Regional Internet Registries

[Image of world map showing Regional Internet Registries: ARIN, RIPE NCC, APNIC, LACNIC, and AfriNIC]
RIPE NCC Activities

• Secretariat for RIPE community

• RIPE Database (RIPE Registry)
  - IP addresses, contact info, routing details, etc.

• Data sets and tools
  - publicly available
  - for researchers and operators

• Community building
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)
Active Measurements Network

• Probe distribution
  - 10,300 active RIPE Atlas probes
  - 442 active RIPE Atlas anchors

• Coverage
  - 183 countries covered
  - 3,600 IPv4 ASes (6%)
  - 1,450 IPv6 ASes (9%)

• All data are open and publicly available
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

[https://atlas.ripe.net/](https://atlas.ripe.net/)
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/2019/03/01
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’
The size of the ring segment is a measure for the amount of end users in the network.

The size of the circle indicates the interconnectedness of the network.
RIPE IPmap
Geolocation for Infrastructure
Geolocation for Infrastructure

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

https://labs.ripe.net/Members/massimo_candela/ripe-ipmap-whats-under-the-hood
RIPE IPmap Output

RIPE IPmap  A Collaborative Approach to Mapping Internet Infrastructure

ams-ix.net

About | API reference | Manual

185.55.136.60  Amsterdam,NL-07 Netherlands

2001:67c:1a8:a100::60  is currently being located

Amsterdam
Traceroute Visualisation
Routing Information Service (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:

- Data stored in MRT format (RFC 6396)

- Readable using BGPdump utility
  
  - Open source, available on GitHub: https://bitbucket.org/ripencc/bgpdump/wiki/Home

- RIPEstat
RIS Live BGP Message Stream

- Monitoring and detecting routing events
- Based on RIS route collector data
- WebSocket JSON API

https://labs.ripe.net/Members/chris_amin/ris-live-bgp-message-stream
RIPEstat
One stop shop for data
RIPEstat - stat.ripe.net

RIPEstat

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

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

Try one of these: IPv4 prefix, IPv4 range, IPv6, ASN

RIPE NCC

Manage IPs and ASNs  Analyse  Participate  Get Support  Publications  About Us

193.0.20.0/23

At a Glance
Routing  DNS  Anti Abuse  Database  Geographic  Activity  Suggestions

Prefix Overview (193.0.20.0/23)

This prefix is announced by
AS3333
"RIPE-NCC-AS, NL"

RIR  Status  Registration  Country
RIPE NCC  ALLOCATED  1993-03-01  NL

Show IANA Registry Information

Geoloc (193.0.20.0/23)

Data is based on MaxMind's GeoLite City data set and valid for the stated query time (see below)

Showing results for 193.0.20.0/23 as of 2016-11-01 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](https://stat.ripe.net/docs/widget_api)

- Access to underlying data via data API
- Documentation: [https://stat.ripe.net/docs/data_api](https://stat.ripe.net/docs/data_api)
Use Cases

Routing History

Country Statistics

BGPlay

Anti-Abuse Contact

Mirjam Kühne | IETF 104 GAIA RG | March 2019
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

mir@ripe.net
@mir_ripe_labs