RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE NCC Internet Measurement Tools

for the Good of the Internet

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Agenda

- Who we are?
- RIPE NCC Internet Measurement services:
  - Routing Information Service (RIS)
  - RIPEstat
  - RIPE Atlas
- RIPE NCC Internet Country report: a sneak peek
- Upcoming events announcement

RIPE NCC

Who we are?

- The RIPE NCC is the Regional Internet Registry (RIR) for Europe, the Middle East and parts of Central Asia
- We allocate and register Internet number resources
- We are not-for-profit organisation that works to support the open RIPE community and the development of the Internet in general

What we do?

- As an **authority on unique Internet number resources**, we enable people to operate and develop the Internet
- As the **Secretariat for the RIPE community**, we are a trusted steward of the open, inclusive, collaborative Internet model, engaging and connecting people and communities
- As a **neutral source of information and knowledge**, we actively contribute to the stability and evolution of the Internet

RIPE NCC Strategy 2021–2026

- “Be a **centre of excellence for data, measurements and tools** that provide insight on the Internet and its operations”
- RIPE NCC Internet measurement services:
  - Routing Information Service (RIS)
  - RIPEstat
  - RIPE Atlas

Routing Information Service

Routing Information Service (RIS)

- RIS is a routing data collection platform, started in 1999
  - all historical data is publicly available
- Deployed at Internet Exchange Points
- Collects raw BGP data from peers
  - stores BGP messages and routing table dumps
- Real-time routing information, as opposed to information in databases and routing registries
- Is a source of data for many other services

Why collect BGP data?

- BGP doesn’t have in-built security mechanisms and routing incidents are not rare
- Routing problems and Looking glasses are temporary

- BGP history is recorded to track what is happening and what has happened
- Better visibility → greater security → lower risk of a BGP attacks

Collector Locations

- 23 route collectors
- 1,490 peering sessions
- 579 peer ASes

RIS collectors

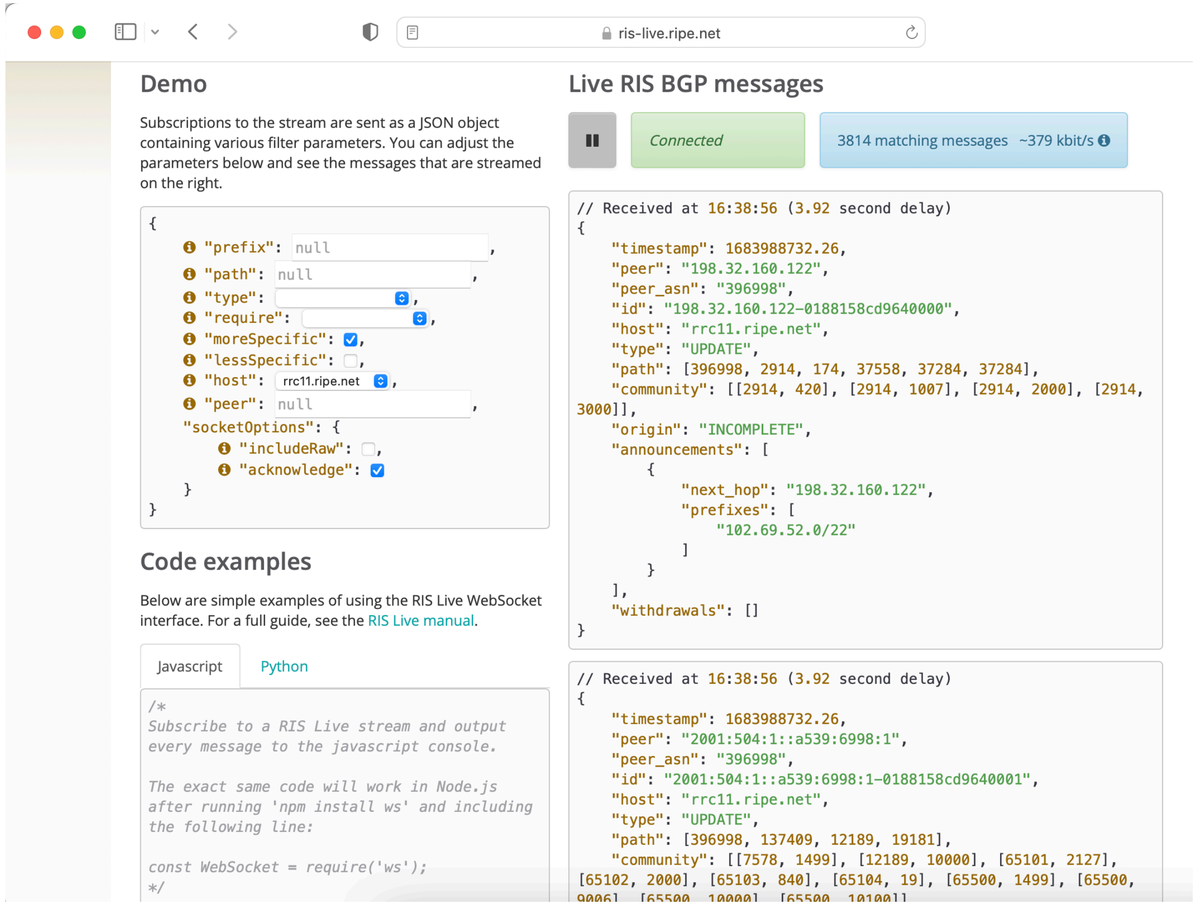
Collector	Location	IXP	Deployed	Removed	Collector	Location	IXP	Deployed	
RRC00	Amsterdam	Multi-hop	1999		**RRC13**	Moscow	MSK-IX	2005	
RRC01	London	LINX	2000		**RRC14**	Palo Alto	PAIX	2005	
RRC02	Paris	SFINX	2001	2008	**RRC15**	Sao Paulo	PTT-Metro SP	2006	
RRC03	Amsterdam	AMS-IX	2001		**RRC16**	Miami	NOTA	2008	
RRC04	Geneva	CIXP	2001		**RRC18**	Barcelona	CATNIX	2015	
RRC05	Vienna	VIX	2001		**RRC19**	Johannesburg	NAPAfrica JB	2016	
RRC06	Tokyo	DIX-IE	2001		**RRC20**	Zurich	SwissIX	2015	
RRC07	Stockholm	Netnod	2002		**RRC21**	Paris	FranceIX	2015	
RRC08	San Jose	MAE-West	2002	2004	**RRC22**	Bucharest	InterLAN	2017	
RRC09	Zurich	TIX	2003	2004	**RRC23**	Singapore	Equinix SG	2017	
RRC10	Milan	MIX	2003		**RRC24**	Montevideo	LACNIC multi-hop	2019	
RRC11	New York	NYIIX	2004		**RRC25**	Amsterdam	Multi-hop	2021	
RRC12	Frankfurt	DE-CIX	2004		**RRC26**	Dubai	UAE-IX	2021	

Who is RIS for?

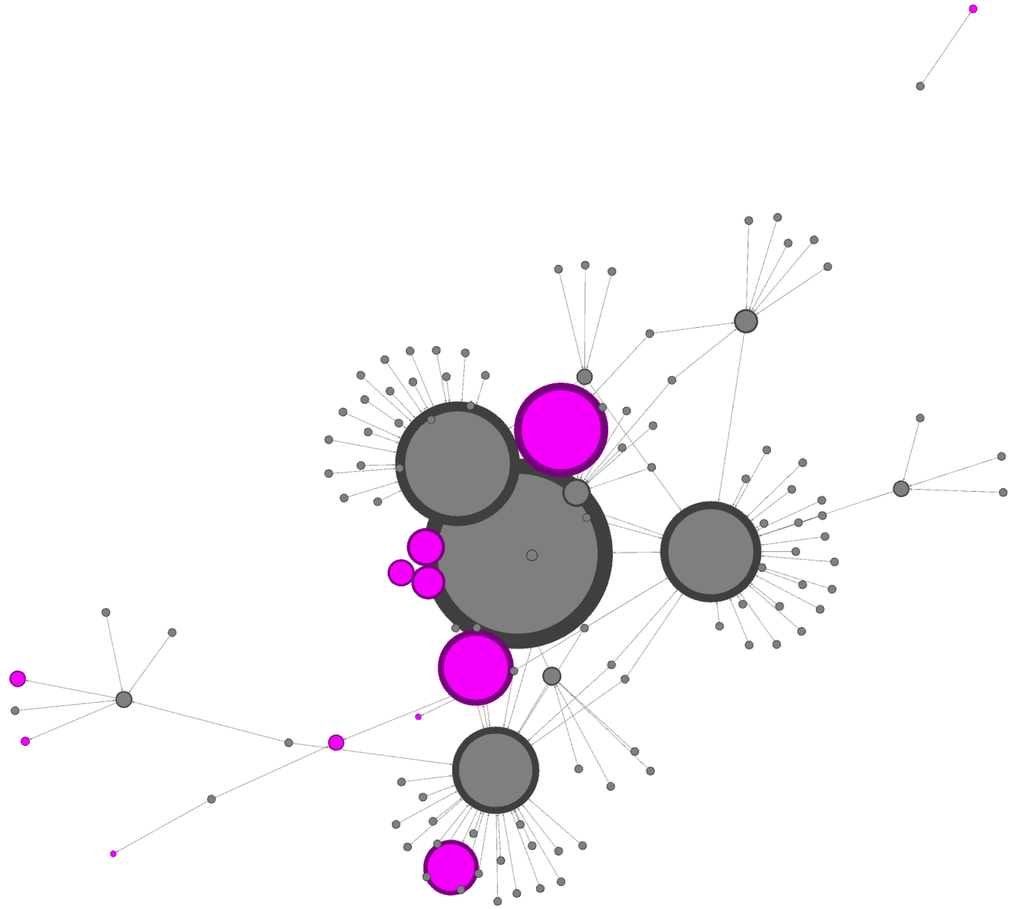
- Network operators, network policy makers
  - To check specific routes and routing incidents
  - To troubleshoot Internet routing
  - To develop future plans based on routing trends
- Researchers
  - To investigate notable events occurring in the Internet (i.e. network disruptions in specific countries, service outages, etc.)

How can you use RIS?

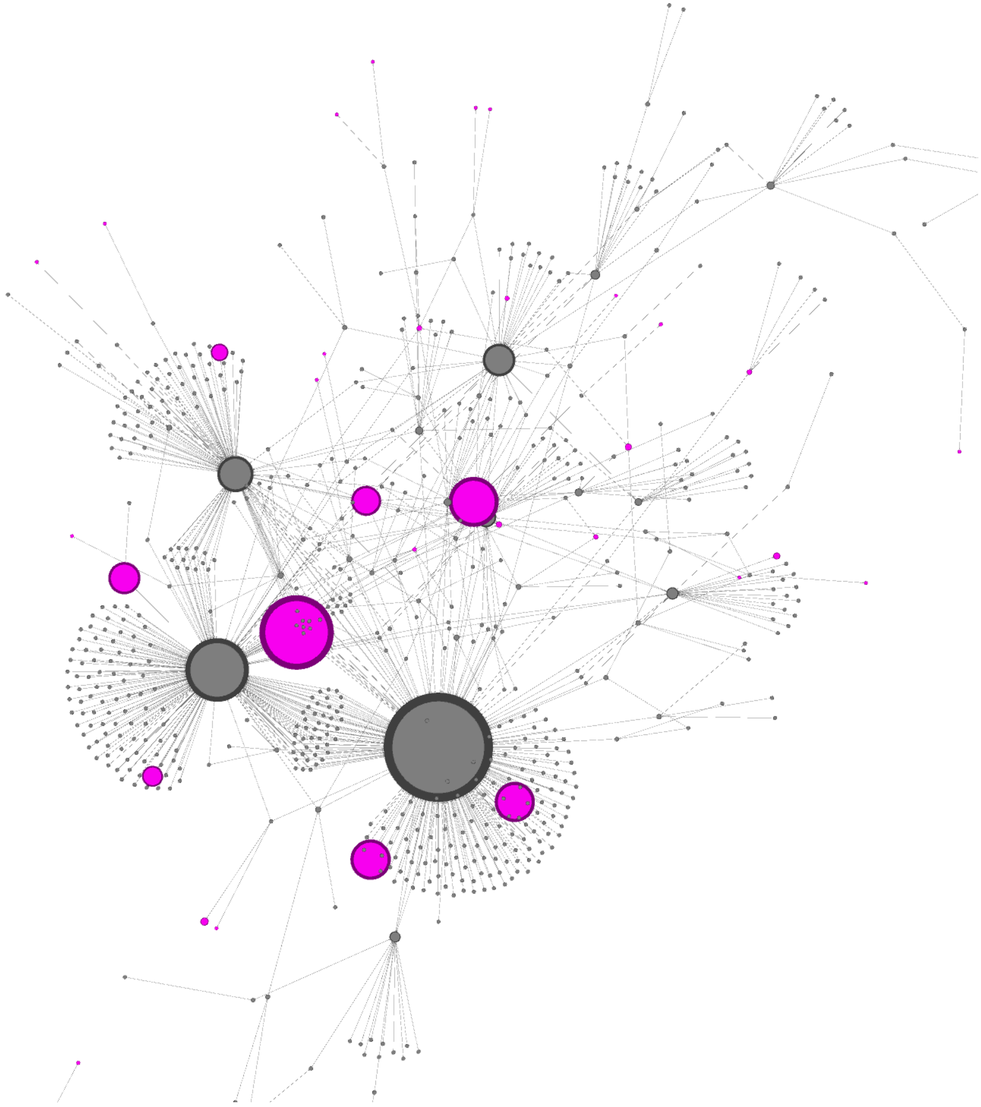
- Available as:
  - Raw data (archived MRT files)
  - Live stream – RIS Live
  - Whois query interface – RISwhois
  - Visualisations in RIPEstat
- Find more at ris.ripe.net



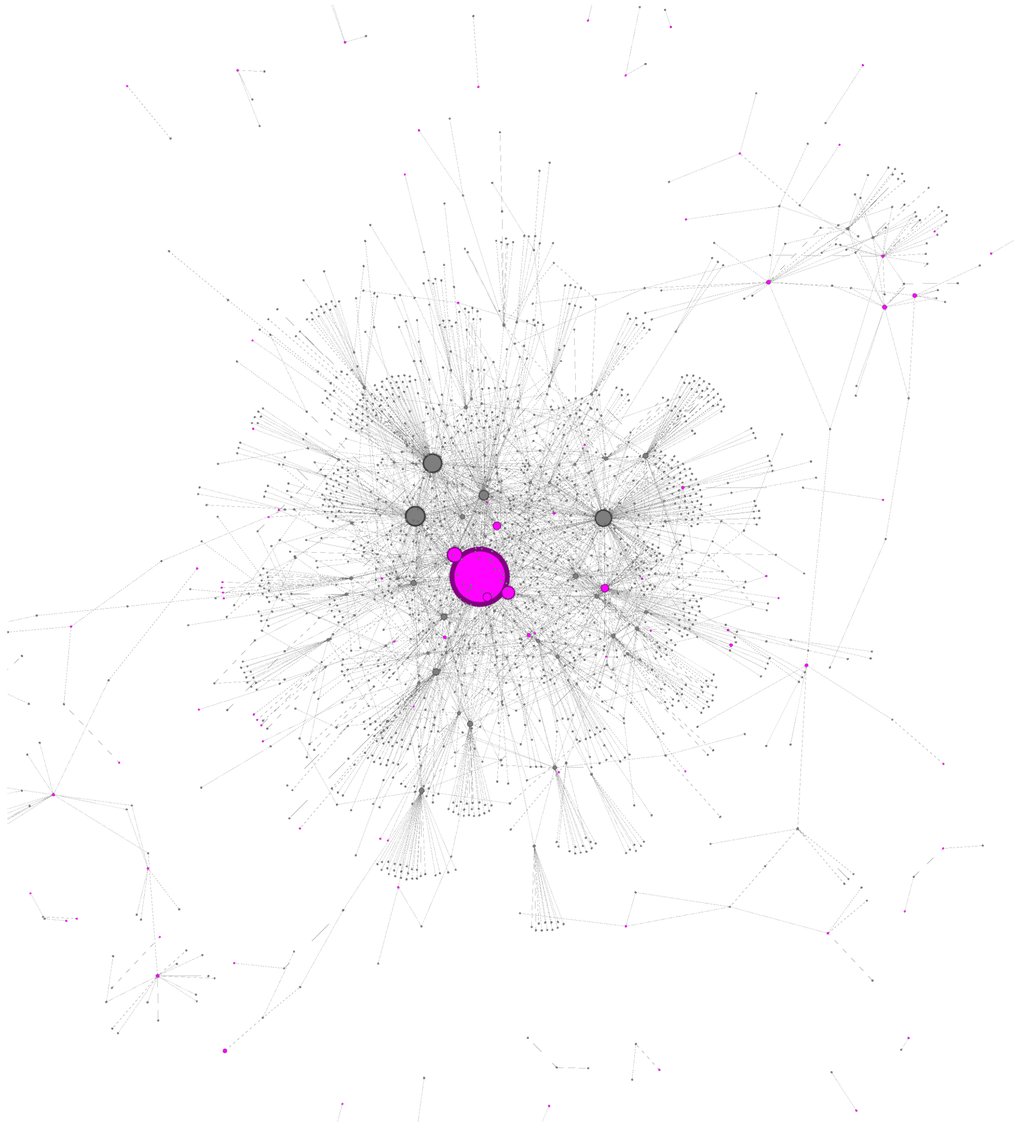
RIS data 2023-05-01 – Belarus



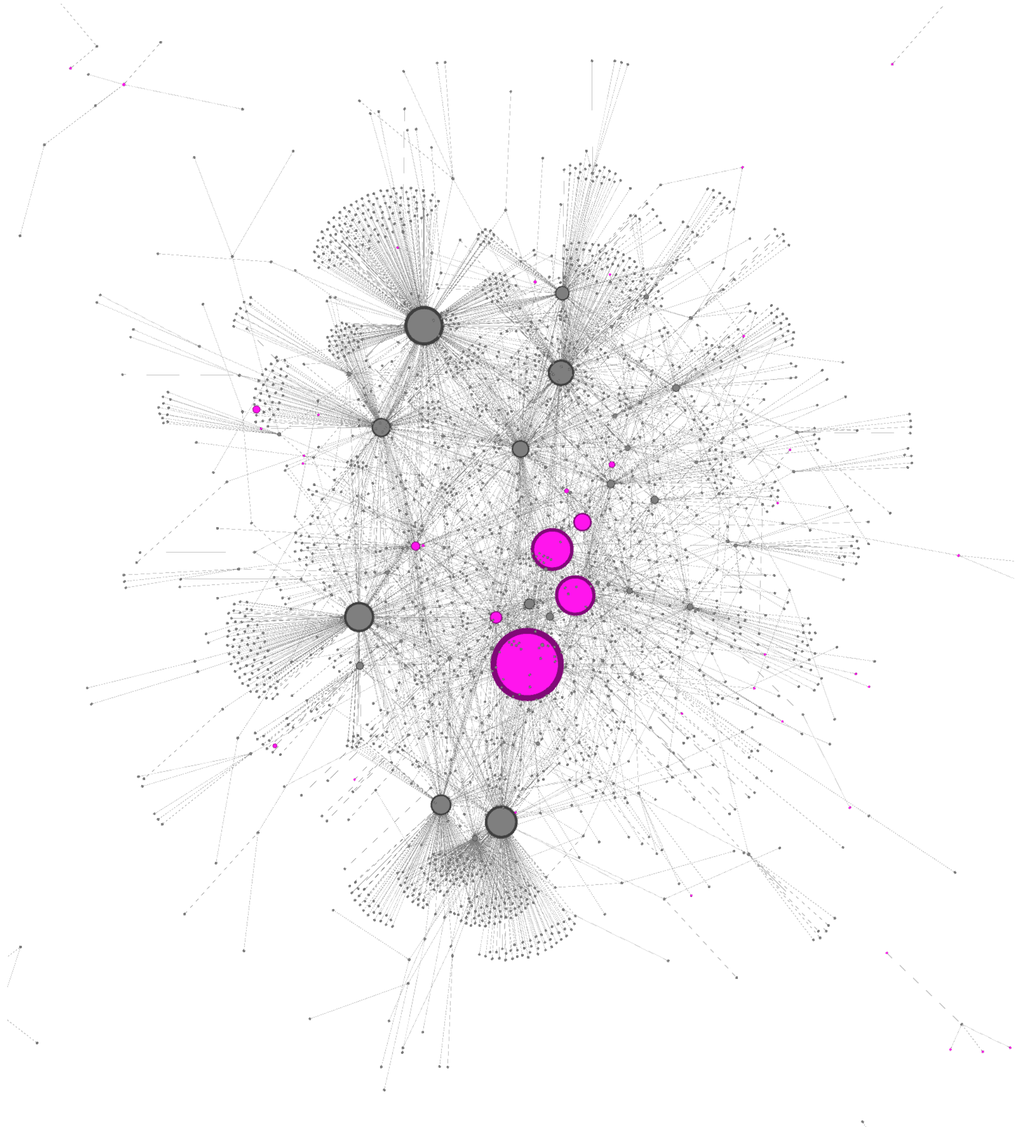
RIS data 2023-05-01 – Turkey



RIS data 2023-05-01 – Ukraine



RIS data 2023-05-01 – Poland



Foreign peering transits

PL 2022-01-01	PL 2023-01-01	PL 2023-05-01	UA 2023-05-01	BY 2023-05-01	TR 2023-05-01
US 17	US 18	US 20	RU 22	RU 3	US 14
DE 7	GB 5	DE 6	US 15	US 3	DE 8
GB 6	RO 4	GB 4	PL 11	NL 2	GB 5
UA 4	UA 4	RO 3	NL 9	UA 1	NL 5
RU 4	DE 4	UA 3	DE 7	GB 1	IN 2

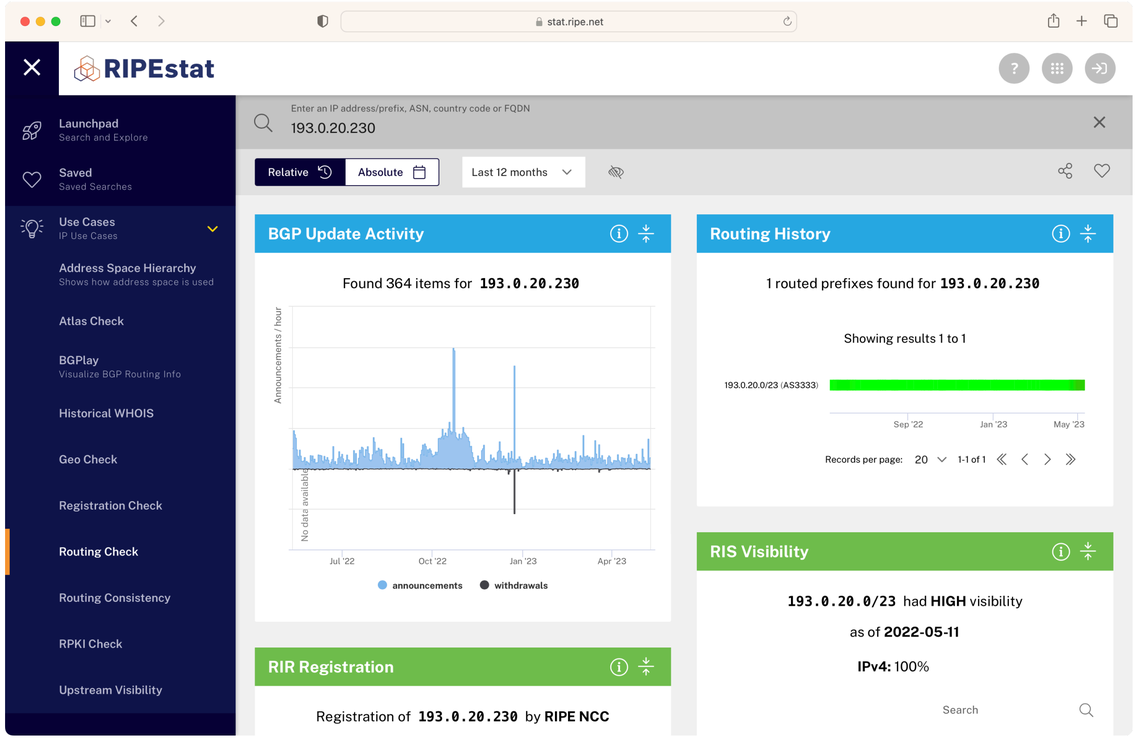
Summary (snapshot 2023-05-01)

	PL	UA	BY	TR
Nr. domestic ASNs in routing	2117	1671	107	648
Nr. foreign ASNs in routing	56	100	12	42
Nr. domestic transit links	2960	1938	117	784
Nr. international transit links	548	620	15	90

RIPEstat

What is RIPEstat?

- Information service for Internet-related data
- Open data platform of the RIPE NCC data
- RIPEstat provides:
  - information on IP address space and Autonomous System Numbers (ASNs)
  - statistics on specific hostnames and countries

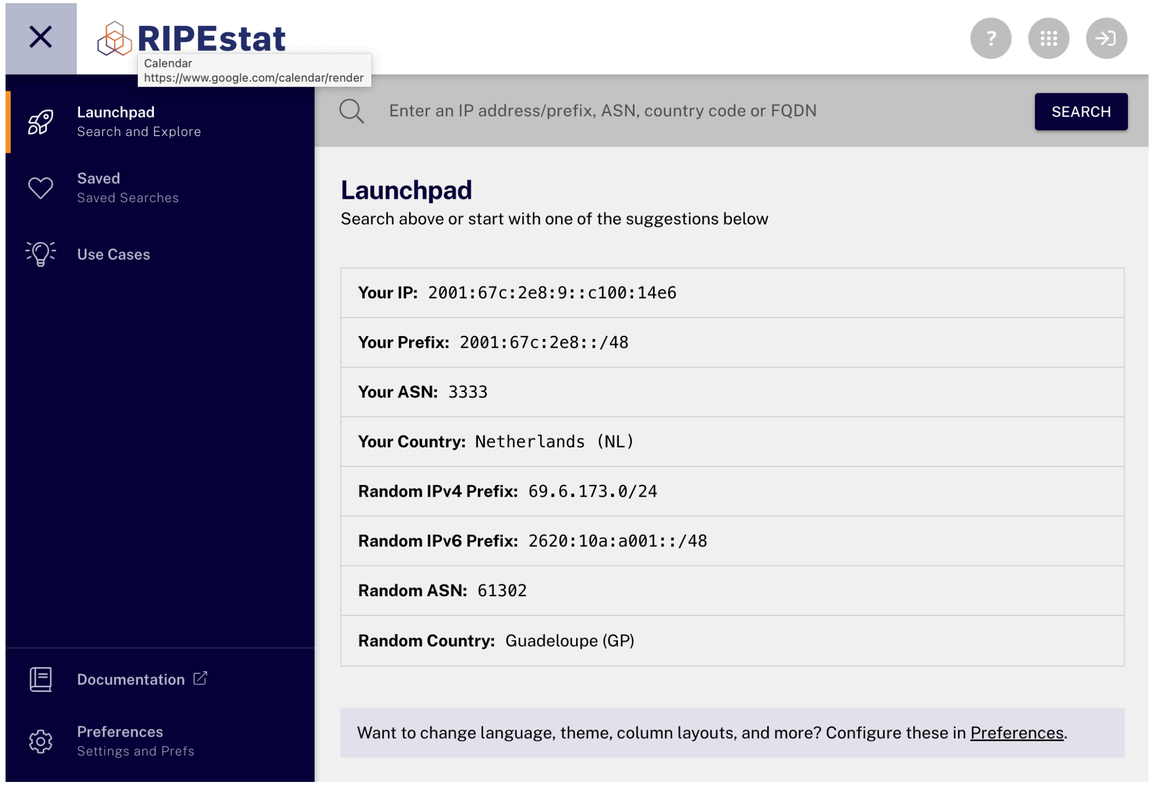


RIPEstat Data Sources

- More than 35 different datasets
  - RIPE Database and the registry data from other RIRs
  - BGP routing data (RIS)
  - RIPE Atlas
  - M-Lab, Speedchecker, etc.
  - Geolocation
  - RPKI
  - More details at https://stat.ripe.net/data-sources
- New datasets are constantly added!
  - E.g. new feature to check multiple DNS-based blocklists in real-time

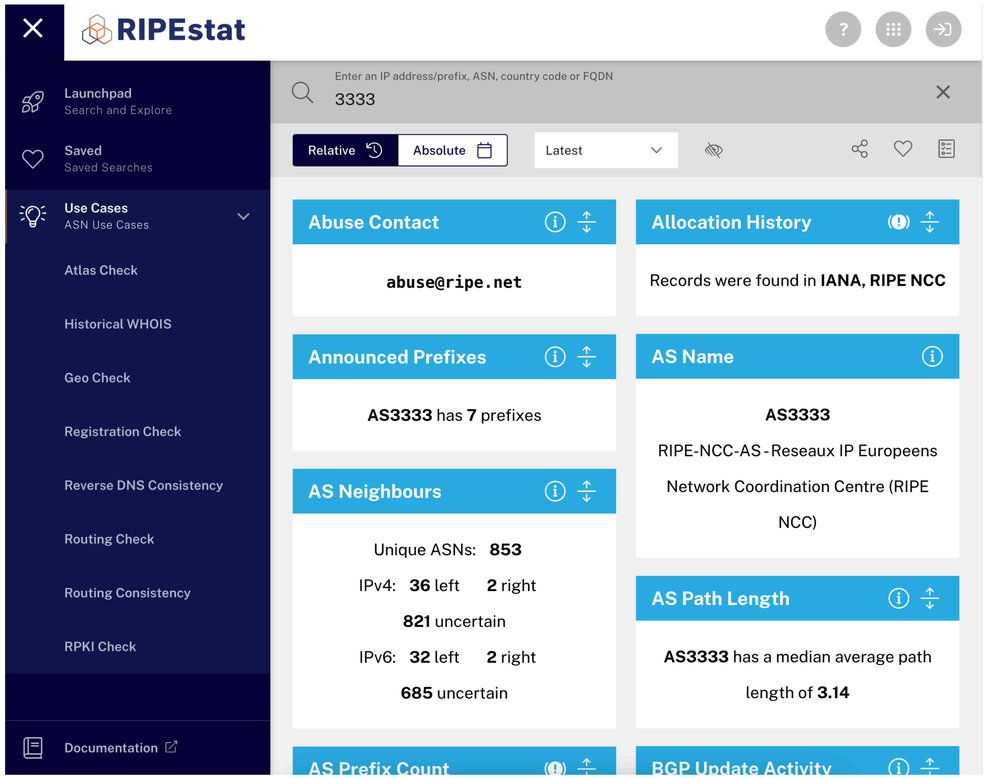
Quick intro (1)

- Search by IP address/prefix (IPv4, IPv6), ASN, country code or fully qualified domain name (FQDN)
- Launchpad suggestions are pulled from your network or are random suggestions

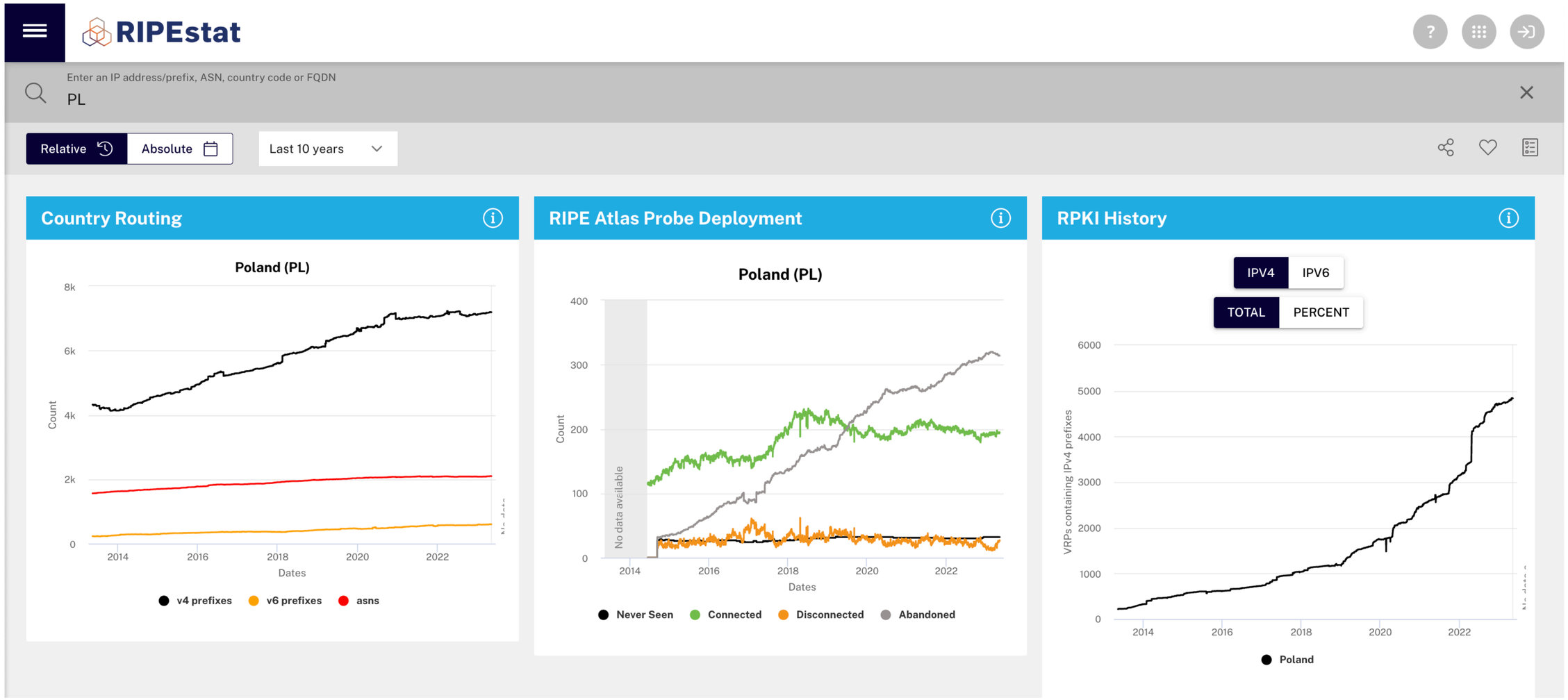


Quick intro (2)

- Use cases are based on the resource type/search:
  - IP address/prefix (IPv4, IPv6),
  - ASN,
  - country code,
  - fully qualified domain name (FQDN)

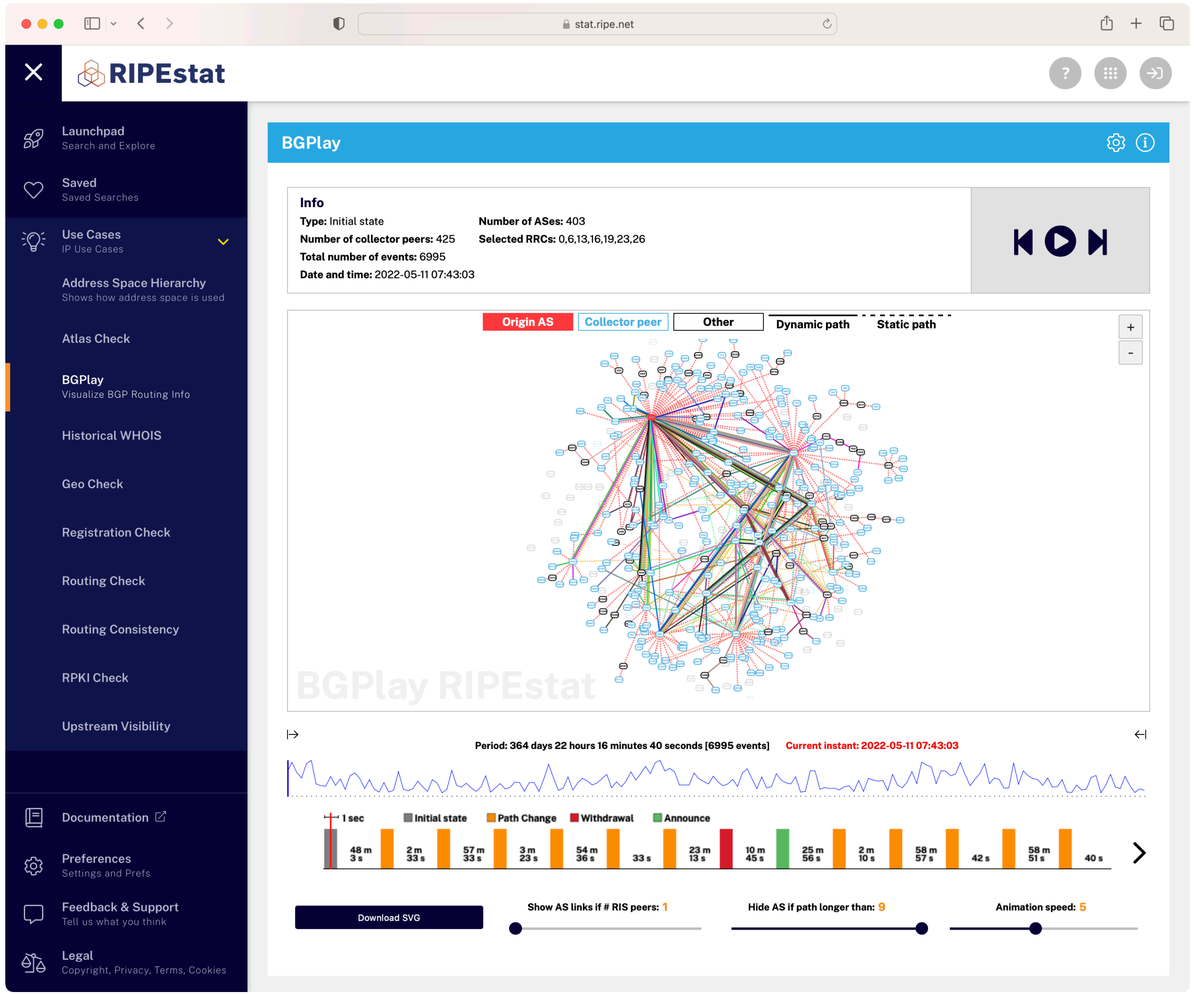


Use Cases: County Stats – PL



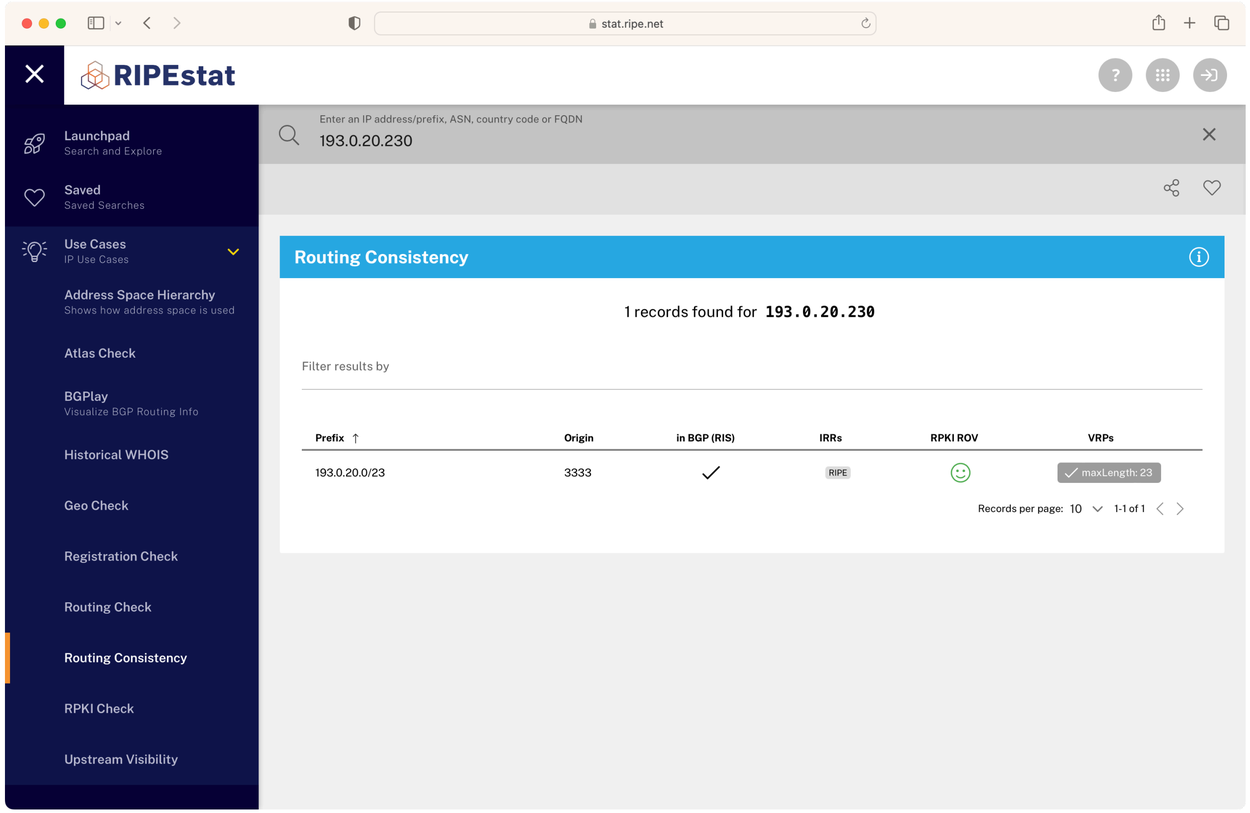
Use cases: BGPlay

- BGPlay shows the routing history related to a specific set of resources (prefixes, Autonomous Systems, IPs), as seen by RIS
- It provides a graphical representation of the links across all AS paths between the BGP collection points and the target resource(s)



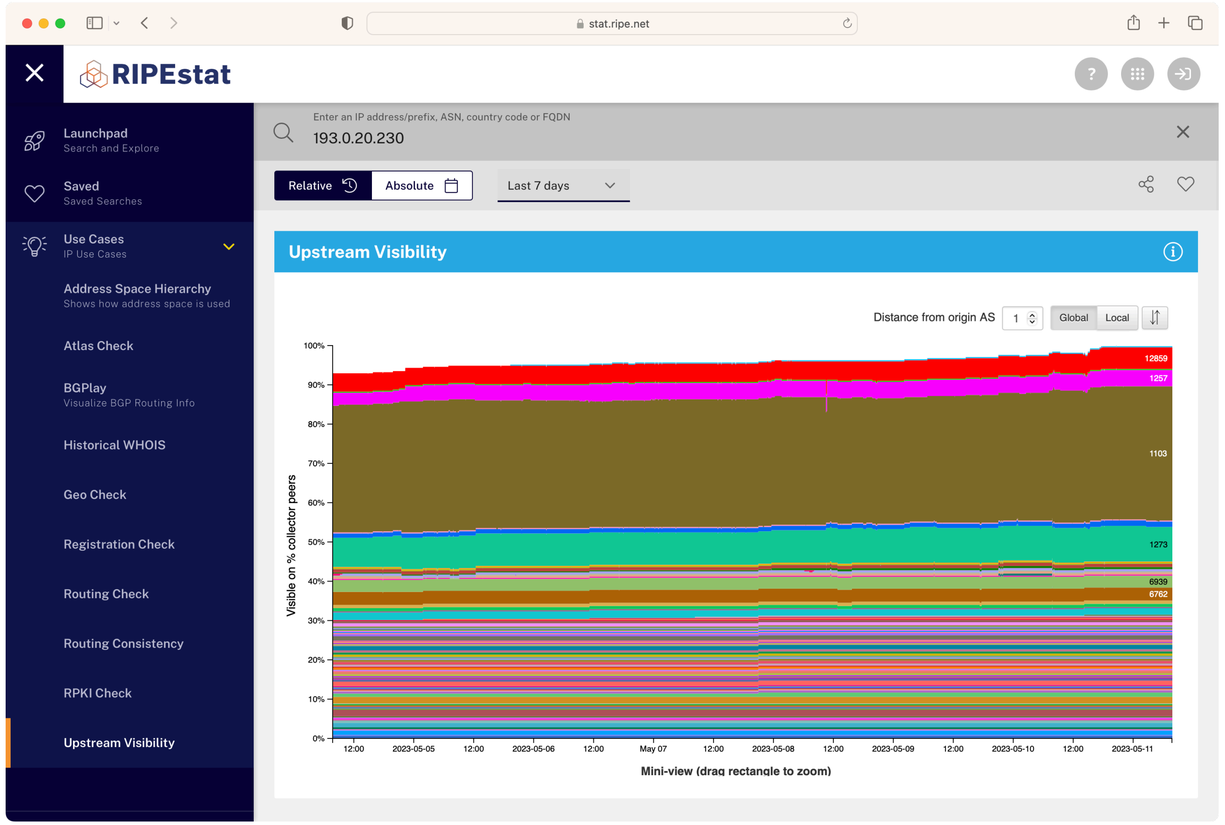
Use cases: Routing consistency

- Routing Consistency compares:
  - objects in Routing Registries with observed real-world routing (seen by RIS)
  - RPKI validation status where applicable



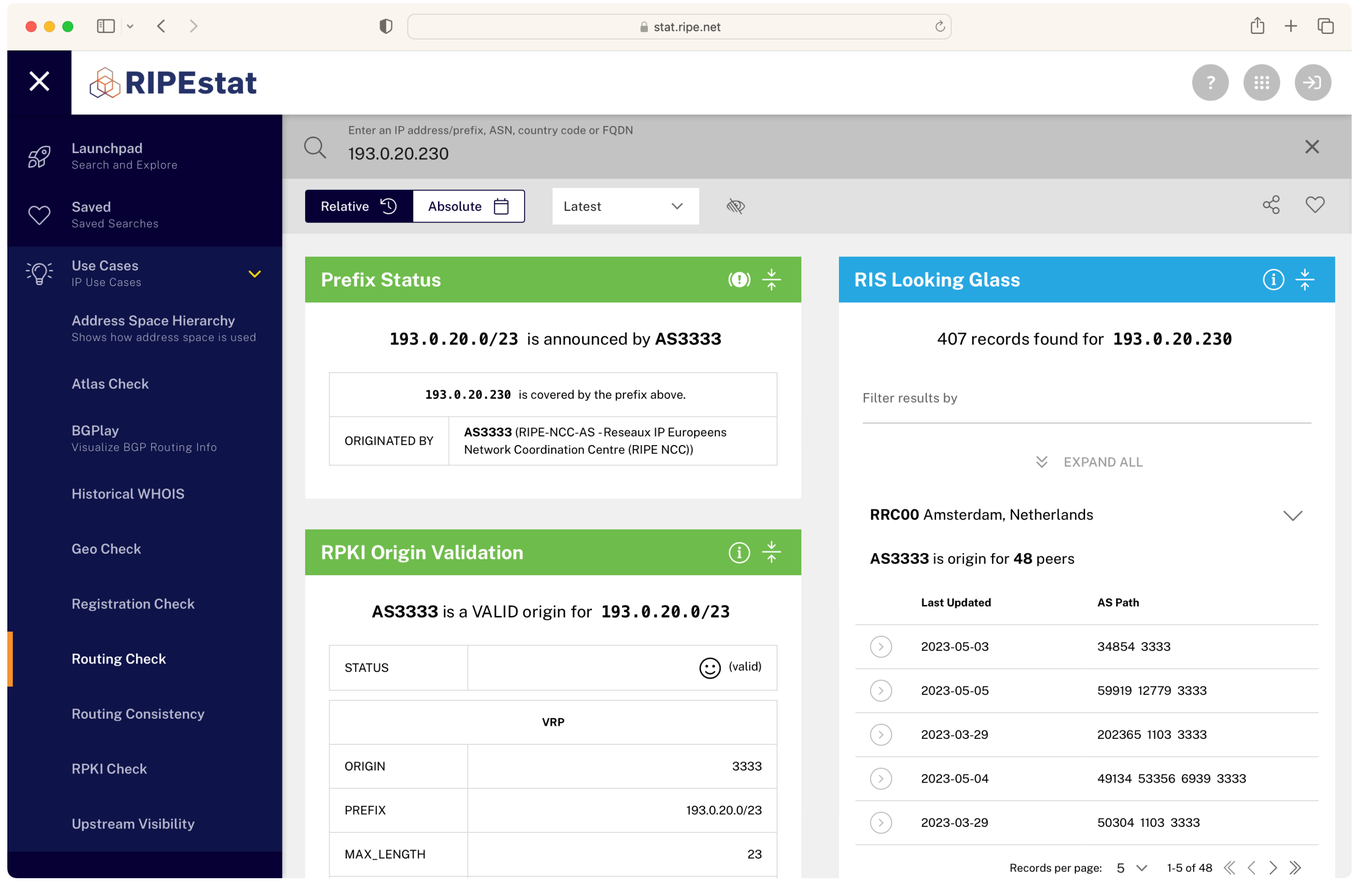
Use cases: Upstream visibility

- The Upstream Visibility provides a concise way of visualising routing data of a specified prefix



Use cases: Routing check (1)

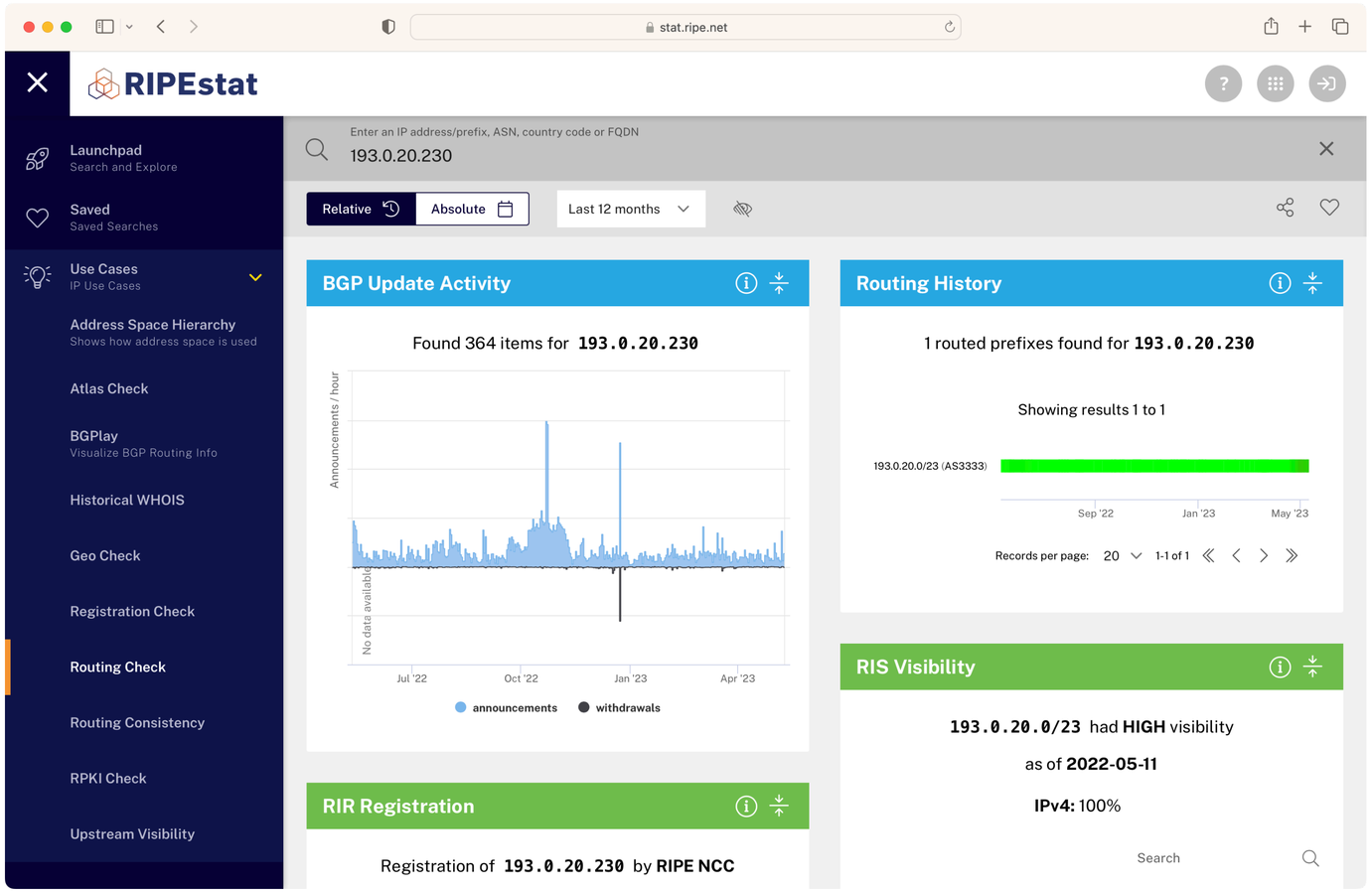
- Prefix Status
- RIS Looking Glass
- RPKI Origin Validation



Use cases: Routing check (2)

- BGP Update Activity
- RIR Registration
- Routing History
- RIS Visibility

- RIPEstat Data API



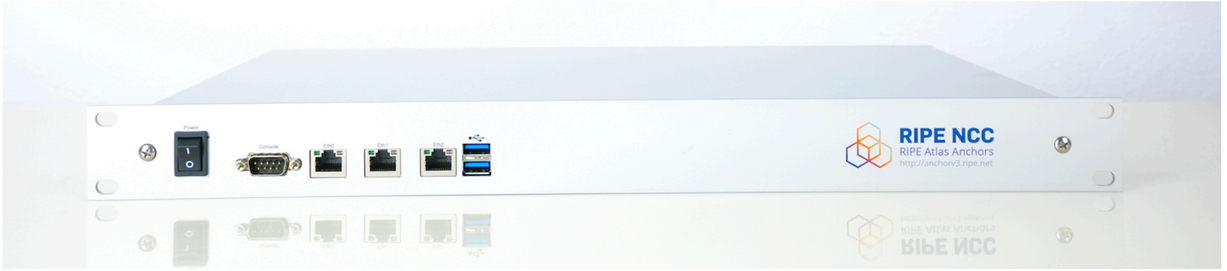
RIPE Atlas

RIPE Atlas

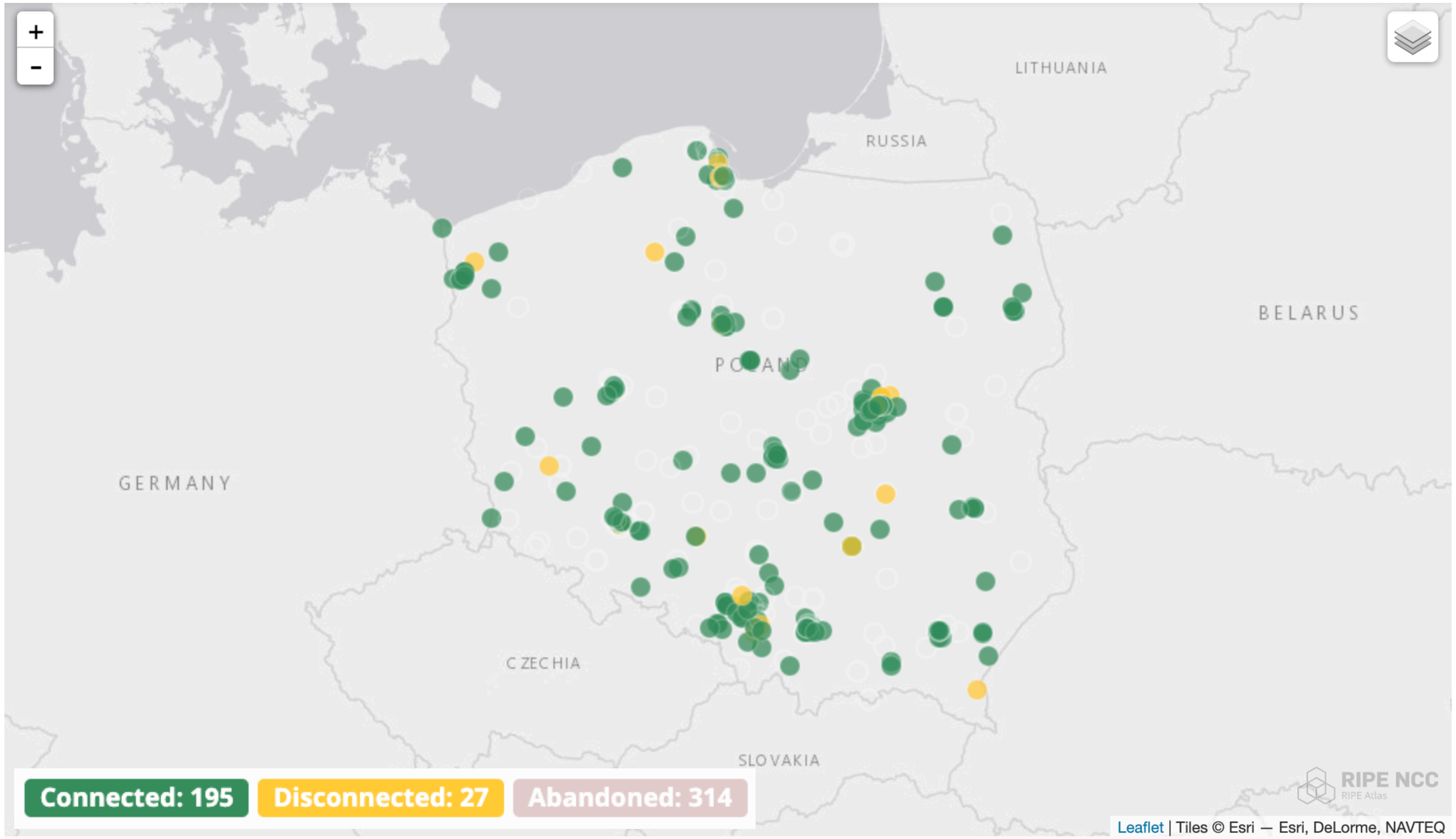
- RIPE Atlas is the RIPE NCC’s Internet measurement platform
- It is a global network of devices that actively measure Internet connectivity
- Anyone can access this data via Internet traffic maps, streaming data visualisations, and an API
- RIPE Atlas users can also perform customised measurements to gain information about their own networks

How we collect data?

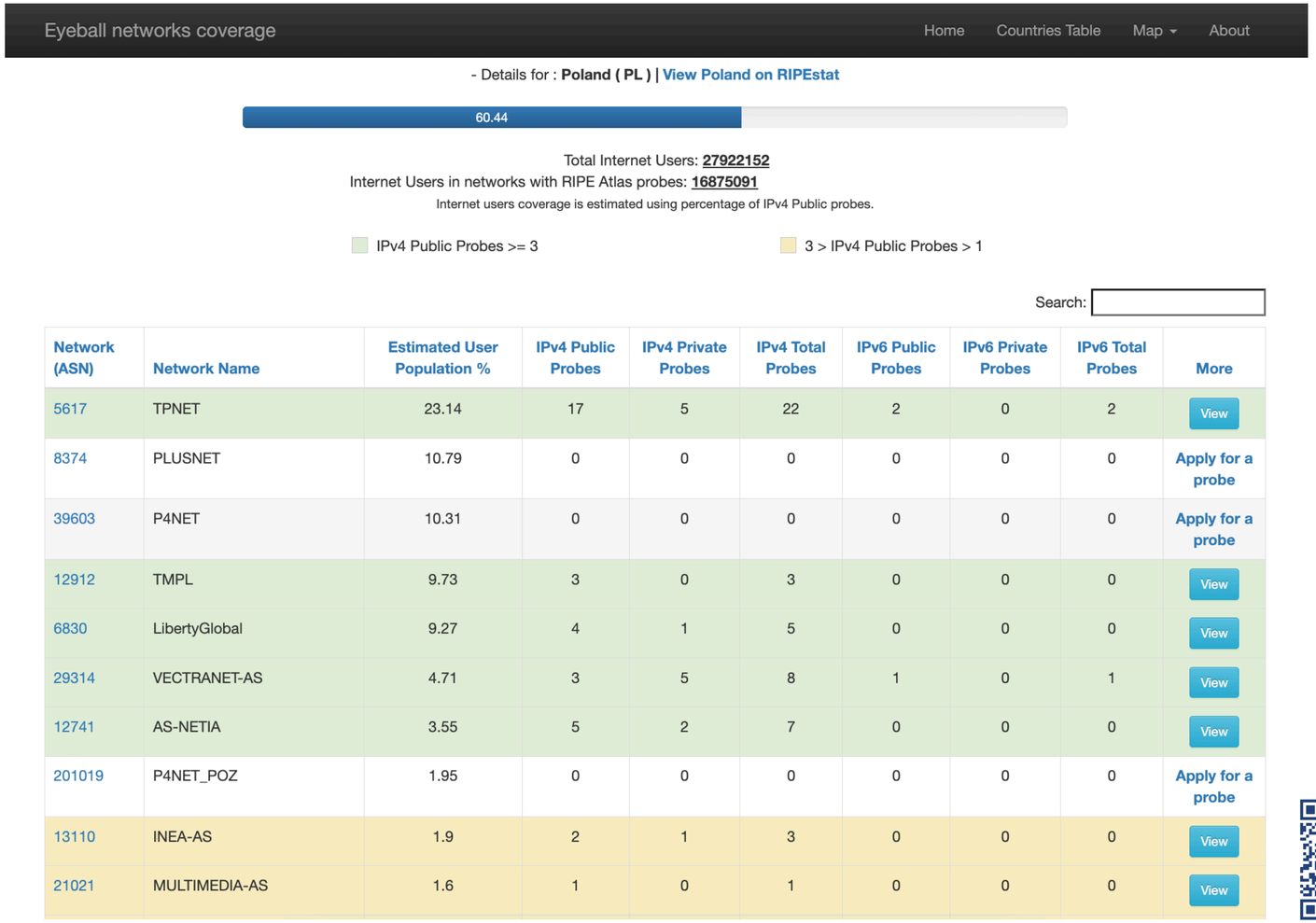
- 12,000+ RIPE Atlas probes connected in 169 countries
- 787 RIPE Atlas Anchors
- 14,000+ results collected per second
- 33,000+ measurements currently running



RIPE Atlas in Poland – Geographical Distribution



Networks coverage in Poland



Network (ASN)	Network Name	Estimated User Population %	IPv4 Public Probes	IPv4 Private Probes	IPv4 Total Probes	IPv6 Public Probes	IPv6 Private Probes	IPv6 Total Probes	More
5617	TPNET	23.14	17	5	22	2	0	2	View
8374	PLUSNET	10.79	0	0	0	0	0	0	Apply for a probe
39603	P4NET	10.31	0	0	0	0	0	0	Apply for a probe
12912	TMPL	9.73	3	0	3	0	0	0	View
6830	LibertyGlobal	9.27	4	1	5	0	0	0	View
29314	VECTRANET-AS	4.71	3	5	8	1	0	1	View
12741	AS-NETIA	3.55	5	2	7	0	0	0	View
201019	P4NET_POZ	1.95	0	0	0	0	0	0	Apply for a probe
13110	INEA-AS	1.9	2	1	3	0	0	0	View
21021	MULTIMEDIA-AS	1.6	1	0	1	0	0	0	View

What Can I Do With RIPE Atlas?

- RIPE Atlas customised measurements allow hosts and sponsors to conduct measurements on their own network(s) using other probes within the RIPE Atlas network:
  - Continuously monitor network reachability from thousands of vantage points around the globe
  - Investigate and troubleshoot network issues with quick, flexible connectivity checks
  - Create alarms using RIPE Atlas status checks, which work with your own monitoring tools
  - Check the responsiveness of DNS infrastructure, such as root name servers
  - Test IPv6 connectivity
- A complete collection of use cases, published research and analyses based on RIPE Atlas is published on RIPE Labs

Customised Measurements

- RIPE Atlas customised measurements are available to:
  - RIPE Atlas probe hosts
  - anchor hosts
  - sponsors
  - RIPE NCC members
- How it works?
  - earn credits by hosting or sponsoring one or more probes
  - pick your destination and customise your measurements

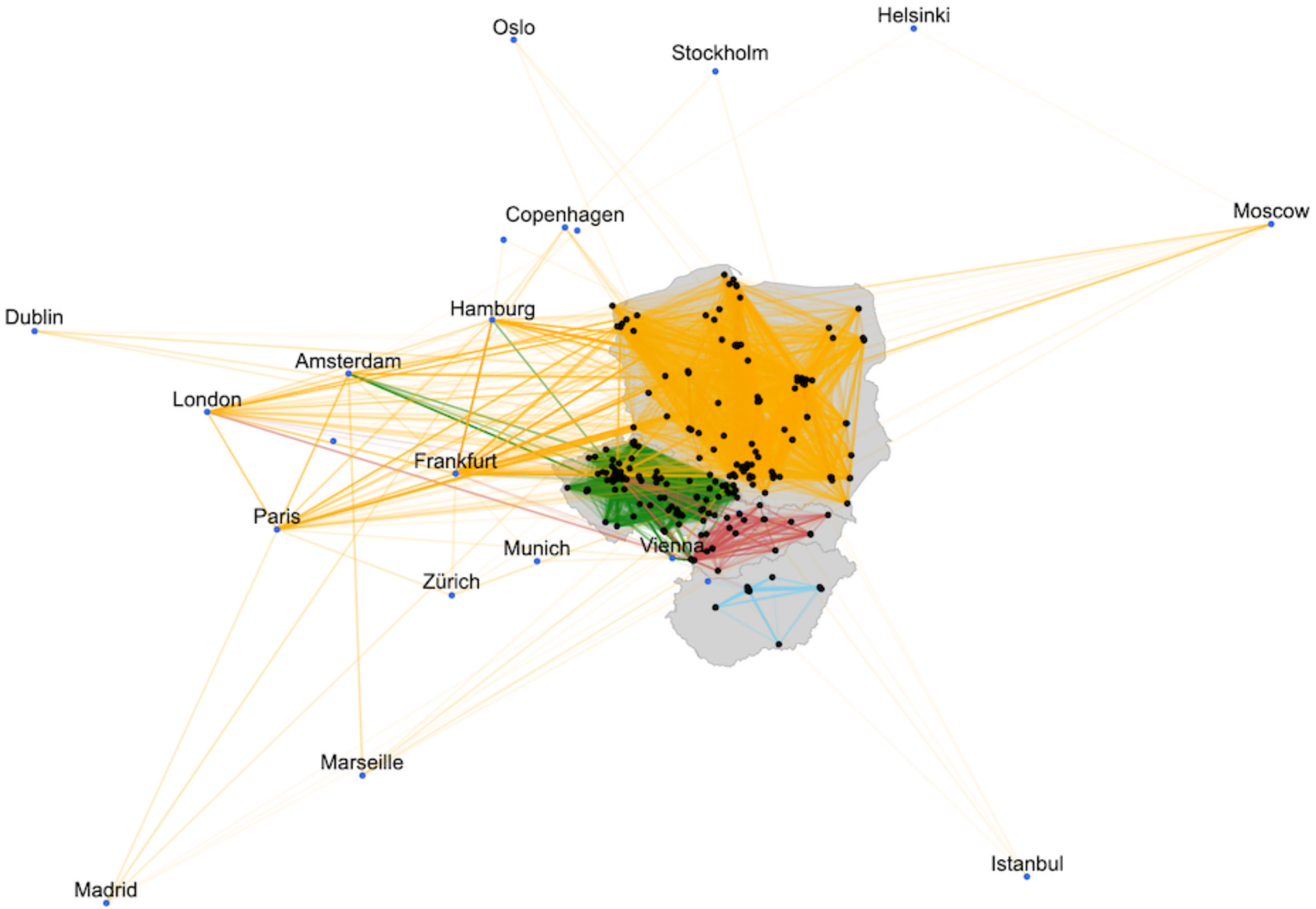
RIPE NCC
Internet Country Report

Poland, Hungary, Slovakia, Czech Republic

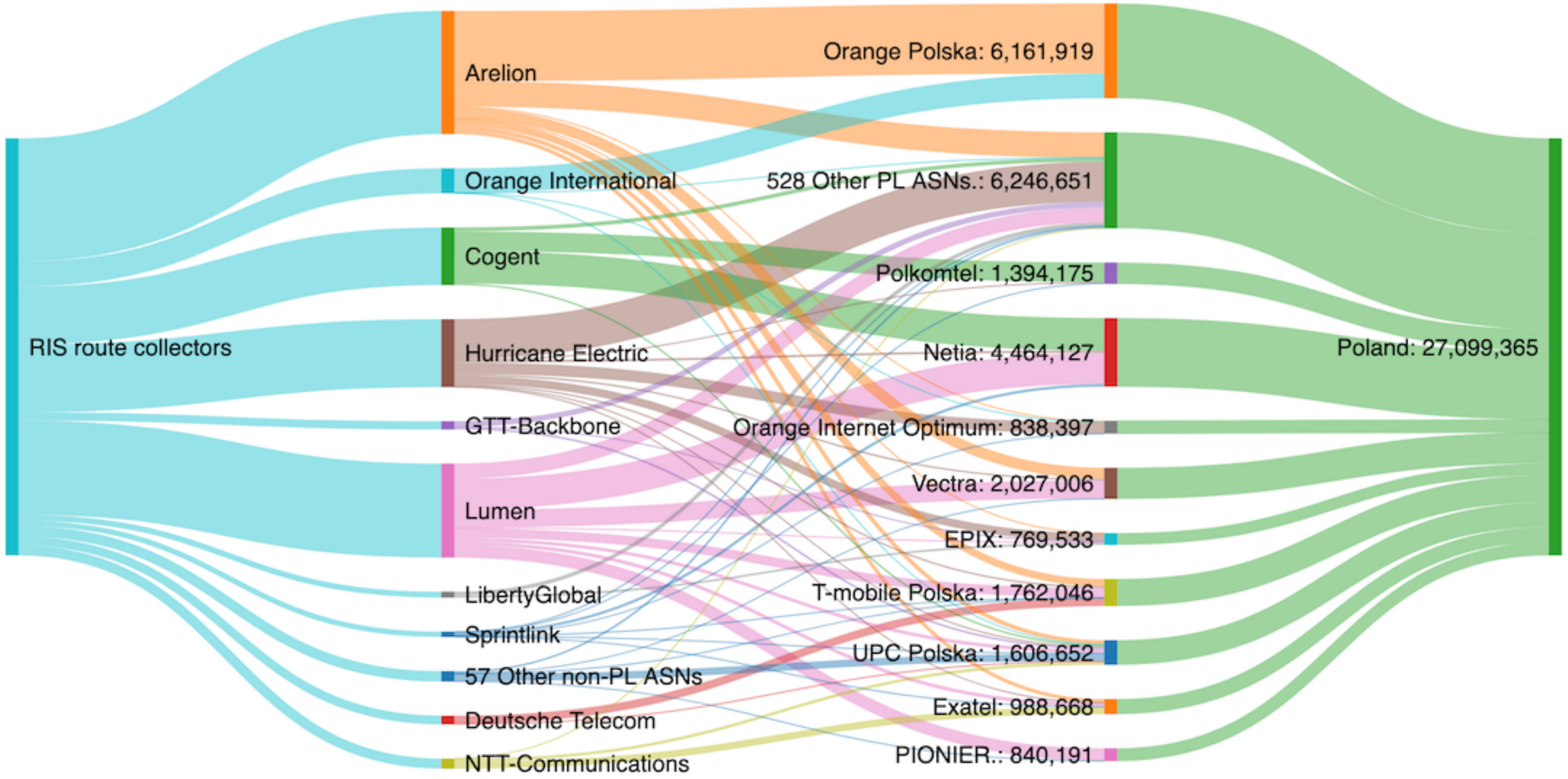
RIPE NCC Internet Country Reports

- Major market players analysis
- Internet number resource holdings and transfers
- IPv6 readiness
- Current state of Internet development and capacity for future growth
- Relationship between different networks in the countries and regions
- International connectivity to the global Internet
- Access to K-root
- Traffic paths and routing security

Out-of-country paths (IPv4)



Poland’s international connectivity



Keep an eye on the announcements

- Internet Country Report on Poland, Hungary, Slovakia, Czech Republic will be published on 20 June 2023
- All reports are available on https://labs.ripe.net/author/ripe-labs-editor/country-reports/
- Highlights from the reports are presented at the Open Houses - online events
- Follow us on Twitter @RIPELABS or LinkedIn

Upcoming events


Join us at
RIPE 86
Rotterdam, Netherlands
22 - 26 May 2023


RIPE NCC Days
Sofia
Join us!
27-28 June 2023 · Sofia – Bulgaria
www.ripe.net/ripe-ncc-days-sofia

Questions

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