



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE NCC Update

Nathalie Trenaman | 19 April 2017 | IPv6 Council - Belgium



IPv6 Routing in BE

-from an Atlas probe perspective

Probes and Anchors



- 9,600+ probes connected (250 RIPE Atlas Anchors)
- 4,100+ results collected per second
- 12,200+ measurements currently running

RIPE Atlas IXP Country Jedi



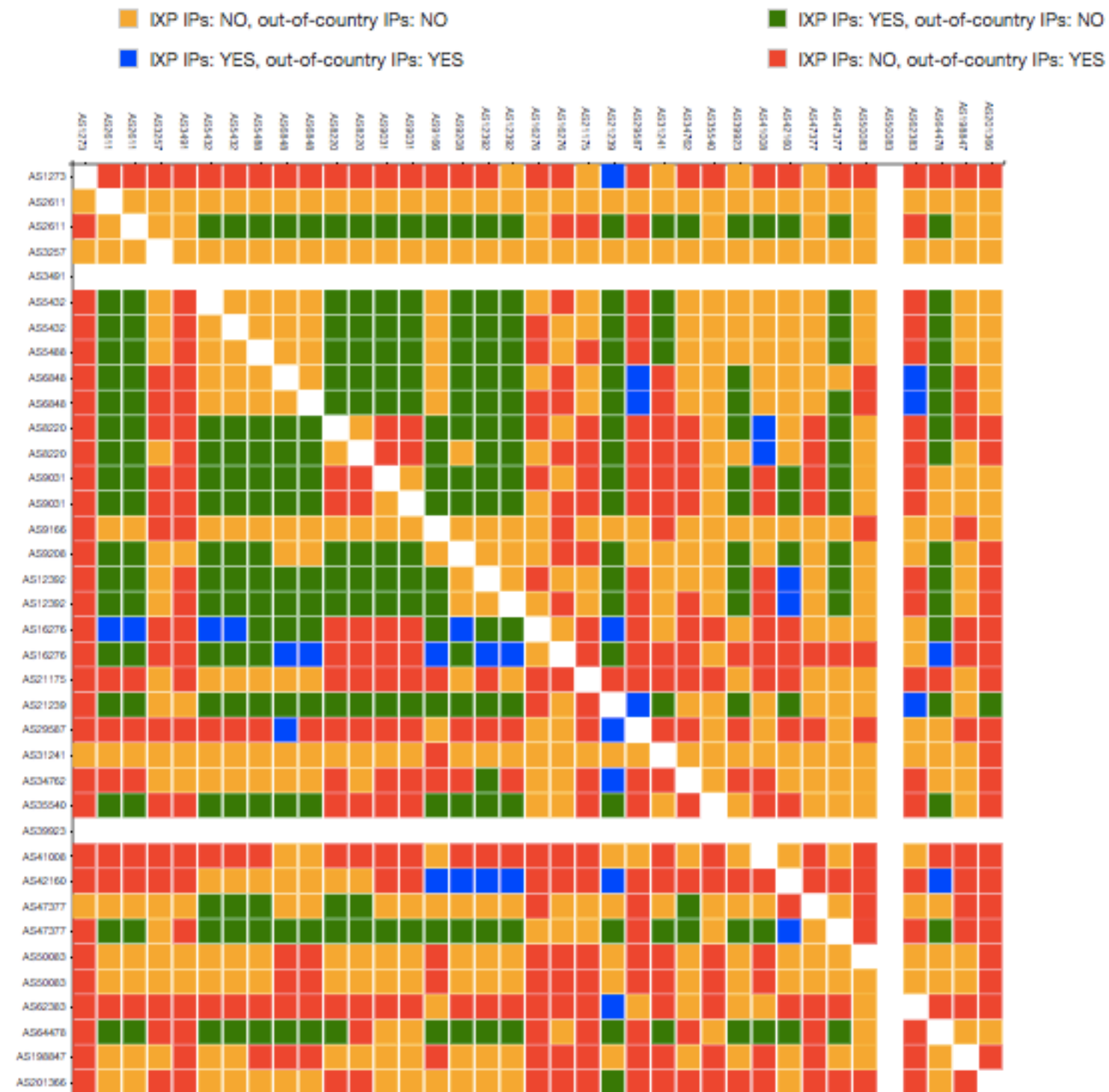
- Are paths between ASes staying in country?
- Any difference between IPv4 and IPv6?
- How many paths go via local IXP?
- Could adding peers improve reachability?
- Experimental tool
 - Feature requests welcome!
 - Depends on probe distribution in country

Methodology



- Trace route mesh between RIPE Atlas probes
- Identifying ASNs in country using RIPEstat
 - Using a maximum of two probes per AS
- Identifying IXP and IXP LANs in PeeringDB

Output for BE

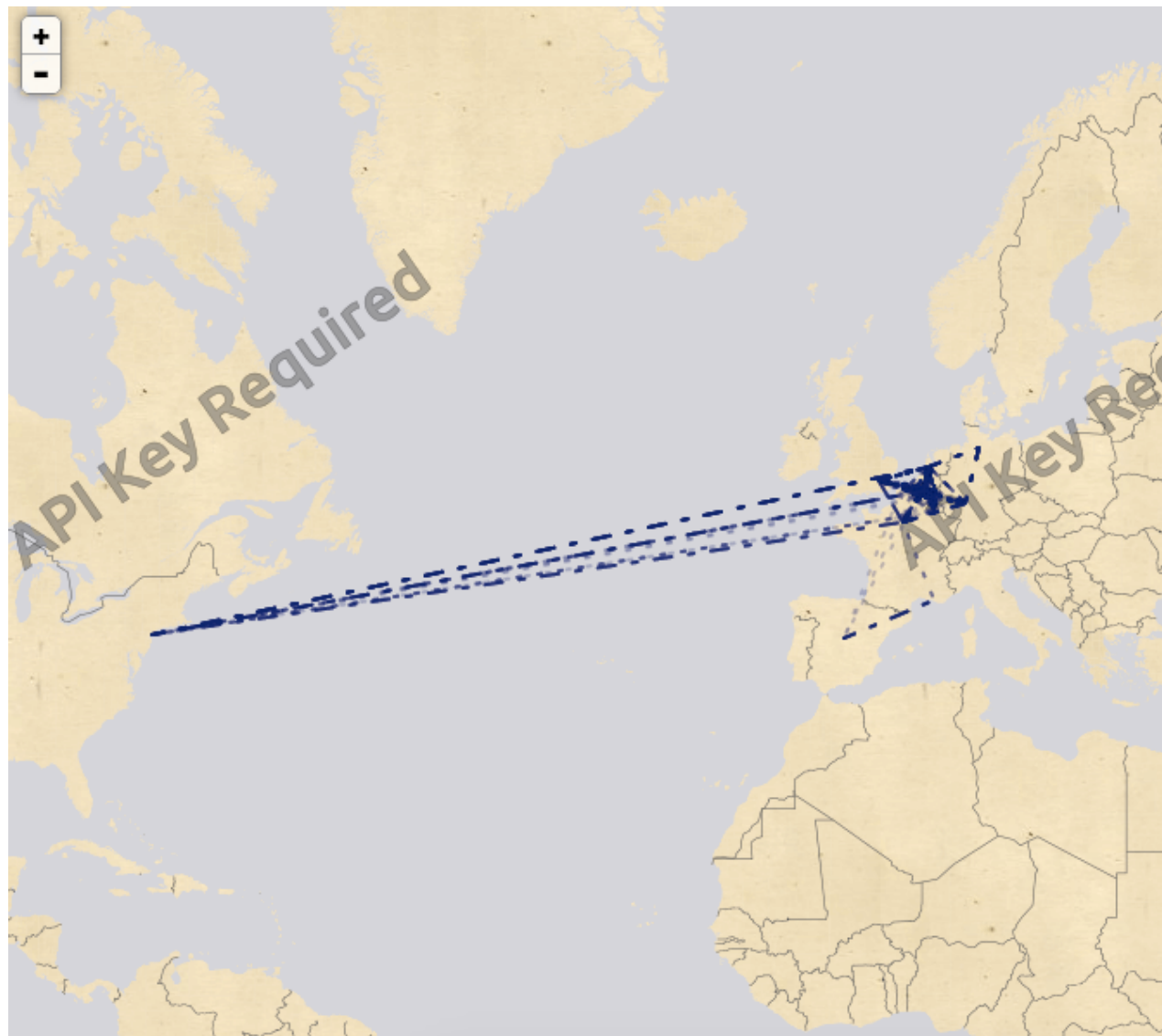


<http://sg-pub.ripe.net/emile/ixp-country-jedi/latest/BE/ixpcountry/index.html>

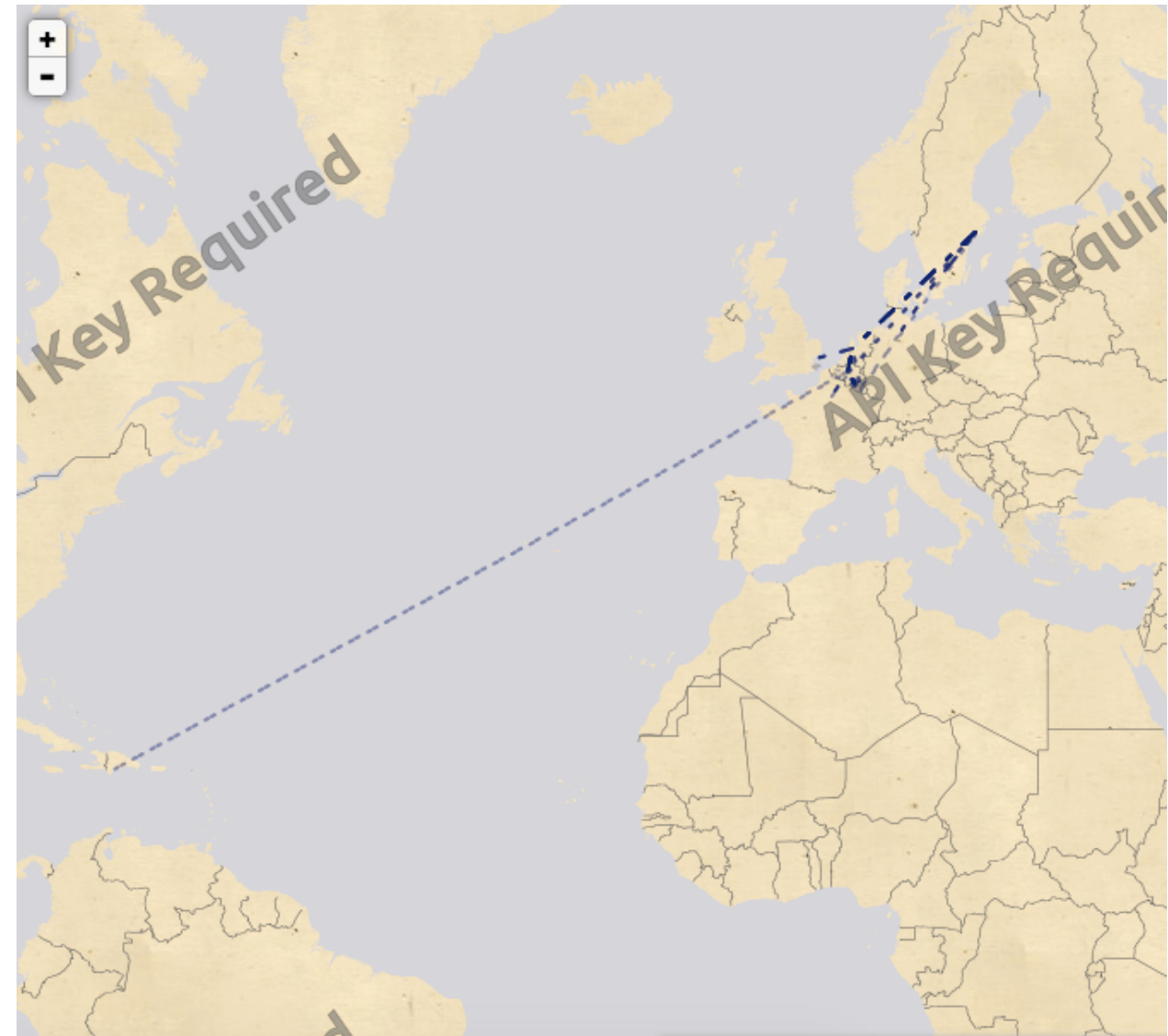
RIPE Atlas IXP Country Jedi



IPv4



IPv6



Ehh....What?



IPv6



Geolocation strikes again!



- Geolocate IP hops: OpenIPMap
 - <https://marmot.ripe.net/openipmap/>
 - Crowdsourcing information about location of IPs

 **Emile Aben** · 11:39 AM
nee, maar doe 't toch 😊
ja hier heb ik 'm:
{ "ip": "2001:2000:3080:778::2", "hostname": "telenet-ic-300453-brx-b1.c.telia.net", "lon": -71.10077, "location": "Santa Cruz de Barahona, Barahona, DO", "lat": 18.20854, "asn": 1299 }
iemand heeft blijkbaar gezegd dat die host in (duidelijk brussel) op de dominicaanse republiek is ...

 **Nathalie Trenaman** · 11:42 AM
die host is een atlas probe?

 **Emile Aben** · 11:42 AM
crowdsourced info, wikipedia is ook alleen zo goed als zijn contributors 'm maken (en weer zwaaien met de handjes)
waarschijnlijk ip van een router

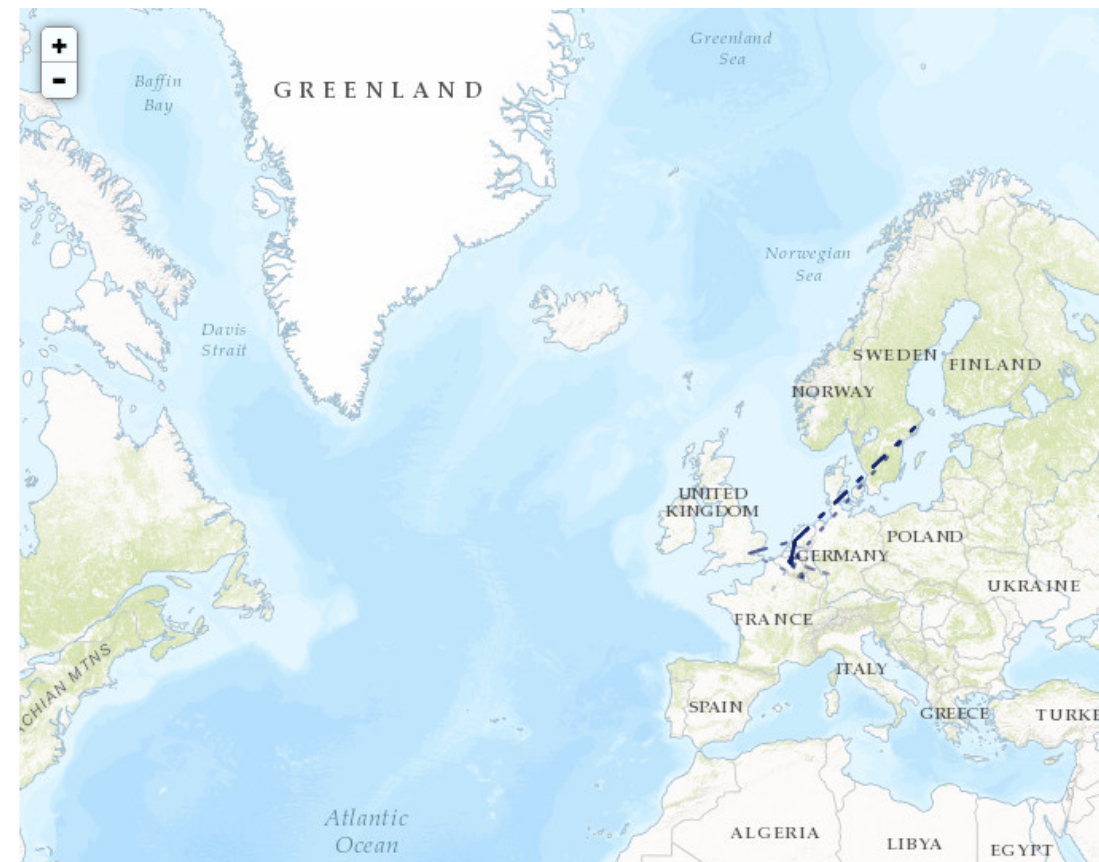
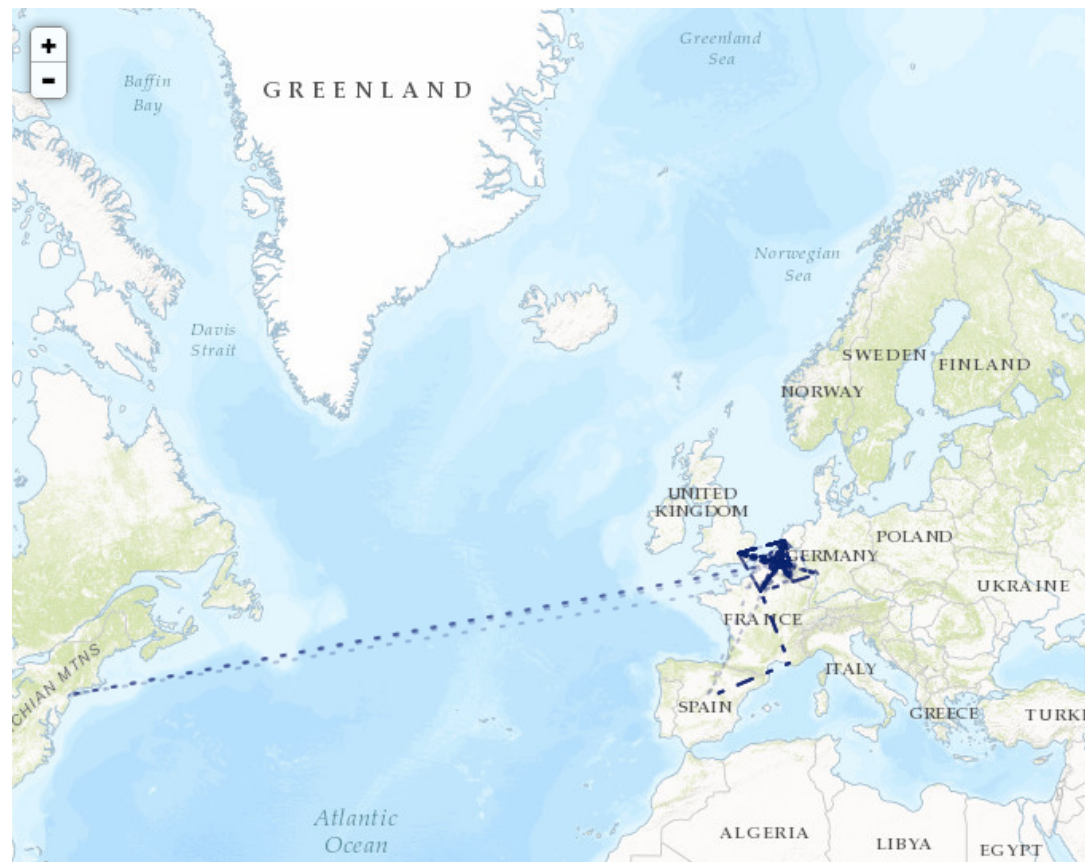
 **Nathalie Trenaman** · 11:43 AM
IP van Telia dus

 **Emile Aben** · 11:45 AM
foei user 498, die heeft 't gedaan
zou zo maar een Belg geweest kunnen zijn

Ok, fixed



- We updated the database
- Still traffic paths looks different between IPv4 and IPv6
- Less probes connected over IPv6



References



- <http://sg-pub.ripe.net/emile/ixp-country-jedi/latest/BE/index.html>
- You can hover over the cells and find out more
- More results, analysis, studies, stats on <http://labs.ripe.net>





IPv6 RIPEness

New dataset for 5th star



- Alexa 1 Million is retired
 - But was limited any way
- Cisco started publishing an alternative ranking
 - Cisco Umbrella 1 Million
 - More accurate, not only HTTP requests from browser plugin
 - Also DNS and NTP for example

And a New T-Shirt

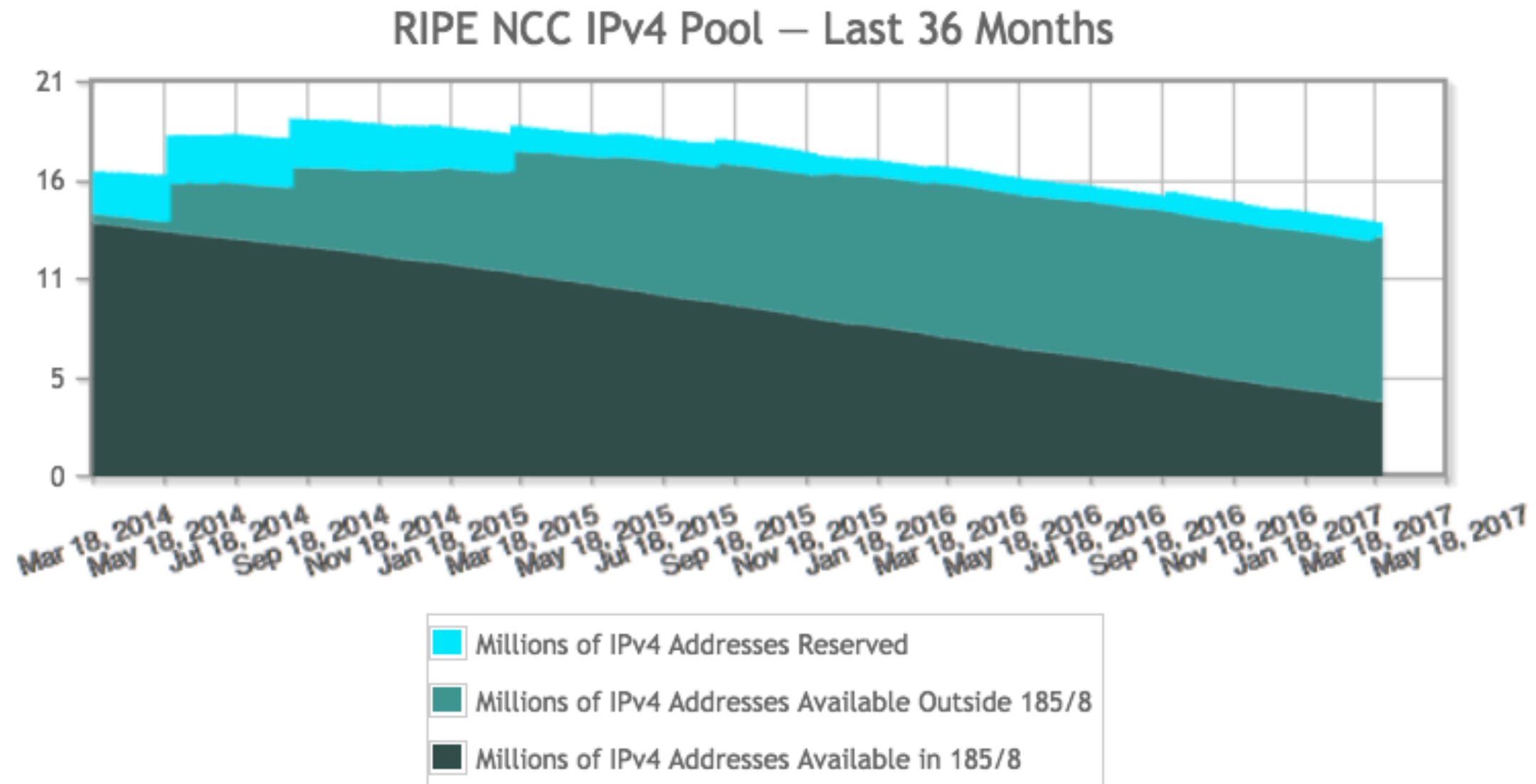


<https://ripeness.ripe.net/5star/BE.html>



IPv4 Status

RIPE NCC Available IPv4 Pool



www.ripe.net/IPv4-graph

IPv4 Address Distribution



- Less than 0.8 /8s in our pool - Projected to last 4 more years
- Each LIR can receive one final allocation from our remaining pool (last /8)
 - Allocation size: 1,024 addresses (/22)
 - For both new and existing members
- IPv4 addresses cannot be transferred for 24 months from the date they were received by the resource holder



Transferring IPs

If you need more IPv4 addresses



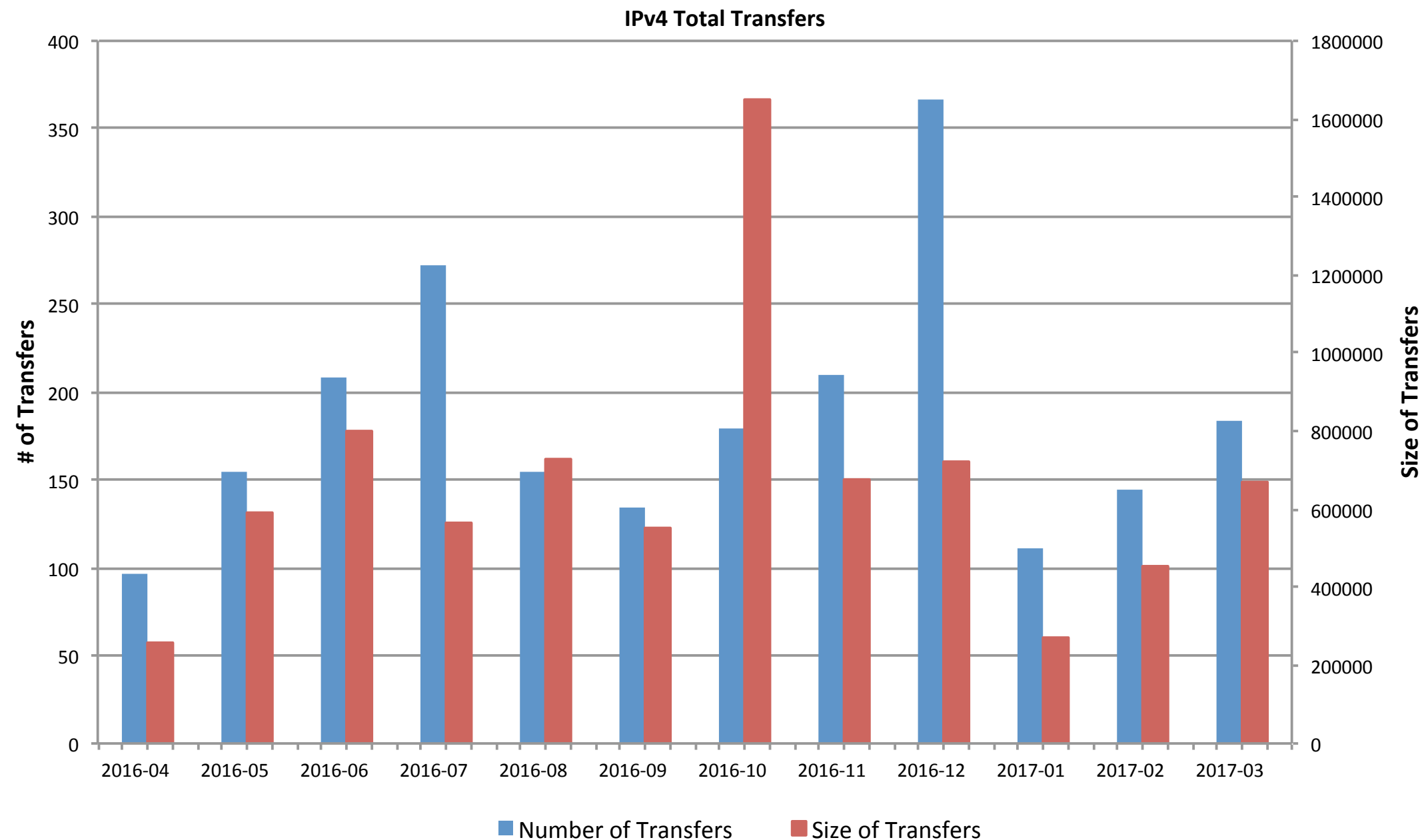
- IPv4 allocations can be transferred
 - Between members only
- IPv4 Provider Independent (PI) assignments
 - Members and non-members
- Legacy space can be transferred
 - RIPE NCC can update the Registry to reflect changes
- Inter-RIR transfers
 - Between the RIPE NCC, ARIN and APNIC

IPv4 Transfers: Where to Look



- RIPE NCC IPv4 Transfer Listing Service
 - Facilitates demand and supply, **increasing transparency**
 - Accessible via the LIR Portal
- List of “recognised” brokers on our website
 - Brokers who have signed an agreement to follow RIPE Policies and RIPE NCC procedures
- RIPE NCC not a party in any commercial agreement or financial transaction

Completed IPv4 Transfers



IPv4 Transfers inside Belgium



- Number of IPs transferred: 38912
 - Number of transfers: 23
 - From: 9 members
 - To: 9 members
 - Total: /17, /20, /21

IPv4 Transfers to Belgium



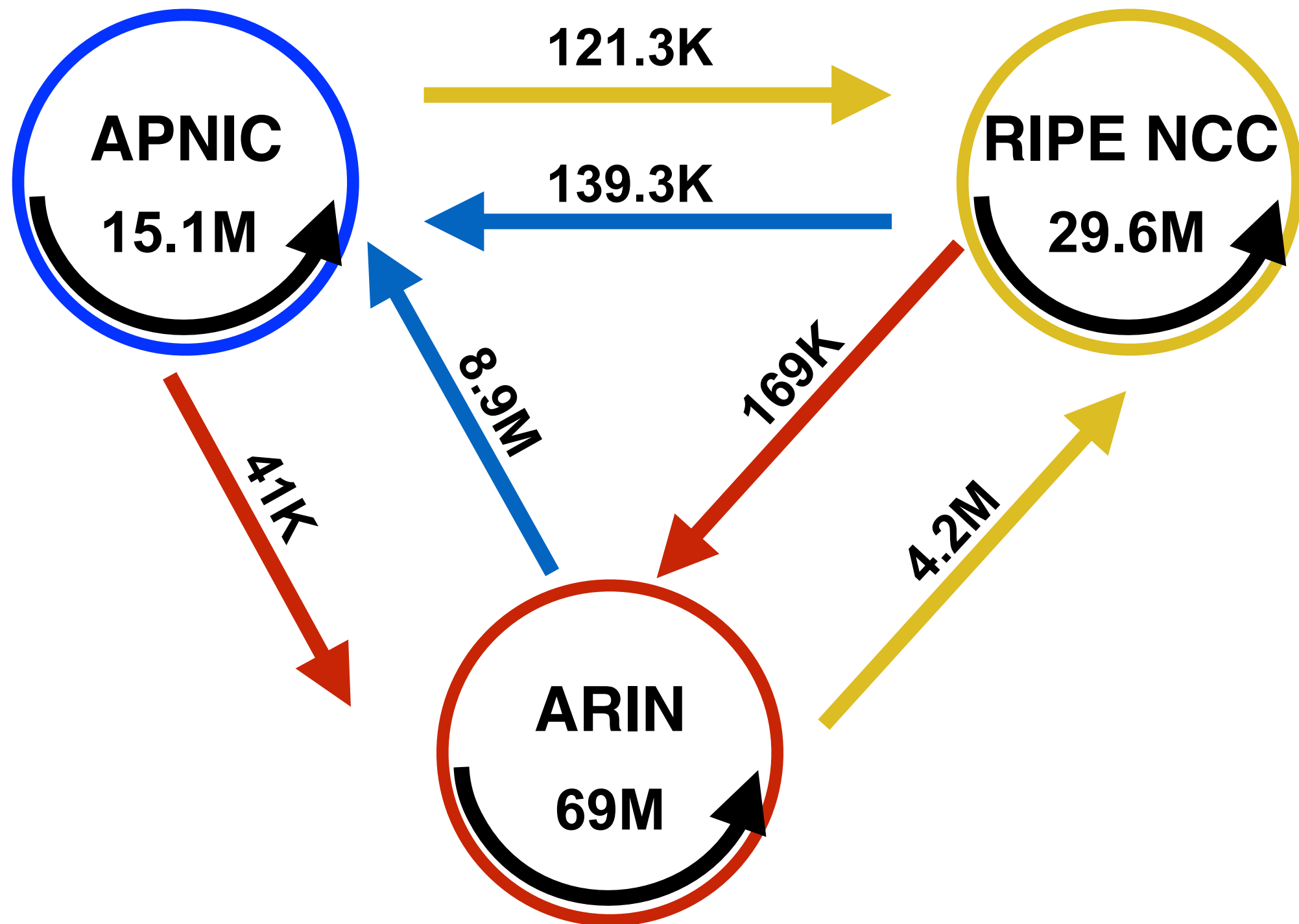
- Number of IPs transferred: 12800
 - Number of transfers: 16
 - To: 7 members
 - Total: /19, /20, /23

IPv4 Transfers From Belgium



- Number of IPs transferred: 65280
 - Number of transfers: 22
 - From: 12 members
 - Total: /17, /18, /19, /20, /21, /22, /23, /24

Inter-RIR Transfers Overview



The RIPE NCC's Role in Transfers



- The ultimate goal is an accurate and up-to-date RIPE Registry
 - Registry data relied upon by Network Operators, LEAs and Regulators
- We support resource holders through the transfer process
 - Ensuring due diligence through thorough checks
 - Protecting your resources, which are valuable to you



Protecting IPs

Why is this important for you?



Imagine you come into the office one day:

- Part of your network is down ...
- Your online services are not accessible ...
- Someone else is announcing your IP space ...
- You discover your resources are not registered to you anymore ...

What do you do?

Our Definition of Hijacking



“Taking control of issued Internet number resources under false pretences”

IPv4 Hijacks



- IPv4 addresses are becoming more valuable due to scarcity
- Criminals use very sophisticated methods to obtain control over (seemingly) unused address blocks
 - Faking registration and identity papers
 - Faking entire websites and domains
- Hijackers often target resources with outdated contact details!

Increase in Disputes Over IP Addresses



- Disputed transfers
 - Outdated contact information
 - “LIR contact was no longer working at the company”
- Hijacked, disputed LIR accounts
 - LIR contacts removing other contacts from the LIR Portal
 - LIR accounts opened on behalf of unaware organisations
- We see an increase in efforts to hijack legacy space

Actions Taken by the RIPE NCC

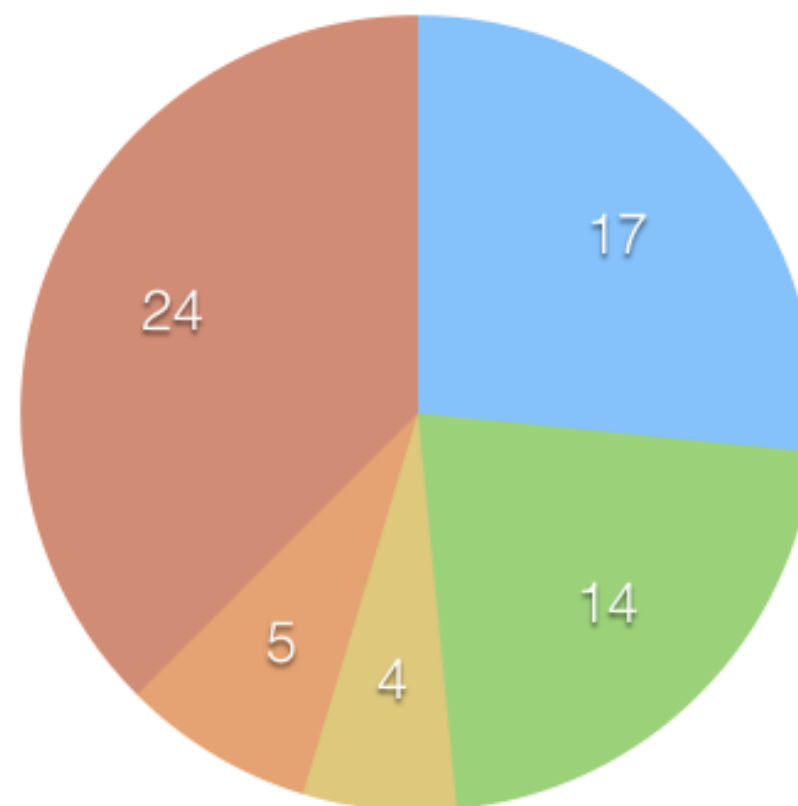


Year	2015	2016
Concluded	95	64
New	25	80

- De-registered PI
- Due-diligence reminder*
- Final warnings**
- LIR closures (SSA & Membership termination)
- Rejected new LIR applications

*Due diligence reminder for more minor infringements

**Final warnings for major Policy and contractual violations



What can we do?



- More thorough checks
 - It can take more time to process requests
 - Please cooperate in supplying the required documentation
- We will investigate any reported hijacks
 - IP space can be returned but it's not always possible
 - Investigations can take time and require legal actions
- We've improved our audit activities
- Be in contact with you more and raise awareness

What can you do?



- Ensure you verify your details in the LIR portal
- Keep your records in the RIPE Database up to date
- If acquiring resources, make sure you:
 - are in contact with the legitimate holder
 - the person you are dealing with is authorised
- Check your information at regular intervals and process any changes right away
- If in doubt, contact us!

What can you do?



Deploy IPv6!



Questions

