

IPv4 and IPv6 in the RIPE NCC Service Region

TNC 2012 - Reykjavik, 22 May 2012

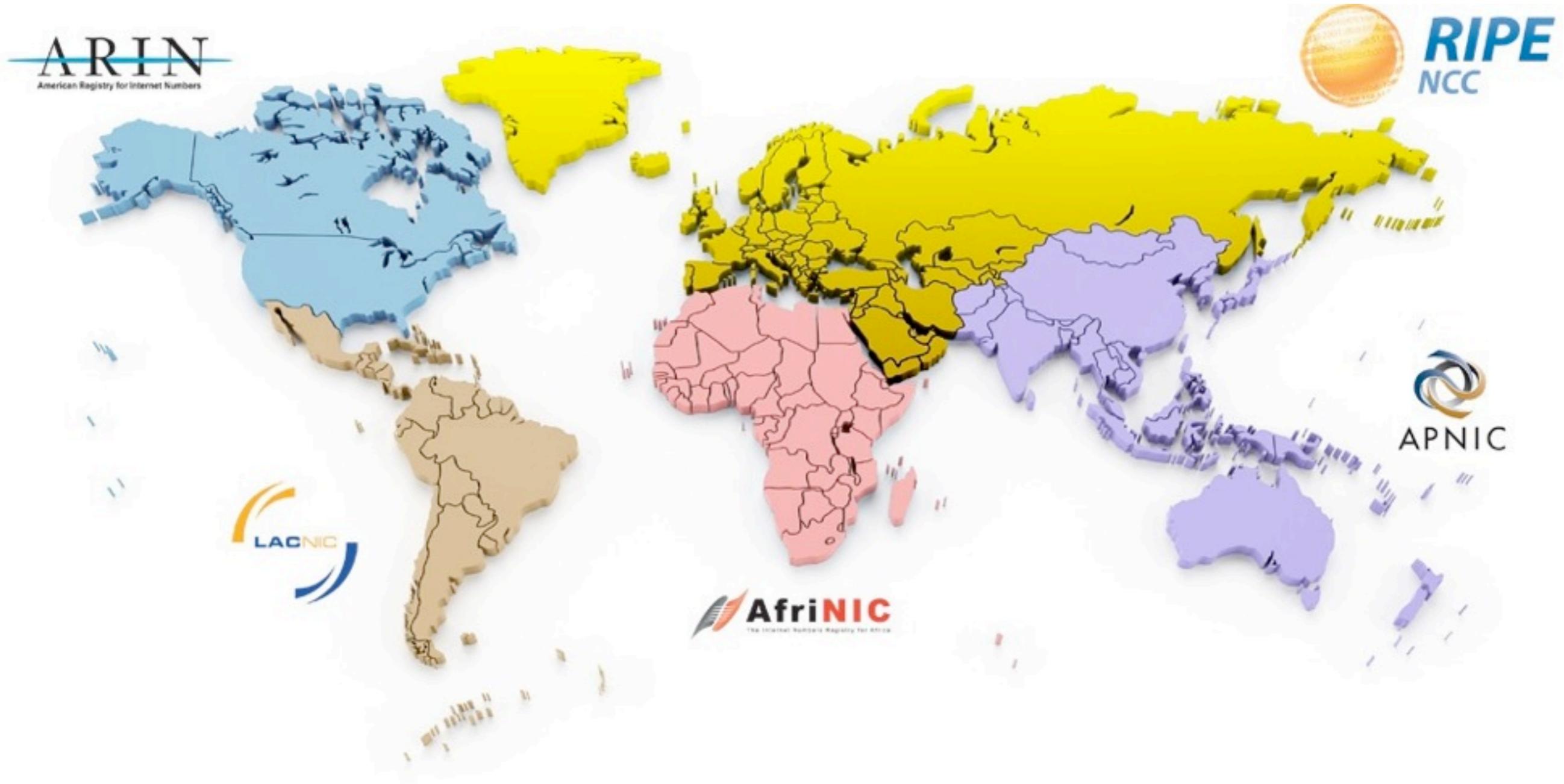
Mirjam Kühne,
RIPE NCC



Topics

- The RIR system
- IPv4 - Reaching the last /8
- IPv6 allocation statistics and measurements
 - IPv6 RIPEness, ASNs announcing IPv6
 - World IPv6 Launch
- Other activities and sources
 - IPv6 Training for LIRs and IPv6 Roadshows
 - RIPE Labs
 - RIPE Atlas

The five Regional Internet Registries



The RIPE NCC

- Independent not-for-profit membership organisation
- Supports the operation and development of the Internet
- Europe, Middle East and Central Asia
- Distributes and registers Internet number resources
- 8,000 members throughout the region

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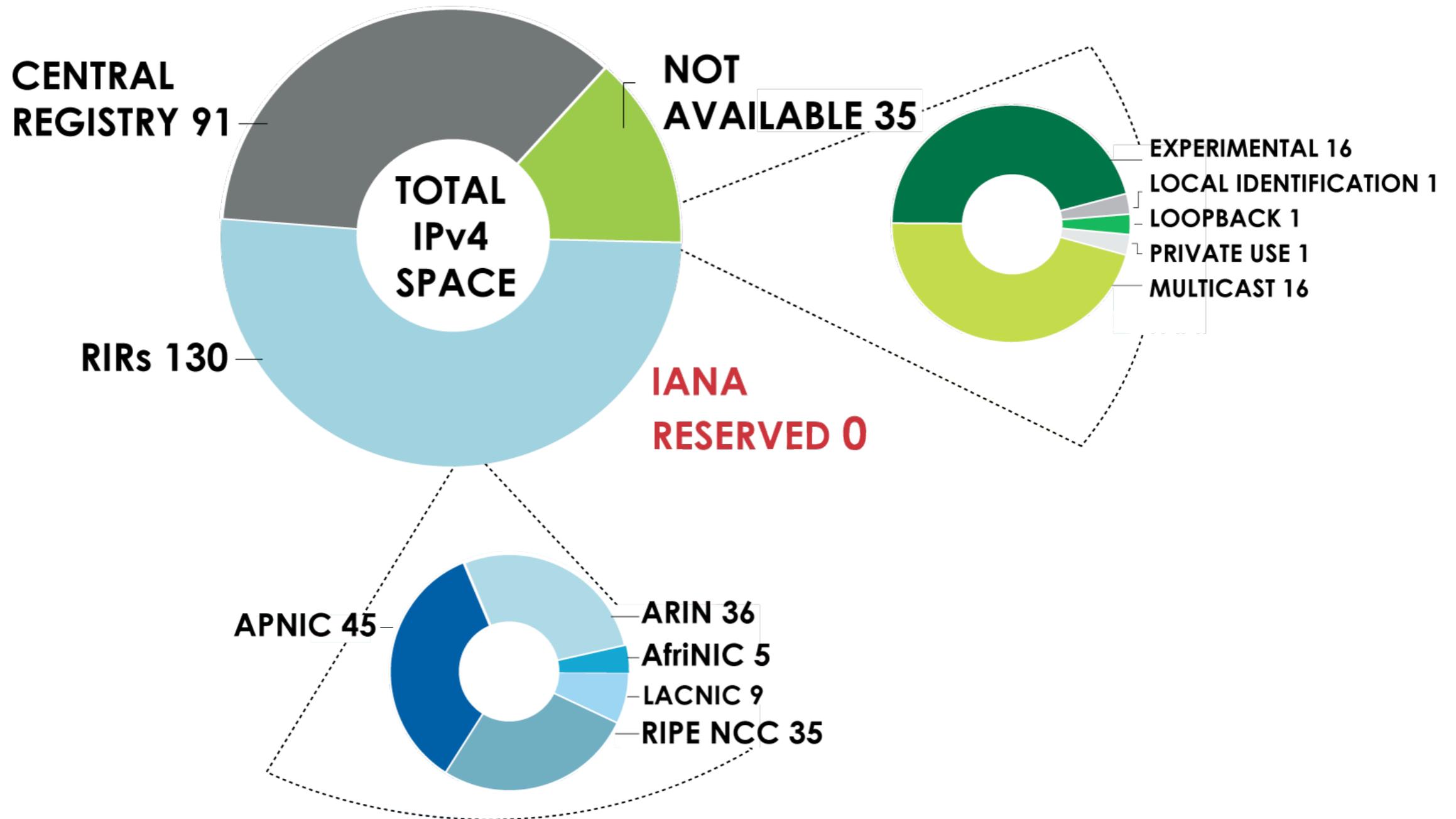


IPv4?



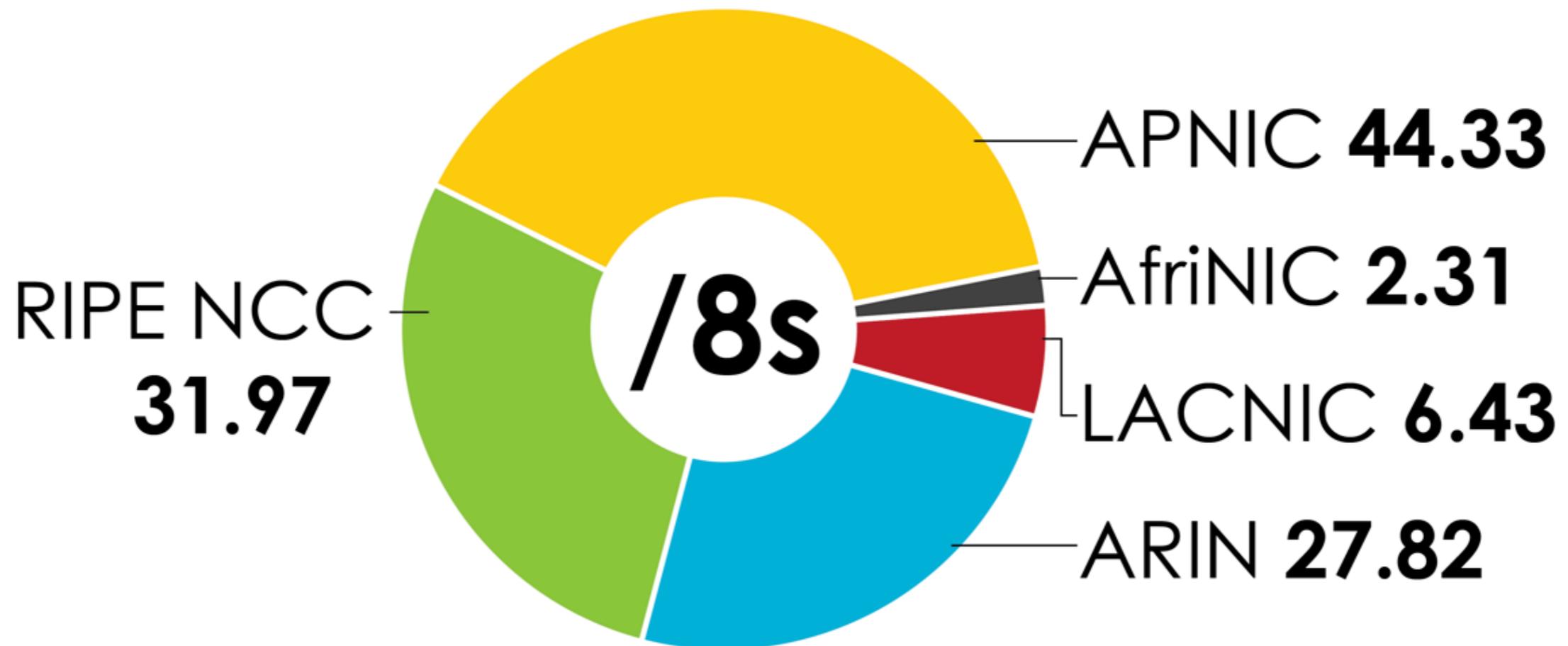
Global IPv4 Address Space

STATUS OF 256 /8s IPv4 ADDRESS SPACE

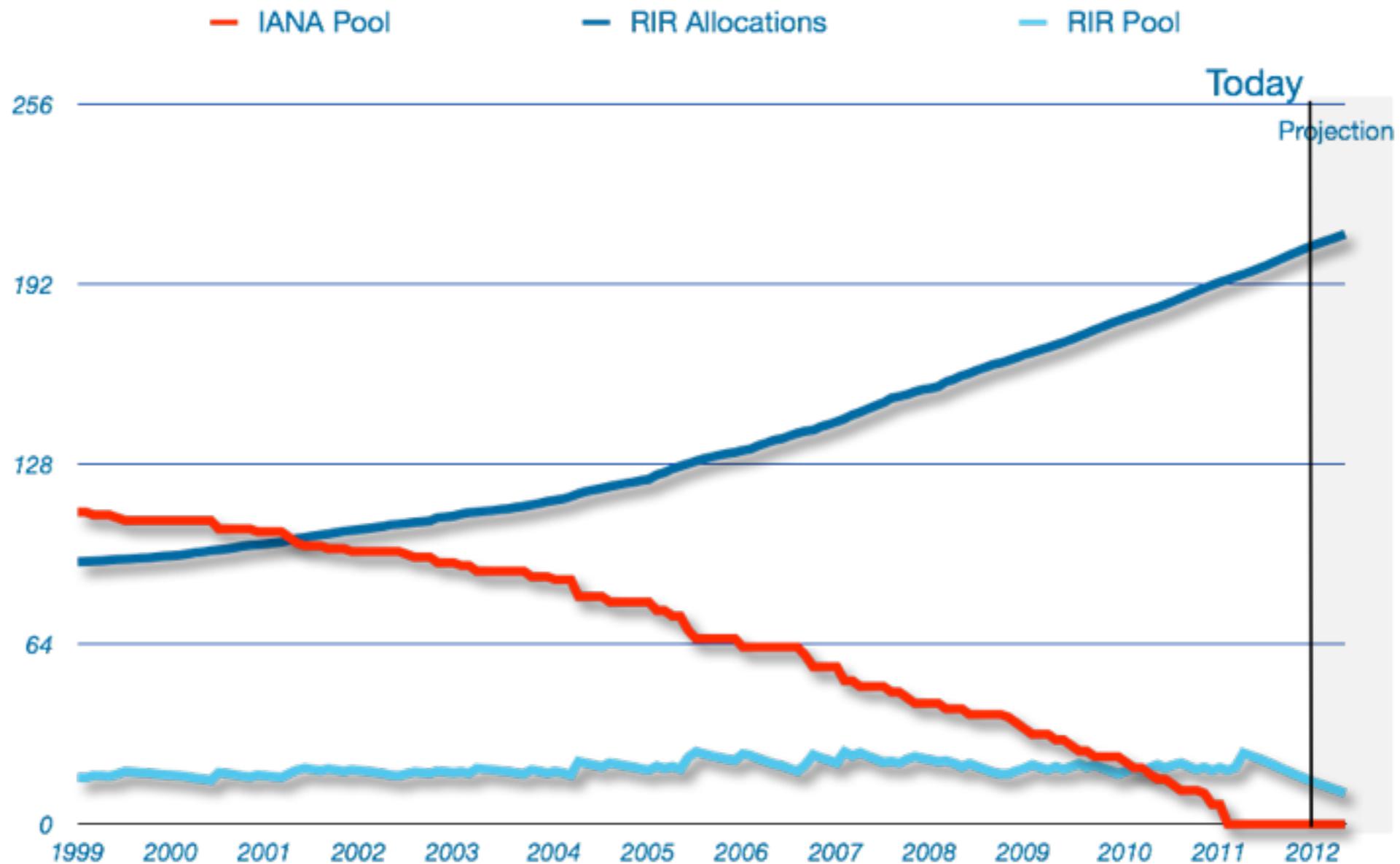


Global IPv4 Address Distribution

- How many IPv4 addresses issued by RIRs
 - Jan 1999 - Dec 2011



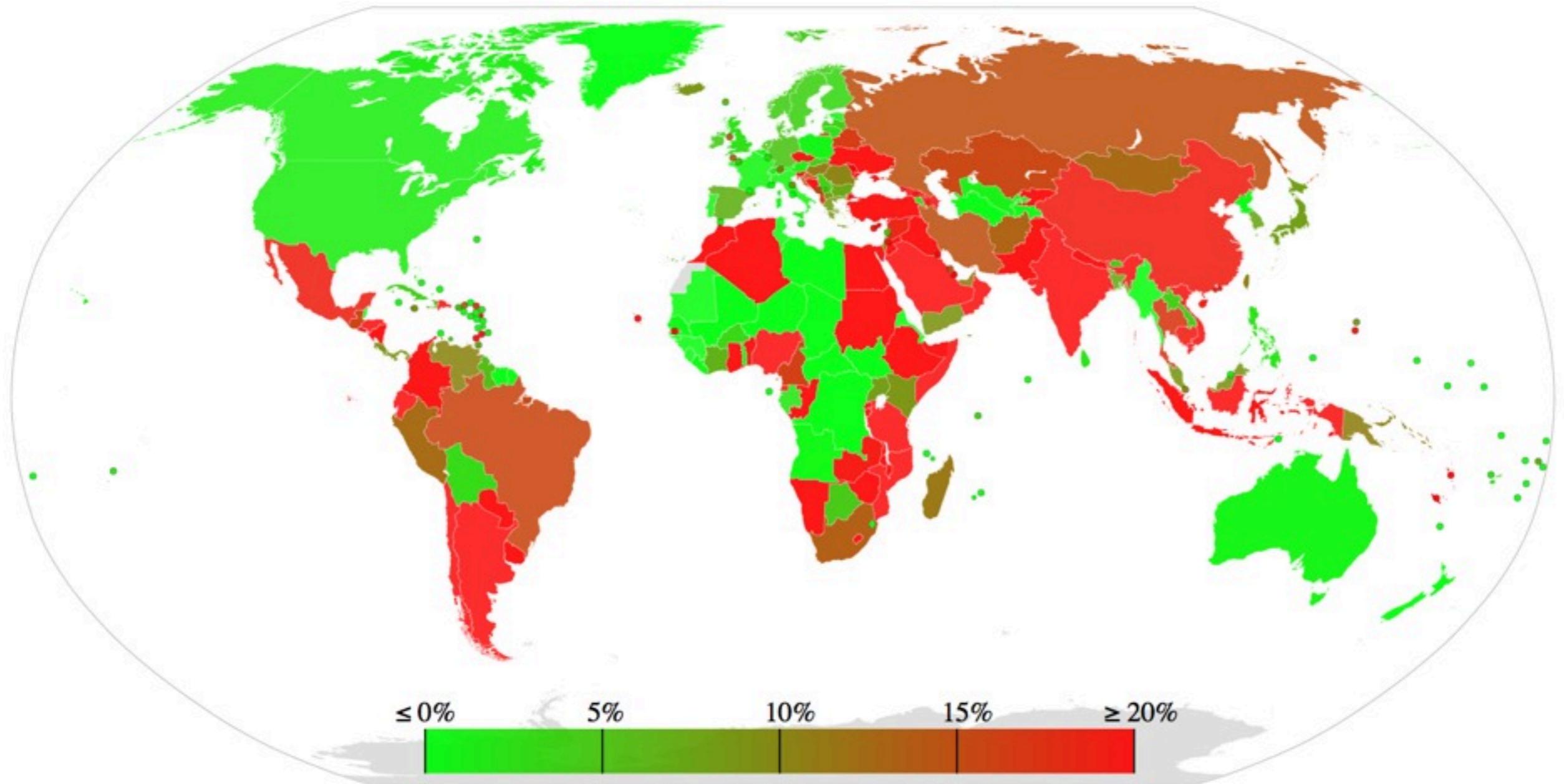
IPv4 Current Status



- RIPE NCC IPv4 Available Pool:

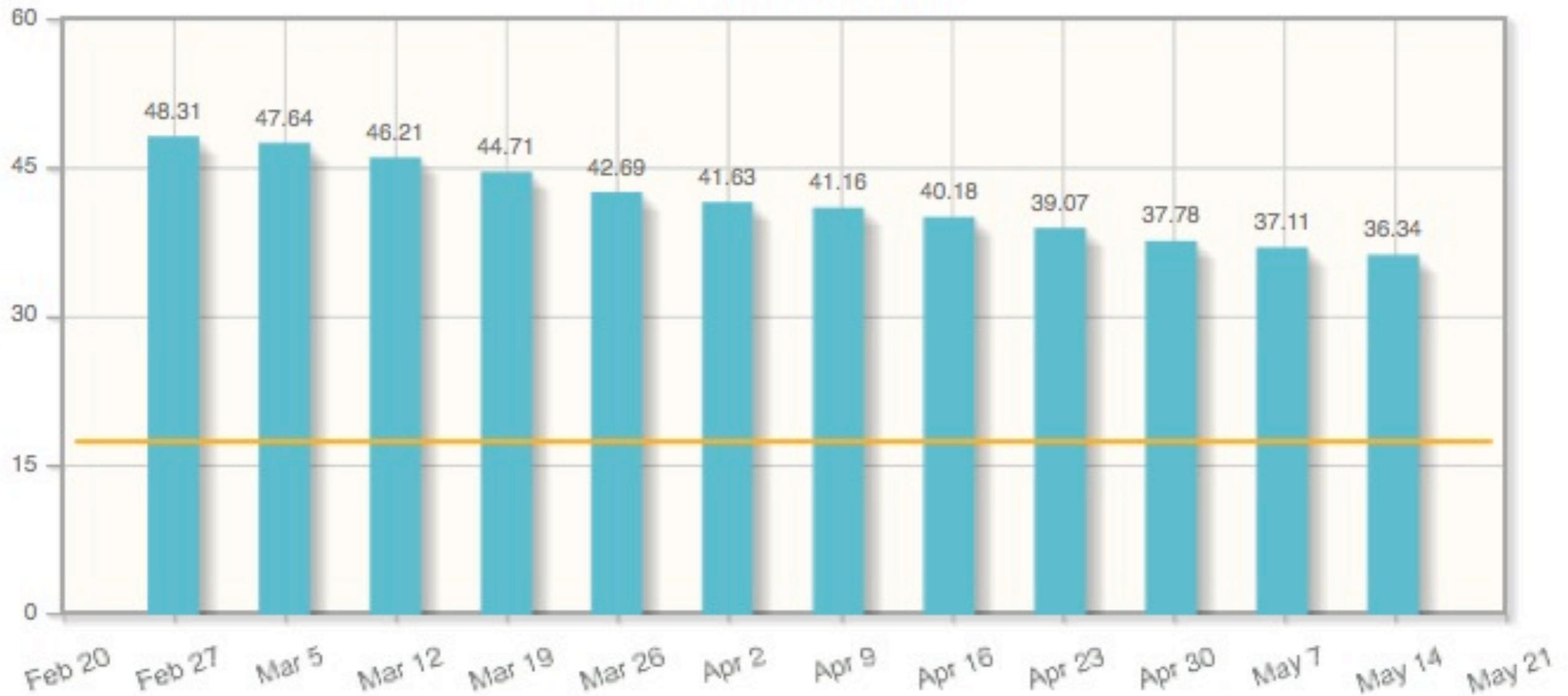
<http://www.ripe.net/internet-coordination/ipv4-exhaustion/ipv4-available-pool-graph>

IPv4 Growth per Country in 2011

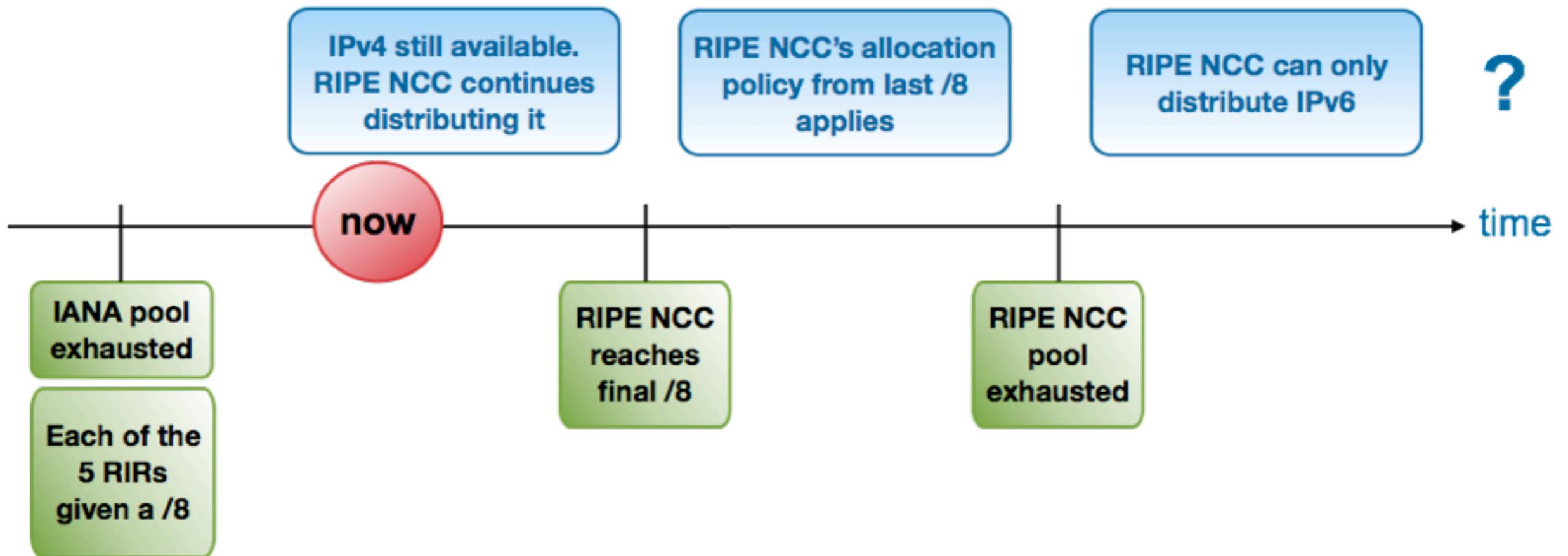


Remaining IPv4 Addresses at the RIPE NCC

RIPE NCC IPv4 Pool



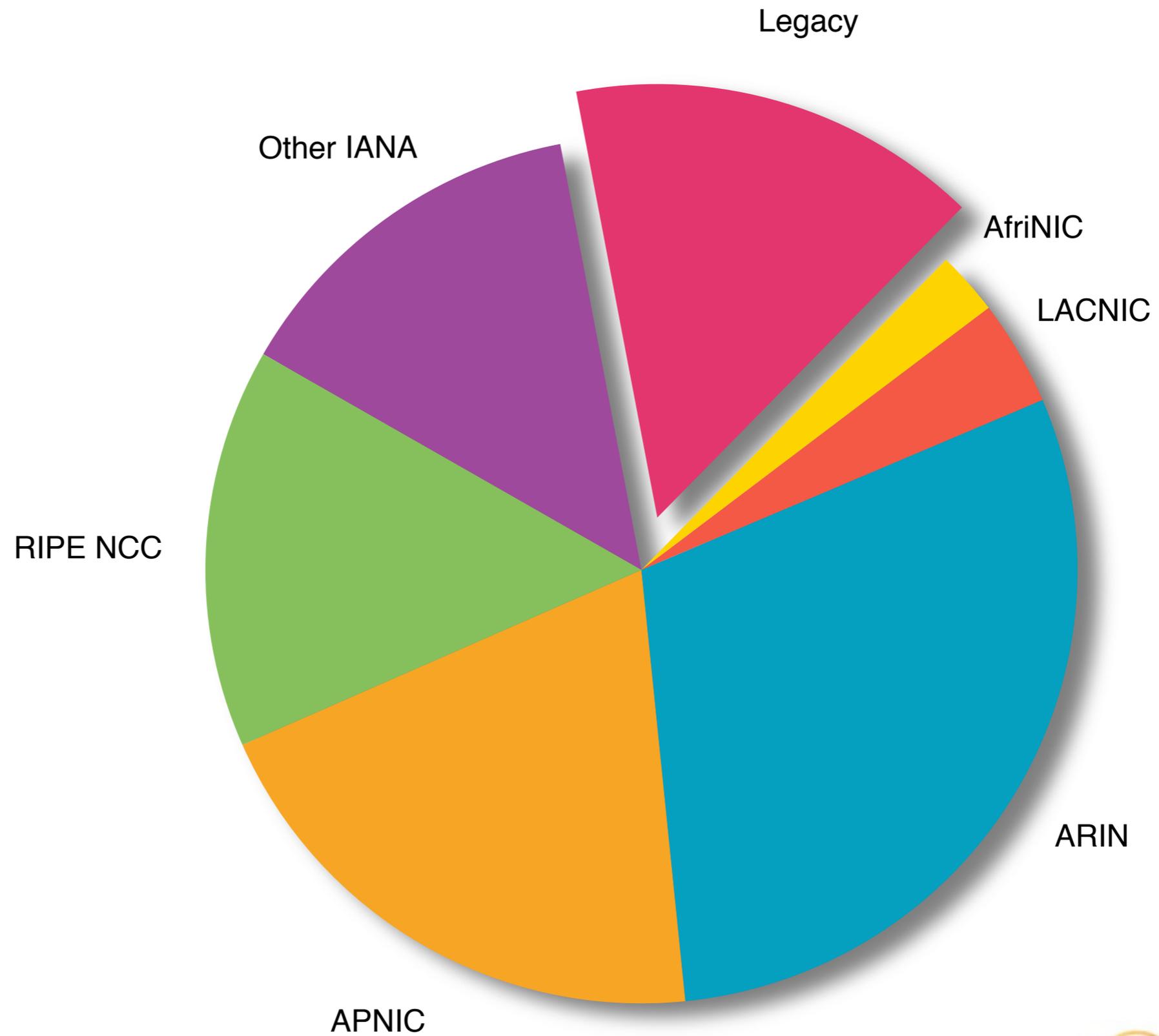
Reaching the Last /8



When We Reach the Last /8

- New and existing members can request **one /22** (1,024 IPv4 addresses):
 - If they already have IPv6 addresses
 - If they can justify the need for this /22
- No IPv4 PI space can be assigned
- IPv4 Allocation and Assignment policy:
<http://www.ripe.net/ripe/docs/IPv4-policies>

Legacy Space



Legacy Space

- IPv4 address space that was distributed by the IANA prior to the formation of the RIR system
- Why register?
 - Benefits of registering:
 - legitimise holdership
 - update reverse DNS delegation
 - use membership services
 - no fees!
 - Risks of not registering:
 - outdated data in the RIPE Registry
 - vulnerable to hijackers



legacy@ripe.net

Make Plans Now

- IPv4 space only given out on 3-month plan
- IPv6 allocations are easily available
- IPv6 offers the only way of supporting future growth

- Network Address Translation (NAT) is not ideal
 - Breaks end-to-end communication principle
 - But you might have to use it in some way

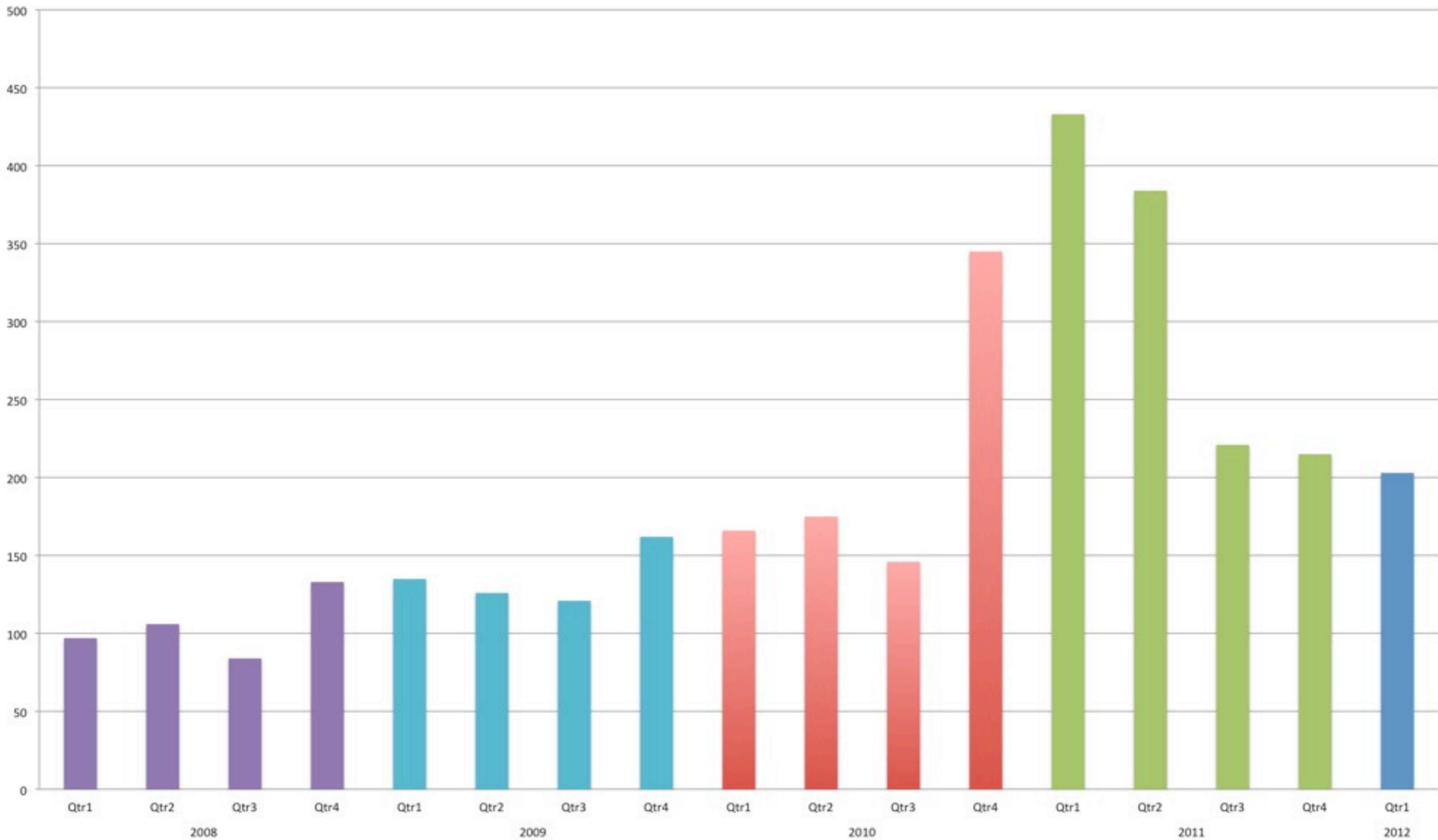
What You Can Do

- Network operators:
 - Ensure your network is IPv6 enabled
- Content providers:
 - Ensure content is available over IPv4 and IPv6
- Software producers:
 - Ensure software is IPv6 compliant
- Hardware vendors:
 - Ensure products are IPv6 compatible
- **Only invest in IPv6-ready products**

IPv6 Statistics and Measurements



IPv6 Allocations per Quarter



Mirjam Kühne, May 2012

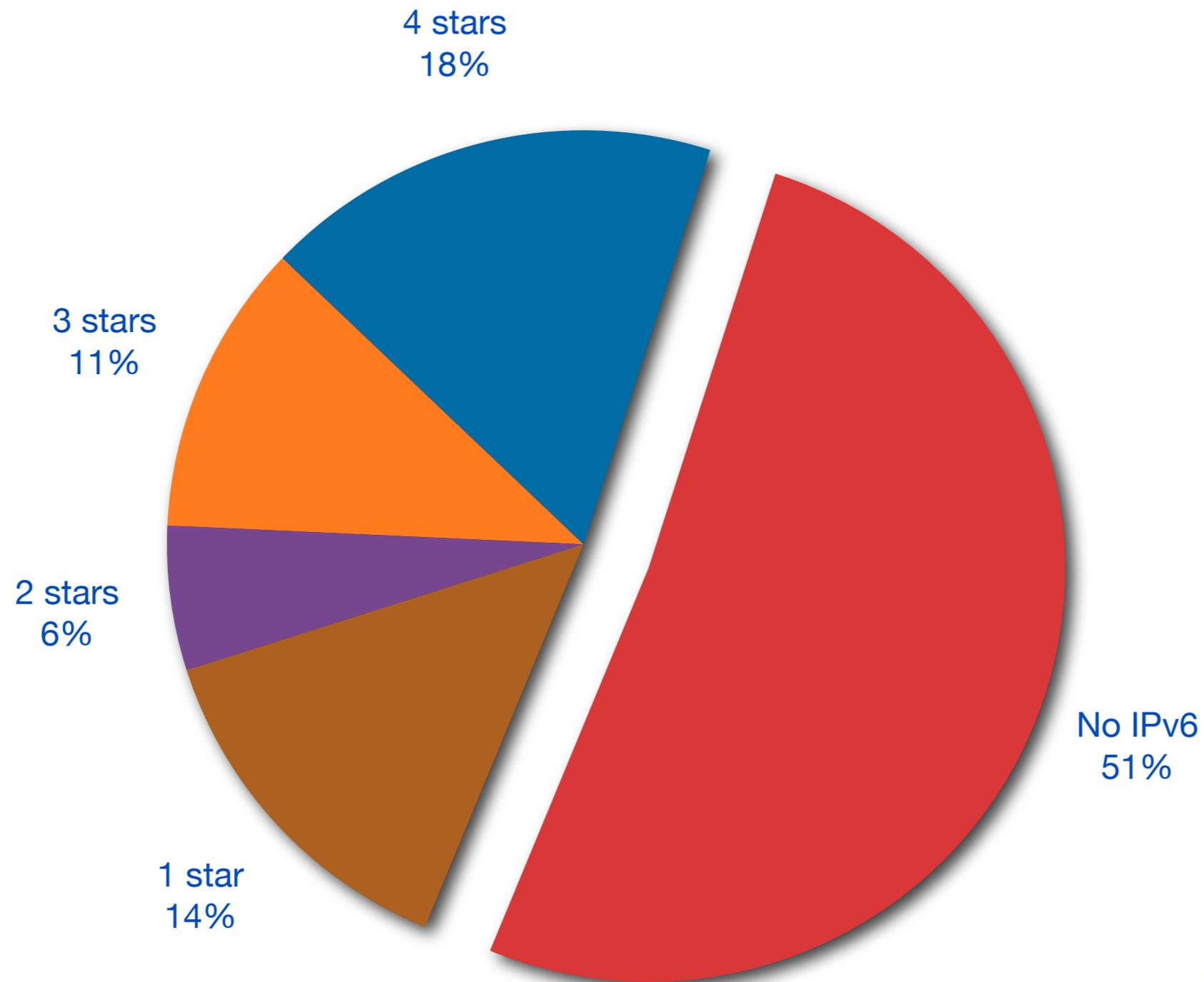
IPv6 RIPEness

- Rating system:
 - One star if the LIR has an IPv6 allocation
- Additional stars if:
 - IPv6 prefix is announced
 - A route6 object is in the RIPE Database
 - Reverse DNS is set up
- A list of all 4-star LIRs and country graphics:

<http://ripeness.ripe.net/>

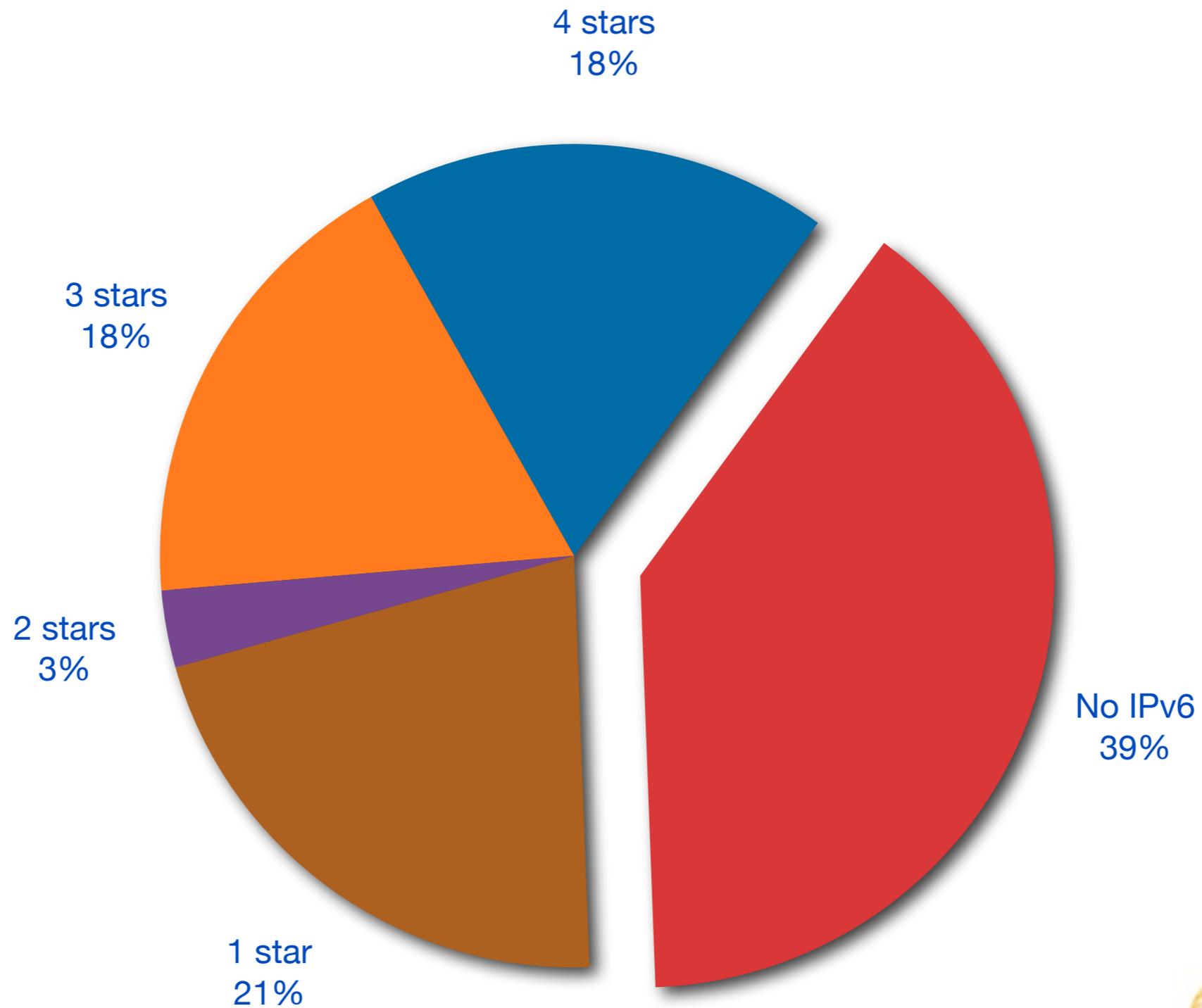
IPv6 RIPEness in the RIPE NCC Service Region

● 1 star ● 2 stars ● 3 stars ● 4 stars ● No IPv6

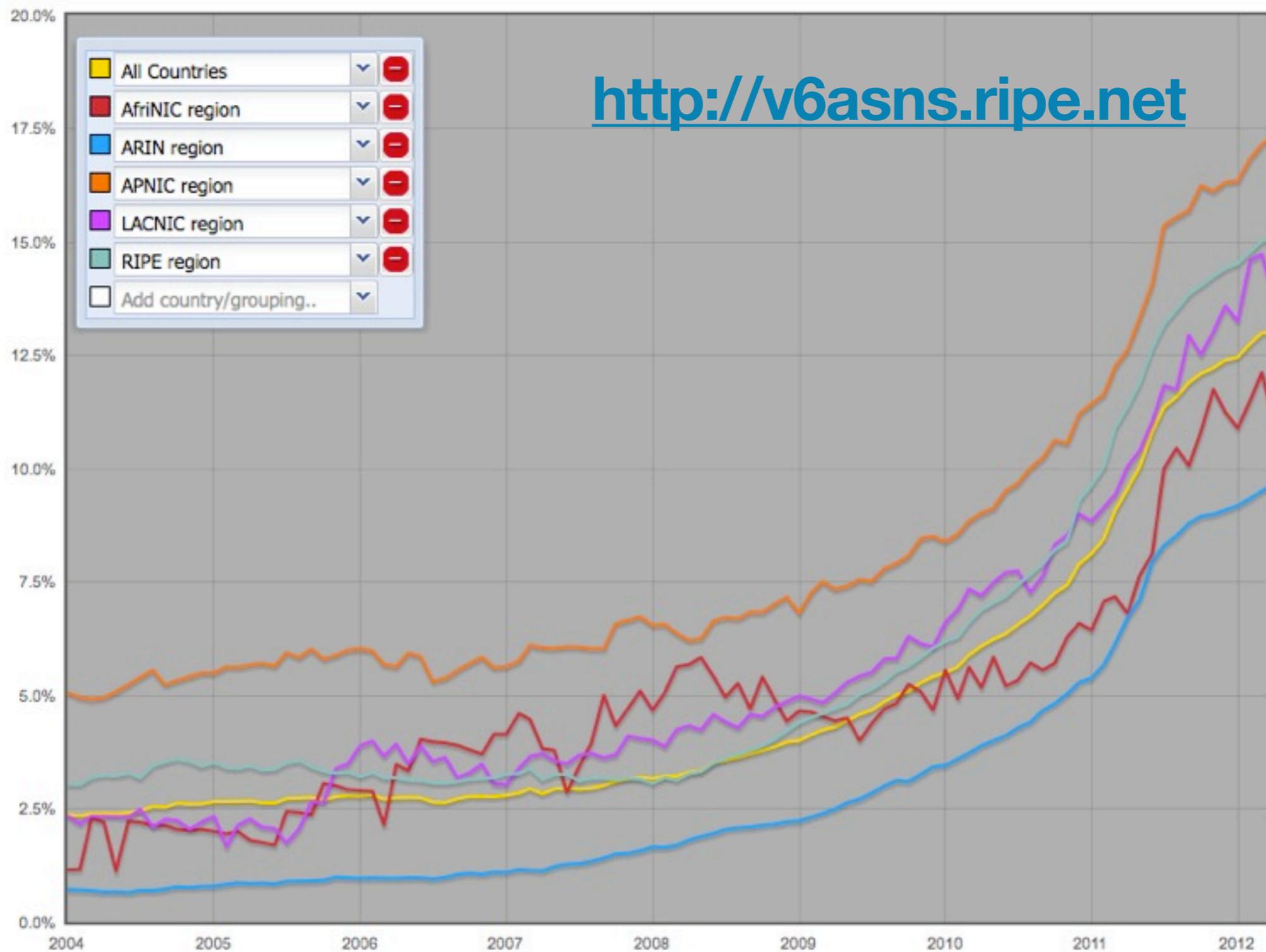


IPv6 RIPEness in Iceland (33 LIRs)

● 1 star ● 2 stars ● 3 stars ● 4 stars ● No IPv6



Networks Announcing IPv6



World IPv6 Launch

- Global Event initiated by ISOC on 6 June
- Event in Amsterdam <http://www.ipv6launch.nl>
 - Co-organised by various organisations
 - Workshops, tutorials, keynote speakers, panels, measurements, press room
 - Targeted at IT industry, students, ISPs, press...
- RIPE NCC will measure and monitor progress worldwide during the day

IPv6 Training

- Training for Local Internet Registries
 - Targeted at LIRs/RIPE NCC members
- IPv6 Roadshows
 - Targeted at technical staff operating governments and enterprise networks
 - Collaboration with industry and regional Network Operators Groups (NOGs)
- Presenting at various conferences and events

IPv6 Act Now!

- One-stop shop for IPv6 information
- Audience includes businesses, governments, technical community
- Sections include:
 - How to Act Now
 - Community interviews
 - Statistics
 - RSS feed of IPv6-related news and developments

<http://www.ipv6actnow.org>

More IPv6 on RIPE Labs

- IPv6 measurements compilation
- Measuring IPv6 at web clients and resolvers
- 6to4 brokenness
- IPv6 RIPEness
- IPv6 transition mechanisms
- And also many other topics

<http://labs.ripe.net>

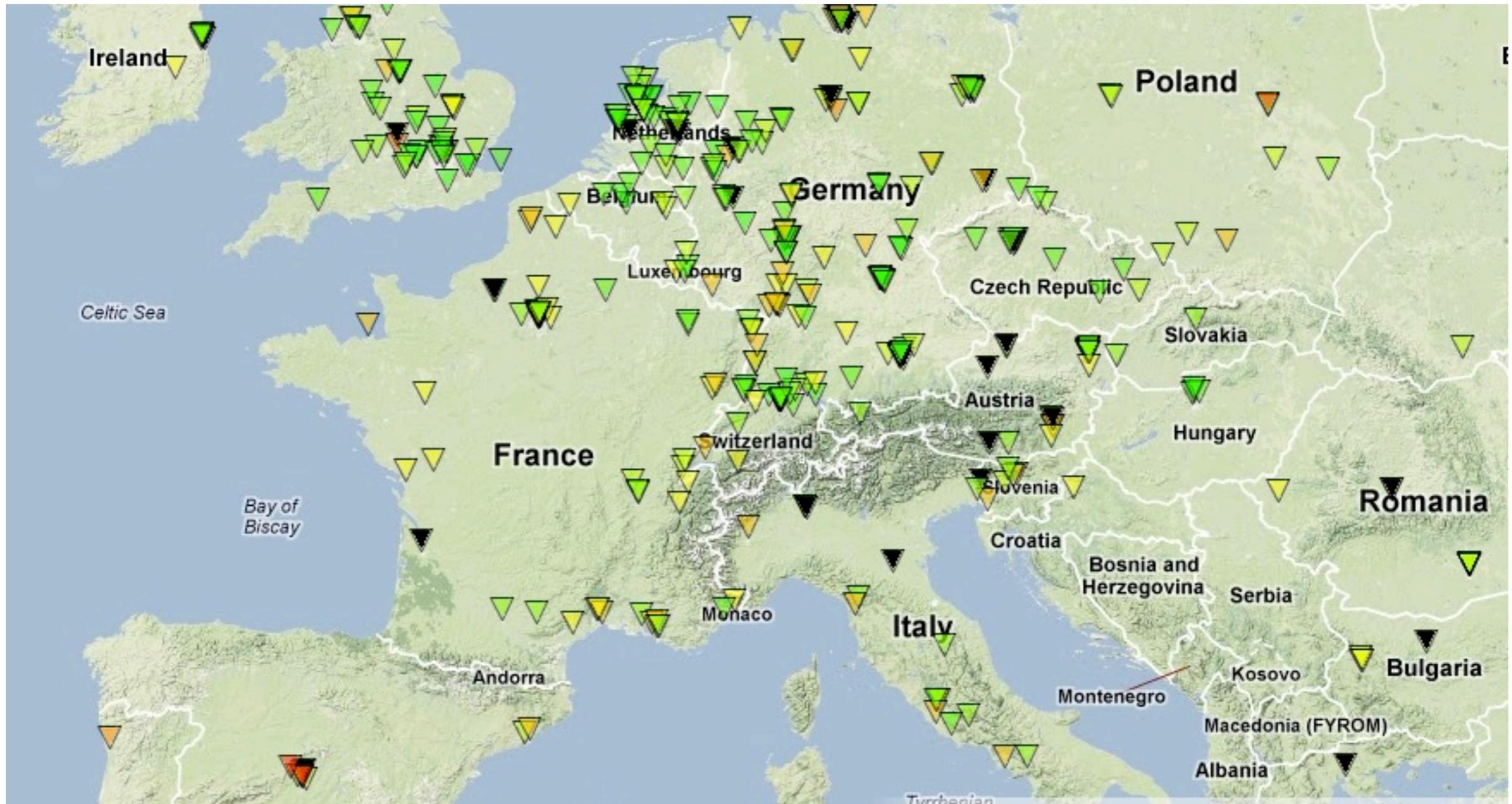
Test IPv6 with RIPE Atlas

- Global Internet active measurement network
- Test IPv6 reachability from all RIPE Atlas probes
 - Only available for members at the moment
- Over 1500 active probes
 - ping, traceroute, DNS lookup
 - Maps showing various measurements
- User Defined Measurements
- Data available for researchers (atlas@ripe.net)



<http://atlas.ripe.net>

IPv6 RTT to K root



Legend: <=10ms <=20ms <=30ms <=40ms <=50ms <=100ms <=200ms <=300ms <=500ms >500ms (unreachable)

Further Readings

- RIPE NCC main web site: www.ripe.net
- RIPE Labs: labs.ripe.net
- RIPE Atlas: atlas.ripe.net
- IPv6 related statistics
 - ripeness.ripe.net
 - v6asns.ripe.net
- Status of Available IPv4 pool
 - www.ripe.net/internet-coordination/ipv4-exhaustion/ipv4-available-pool-graph

Questions?

