

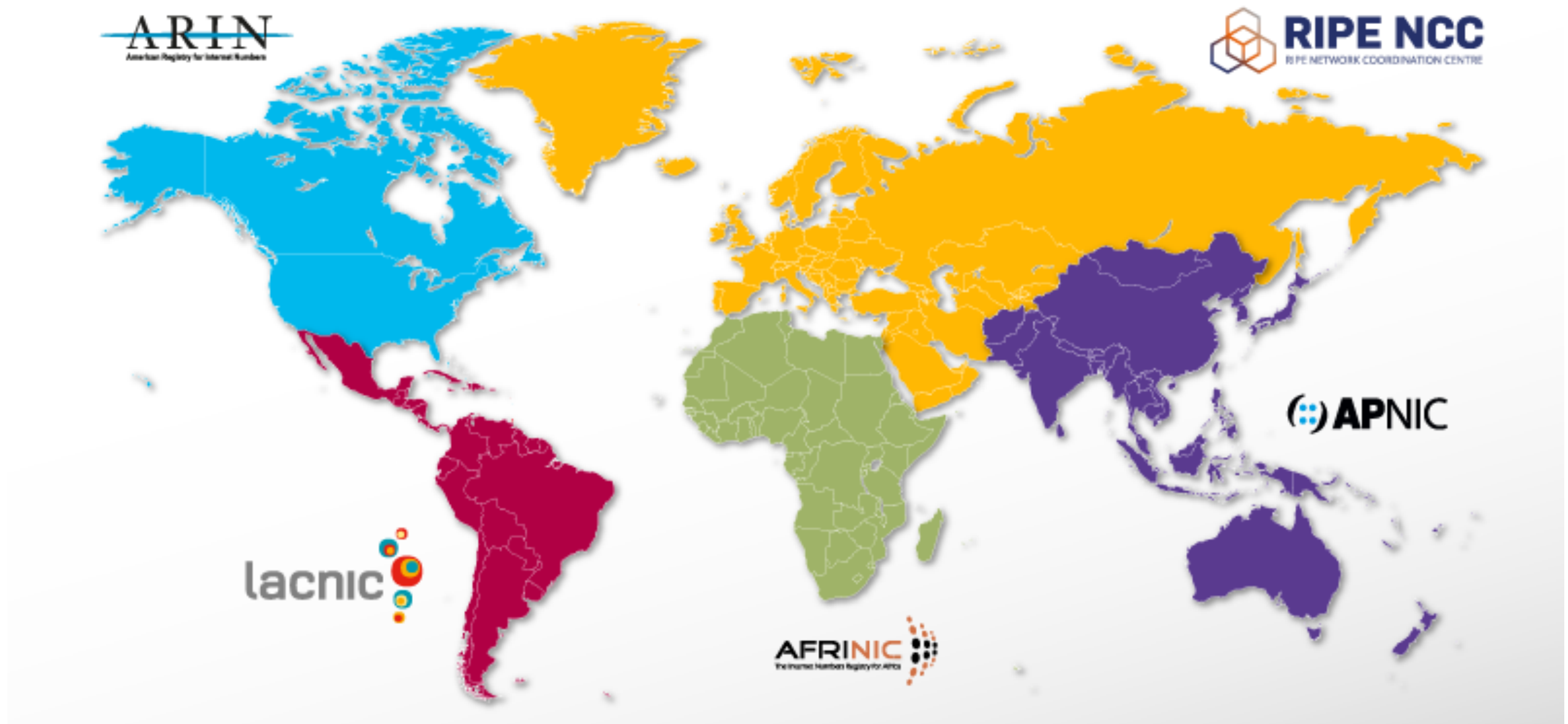


**RIPE NCC**  
RIPE NETWORK COORDINATION CENTRE

# The (IPv6) Internet in Romania - RIPE NCC Data & Tools

Mirjam Kühne

# RIR Service Regions



# RIPE NCC



- Started operating in 1992
  - Membership association under Dutch law
  - 16,700 members from 76 countries

## Member services

- Resource distribution
  - IPv4, IPv6, ASNs
- Training courses

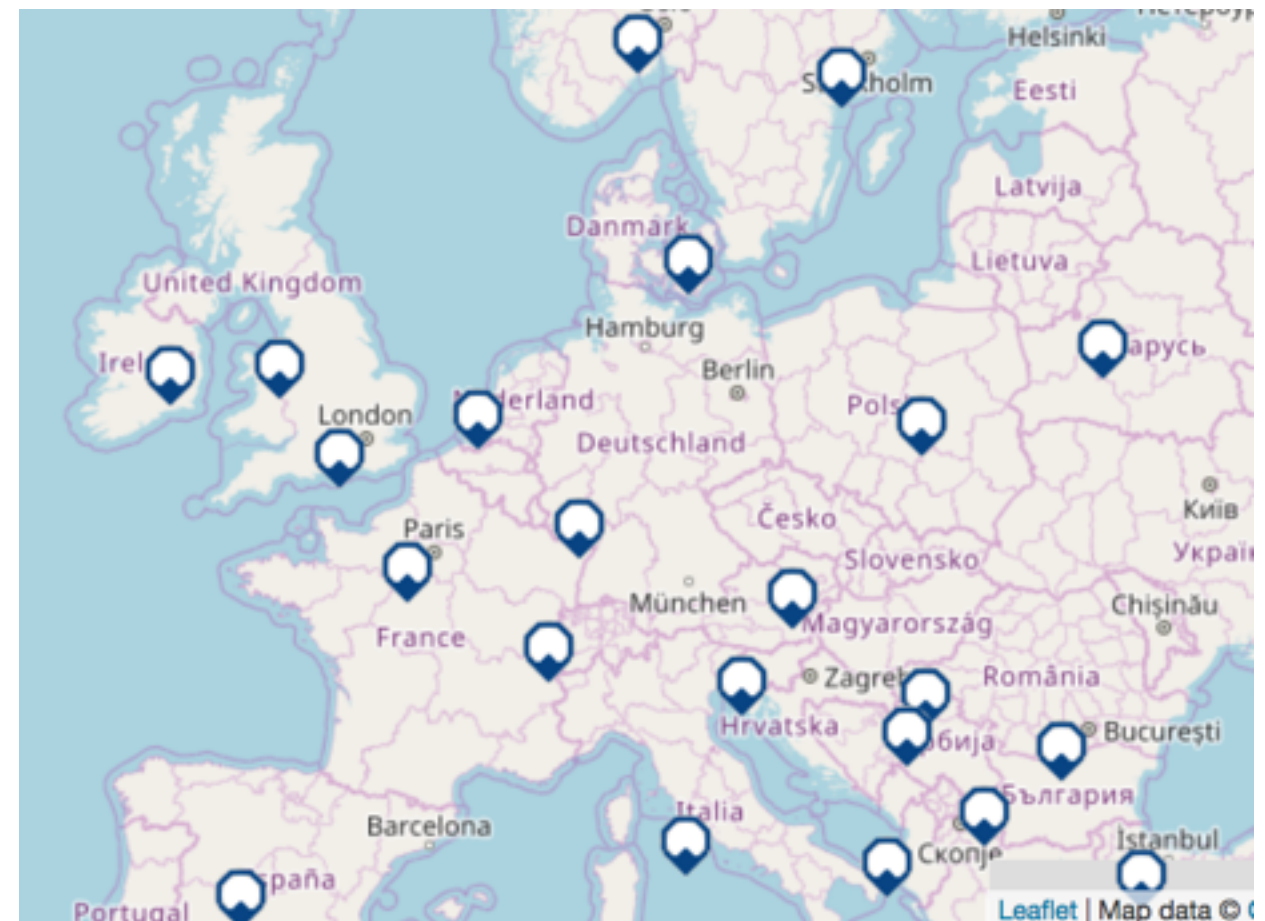
## Public services

- RIPE Database
- DNS services
  - reverse DNS
  - K-root
- Tools and Data

# Supporting local NOGs



- Platform for local NOGs
  - <https://labs.ripe.net/nog>
- NOGs can exchange experiences
- The RIPE NCC can
  - Help to find speakers
  - Connect to other NOGs
  - Promote the event
  - Sponsor





# IPv6 Deployment

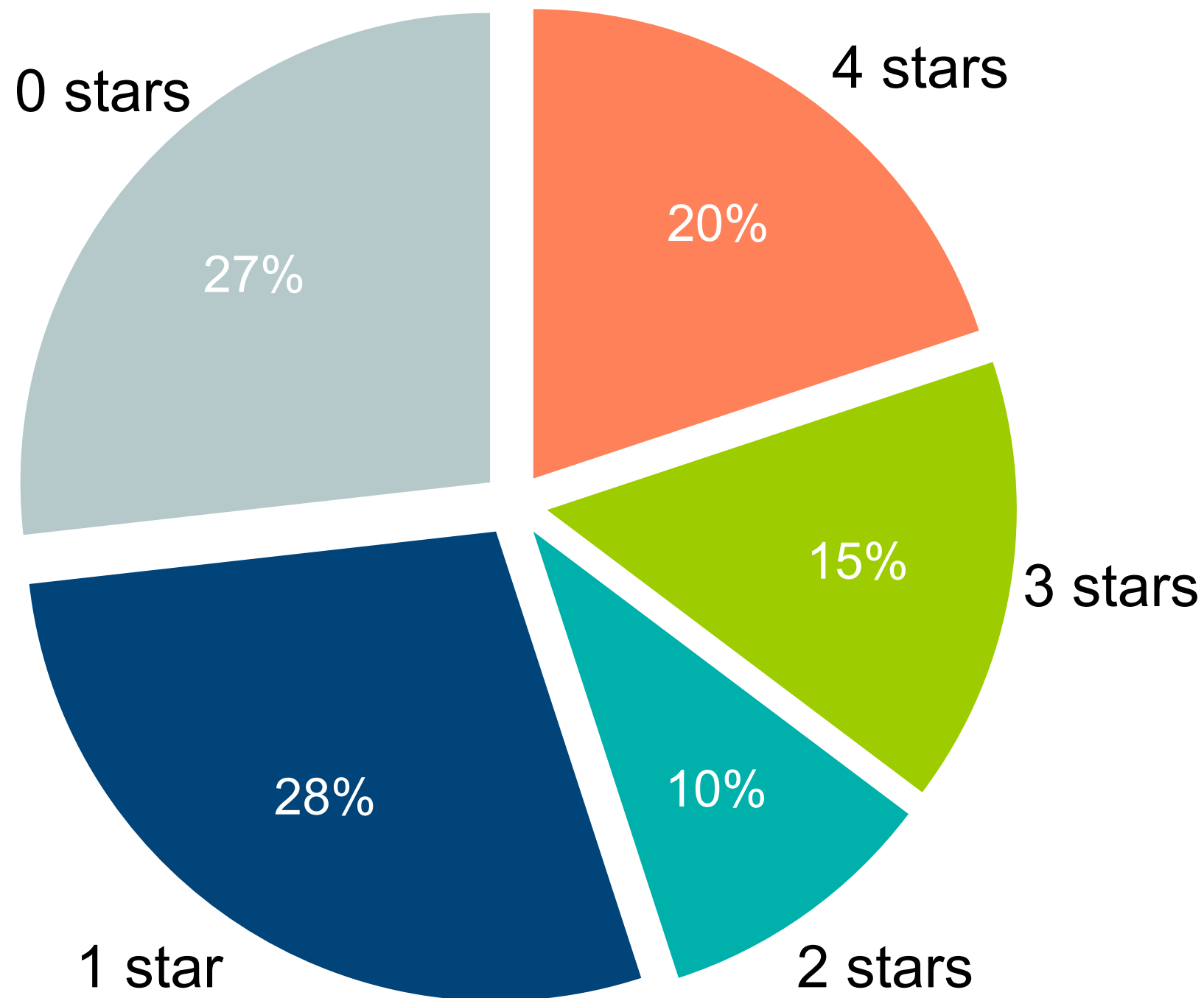
# IPv6 RIPEness



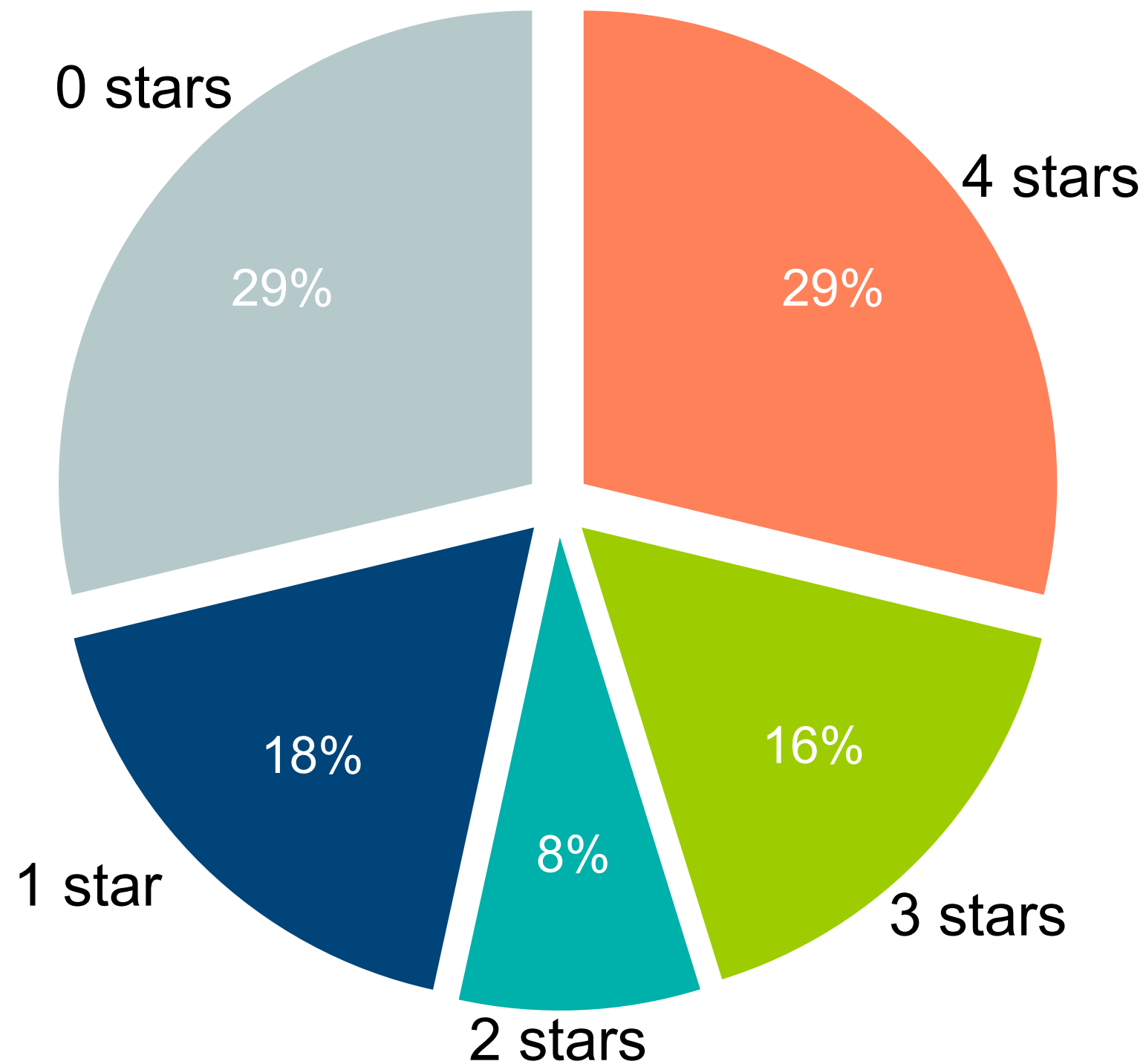
- Rating system to monitor IPv6 deployment among RIPE NCC members
- Stars are awarded for:
  - Obtaining an IPv6 address (allocation)
  - Visibility in global routing table
  - Setting up routing registry entries
  - Setting up reverse DNS
- Per country statistics published daily

<https://ipv6ripeness.ripe.net/>

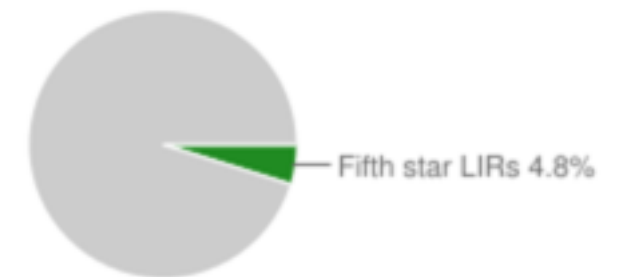
# IPv6 RIPEness in RIPE NCC Region



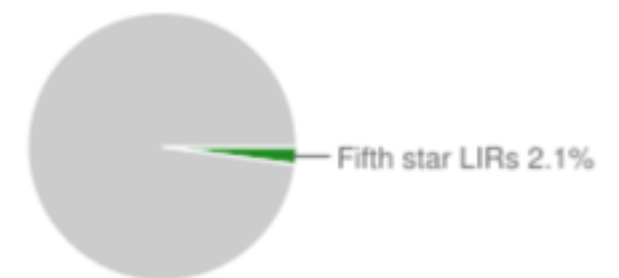
# IPv6 RIPEness in RO (146 LIRs)



## Content



## Access





# IPv6 RIPEness - Fifth Star



- Members can qualify for a fifth star
- This measures IPv6 deployment at the edge and looks at:
  - **Content** - 32% of content must be accessible over IPv6; or
  - **Access** - 32% of your customers are IPv6-capable
- The threshold doubles every year
- Get a new 5-star RIPEness t-shirt every year!

<https://ipv6ripeness.ripe.net/5star/NL.html>

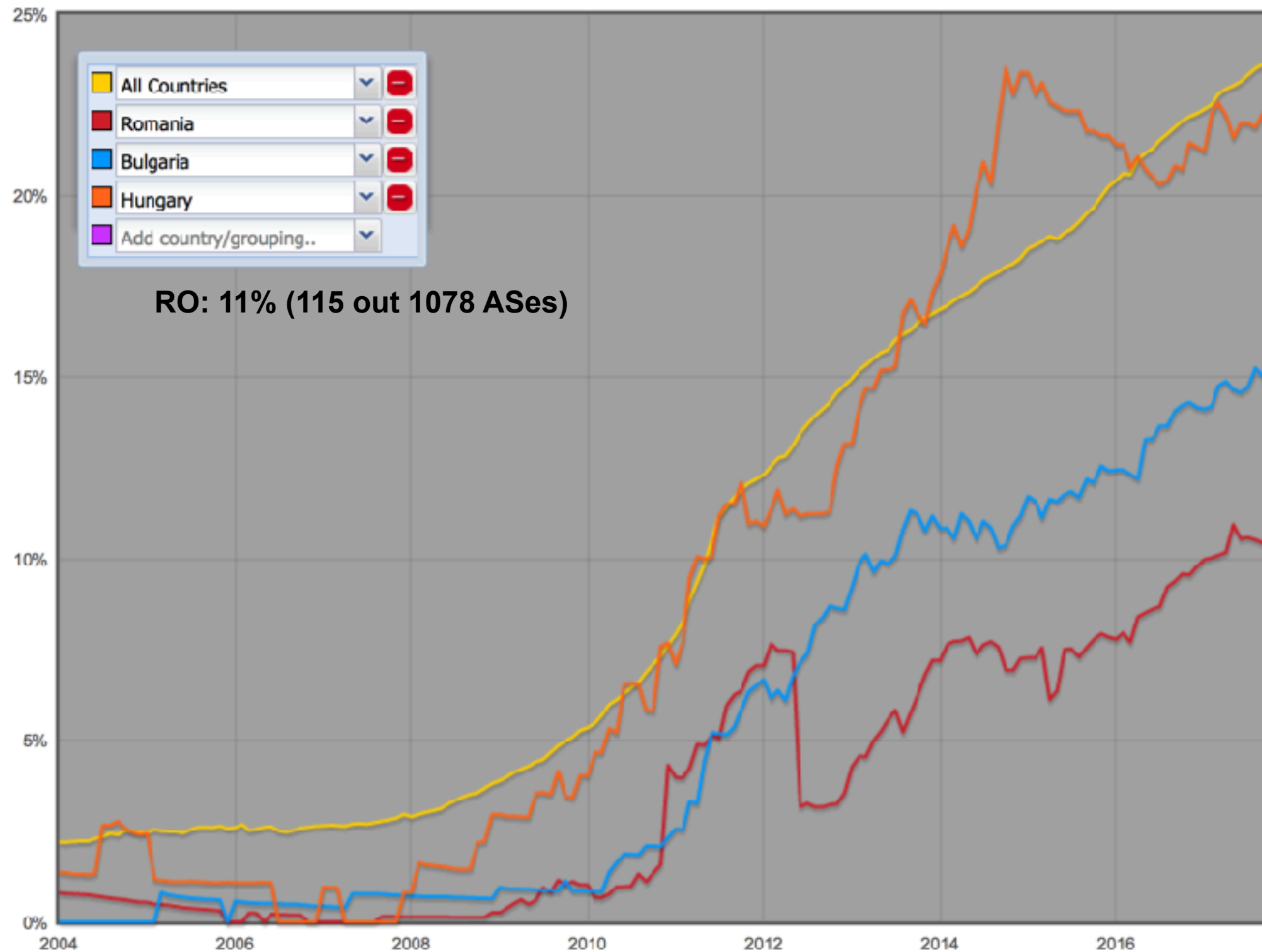
# New IPv6 RIPv6ness T-shirt



Show us your  
fifth star and we  
will send you this  
t-shirt :-)

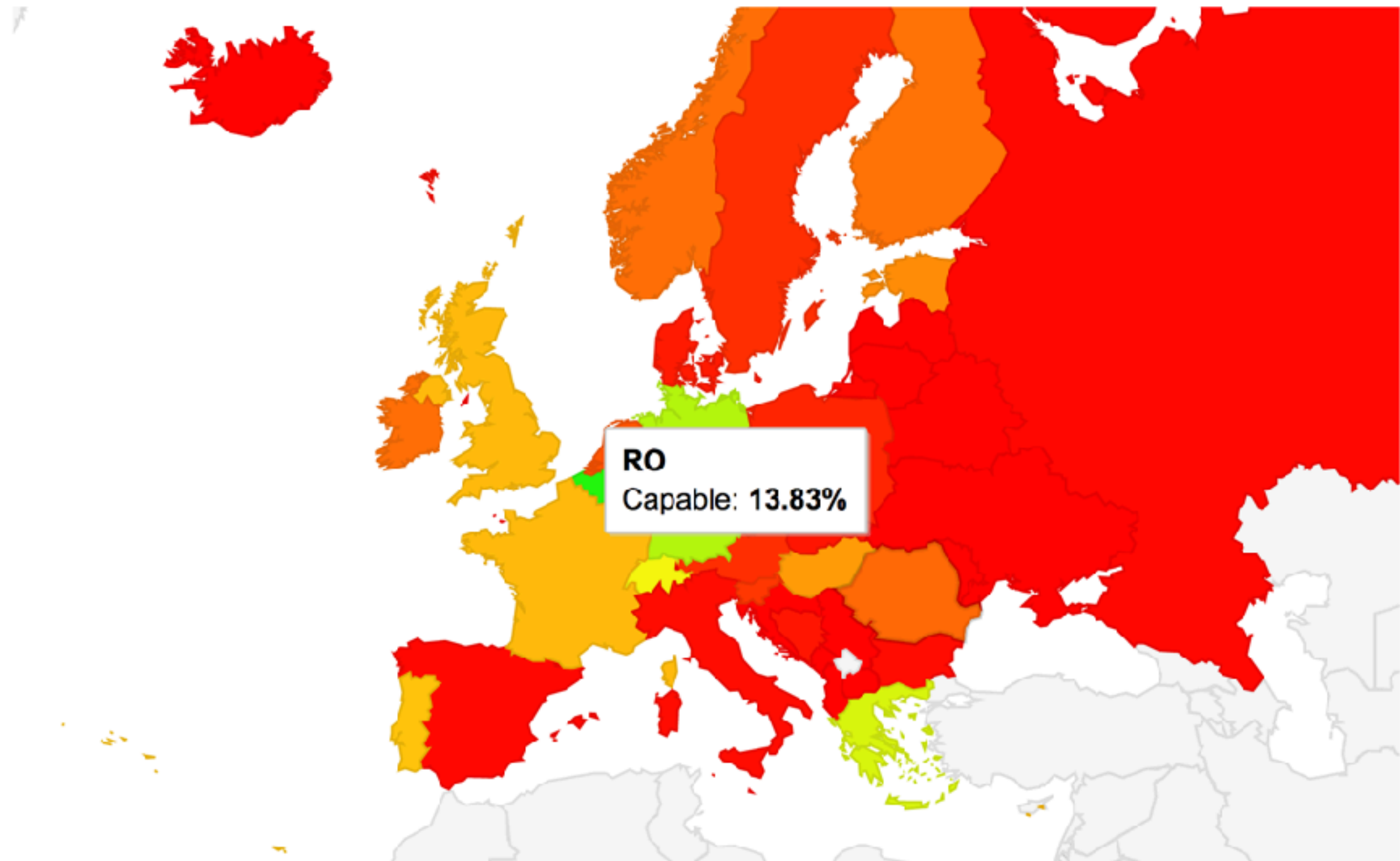


# ASes Announcing IPv6 Prefixes



<http://v6asns.ripe.net>

# IPv6 Everywhere?



<https://stats.labs.apnic.net/ipv6/>



# Europe in Numbers



CC	Country	IPv6 Capable	IPv6 Preferred	Samples	Weight	Weighted Samples
BE	Belgium, Western Europe, Europe	53.03%	51.67%	1,022,088	0.97	989,854
DE	Germany, Western Europe, Europe	43.65%	41.76%	2,751,810	2.68	7,382,314
IE	Ireland, Northern Europe, Europe	37.36%	36.95%	1,028,074	0.38	390,998
CH	Switzerland, Western Europe, Europe	36.51%	34.45%	640,220	1.2	768,384
GR	Greece, Southern Europe, Europe	33.46%	32.69%	1,273,573	0.55	695,086
LU	Luxembourg, Western Europe, Europe	31.79%	30.50%	98,151	0.58	57,036
EE	Estonia, Northern Europe, Europe	25.97%	25.55%	173,116	0.64	111,270
GB	United Kingdom of Great Britain and Northern Ireland, Northern Europe, Europe	23.94%	22.24%	3,248,861	1.91	6,192,273
PT	Portugal, Southern Europe, Europe	21.18%	20.44%	1,505,622	0.45	680,325
FR	France, Western Europe, Europe	19.11%	18.73%	8,338,488	0.68	5,708,899
NO	Norway, Northern Europe, Europe	14.06%	13.14%	417,513	1.27	529,332
FI	Finland, Northern Europe, Europe	11.66%	10.61%	229,079	2.34	535,754
NL	Netherlands, Western Europe, Europe	11.56%	10.99%	2,084,889	0.81	1,692,131
CZ	Czech Republic, Eastern Europe, Europe	10.12%	9.46%	304,369	2.73	829,489
EU	European Union, Western Europe, Europe	9.46%	0.11%	143,535	0	0
RO	Romania, Eastern Europe, Europe	9.06%	7.13%	2,124,848	0.48	1,026,742
AT	Austria, Western Europe, Europe	8.54%	8.00%	360,593	2.03	732,355
HU	Hungary, Eastern Europe, Europe	7.68%	7.50%	714,915	1.06	757,796
SI	Slovenia, Southern Europe, Europe	6.06%	5.92%	354,407	0.45	159,632
AX	Aland Islands, Northern Europe, Europe	4.05%	3.89%	2,571	0	0
SE	Sweden, Northern Europe, Europe	3.90%	3.25%	966,501	1.02	988,639
PL	Poland, Eastern Europe, Europe	3.54%	3.44%	2,151,374	1.24	2,663,150
BA	Bosnia and Herzegovina, Southern Europe, Europe	2.65%	2.61%	2,271,859	0.12	274,246
DK	Denmark, Northern Europe, Europe	2.62%	2.54%	535,232	1.07	570,613
FO	Faroe Islands, Northern Europe, Europe	2.37%	2.27%	25,864	0.18	4,606
BG	Bulgaria, Eastern Europe, Europe	1.96%	1.92%	1,242,651	0.32	401,130
SK	Slovakia, Eastern Europe, Europe	1.85%	1.80%	168,554	2.7	455,175
IT	Italy, Southern Europe, Europe	1.45%	1.37%	4,001,897	0.93	3,713,212

# RO: Not Much Progress?



# RIPE NCC Hackathon Version 6



- Date: 4 and 5 November 2017
- Location: Copenhagen, Denmark
- Sponsor: Comcast
- Local support: DKNOG

[labs.ripe.net/hackathons](https://labs.ripe.net/hackathons)



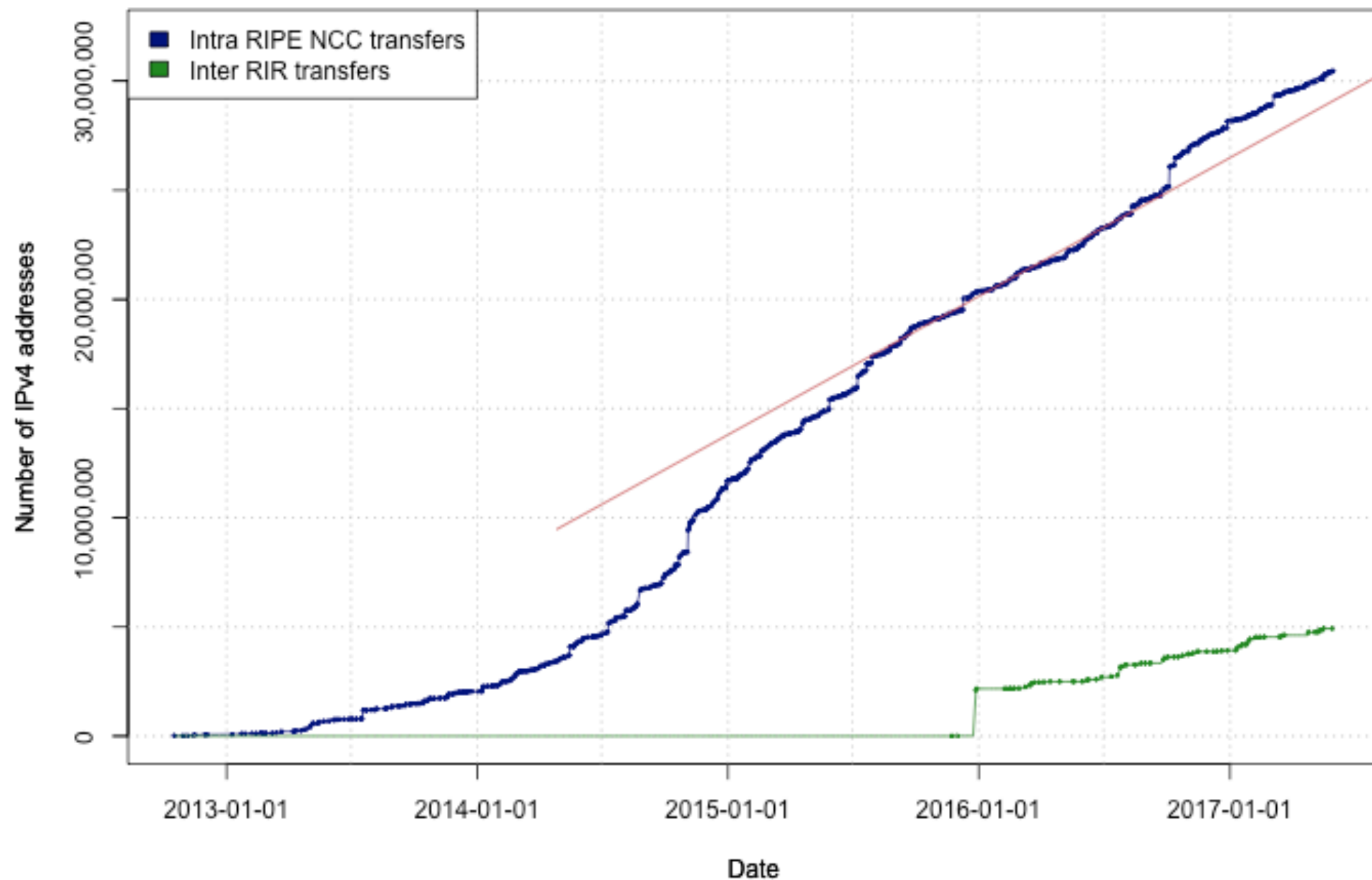
# IPv4 Transfers



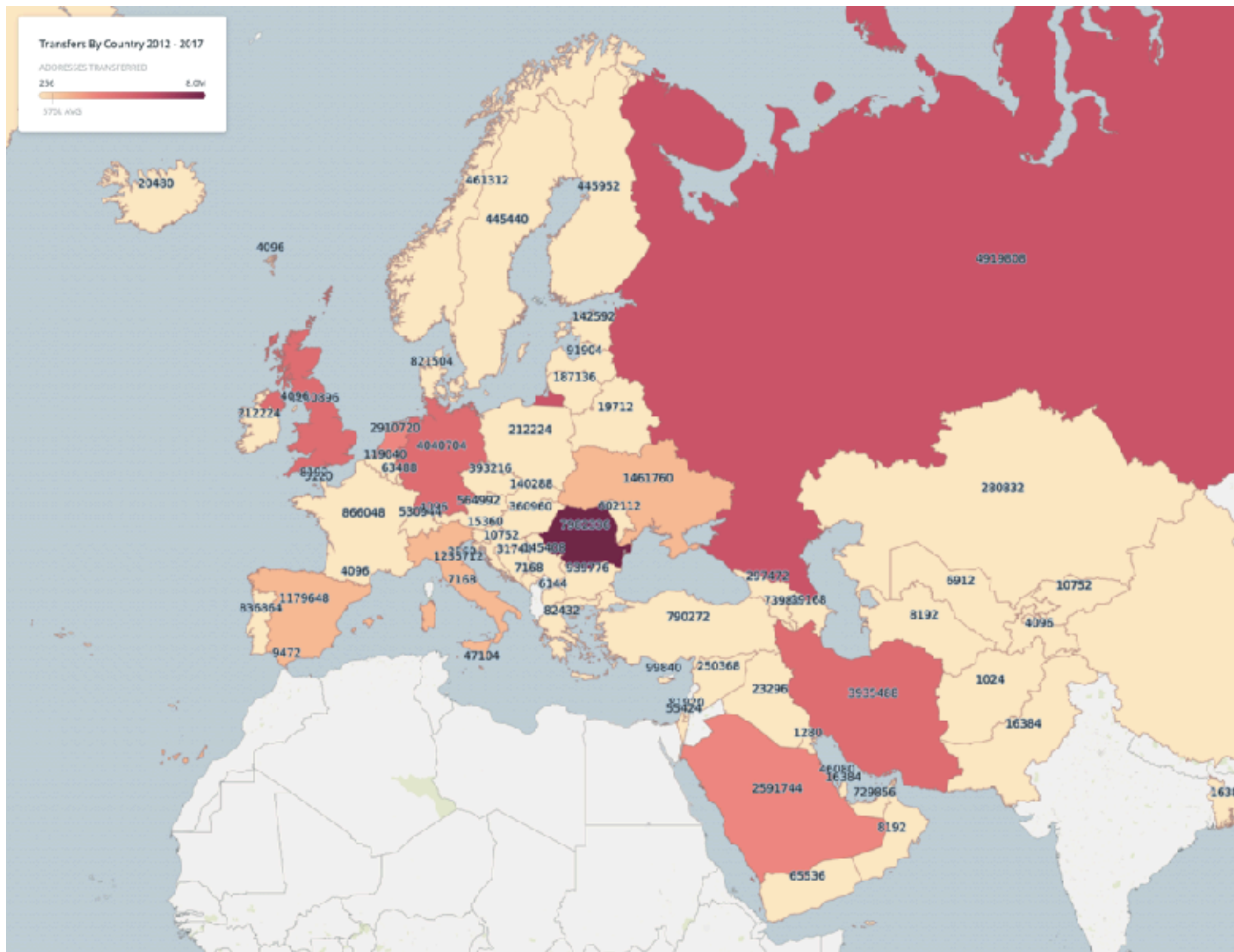
# RIPE NCC IPv4 Transfers



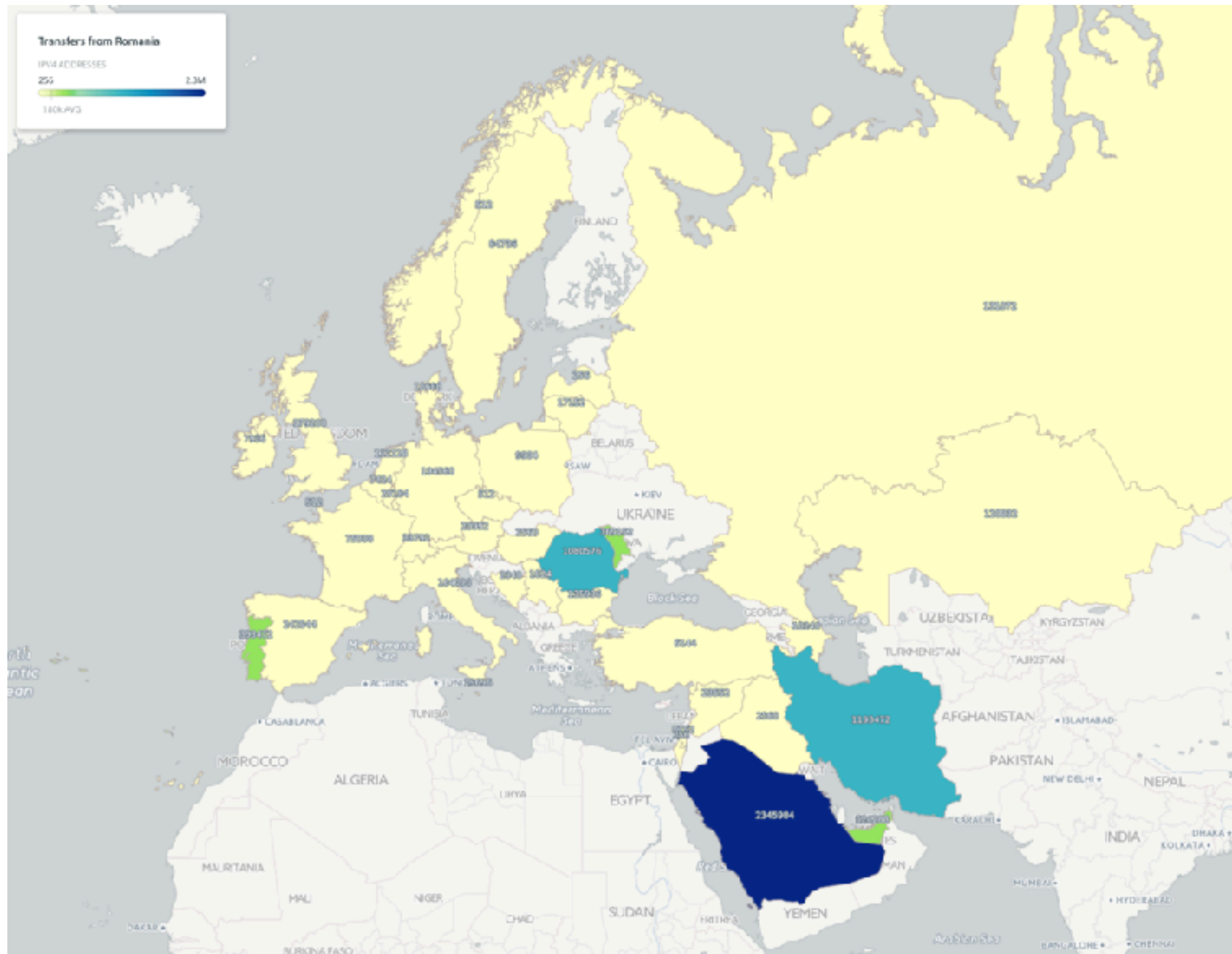
Cumulative number of IPv4 addresses transferred via RIPE policies



# IPv4 Transfers per Country



# IPv4 Transfers from Romania






# **RIPEstat**

## **One stop shop for data**

# RIPEstat - stat.ripe.net



**RIPE NCC**  
RIPE NETWORK COORDINATION CENTRE

RIPE Database (Whois) Website

Search the content of this website

Login

Manage IPs and ASNs > Analyse > Participate > Get Support > Publications > About Us >

>> You are here: Home > Analyse > Statistics > RIPEstat > 193.0.20.0/23

193.0.20.0/23 Search

permalink

**At a Glance** (4)

- Routing (9)
- DNS (2)
- Anti Abuse (2)
- Database (9)
- Geographic (2)
- Activity (4)
- Suggestions (1)

+ MyView ?

**Prefix Overview (193.0.20.0/23)**

✓ Announced

This prefix is announced by


**AS3333**

**"RIPE-NCC-AS , NL"**

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

Show IANA Registry Information

Showing results for 193.0.20.0/23 as of 2016-11-06 16:00:00 UTC

**Geoloc (193.0.20.0/23)**

Geoloc details

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 2016-11-07 00:00:00 UTC

# Data Sets



- IP Registry data from all RIRs
- Routing data (RIPE RIS)
  - Collecting BGP data since 1999
  - 160 full-feed peers
- RIPE Atlas data
- External datasets
  - Geolocation, blacklists, bandwidth measurements



# Widget API & Data API

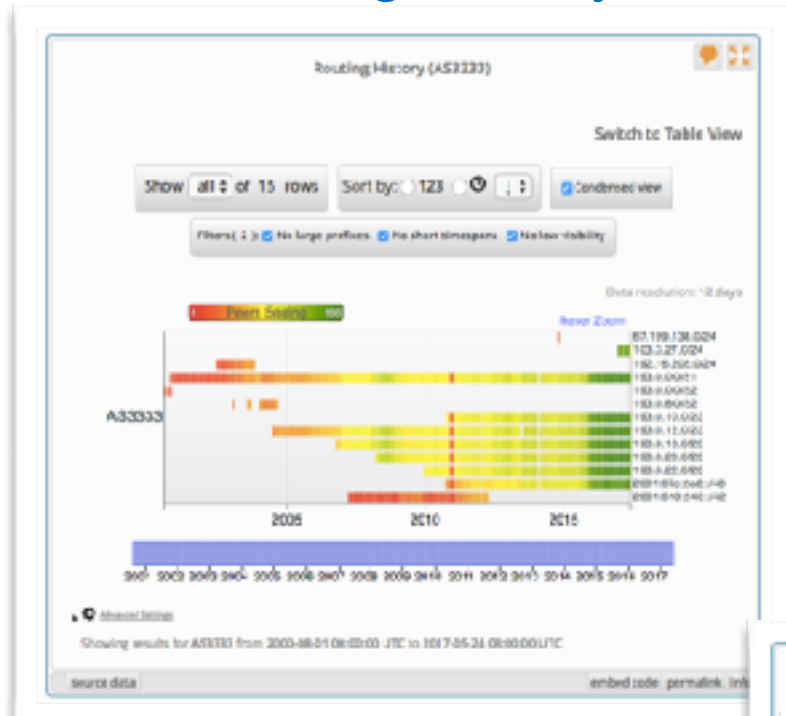


- More than 50 widgets
- RIPEstat widgets are embeddable
  - e.g. web pages or NOC interfaces
- Documentation: [https://stat.ripe.net/docs/widget\\_api](https://stat.ripe.net/docs/widget_api)
- Access to underlying data via data API
- Documentation: [https://stat.ripe.net/docs/data\\_api](https://stat.ripe.net/docs/data_api)

# Use Cases



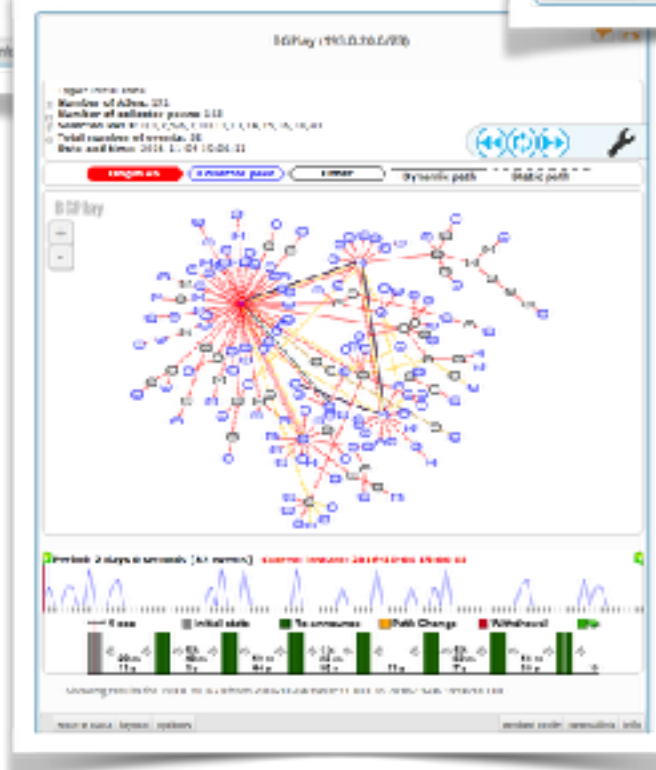
## Routing History



## Country Statistics



## BGPlay

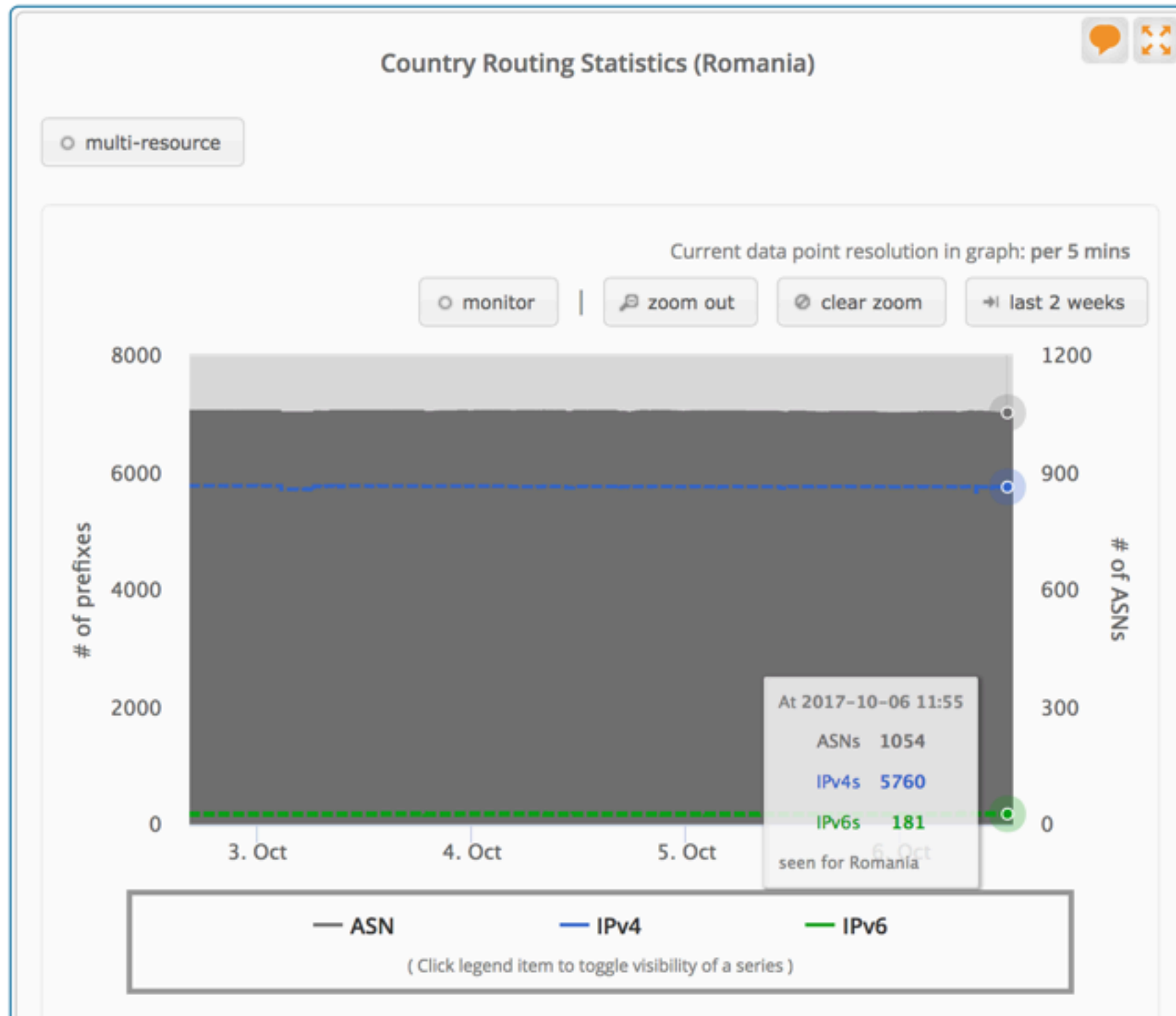


## Anti-Abuse Contact





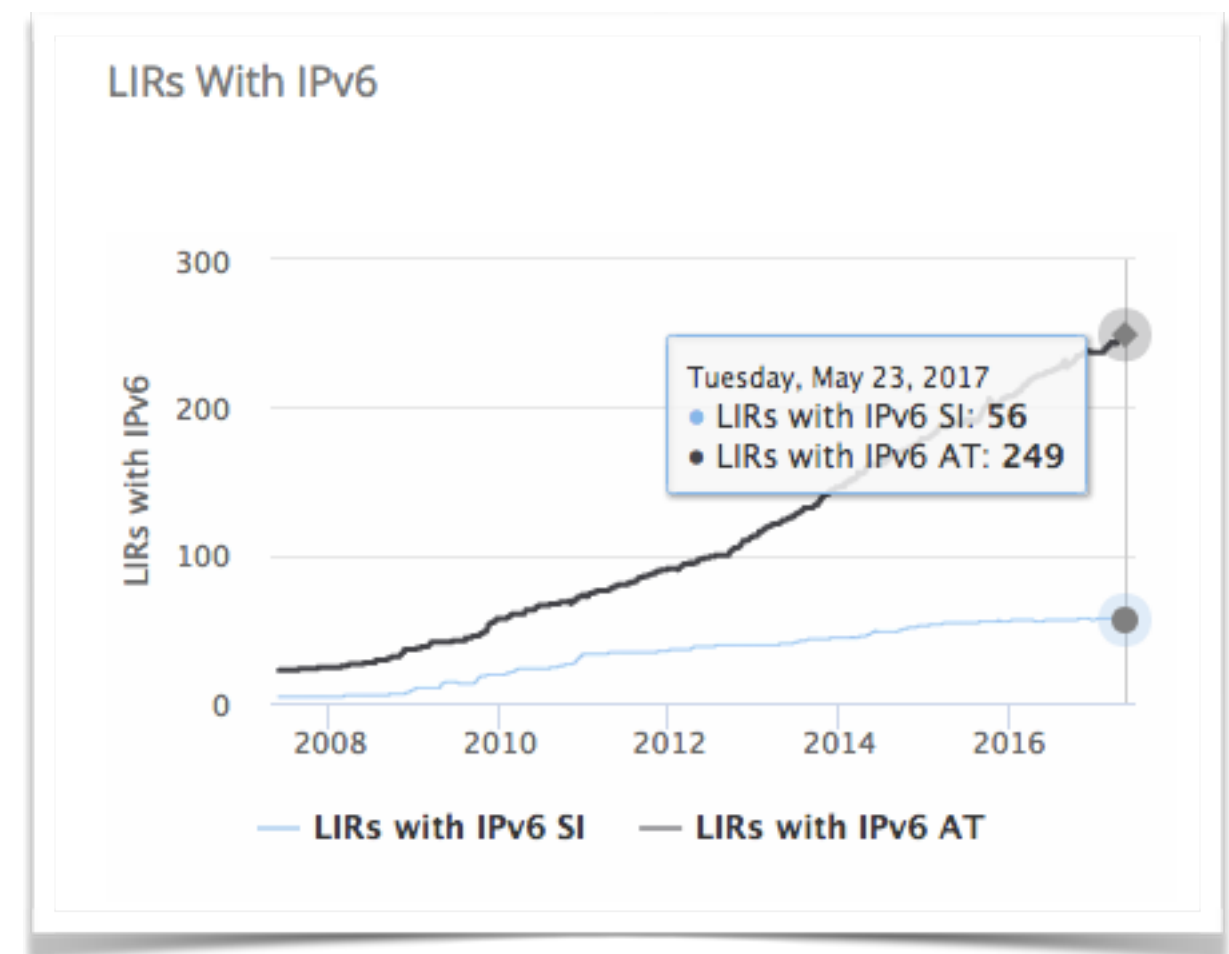
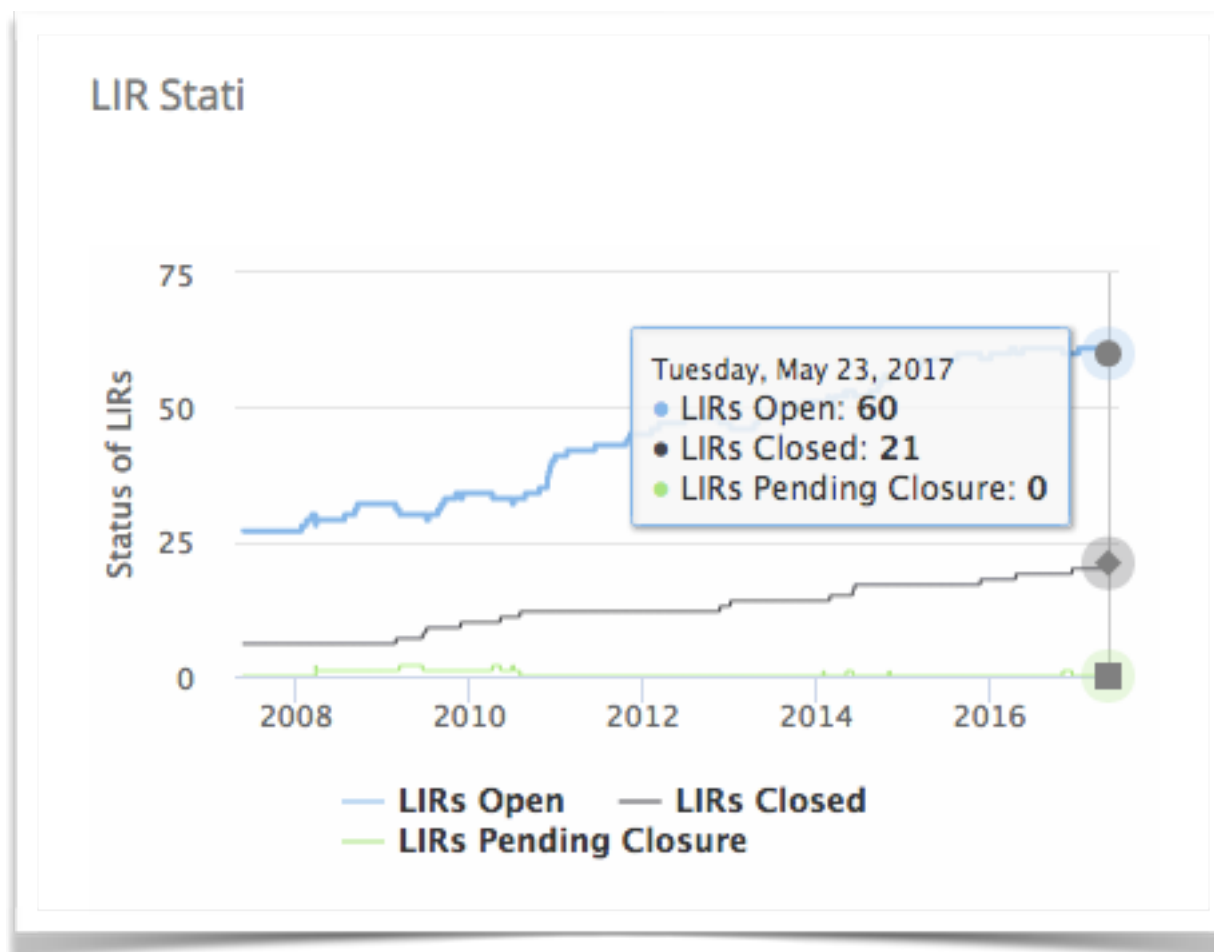
# Country Statistics in RIPEstat



# What is next?



- More data
- More visualisations
- Country Reports





**RIPE Labs**



[RIPE Labs](#) «

[Data Repository](#)

[Security](#)

[RIPE NCC Statistics](#)

[RIPE Database](#)

[RIPE Atlas](#)


[RIPEstat](#)

[About](#)

Your IP address is:  
**2001:67c:2e8:9::c100:14e6**

TagCloud

BGP DNS IOT jodi RIPE RIPE Fellowship RIPE Meeting allocation api ases atlas bgp certification community country cpe database datarepository dns dnsmoon dnssec geolocation governance hackathons hackathon hackathons hackerspace ipv4 ipv6 ipv6day ipv6launch ixp k-root lirs measurements meetings members nat operational policy reputation research rex ripestat root-servers routing security statistics syria tools transfers visualisation



# RIPE Labs

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

Statistics

15,531  
Number of LIRs

11,611  
LIRs with IPv6

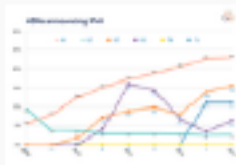
452,864  
IPv4 addresses transferred

9,533  
RIPE Atlas probes

13.57 Million  
IPv4 Allocation Pool

View more statistics

Articles




## Focus on Uzbekistan - RIPE NCC Statistics and Data

Fergal Cunningham — 15 Mar 2017

We take a look at the current Internet status in Uzbekistan using RIPE NCC data and statistics. This is a start of a series featuring various countries in our service region.... [Read more](#)

Tags: country

0 comments  
0 likes, 0 dislikes



## New RIPE Atlas Root Zone DNS Measurements

Chris Amin — 10 Mar 2017

Two new DNS measurements, both designed to assess the impact of issues with one or more root name servers, have been added to every RIPE Atlas probe. ... [Read more](#)

Tags: atlas dns root-servers k-root

2 comments  
0 likes, 0 dislikes

# Recent RIPE Labs Articles



- Network Connectivity from Puerto Rico

[https://labs.ripe.net/Members/stephen\\_strowes/observable-network-connectivity-from-puerto-rico](https://labs.ripe.net/Members/stephen_strowes/observable-network-connectivity-from-puerto-rico)

- Introducing NAT64 Checker

<https://labs.ripe.net/Members/JanZorz/introducing-nat64-checker>

- IoT Turning Evil

[https://labs.ripe.net/Members/ivana\\_tomic/iot-turning-evil](https://labs.ripe.net/Members/ivana_tomic/iot-turning-evil)

- Celebrating 10,000 Active RIPE Atlas Probes

[https://labs.ripe.net/Members/alun\\_davies/celebrating-10000-active-ripe-atlas-probes](https://labs.ripe.net/Members/alun_davies/celebrating-10000-active-ripe-atlas-probes)

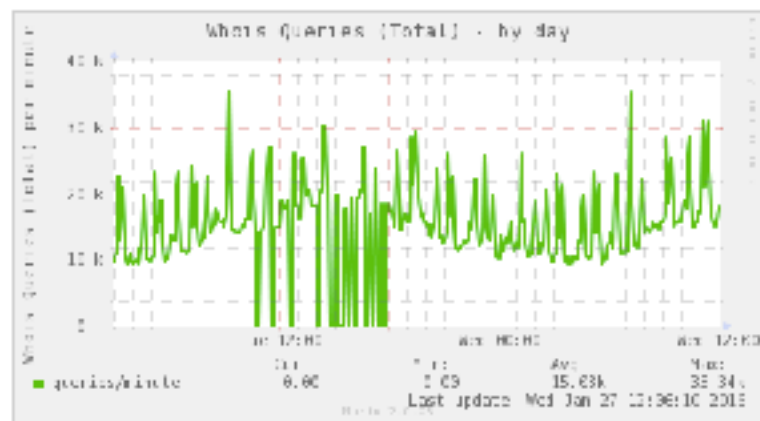
# RIPE Labs Statistics Dashboard



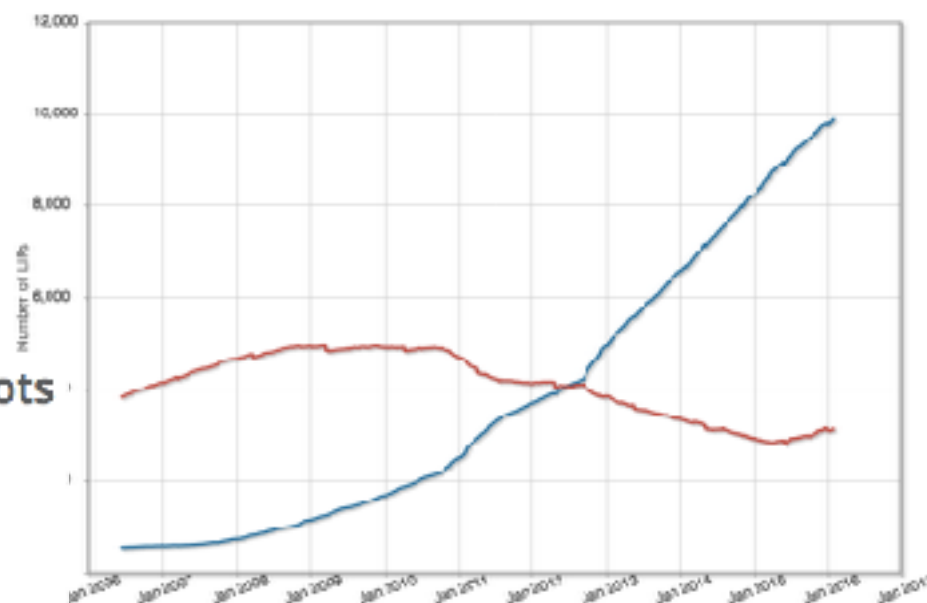
## RIPE Database Server - Operational Plots

Query rate:

The number of RIPE Database queries we serve in total



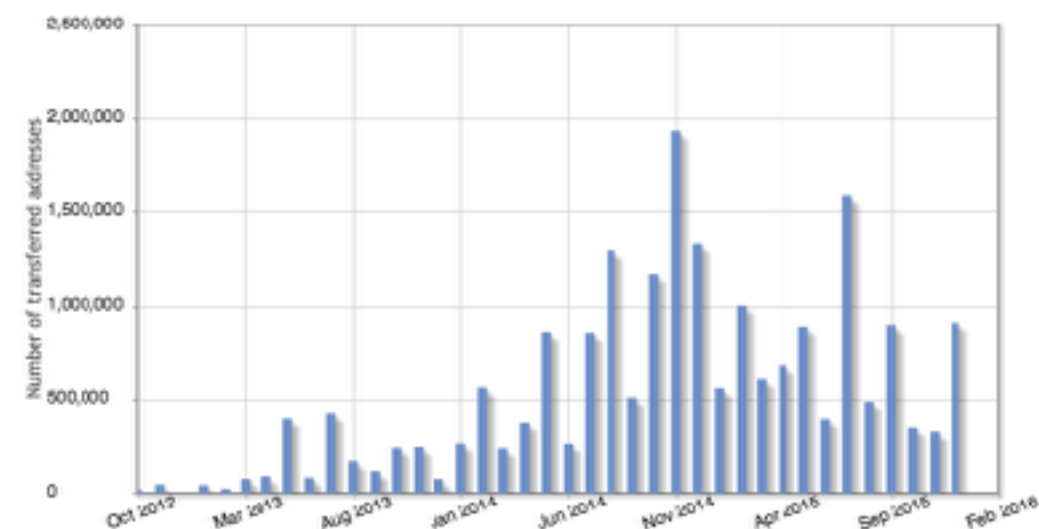
LIRs With and Without IPv6



## Tags

allocation ases atlas  
certification country  
database ipv4 ipv6  
k-root lirs meetings  
ripestat routing syria  
transfers

IPv4 Addresses Transferred



## Statistics

15,531

Number of LIRs



11,611

LIRs with IPv6



452,864

IPv4 addresses tr

9,525

RIPE Atlas probes



13.57 Million

IPv4 Allocation Pool



View more  
statistics



# References



- RIPE Atlas: [atlas.ripe.net](https://atlas.ripe.net)
- IXP country Jedi: [www.ripe.net/ixp-country-jedi](https://www.ripe.net/ixp-country-jedi)
- RIPEstat: [stat.ripe.net](https://stat.ripe.net)
- IPv6 RIPEness: [ipv6ripeness.ripe.net](https://ipv6ripeness.ripe.net)
- IPv6 ASNs: [v6asns.ripe.net](https://v6asns.ripe.net)



# Questions



[mir@ripe.net](mailto:mir@ripe.net)  
[@mir\\_ripe\\_labs](#)





# **Additional Slides**



**RIPE Atlas**

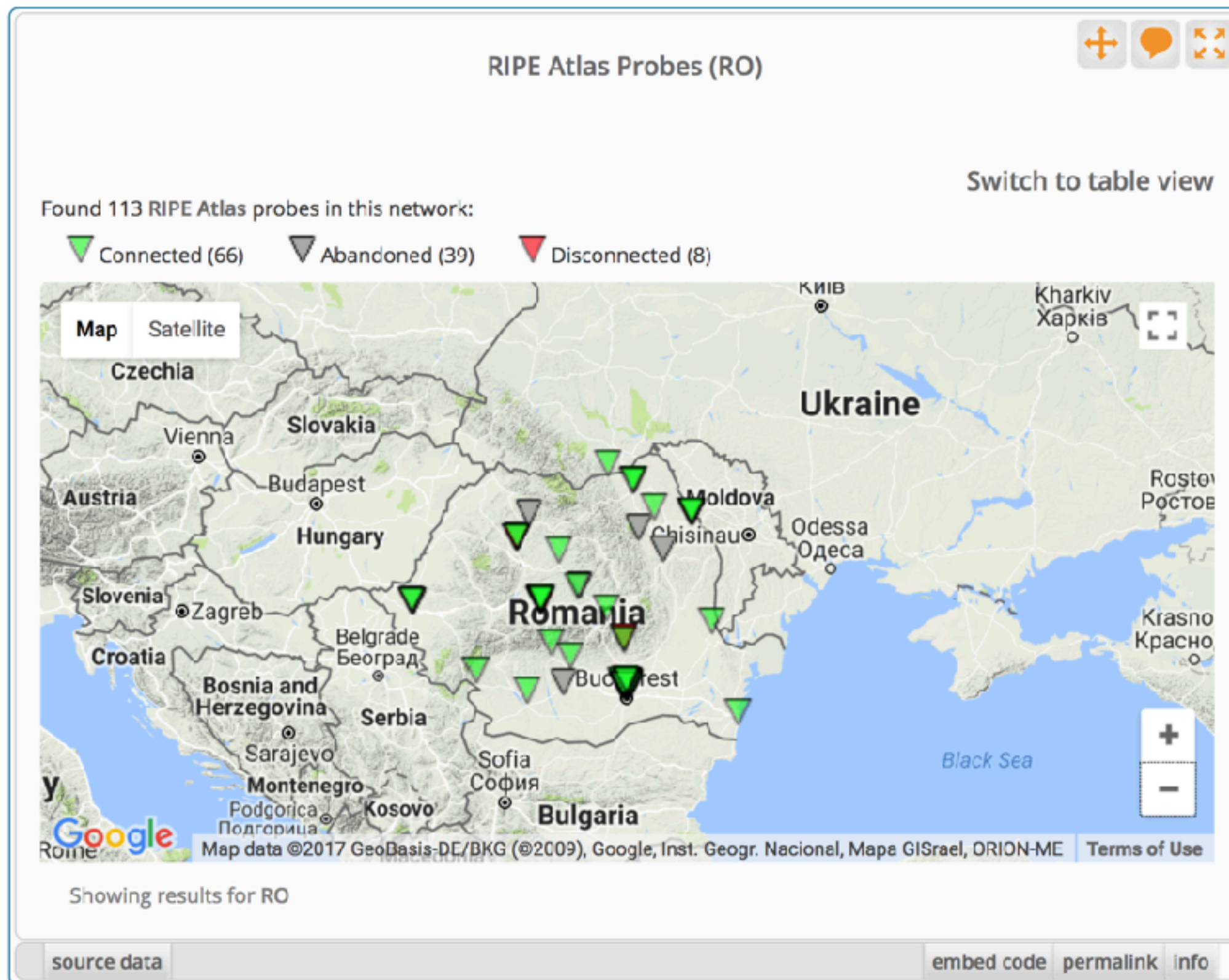
# Active Measurements Network



- Probe distribution
  - 10,000+ active RIPE Atlas probes
  - 287 active RIPE Atlas anchors
- Coverage
  - 180 countries covered
  - Originating ASes covered
    - 3,429 (IPv4), 1,297 (IPv6)
- ping, traceroute, DNS, TLS (SSL)



# RIPE Atlas in Romania



-

# IXP Country Jedi



- [www.ripe.net/ixp-country-jedi](http://www.ripe.net/ixp-country-jedi)
  - Are the paths between ASes staying in the country?
  - What is the difference between IPv6 & IPv4?
  - How many paths go via a local IXP?
  - Which peer could you add to improve reachability?
- Experimental tool
  - Feature requests welcome!
  - Depends on probe distribution in a country

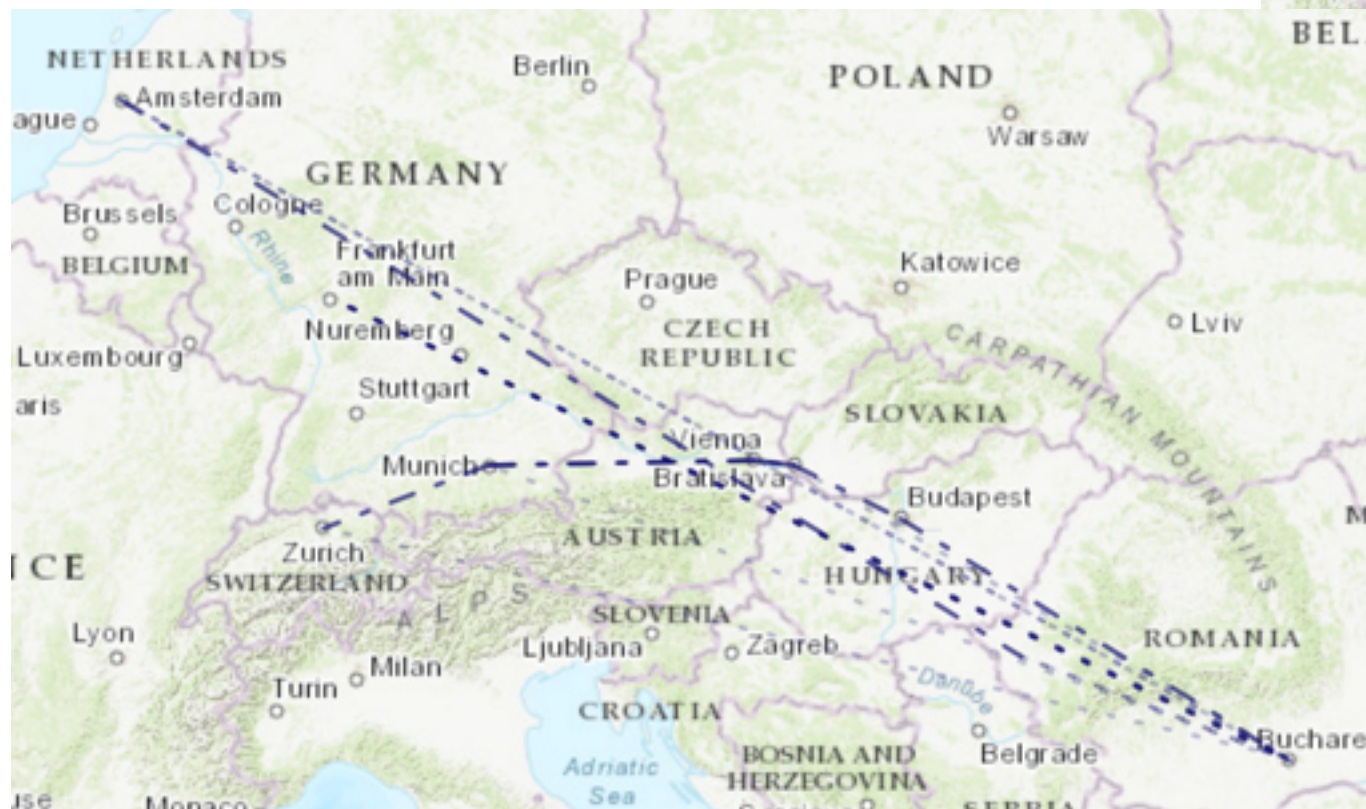


# Difference between IPv4 & IPv6



- Do paths stay in the country?

IPv4



IPv6

# Paths that go via an IXP in NL



IXP: Yes  
Out of country IPs: No

IXP: No  
Out of country IPs: No

IXP: Yes  
Out of country IPs: Yes

IXP: No  
Out of country IPs: Yes

