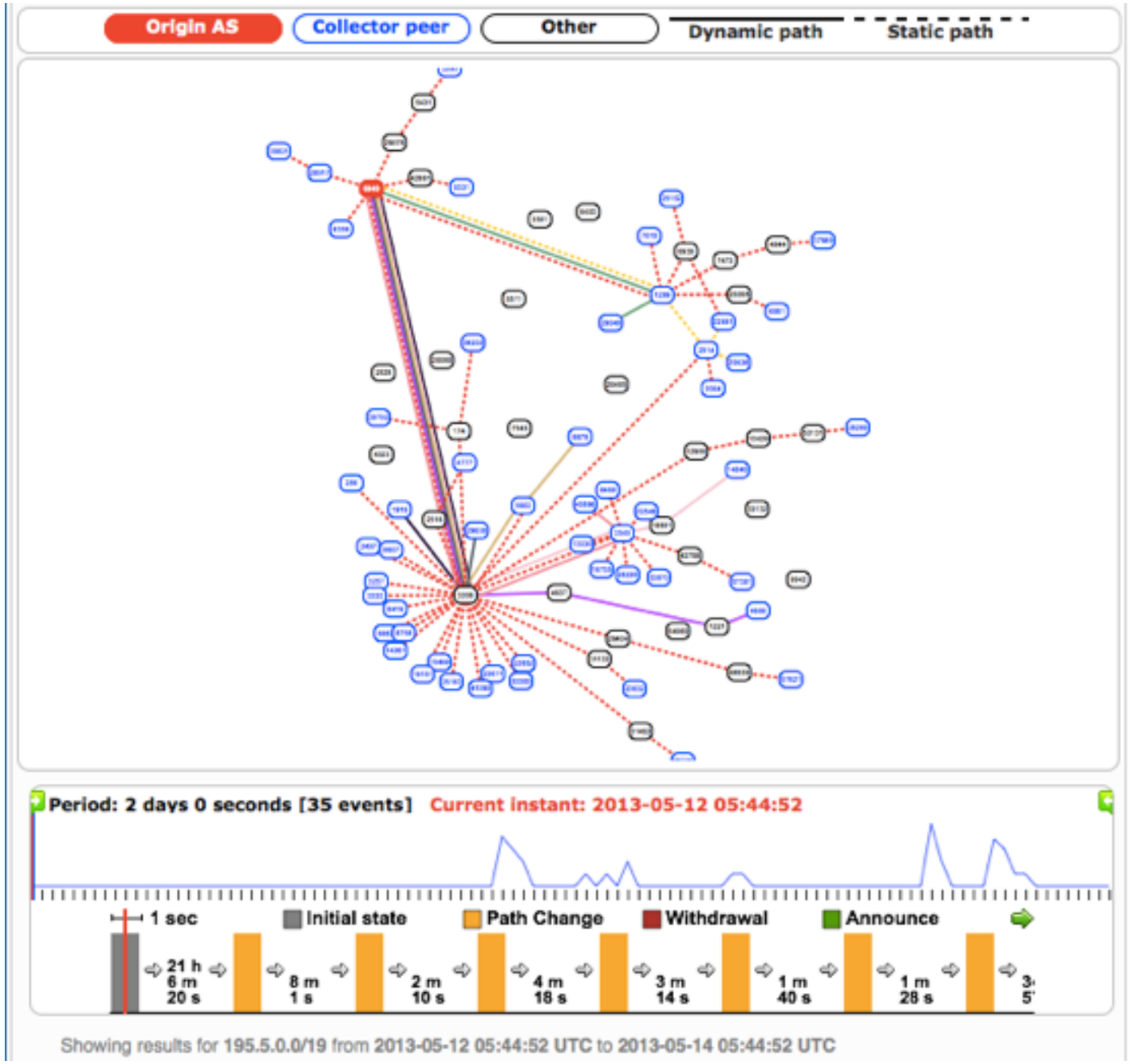
What is RIPEstat?

- Toolbox
- All data in one place
- Routing, IP, geoloc, black lists, history
- Graphical interface
- Organised as widgets
- Can be customised

Country Specific Statistics

- IPv4, IPv6, ASNs in a given country over time
- Comparison of countries possible

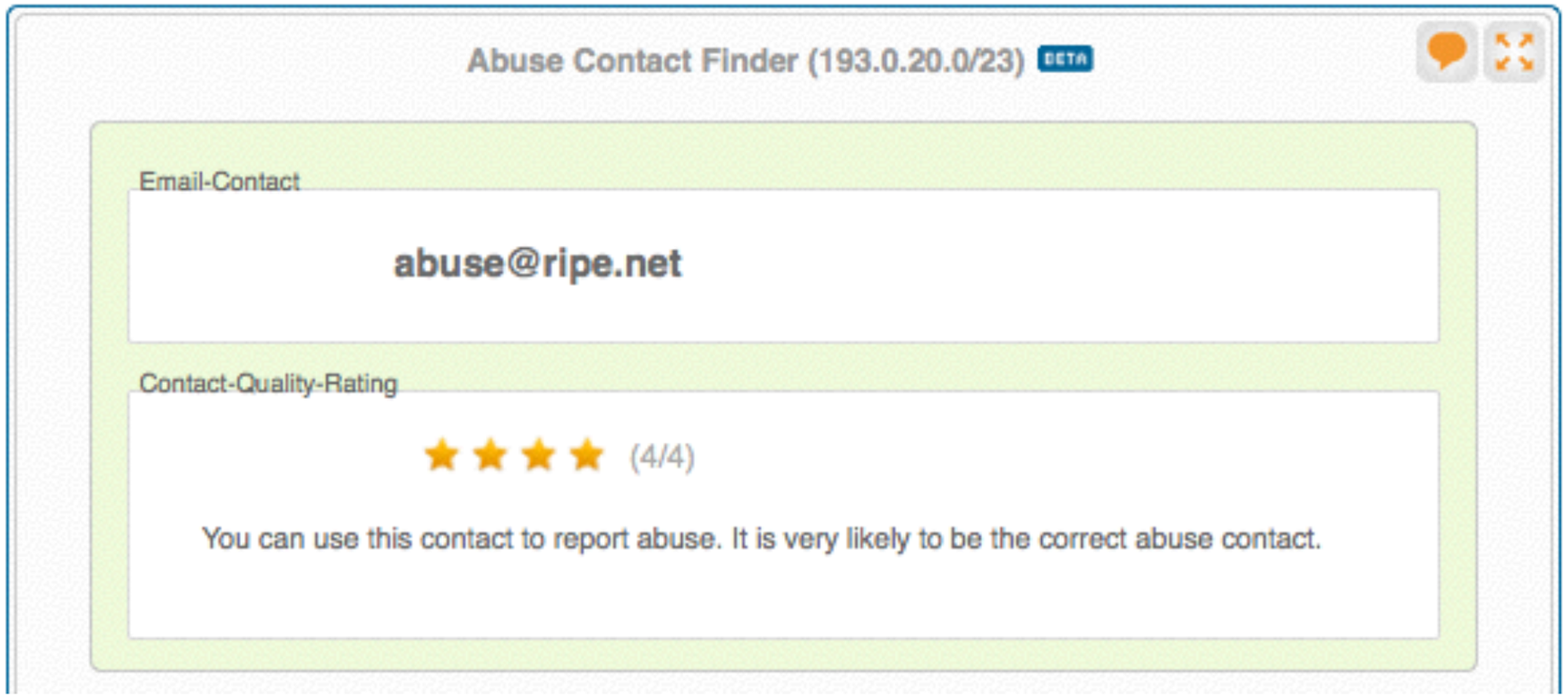
BGPlay Integrated in RIPEstat



- Graphical visualisation of BGP updates
- Animated graphs of routing activity
- Collaboration with Roma Tre University

Abuse Finder

- Finds potential contacts to report network abuse
- Rates quality of information found
- Abuse contacts required in RIPE Database



RIPE Labs: Information for Researchers and Operators

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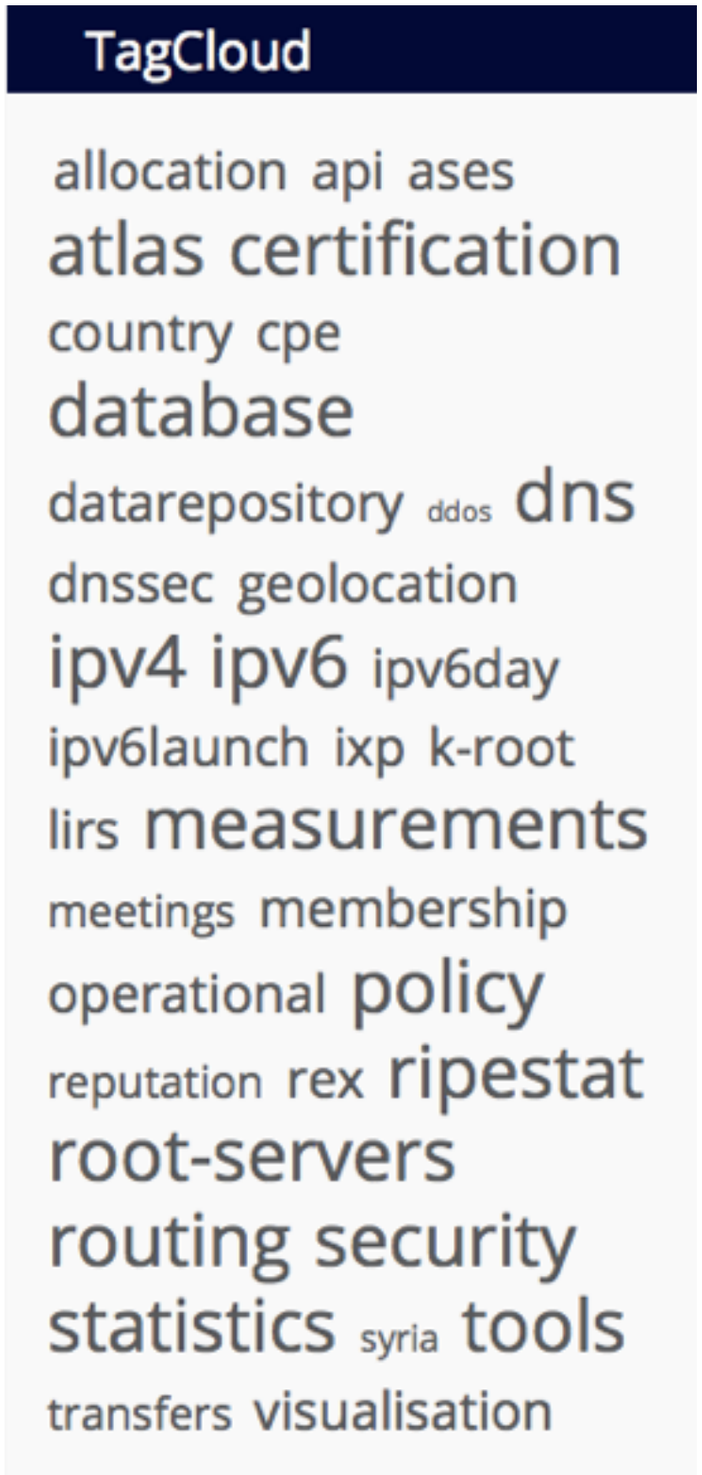
RIPE Labs Content

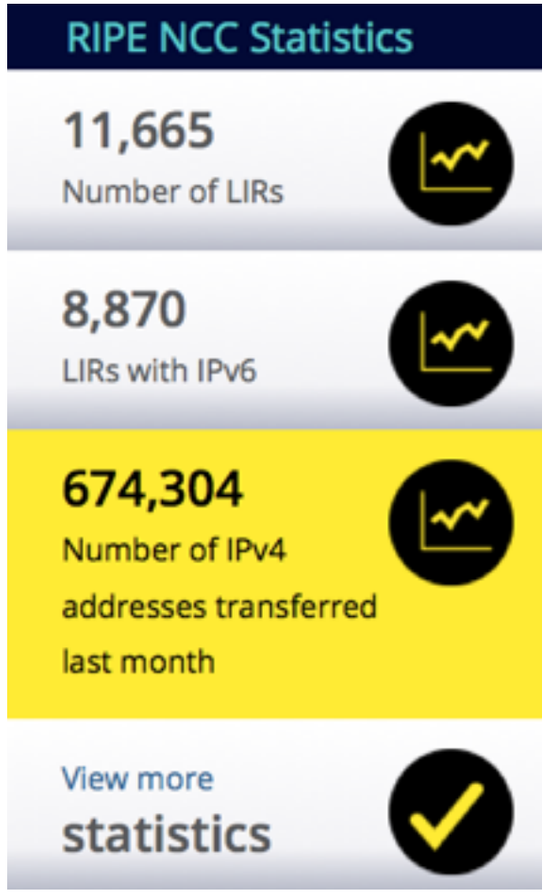
- A website (blog), but more importantly, a community platform
- You can:
  - Test and evaluate new tools and prototypes
  - Contribute new ideas and research results
  - Provide feedback and discuss with others

https://labs.ripe.net

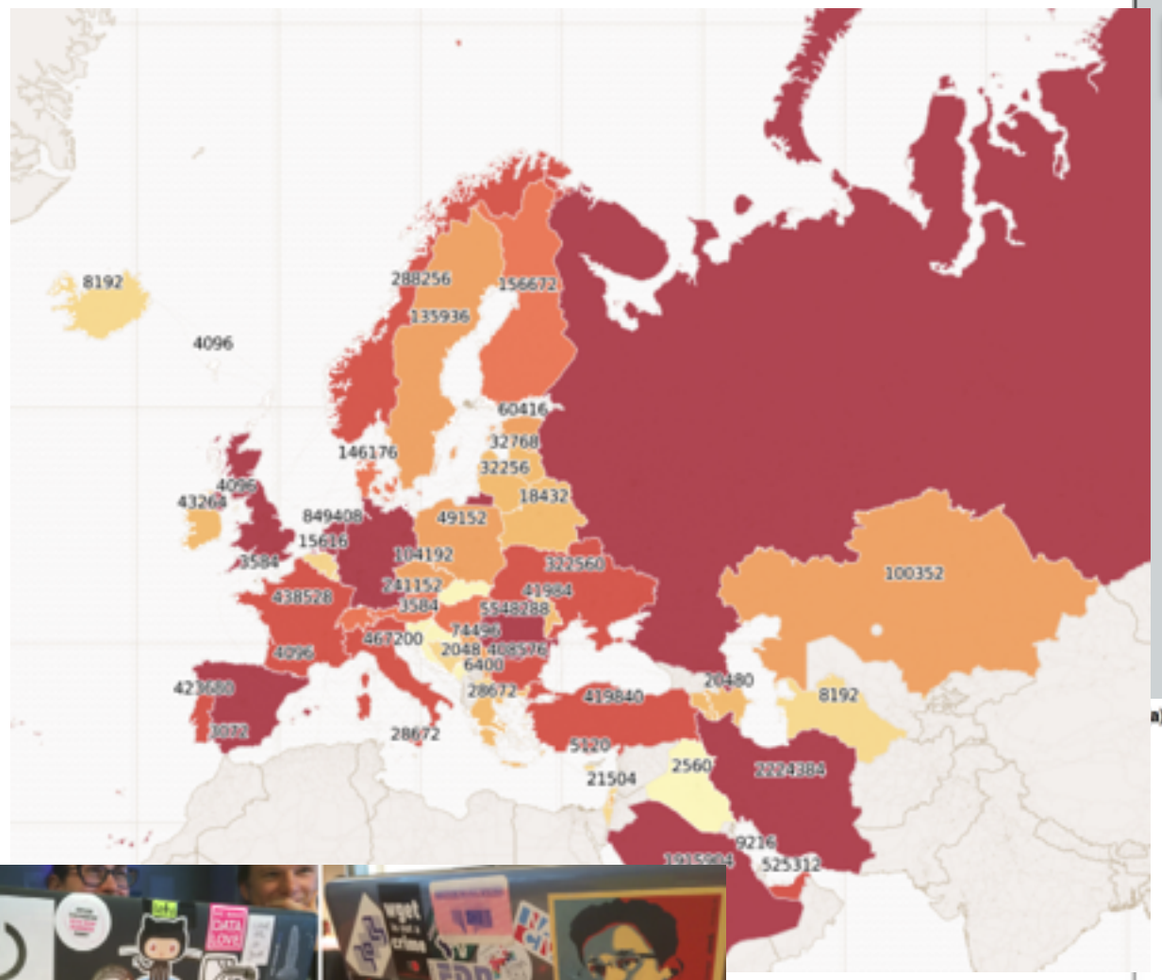
RIPE Labs Content

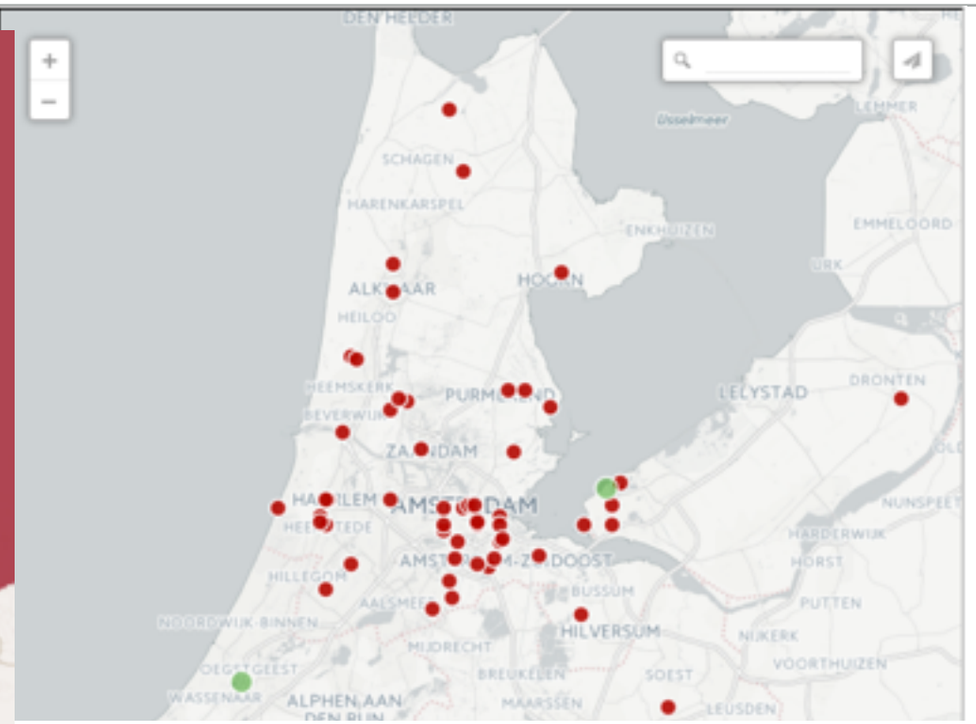


- Statistics, measurements
- Research
  - Routing, IP, networking, security
- Tools
  - RIPE Atlas, RIPEstat, RIPE Database, APIs
- Many external contributions

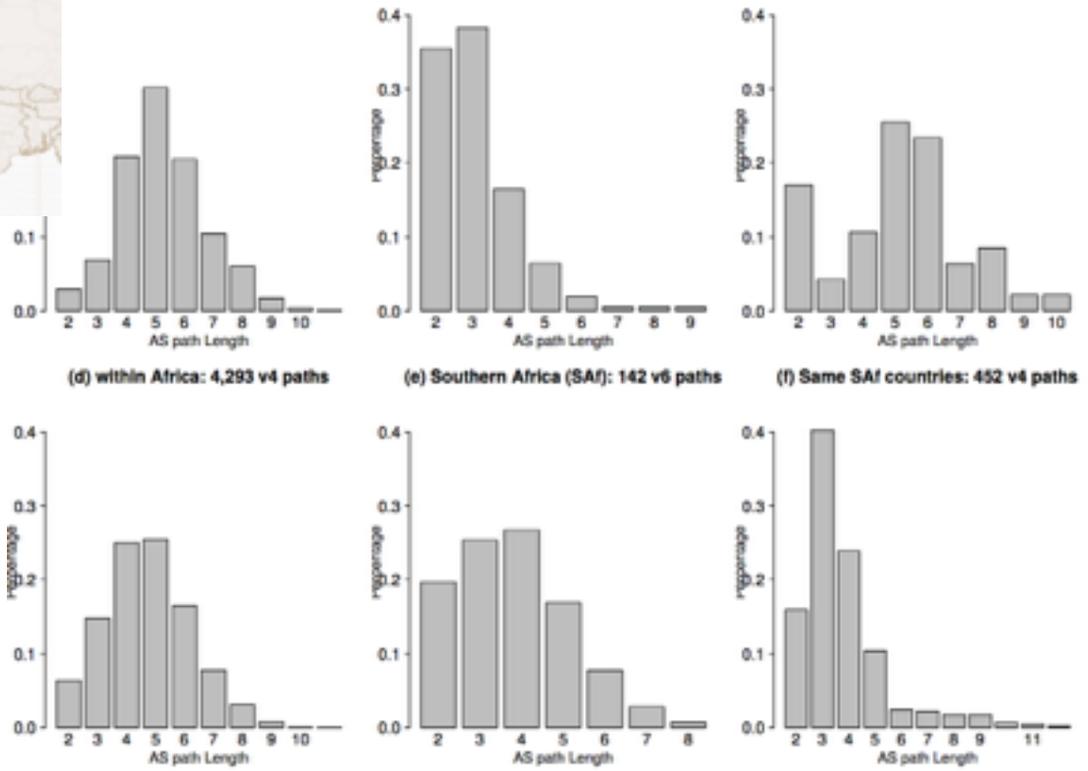


RIPE Labs Examples





(a) West Africa (WAf): 815 v4 paths (b) ZA: 420 v4 paths (c) Same WAf countries: 47 v4 paths



(d) within Africa: 4,293 v4 paths (e) Southern Africa (SAf): 142 v6 paths (f) Same SAf countries: 452 v4 paths

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RACI - RIPE Academic Cooperation Initiative

- We’re looking for talented students/researchers in I’net technology field to share their ideas with the RIPE community
- Receive funding to attend RIPE Meetings or a RIPE NCC Regional Meeting (meeting ticket, travel and accommodation) and present your research
- Application open year-round
- Must be in the RIPE NCC service region
- **ripe.net/ripe/raci**

References

- RIPE & RIPE NCC
  - http://www.ripe.net
- RIPE Atlas
  - https://atlas.ripe.net
- RIPEstat
  - https://stat.ripe.net
- RIPE Labs
  - https://labs.ripe.net
- RACI
  - https://www.ripe.net/ripe/raci

Questions?