



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE NCC Data Sources for Researchers

Mirjam Kühne

Mirjam Kühne | RoN++ | December 2018

Overview



- RIPE Atlas
- Routing Information Service (RIS)
- RIPE IPmap
- RIPEstat



RIPE Atlas

Active Measurements Network

Active Measurements Network



- Probe distribution
 - 10,300 active RIPE Atlas probes
 - 356 active RIPE Atlas anchors
- Coverage
 - 180 countries covered
 - 3,600 IPv4 ASes (6%)
 - 1,450 IPv6 ASes (9%)
- All data are open and publicly available



RIPE Atlas Definition



RIPE Atlas is a **global, open, distributed** Internet measurement platform, consisting of thousands of measurement devices that measure **Internet connectivity** in real time. (wikipedia)





Most Popular Features

- Six types of measurements
 - ping, traceroute, DNS, SSL/TLS, NTP, HTTP (to anchors)
- APIs that interact with the system
- Informative visualisations
- CLI tools (RIPE Atlas Magellan)
- Streaming of real-time data
- New:
 - user-to-user measurements, VM anchors, daily data dumps
(for bulk data)



User-to-user

RIPE Atlas measurements

Motivation



- Usually client-to-server gets measured
 - for traffic and cost optimisation
- What about de-centralised, peer-to-peer, server-less connections?
 - let's go back to end-to-end (i.e. user-to-user)
- Sketches Internet eco system of a country

<https://sg-pub.ripe.net/ixp-country-jedi/de/2018/11/01/>

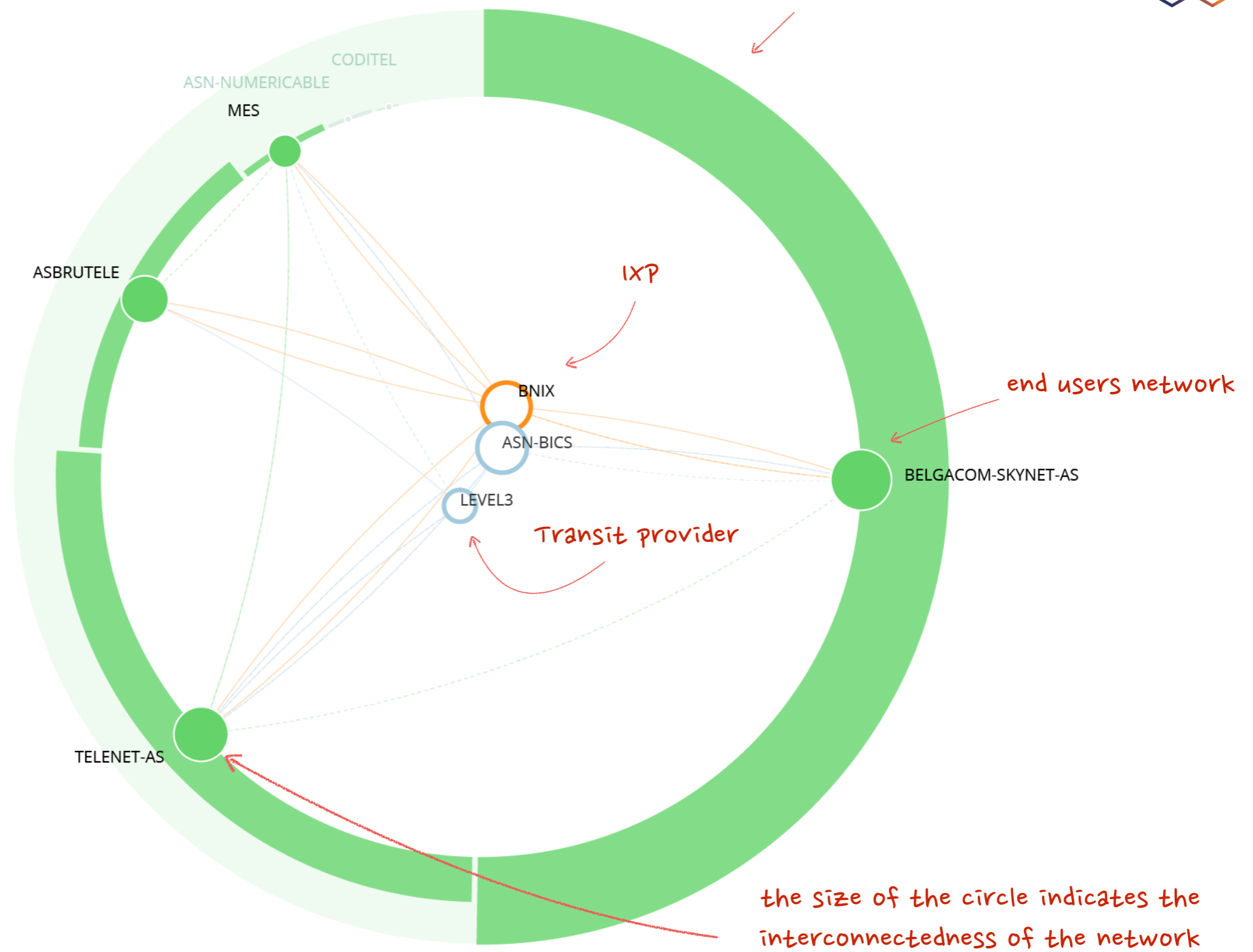
Ingredients



- RIPE Atlas
- User population estimates (APNIC data)
 - measurement-based rough estimate
 - <https://stats.labs.apnic.net/aspop/>
- IXP Country Jedi
 - mesh traceroutes between RIPE Atlas probes in a country
 - <https://www.ripe.net/ixp-country-jedi/>
- Many caveats: Results are ‘sketches’



size of ring segment is a measure for the amount of end users in the network





RIS



What is RIS?

- Worldwide network of BGP collectors
- Deployed at Internet Exchange Points
- Collects raw BGP data from peers
- Stores BGP routing table dumps
- 18+ years of routing history!
- Used by network operators and researchers

RIS Route Collector Locations



RIS Data Access



- Raw data:
 - <https://www.ripe.net/analyse/internet-measurements/routing-information-service-ris/ris-raw-data>
- Data stored in MRT format (RFC 6396)
- Readable using BGPdump utility
 - Open source, available on GitHub:
<https://bitbucket.org/ripenc/bgpdump/wiki/Home>
- RIPEstat



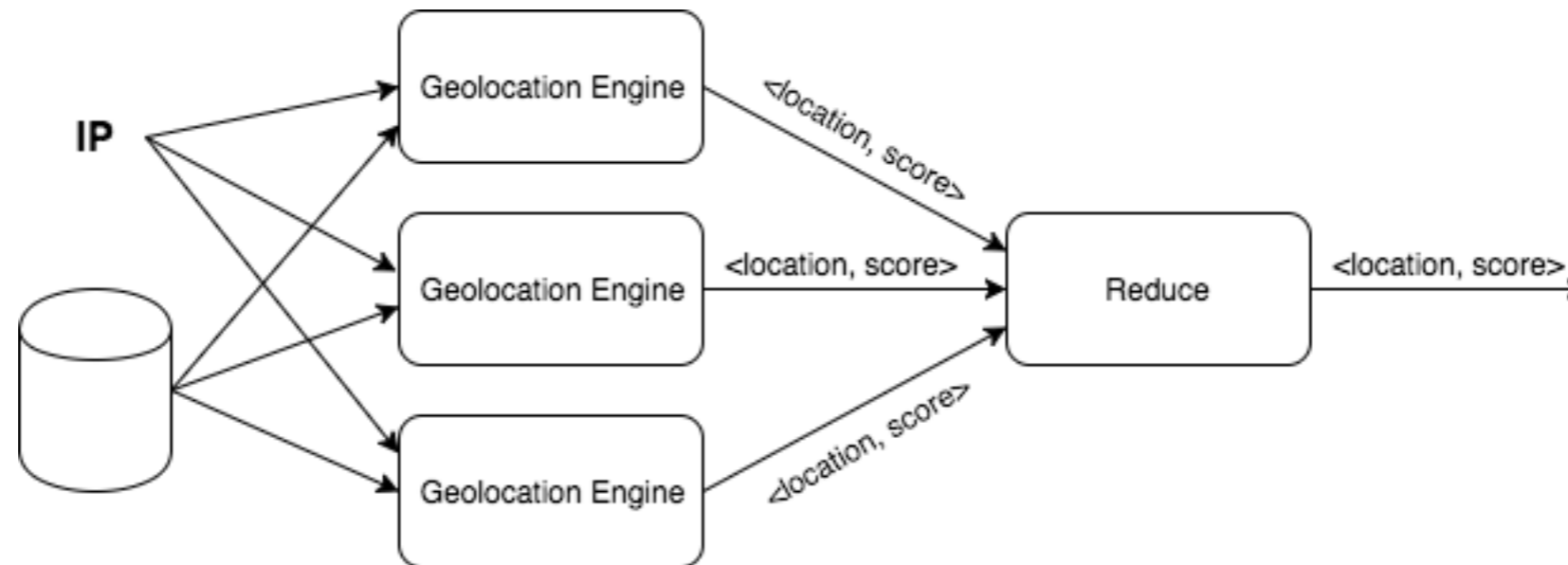
RIPE IPmap

Geolocation for Infrastructure

Geolocation for Infrastructure



- Collaborative model (multi-approach)
 - e.g. crowdsourced, triangulation (RIPE Atlas)



- https://labs.ripe.net/Members/jasper_den_hertog/openipmap-a-collaborative-approach-to-mapping-internet-infrastructure

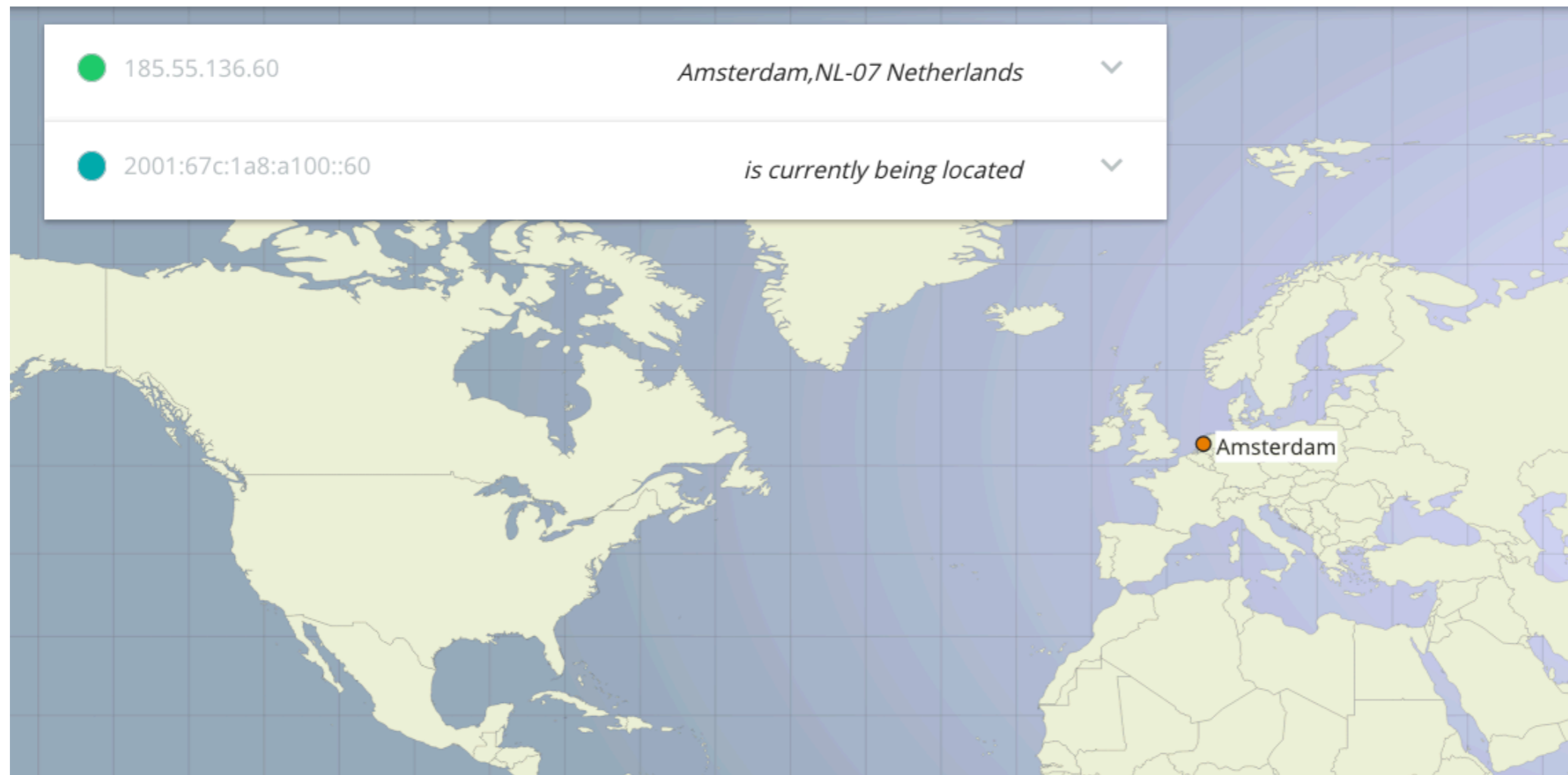
RIPE IPmap Output



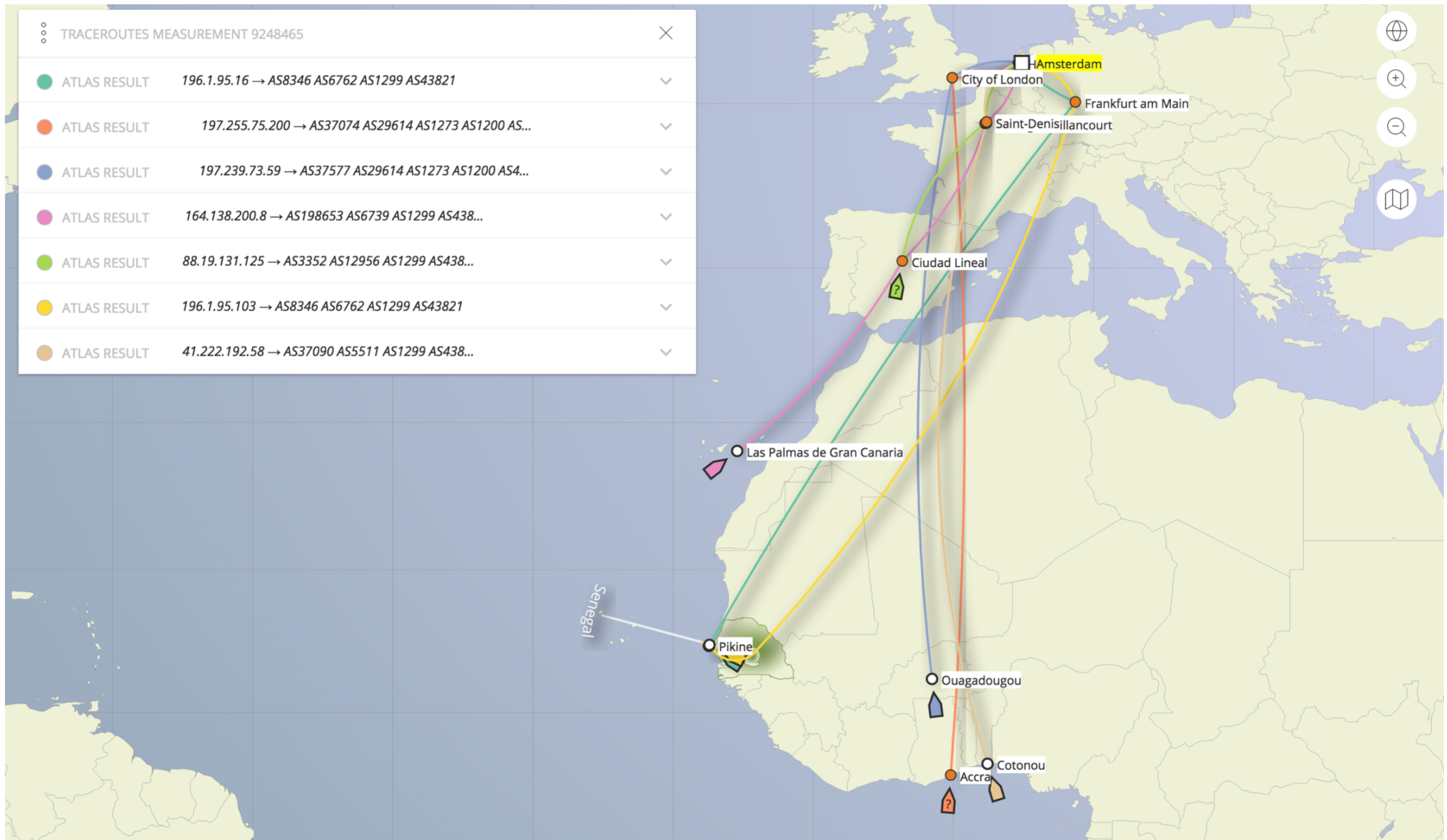
RIPE IPmap A Collaborative Approach to Mapping Internet Infrastructure

ams-ix.net

[About](#) | [API reference](#) | [Manual](#)



Traceroute Visualisation





RIPEstat

One stop shop for data

RIPEstat - stat.ripe.net



RIPEstat

Enter an IP address/prefix, ASN, country code or hostname

Go

Your network: AS3333, 2001:67c:2e8::/48

Try one of these: [IPv4 prefix](#), [IPv4 range](#), [IPv6](#), [ASN](#)

The screenshot shows the RIPE NCC website interface. At the top, there is a search bar with the text "Enter an IP address/prefix, ASN, country code or hostname" and a "Go" button. Below the search bar, the user's network is identified as "AS3333, 2001:67c:2e8::/48". The main navigation menu includes "Manage IPs and ASNs", "Analyse", "Participate", "Get Support", "Publications", and "About Us". The "Analyse" menu is currently selected.

The search results for the prefix "193.0.20.0/23" are displayed. The results are organized into several sections:

- At a Glance (4):** A sidebar menu with links to Routing (9), DNS (2), Anti Abuse (2), Database (9), Geographic (2), Activity (4), and Suggestions (1). There is also a "+ MyView" button.
- Prefix Overview (193.0.20.0/23):** A central panel showing the prefix status as "Announced" (indicated by a green checkmark). It states "This prefix is announced by AS3333 'RIPE-NCC-AS, NL'". Below this is a table with the following data:

RIR	Status	Registration	Country
RIPE NCC	ALLOCATED	1993-09-01	NL

A "Show IANA Registry Information" button is located below the table.
- Geoloc (193.0.20.0/23):** A panel showing a map of the Netherlands with a 100.00% geolocation accuracy. The map includes labels for Amsterdam, London, Brussels, Cologne, and Hamburg. Below the map is a "Geoloc details" section with a note: "Data is based on MaxMind's GeoLite City data set and valid for the stated query time (see below)".

At the bottom of the results, it says "Showing results for 193.0.20.0/23 as of 2016-11-06 16:00:00 UTC".



Data Sets

- IP Registry data from all RIRs
- Routing data (RIPE RIS)
- RIPE Atlas data
- External datasets
 - Geolocation, blacklists, bandwidth measurements (MLab, Speedchecker) and more

Widget API & Data API

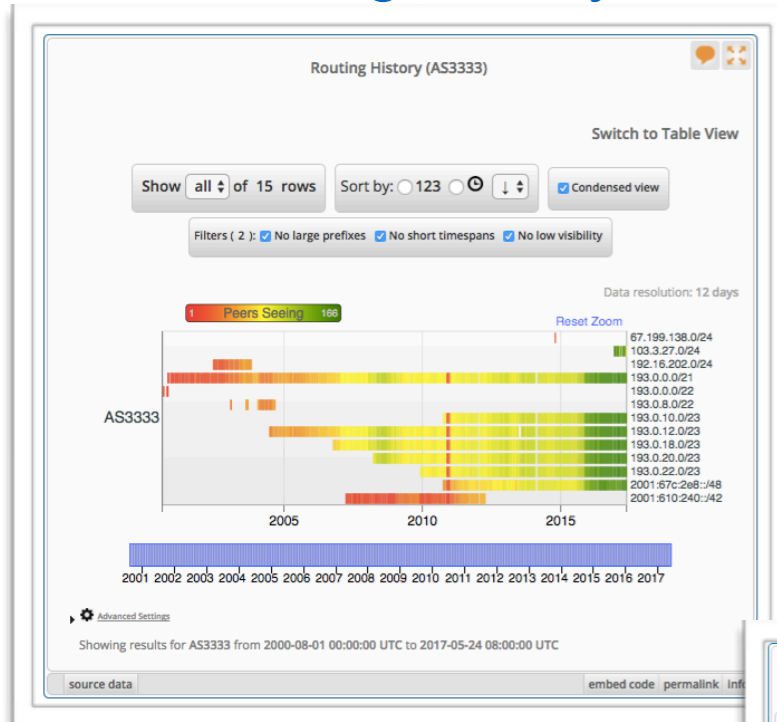


- More than 50 widgets
- RIPEstat widgets are embeddable
 - e.g. web pages or NOC interfaces
- Documentation: https://stat.ripe.net/docs/widget_api
- Access to underlying data via data API
- Documentation: https://stat.ripe.net/docs/data_api

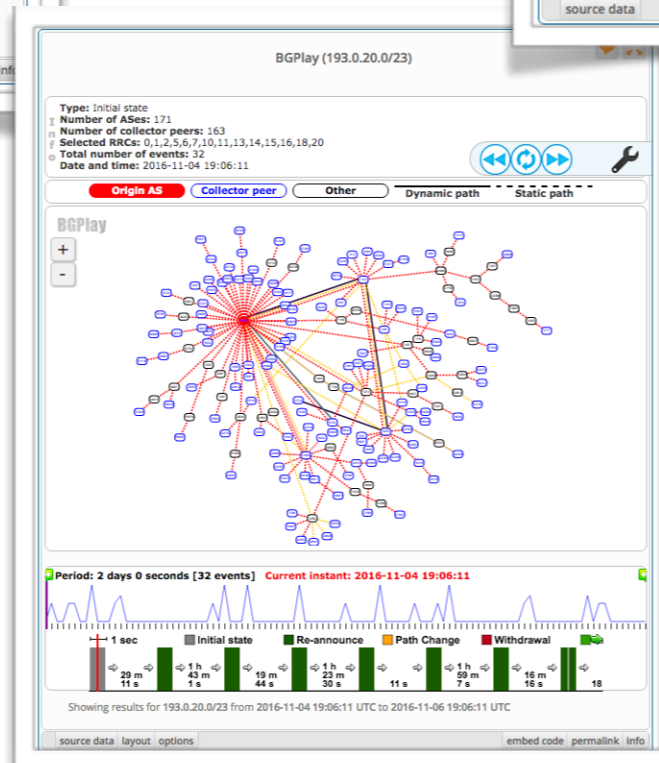
Use Cases



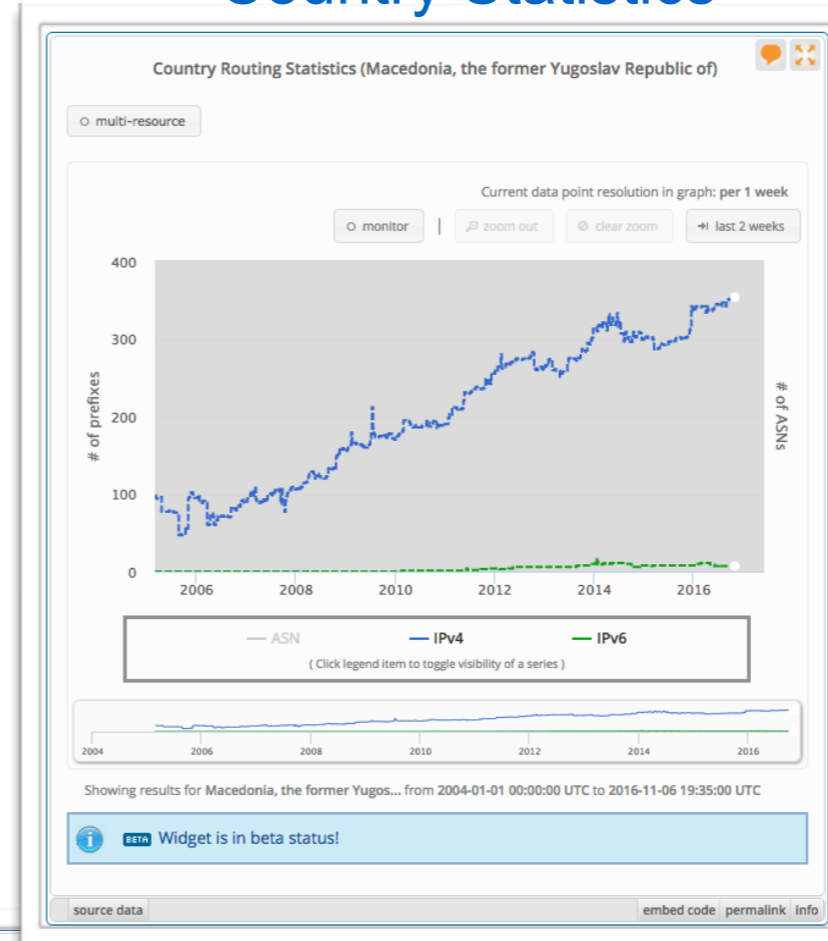
Routing History



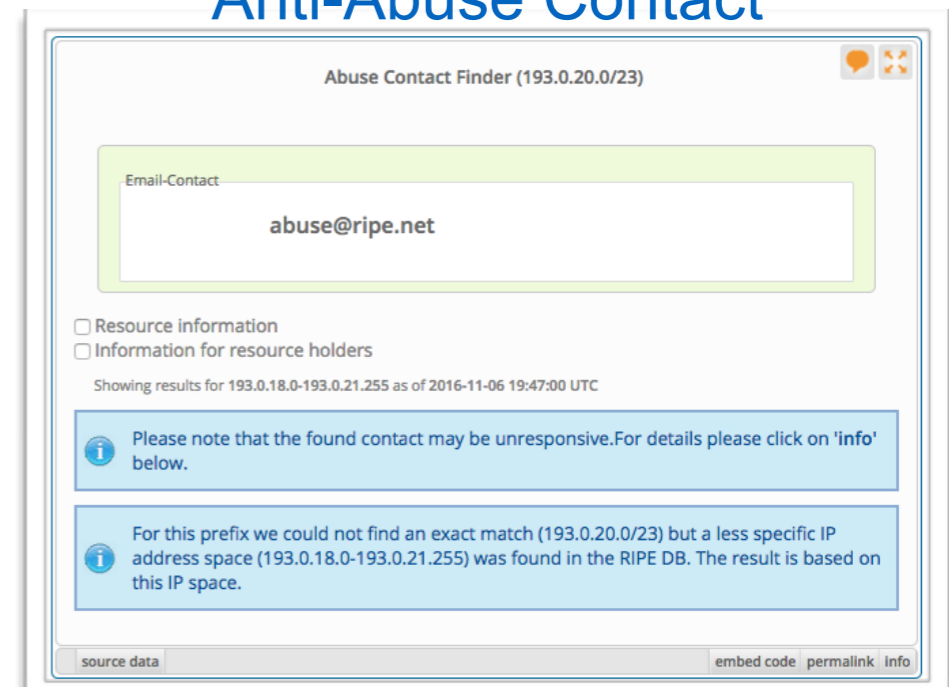
BGPlay



Country Statistics



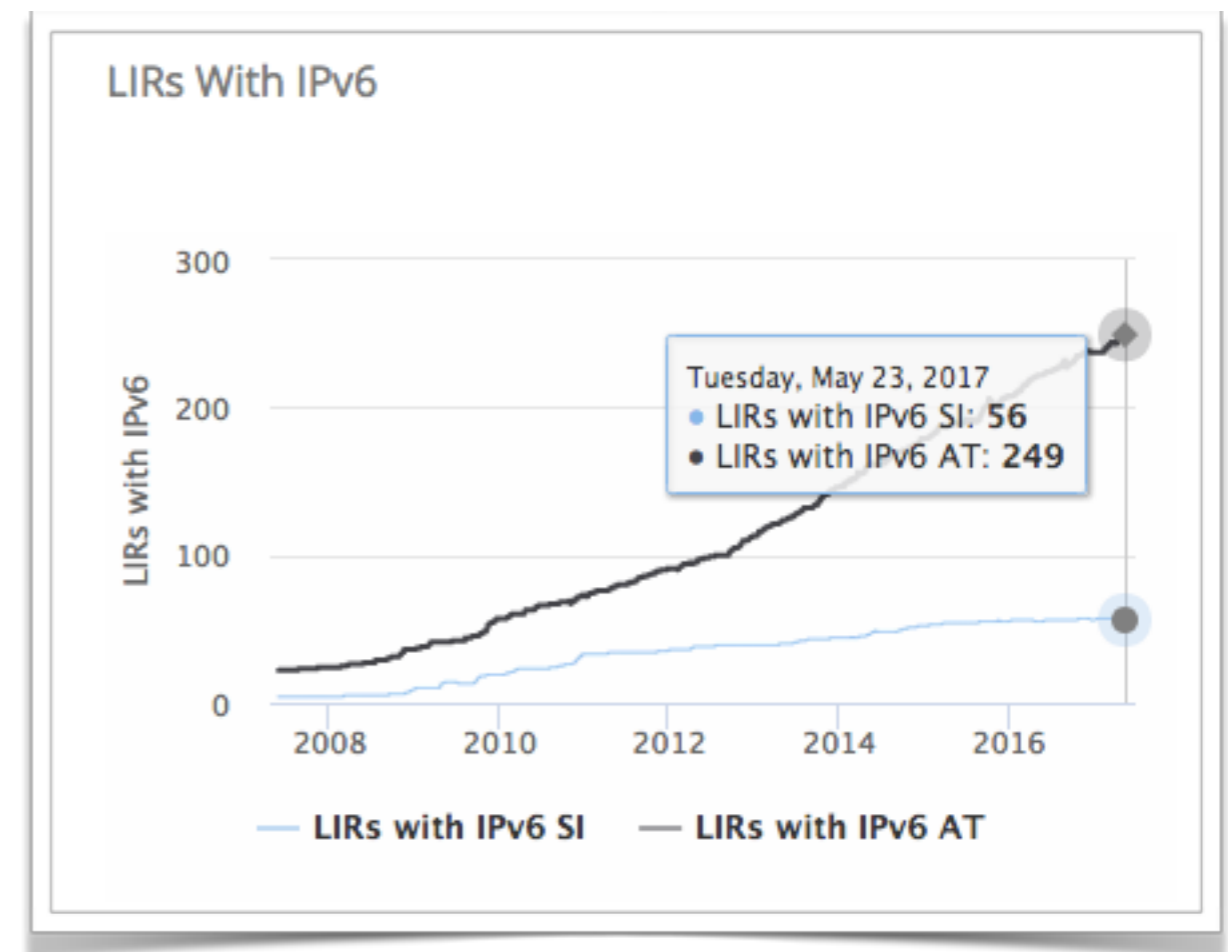
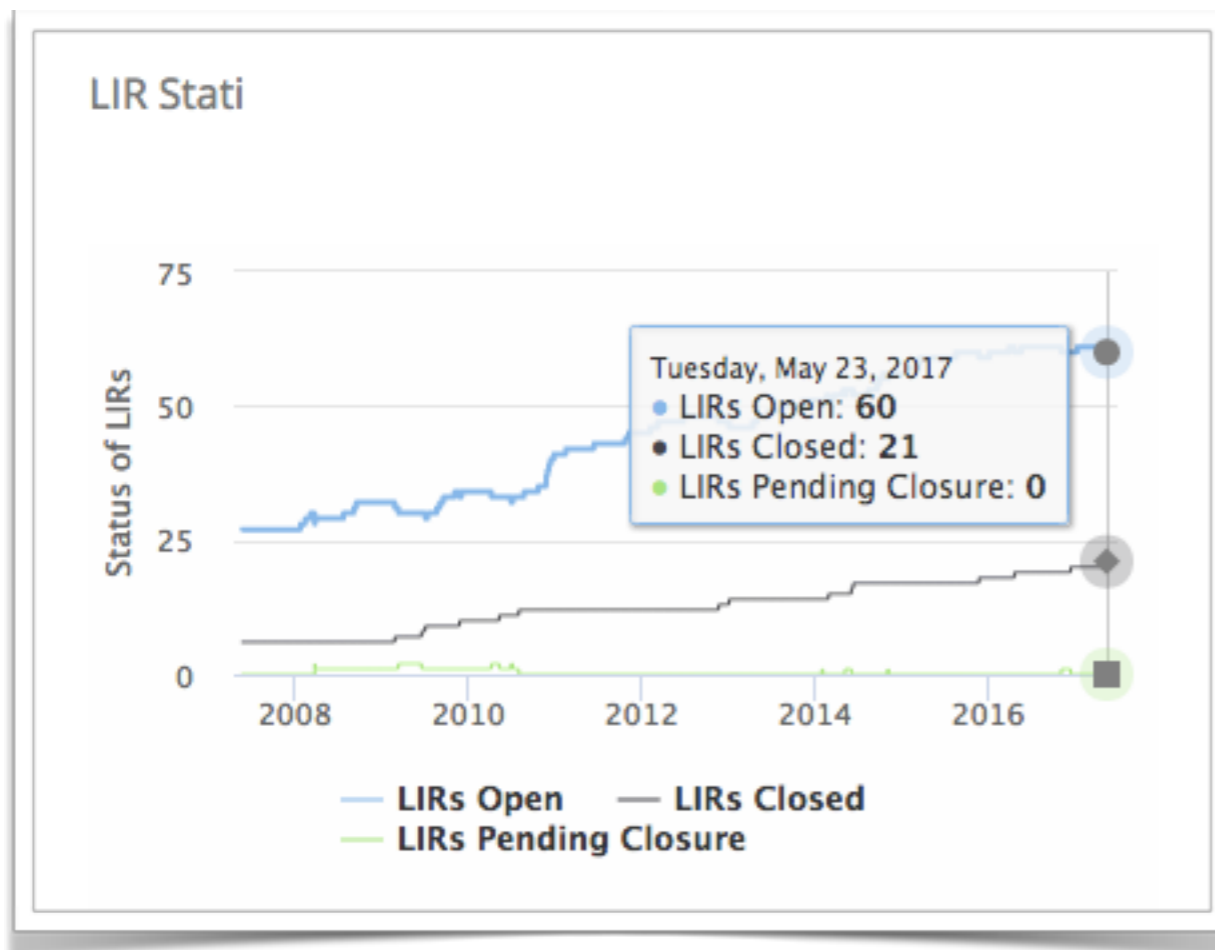
Anti-Abuse Contact



What is new?



- More data
- More visualisations
- Country Reports





RIPE Labs



You are here: [Home](#) > [Publications](#) > RIPE Labs

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- Data Repository
- Security
- RIPE NCC Statistics
- RIPE Database
- RIPE Atlas
- RIPEstat
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Your IP address is:
2001:67c:2e8:9::c100:14e6

TagCloud

25-years IPv6 allocation api ases atlas bgp blockchain certification community communityprojectsfund country cpe database datarepository diversity dns dnsmon dnssec floss gdpr geolocation governance hackathon iot

RIPE Labs

INNOVATIVE INTERNET TOOLS AND IDEAS
SHARE EXPERIENCE | SHOWCASE TOOLS | PRESENT RESEARCH

Statistics

20,561 Number of LIRs	14,119 LIRs with IPv6	1,129,728 IPv4 addresses transferred
10,298 RIPE Atlas probes	7.38 Million IPv4 Allocation Pool	View more statistics

Articles

RSS

Twelve Steps to Enable IPv6 in Government and Enterprise Networks

Jordi Palet Martinez — 23 Nov 2018

In the first part of this two-part series, I shared a recent IPv6 deployment case study I worked on for a government network in the LACNIC region, concentrating on the hereditary peculiarities in the network that we had to overcome, many of which are common among government and organisational networks worldwide. This second post is a quick guide to the necessary steps such networks will face during an IPv6 deployment project.... [Read more](#)

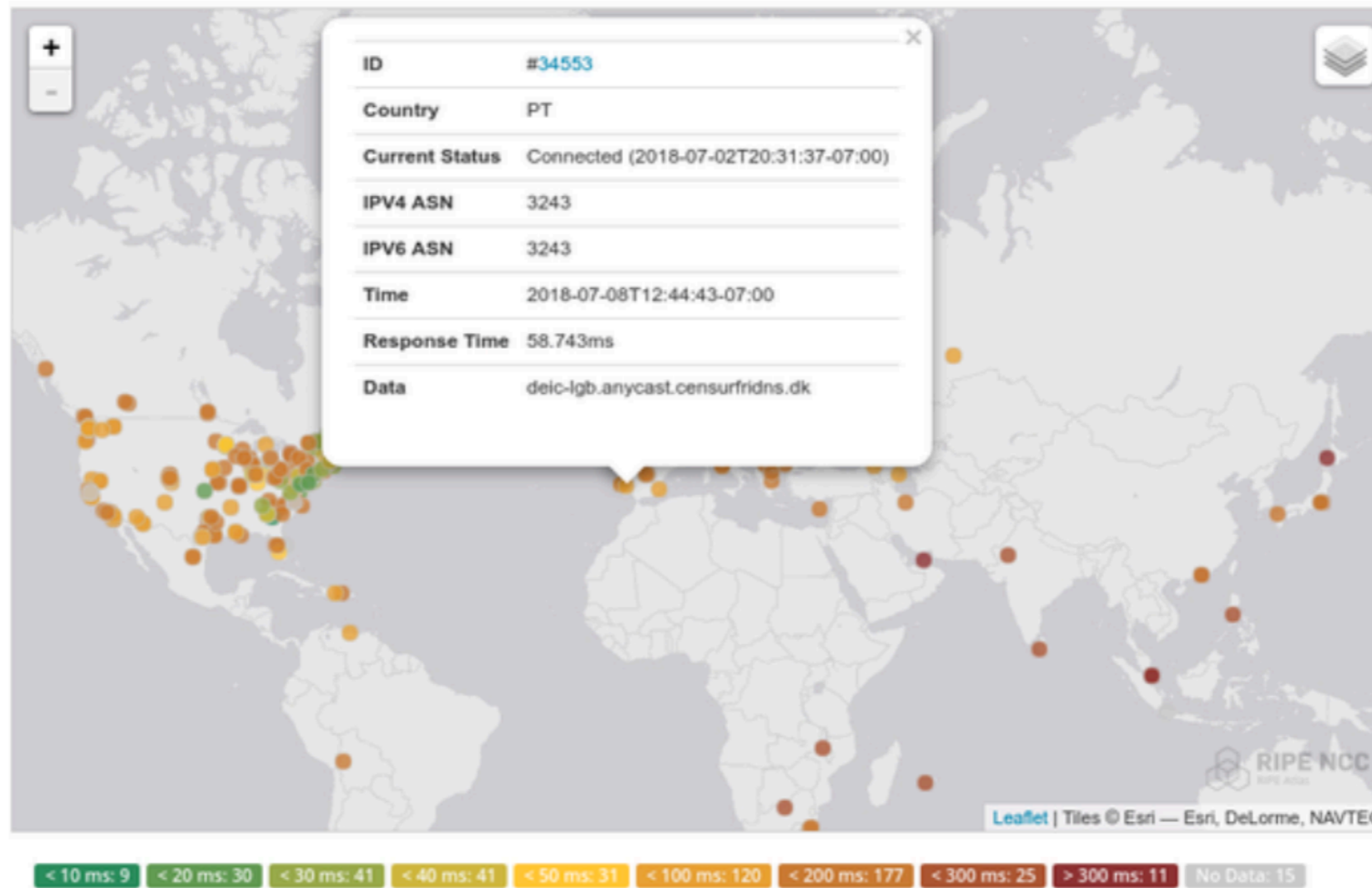
Tags: ipv6

0 comments
0 likes, 0 dislikes

IPv6 for Governments and Enterprises – a Case Study

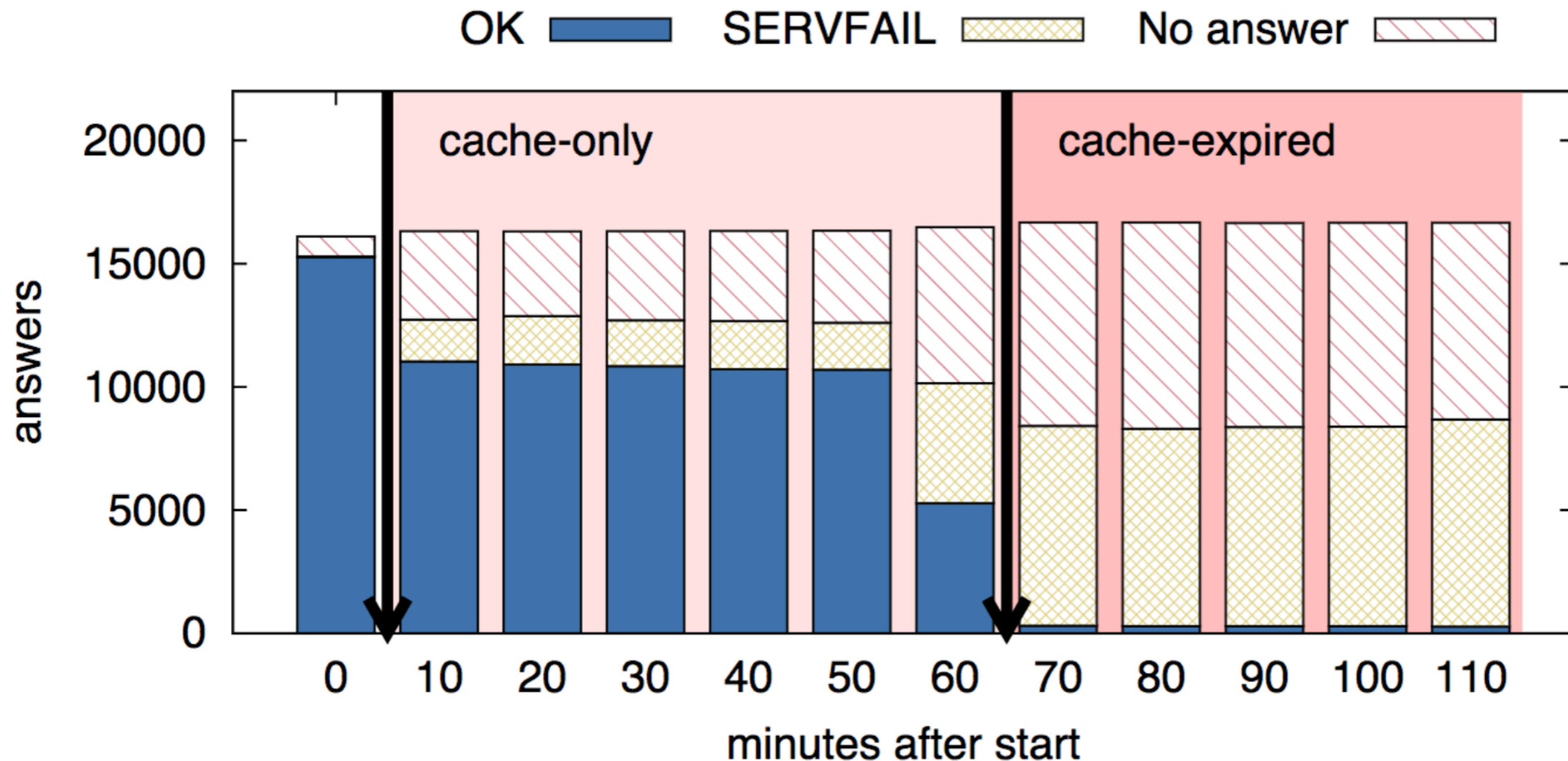
Jordi Palet Martinez — 22 Nov 2018

Measuring Anycast



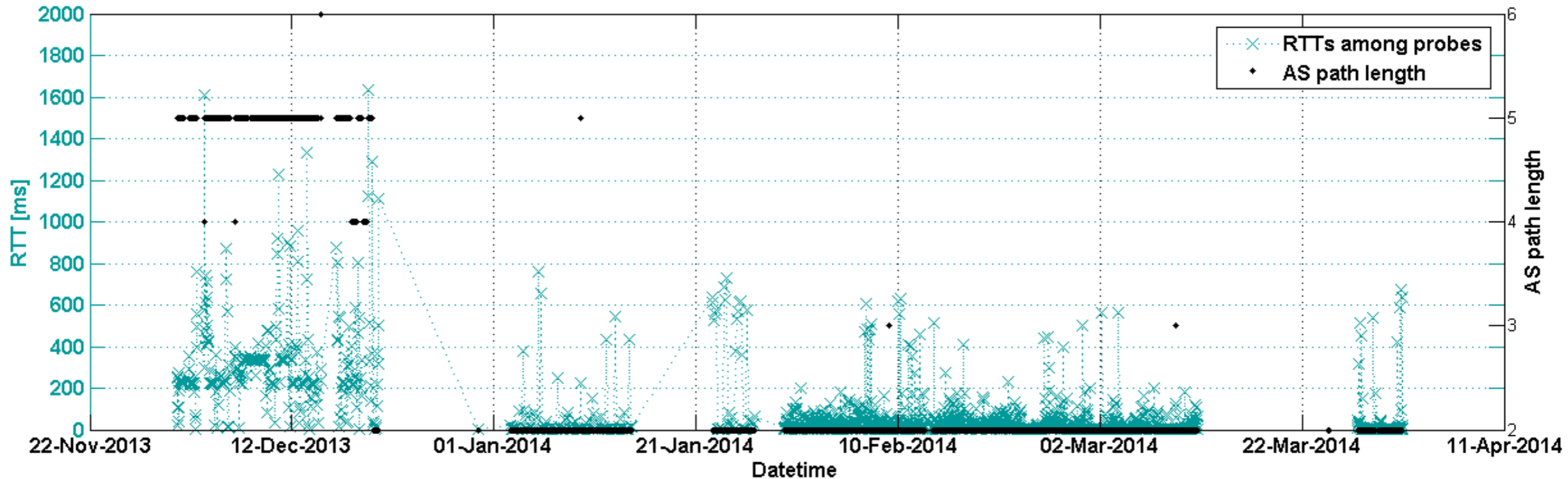
- https://labs.ripe.net/Members/kenneth_finnegan/measuring-anycast-dns-services-using-ripe-atlas

DNS Defences during DDoS



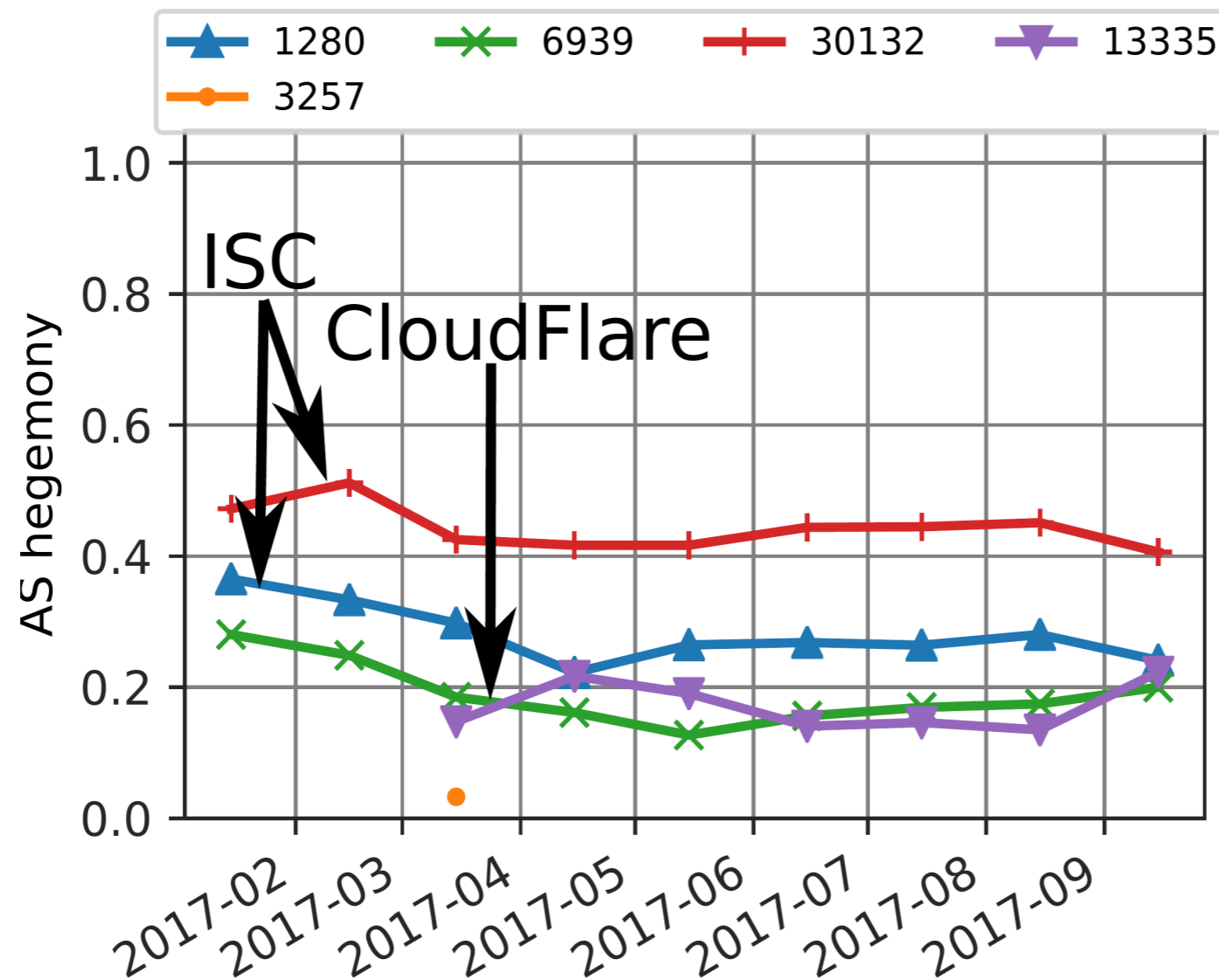
- https://labs.ripe.net/Members/giovane_moura/dissecting-dns-defenses-during-ddos-attacks

Routing Diversity in Africa



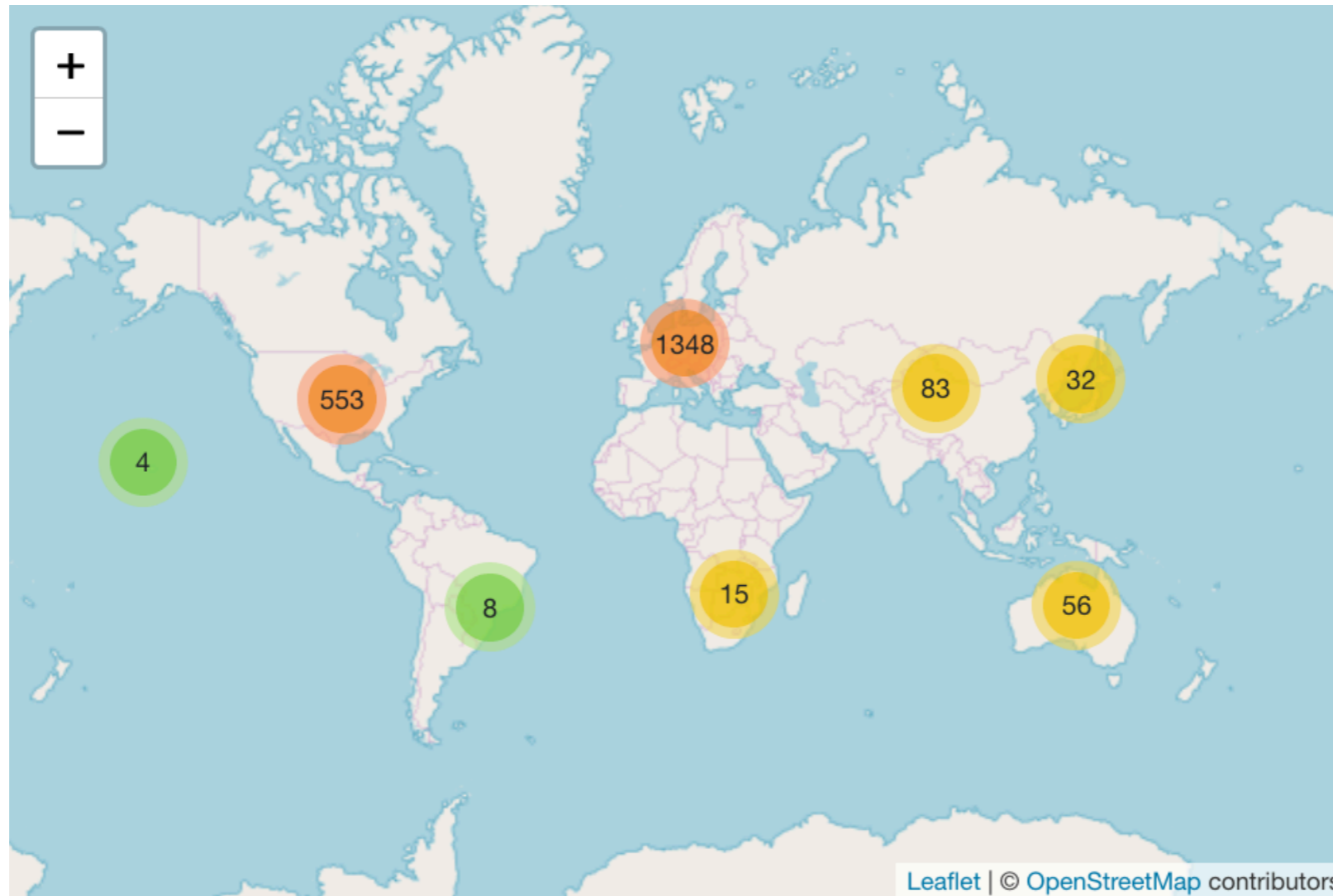
- https://labs.ripe.net/Members/fanou_roderick/on-the-diversity-of-interdomain-routing-in-africa

Measuring AS Interdependence



- https://labs.ripe.net/Members/romain_fontugne/as-hegemony-measuring-as-interdependence

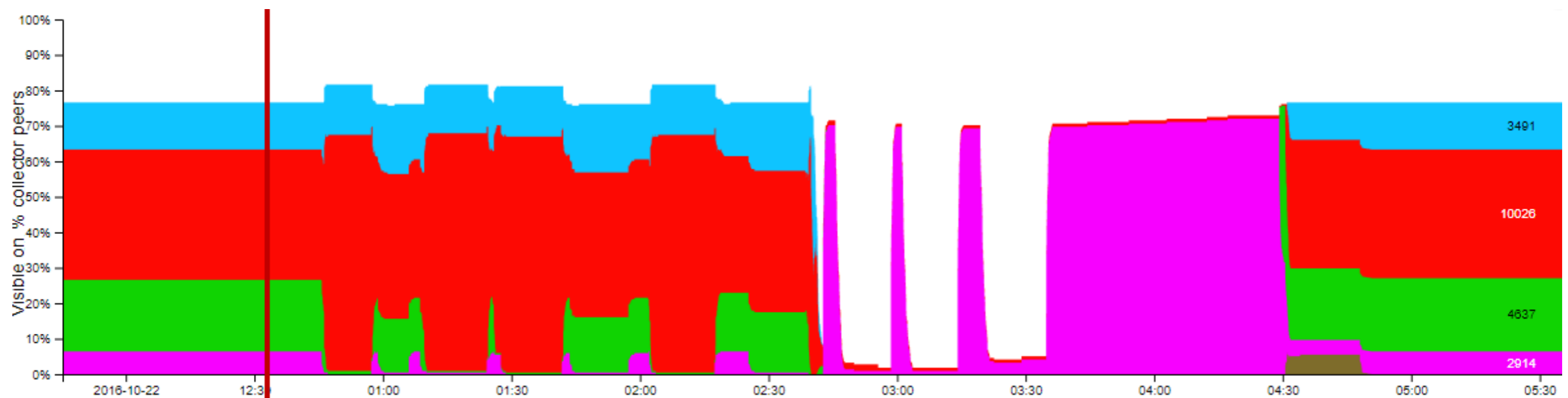
Peering Infrastructure Outages



Community type: Facility IXP City ASN:

- <https://labs.ripe.net/Members/vgiotsas/detection-of-peering-infrastructure-outages-based-on-bgp-communities-monitoring>

Measuring Upstream Visibility



- https://labs.ripe.net/Members/massimo_candela/upstream-visibility-monitor-the-visibility-of-your-prefix



RACI

RIPE Academic Cooperation Initiative

- Students and researchers
 - Present your Internet-related research at RIPE Meetings
 - Complimentary tickets, travel and accommodation
 - Topics: network measurement and analysis, security, IPv6 deployment, BGP routing, Internet governance, peering and interconnectivity
- <https://www.ripe.net/raci>



References

References



- RIPE Atlas: atlas.ripe.net
- IXP country Jedi: www.ripe.net/ixp-country-jedi
- RIPEstat: stat.ripe.net
- IPv6 RIPEness: ipv6ripeness.ripe.net
- IPv6 ASNs: v6asns.ripe.net
- RIPE DB bulk: <https://ftp.ripe.net/ripe/dbase/>
 - <https://ftp.ripe.net/ripe/dbase/split>
- RIPE Labs: labs.ripe.net



Questions



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