IPv6 News
from the RIPE NCC

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RIPE NCC

RIPE / RIPE NCC

RIPE

Open community
Develops addressing policies
Working group mailing lists

RIPE NCC

Located in Amsterdam
Not for profit membership
organisation
One of five RIRs

About RIPE NCC

- One of the five Regional Internet Registries (RIR)

- Our service region: Europe, the Middle East and Central Asia

- Not-for-profit association, based in Amsterdam

- Funded from membership fees

- 8630 members (LIRs) throughout the region

- Neutral, impartial, open and transparent

The Five RIRs
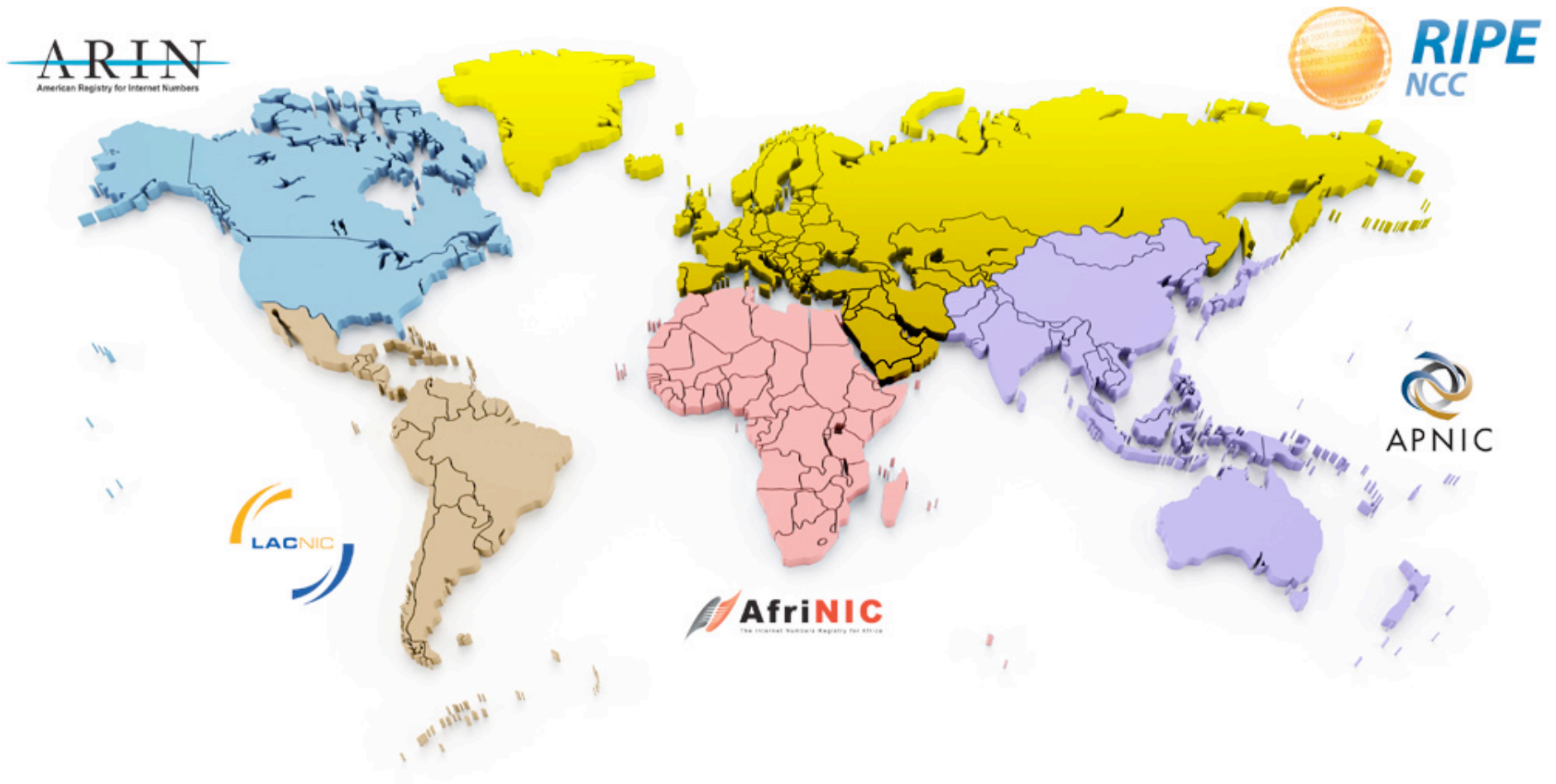
RIPE NCC Activities

- Coordination of Internet Operations

- Distribution and registration of IPv4, IPv6 and AS numbers

- Measurements and statistical analysis

- Operating the K-root name servers

- Helping the industry to exchange experiences and knowledge
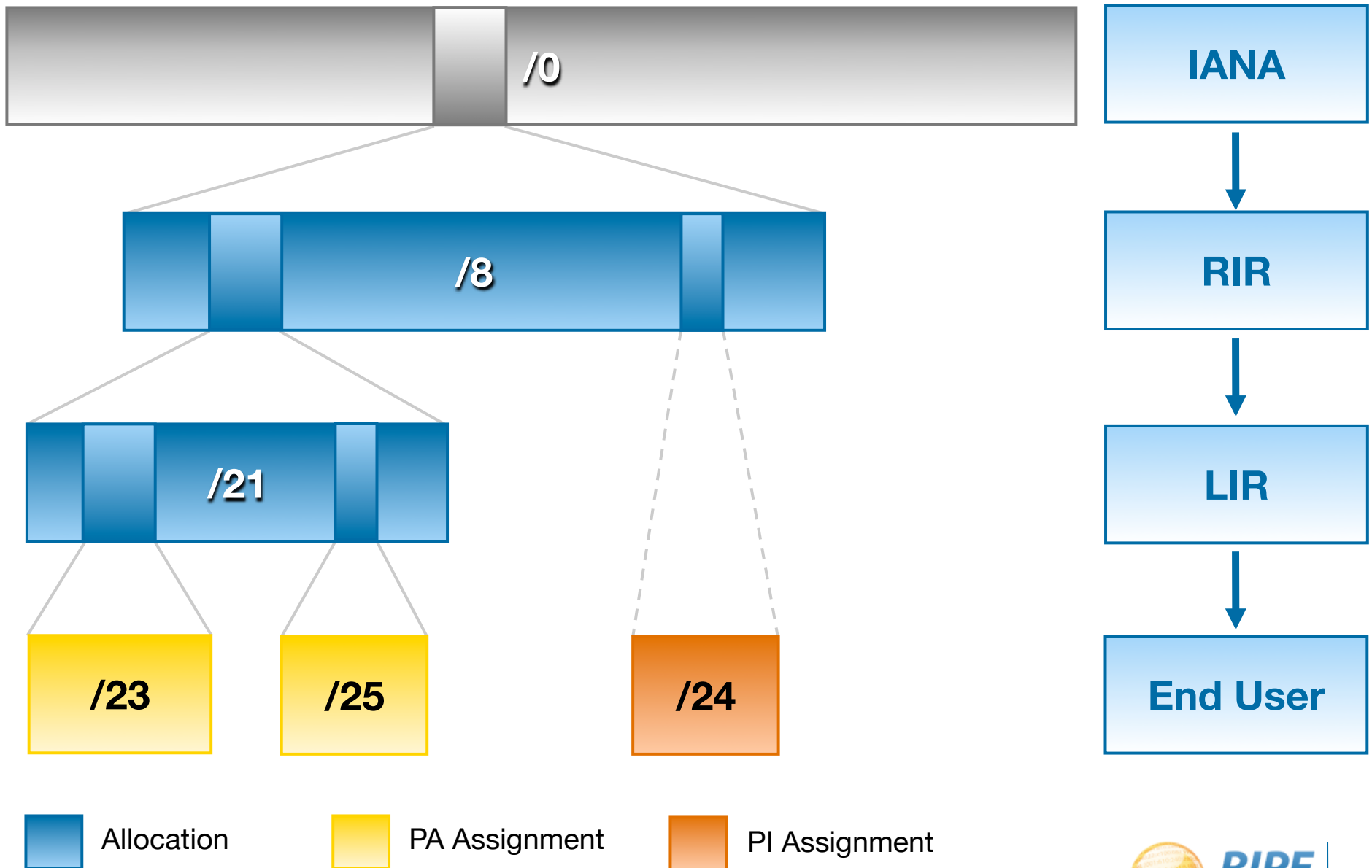
- Training Courses

The RIPE Community

- The RIPE Community **decides policies** in our region

- Community is **open to everyone**

- Discussion via mailing lists and at meetings

- Decisions made by **consensus**

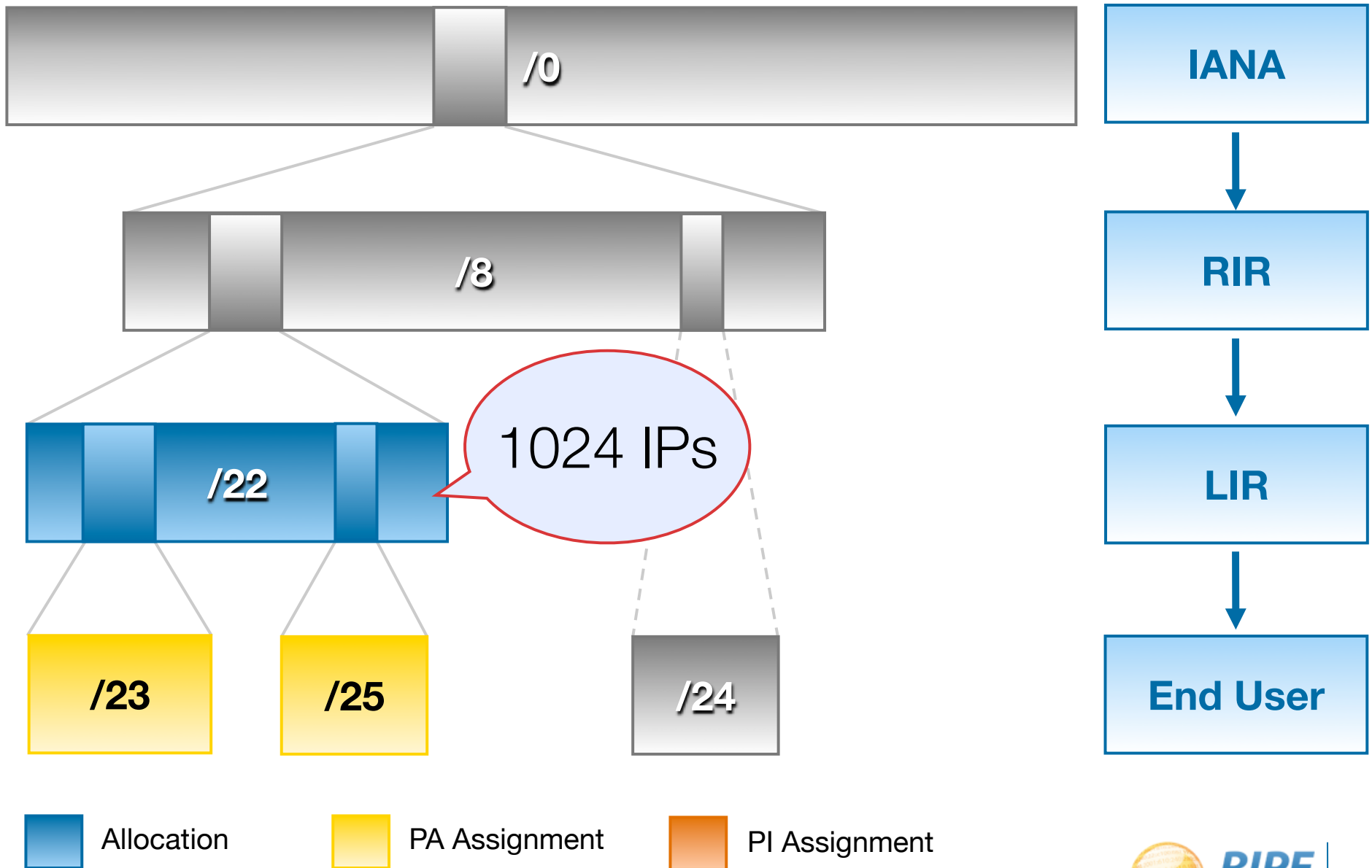- To join: subscribe to the mailing list
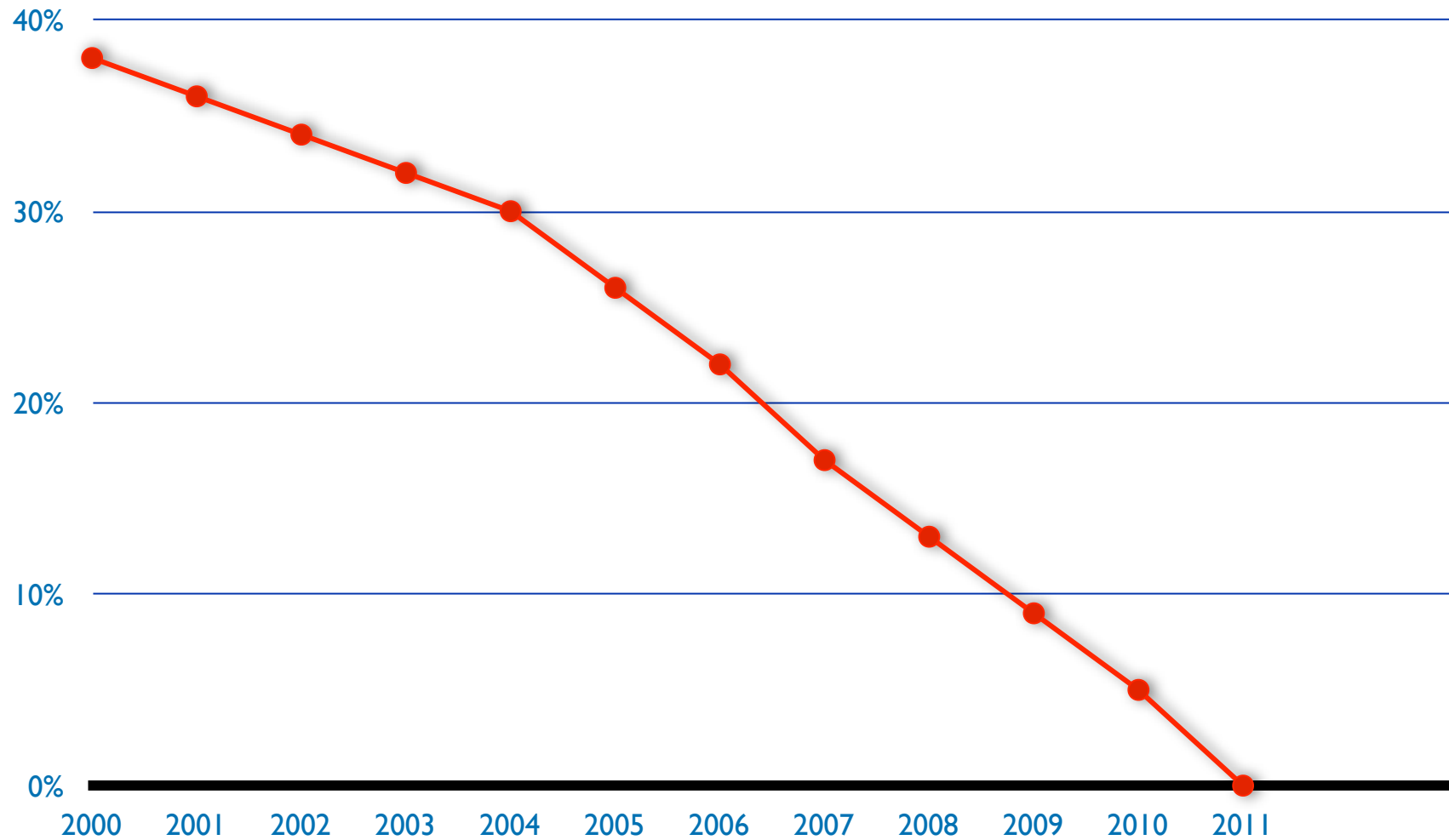
IPv4 Exhaustion

IPv4 Address Distribution

/0

/8

/21

/23

/25

/24

IANA

RIR

LIR

End User

Allocation

PA Assignment

PI Assignment

RIPE NCC

8

IPv4 Address Distribution
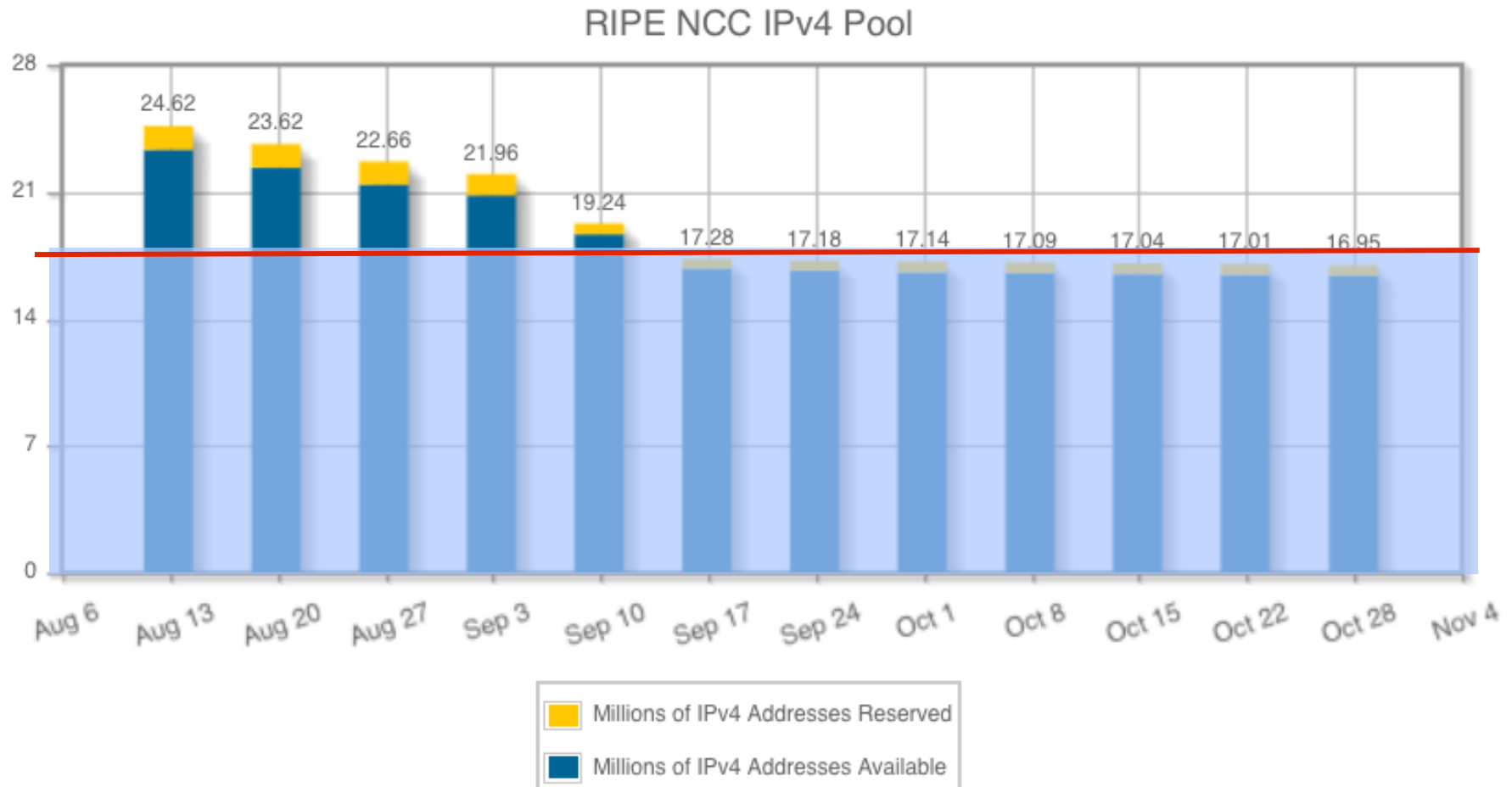
IANA IPv4 Pool

RIPE NCC IPv4 Available Pool

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

RIPE NCC's last /8

- Different rules than before!

- Ensures IPv4 access for all members

- /16 set aside for unforeseen situations
  - if unused, will be distributed

- No PI

Rules for getting IPv4 from the last /8

- 16000[+] /22s in a /8

- members can get **one /22** (=1024 addresses)

- must already hold IPv6

- must qualify for allocation
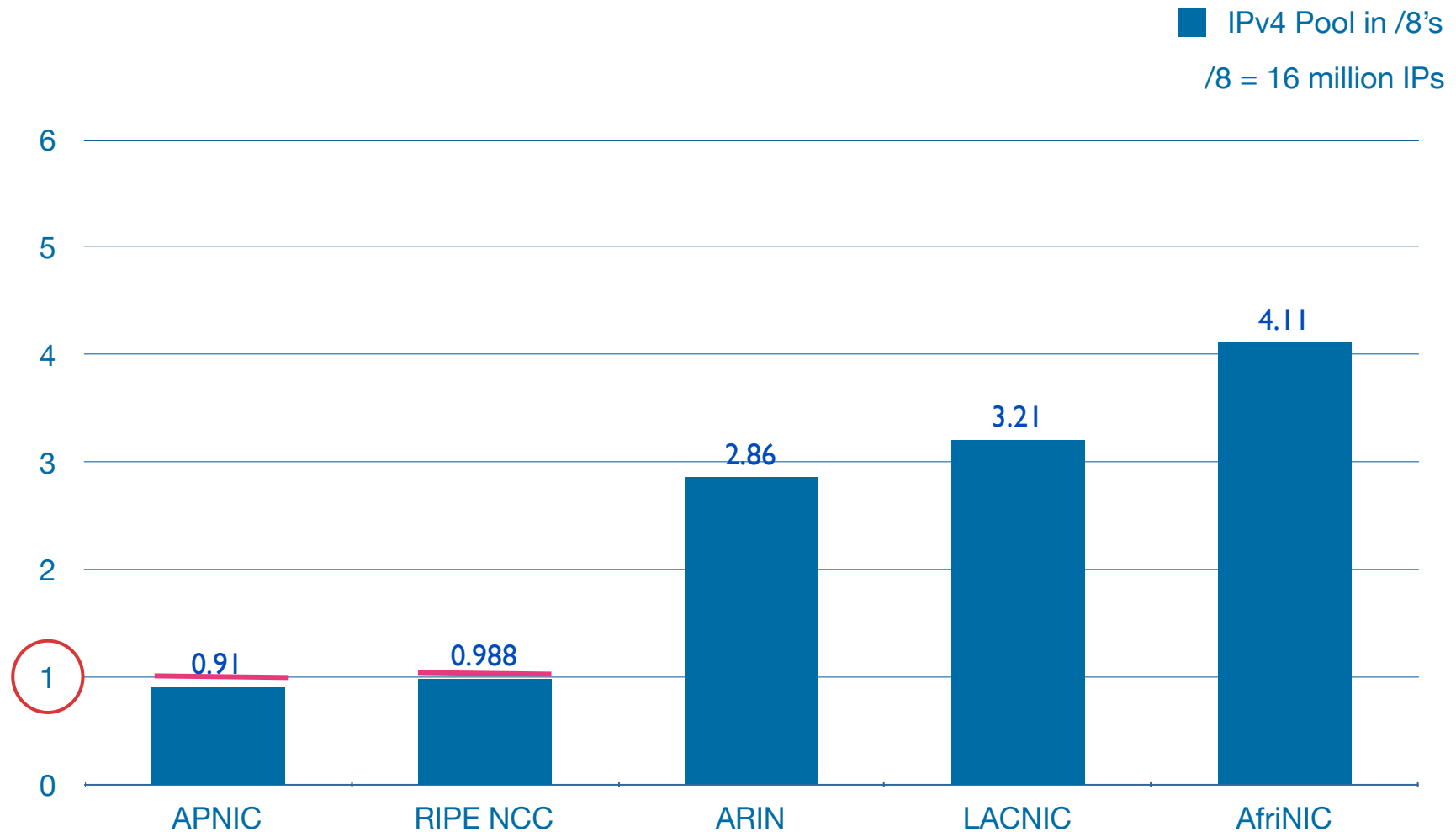
Transfer of IPv4 Allocations

- Policy 2007-08: Allocation Transfer Policy
  - Don't buy your IPv4 on eBay!

  - Transfer unused allocations to another LIR

  - Minimum allocation size /22

  - Evaluated by RIPE NCC

  - Update in RIPE Database

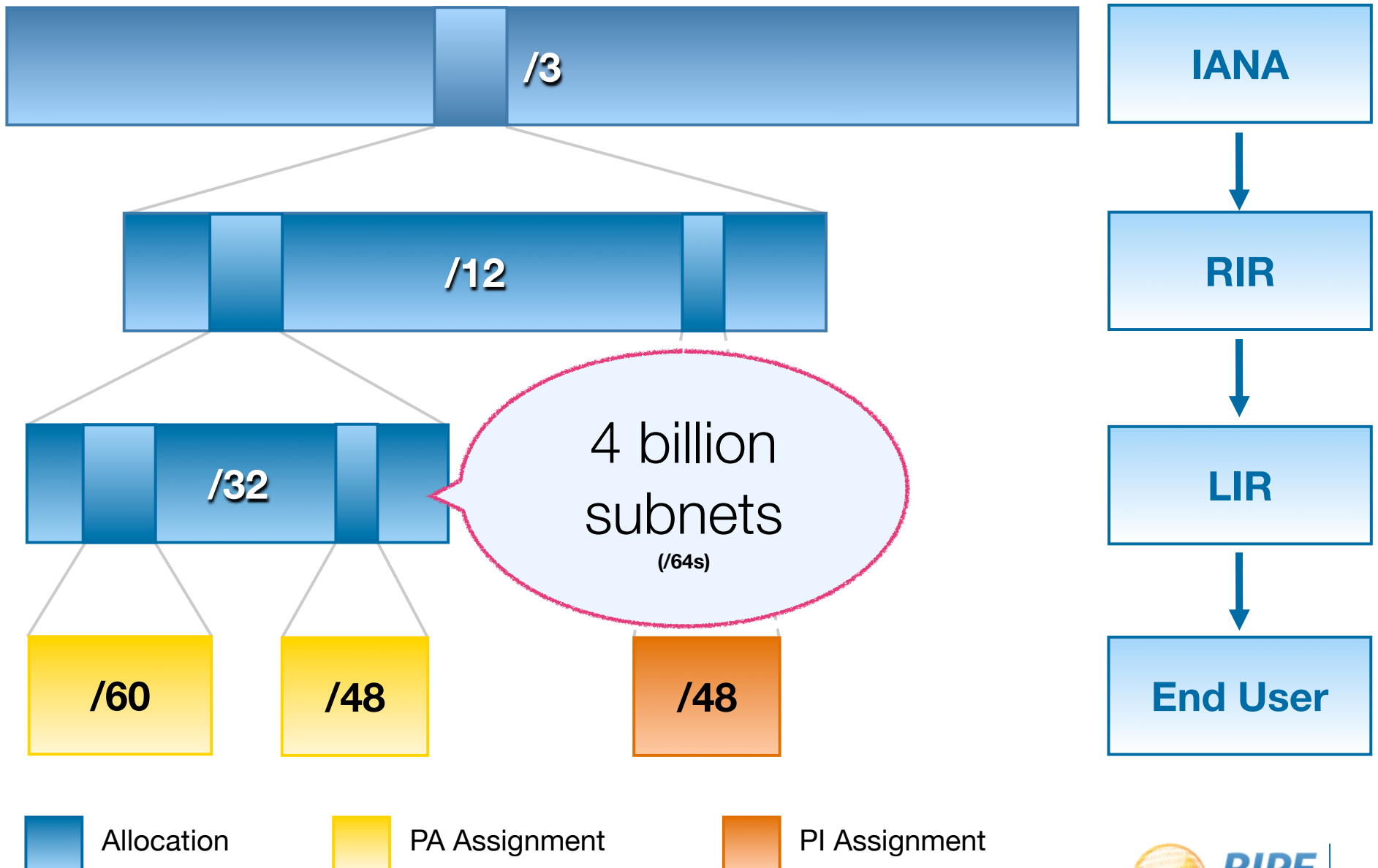   http://www.ripe.net/lir-services/resource-management/listing

IPv4 Exhaustion Worldwide

IPv4 Pool in /8's

/8 = 16 million IPs

4.11 — AfriNIC

3.21 — LACNIC

2.86 — ARIN

0.988 — RIPE NCC

0.91 — APNIC

Source: http://www.nro.net/statistics

IPv6 Adoption

IPv6 Address Distribution

/3

/12

/32

4 billion subnets **(/64s)**

/60

/48

/48

IANA

RIR

LIR

End User

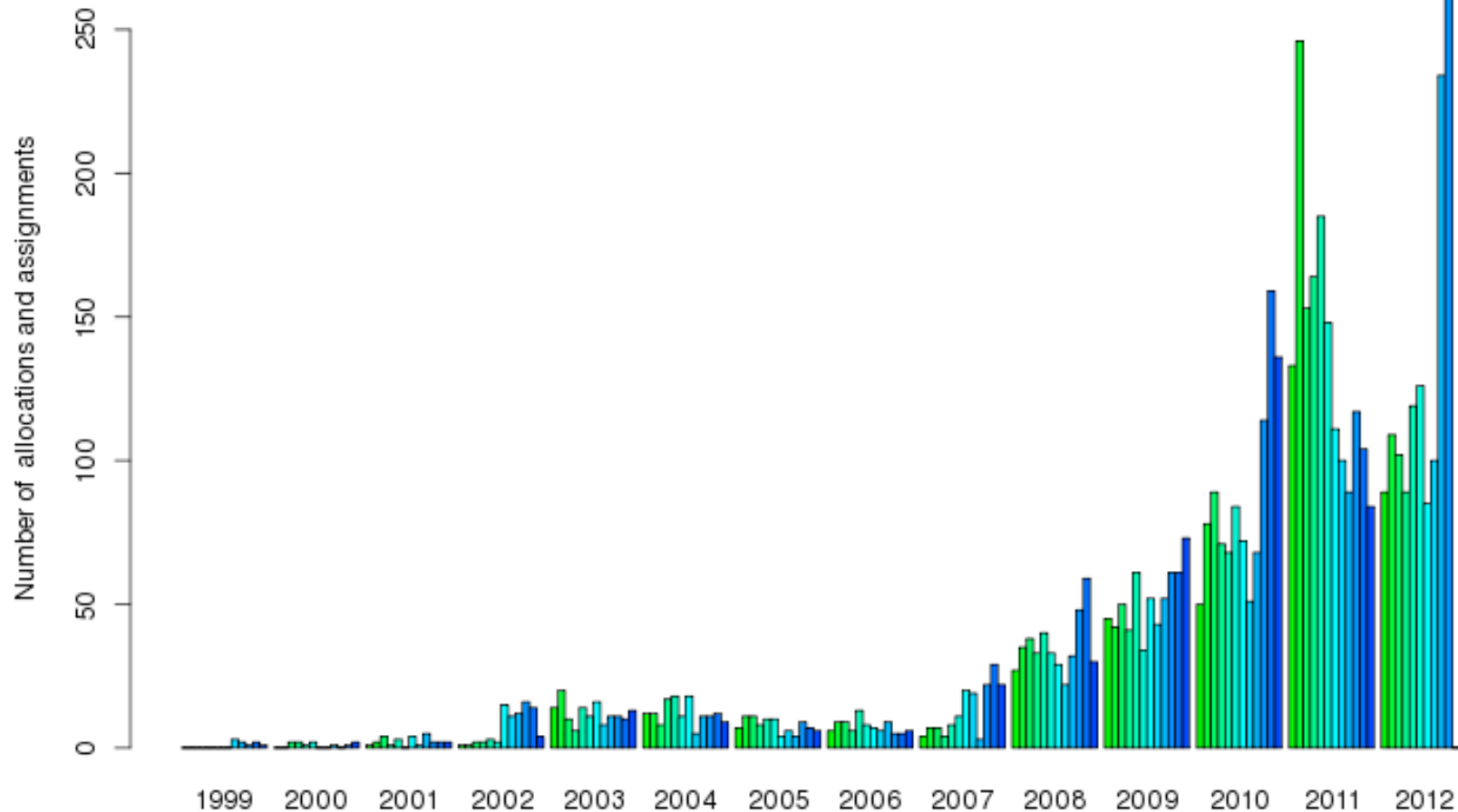Allocation   PA Assignment   PI Assignment

How to measure IPv6 adoption ???

Different ways of measuring IPv6 adoption

- IPv6 Allocations by the RIPE NCC ✓
- IPv6 RIPEness ✓
- LIRs with/without IPv6 ✓
- % IPv6 enabled networks (ASNs) ✓
- Rankings based on client IPv6 preference ✓
- % websites reachable over IPv6 ✓
- IPv6 traffic as % of total traffic ✓
- % of page views (hits) over IPv6 ✓
- Performance v4 vs v6 ✓
- DNS: % having A vs AAAA records ✓
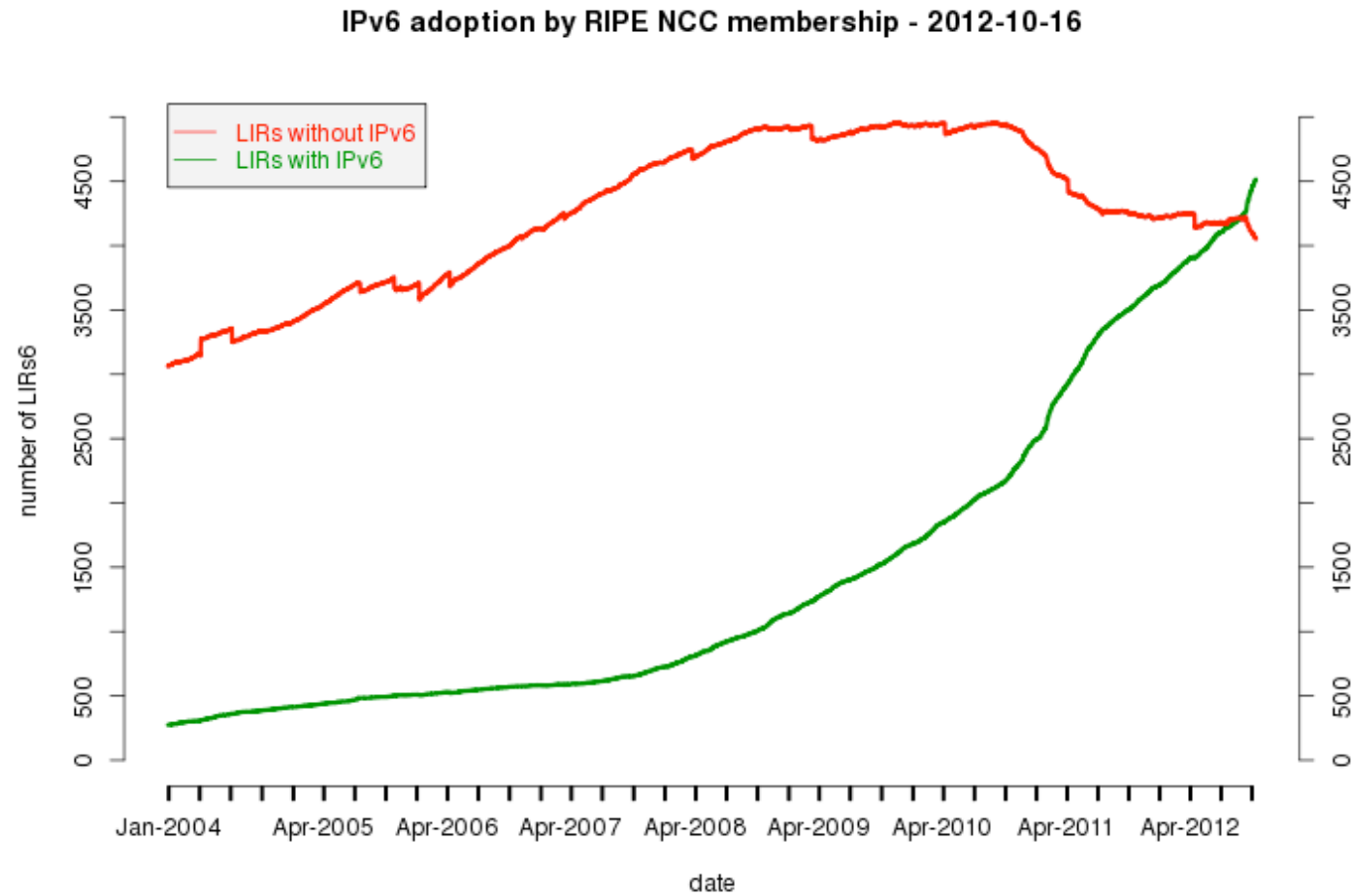- Client capability: can it use IPv6 ✓
- etc   etc

IPv6 allocations/assignments each month
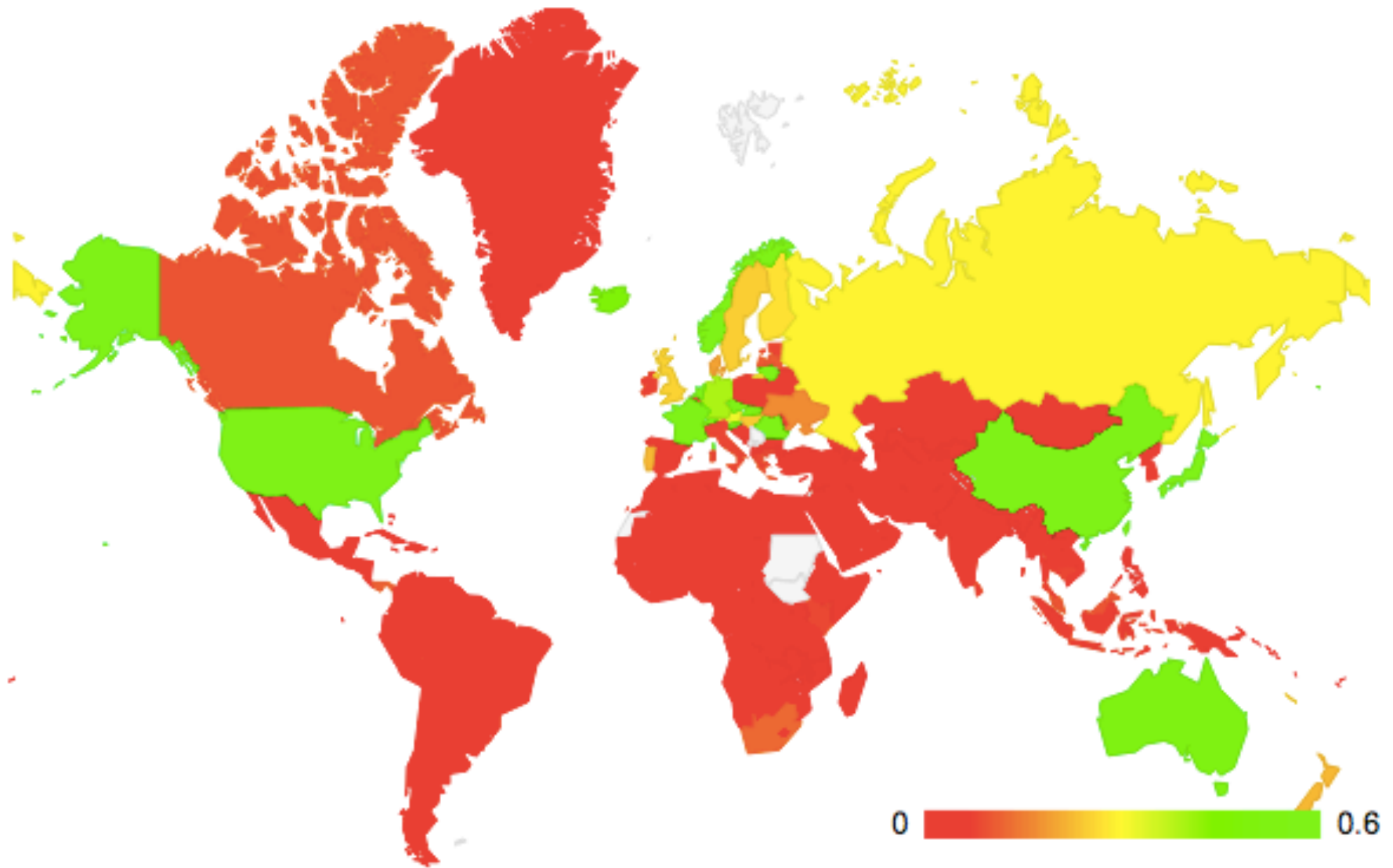

Monthly IPv6 allocations and assignments - RIPE NCC

what's new each month

LIRs with/without IPv6

IPv6 adoption by RIPE NCC membership - 2012-10-16

Legend:
- LIRs without IPv6
- LIRs with IPv6

Y-axis: number of LIRs6

X-axis: date (Jan-2004, Apr-2005, Apr-2006, Apr-2007, Apr-2008, Apr-2009, Apr-2010, Apr-2011, Apr-2012)

World Rankings by client IPv6 Preference

Source: http://labs.apnic.net/ipv6-measurement/AS

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IPv6 Ripeness

- Rating system:

  - One star if the LIR has an IPv6 allocation

  - Additional stars if:

    - IPv6 Prefix is announced on router

    - A route6 object is in the RIPE Database

    - Reverse DNS is set up
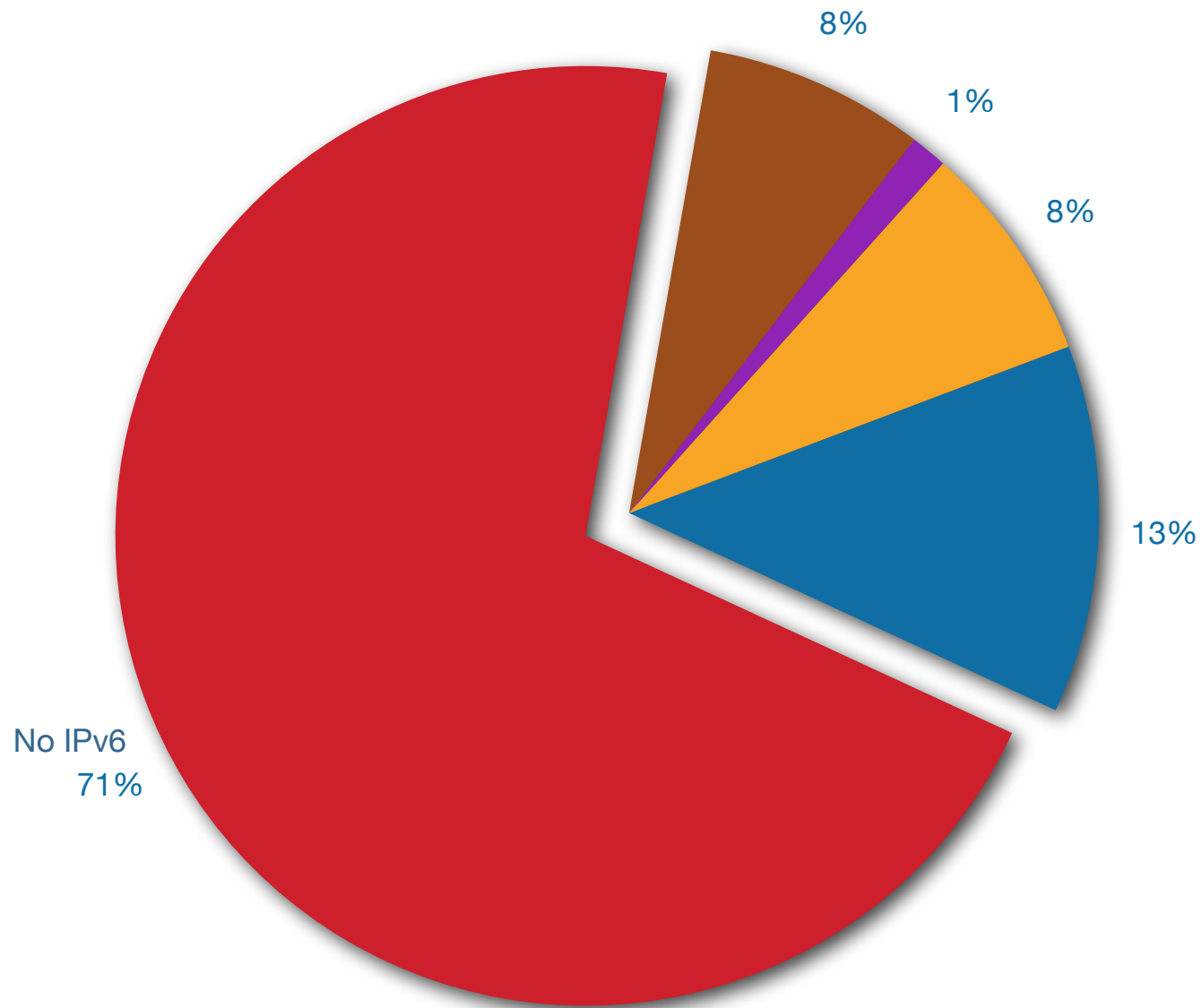
  - A list of all 4 star LIRs: http://ripeness.ripe.net/

2012 IPv6 RIPEness: 8631 LIRs

1 star
16%

2 stars
6%

3 stars
12%

4 stars
19%

No IPv6
47%
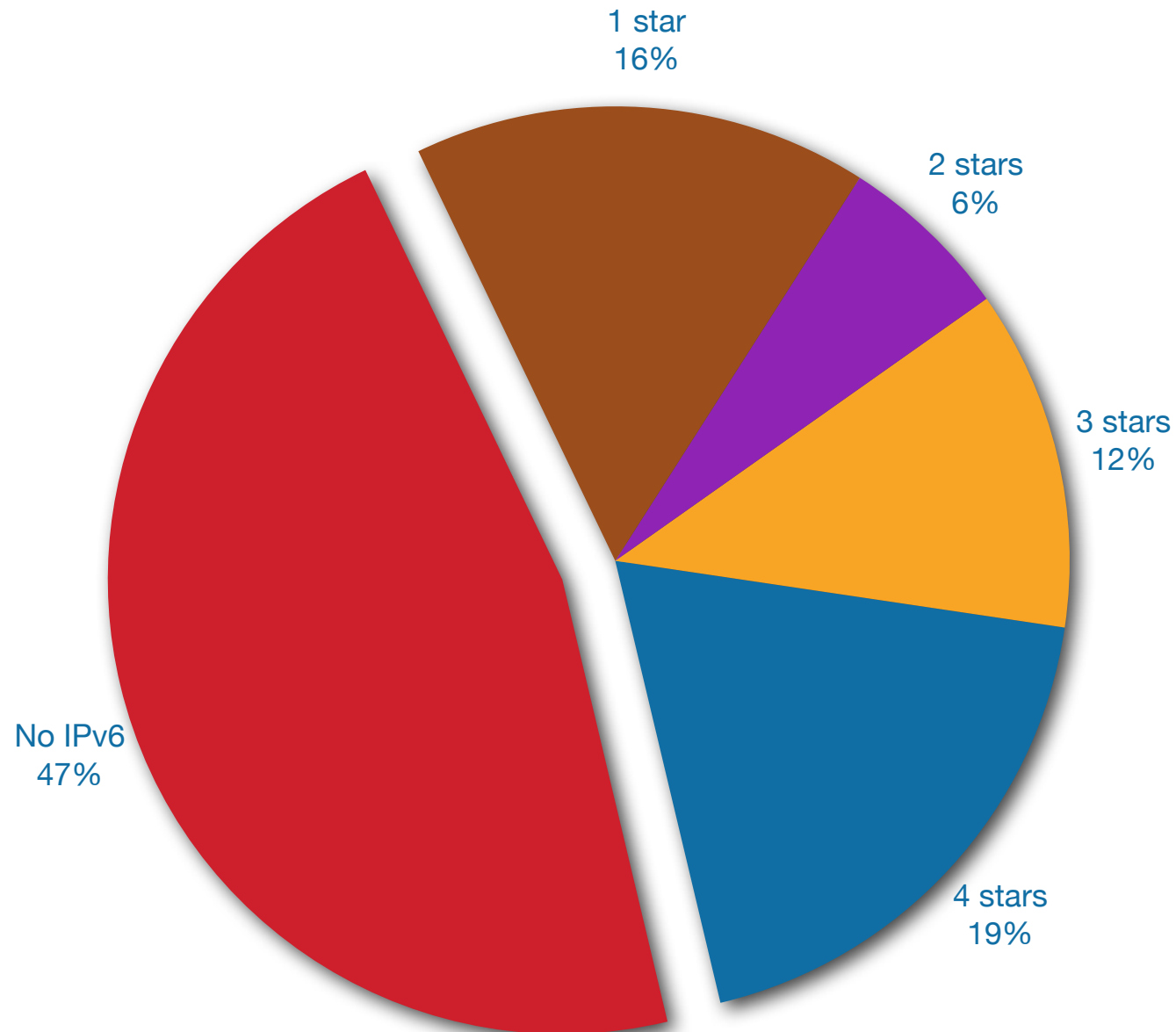
Bulgarian and regional statistics

2012 IPv6 RIPEness: Bulgaria (79 LIRs)

8%

1%

8%

13%

No IPv6
71%

IPv6 RIPEness in the region

Bulgaria(79)
8%
1%
8%
13%
71%

Romania(44)
25%
14%
7%
25%
30%

Ukraine(145)
8%
6%
46%
17%
23%
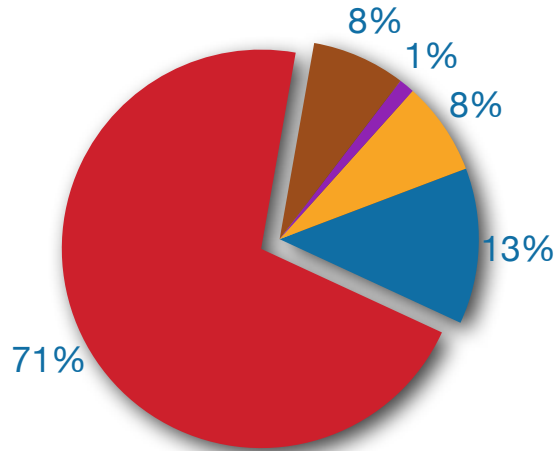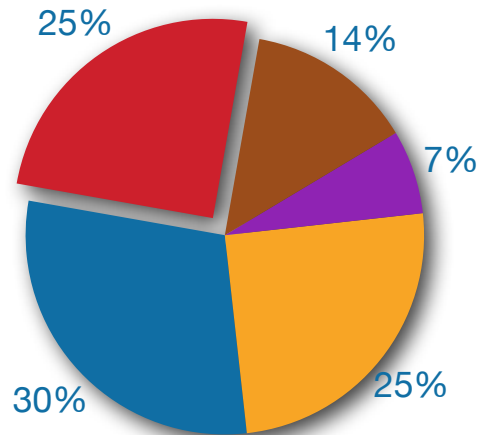
Serbia(68)
13%
3%
10%
10%
63%
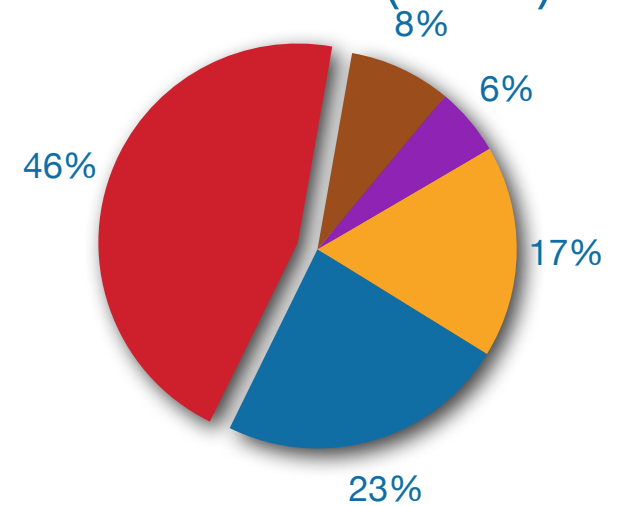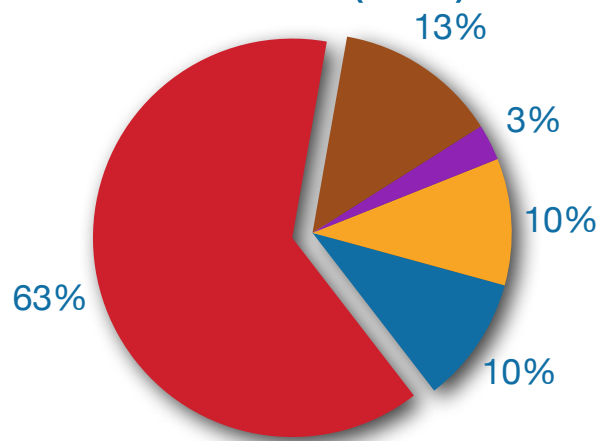
Greece(46)
39%
24%
9%
15%
13%
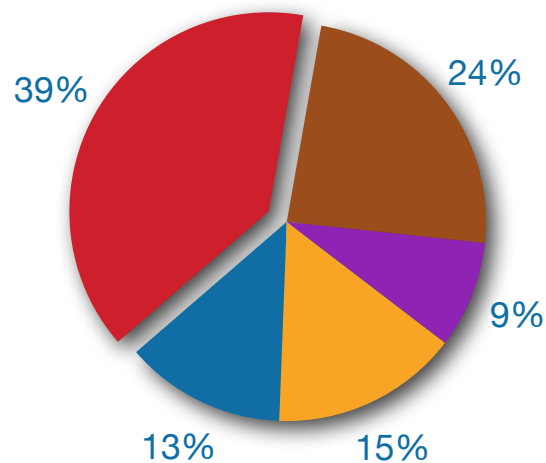
Turkey(148)
24%
3%
9%
7%
57%
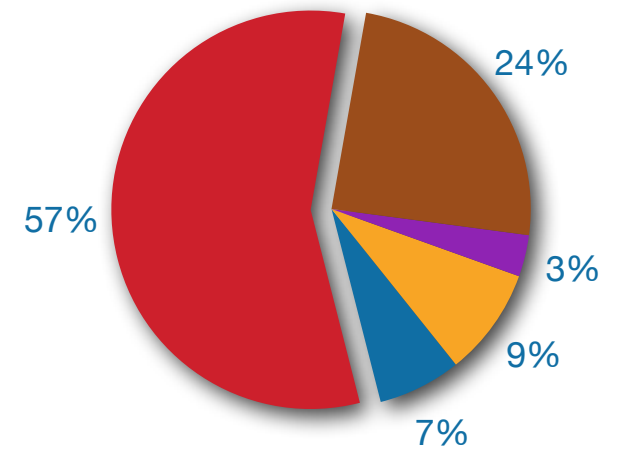
BG: IPv6 allocations/assign each month

Monthly IPv6 allocations and assignments - Bulgaria
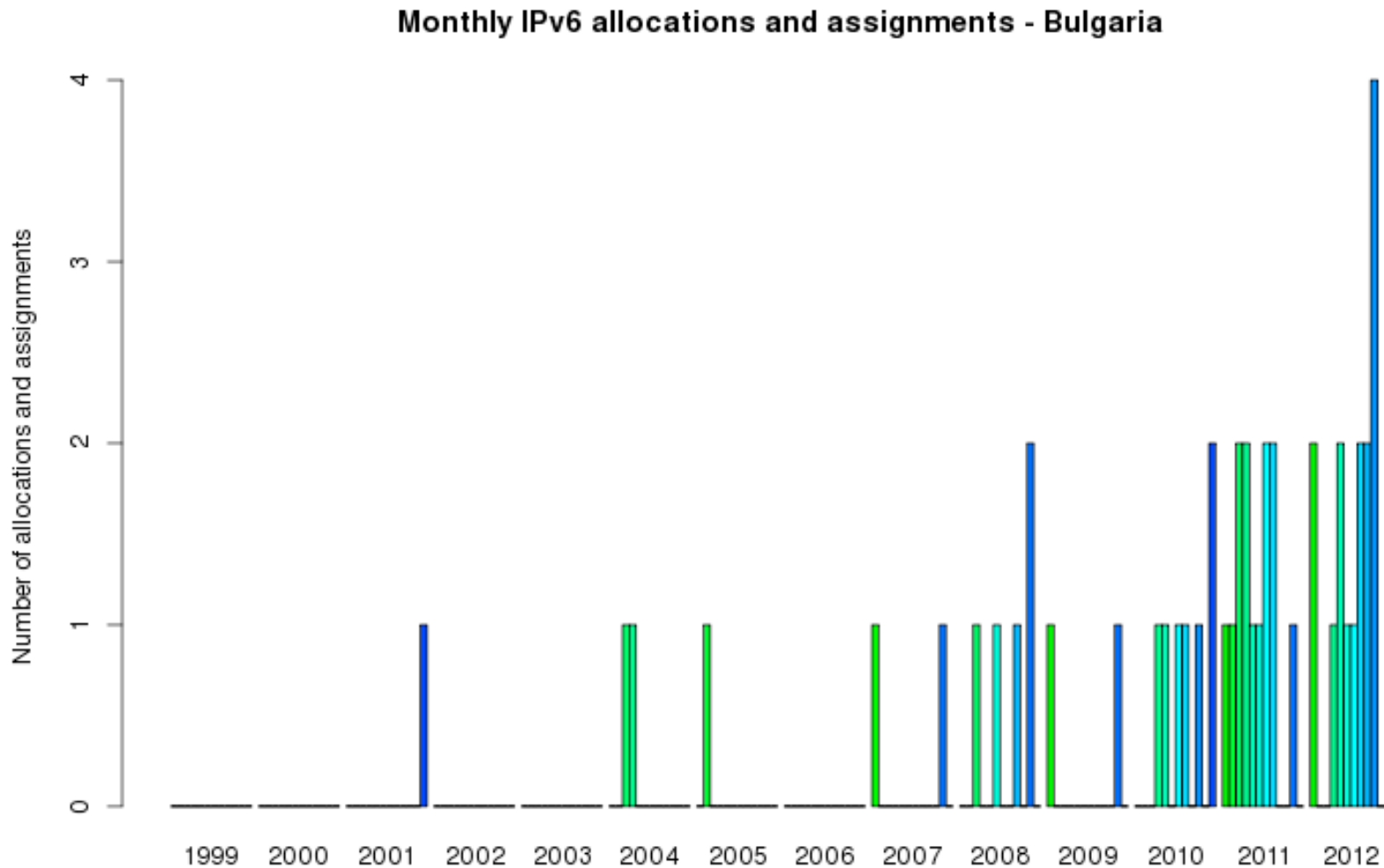
what's new each month

Google: IPv6 adoption

Per-Country IPv6 adoption

4.65%

0.11%

0.29%

1%

8.49%

0.01%

0.03%

1.14%

0.02%

Source: http://www.google.com/ipv6/statistics.html#ipv6-adoption&tab=per-country-ipv6-adoption
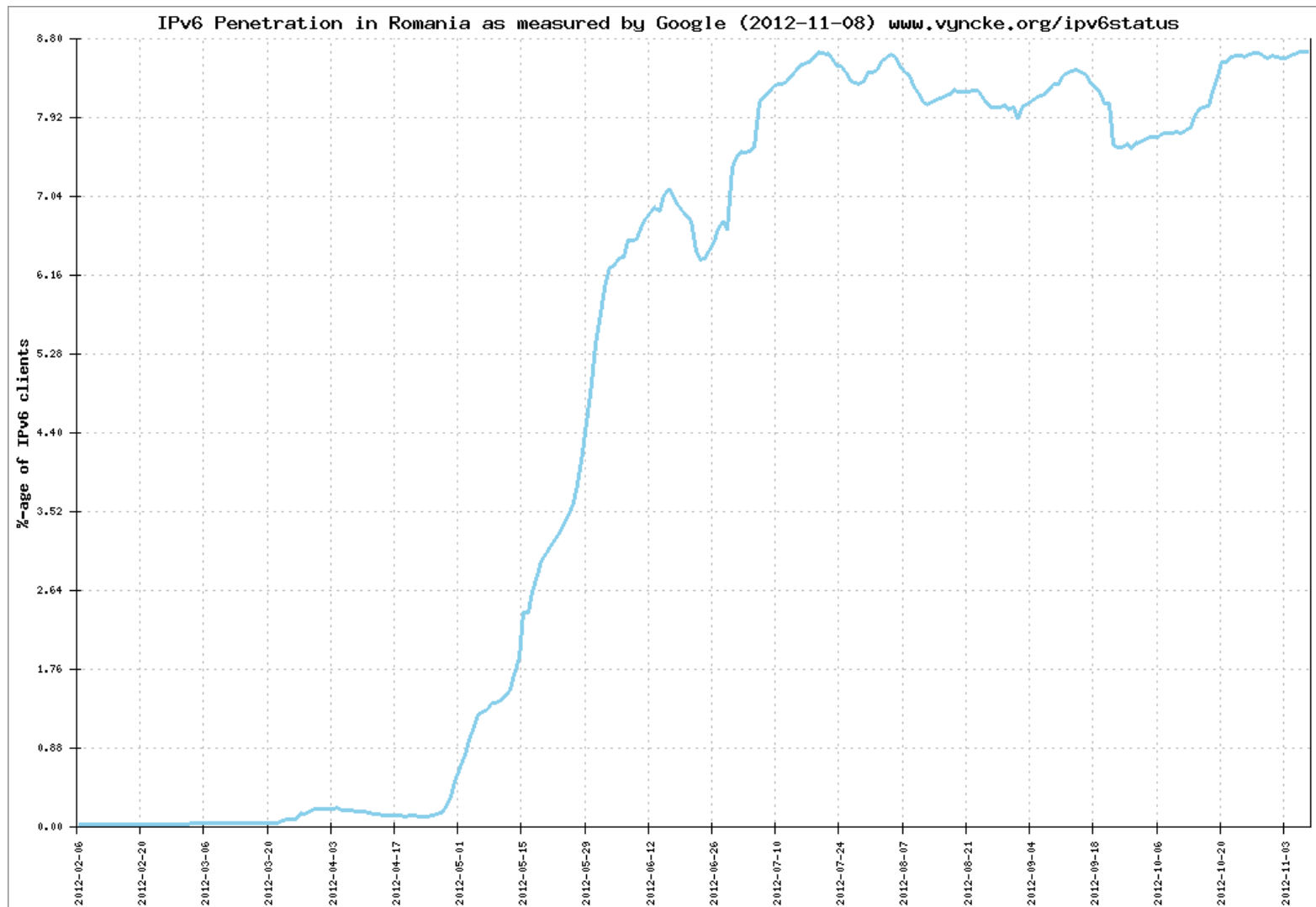
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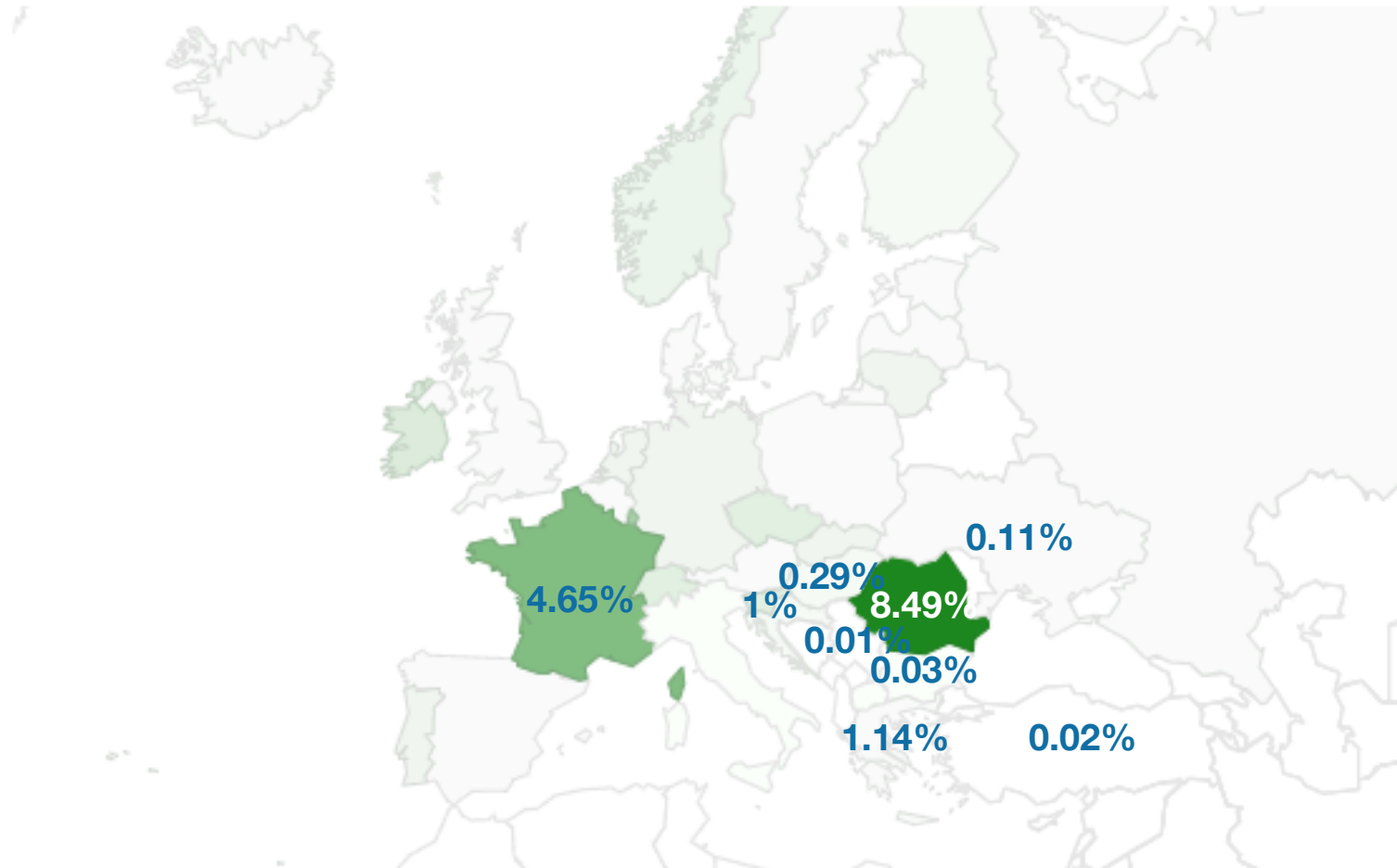
IPv6 Penetration in Bulgaria (Google)

0.03%

0.02%

Source: http://vyncke.org/ipv6status/plotpenetration.php?country=bg
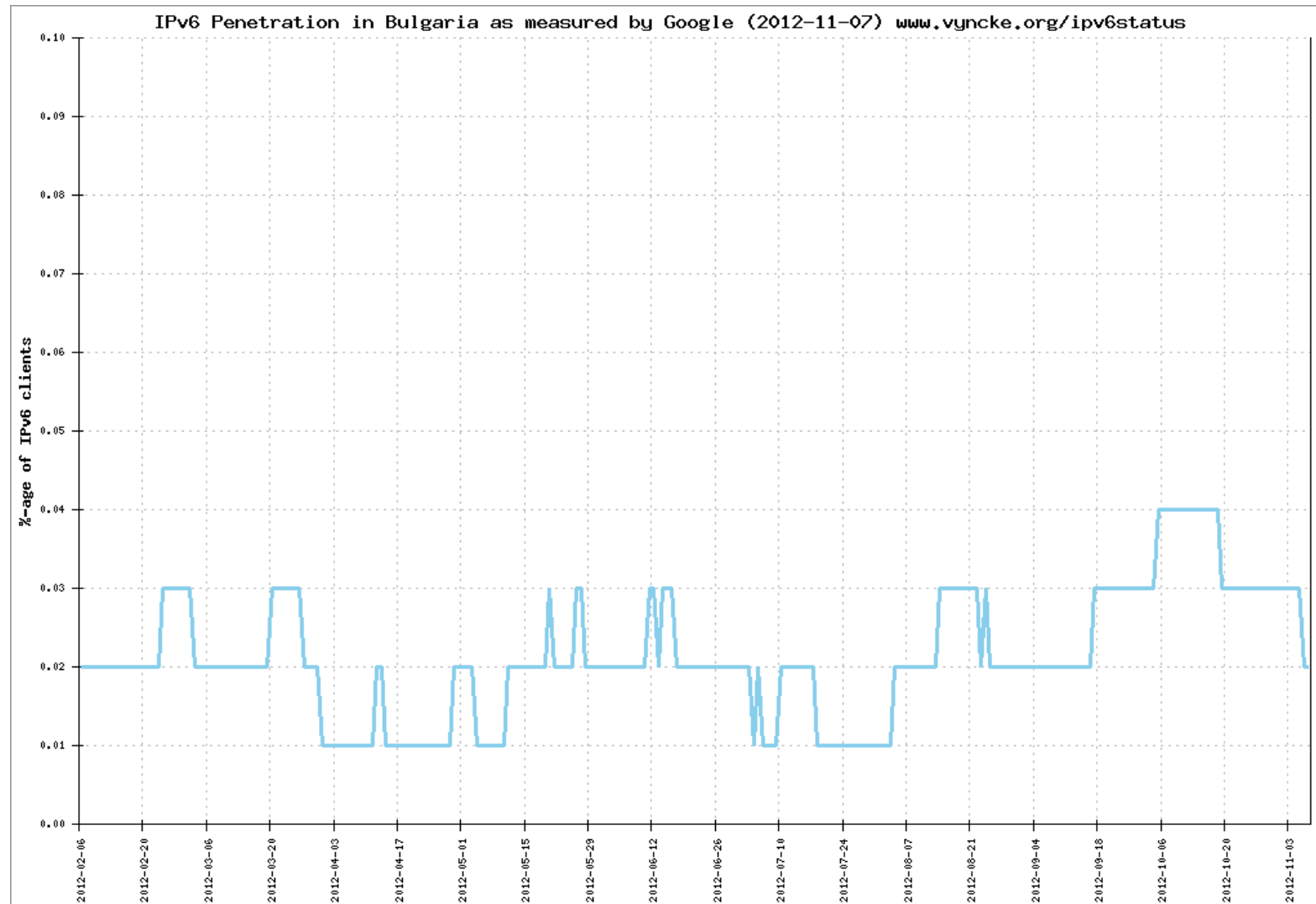
IPv6 Penetration in Romania (Google)

8%

7%

IPv6 Penetration in Romania as measured by Google (2012-11-08) www.vyncke.org/ipv6status

Source: http://vyncke.org/ipv6status/plotpenetration.php?country=ro

World IPv6 Launch

World IPv6 Launch on 6 June 2012

- Major organisations permanently enabled IPv6 for for their services
  - Google, Facebook, Yahoo!, Bing, etc
- IPv4 not "switched off"
- More info on:
  - http://www.worldipv6launch.org/
  - content providers: dual stack & AAAA records in DNS

Bulgaria and World IPv6 Launch

- Some participation - top 50 Alexa list

  - www.google.bg

  - bren.bg

  - acad.bg

  - uni-sofia.bg

  - bullet-zone.com

  - bulsat.bg

  - brokensociety.com

- Source: http://www.vyncke.org/ipv6status

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After IPv6 Launch at AMS-IX

Source: https://www.ams-ix.net/technical/statistics/sflow-stats/ipv6-traffic
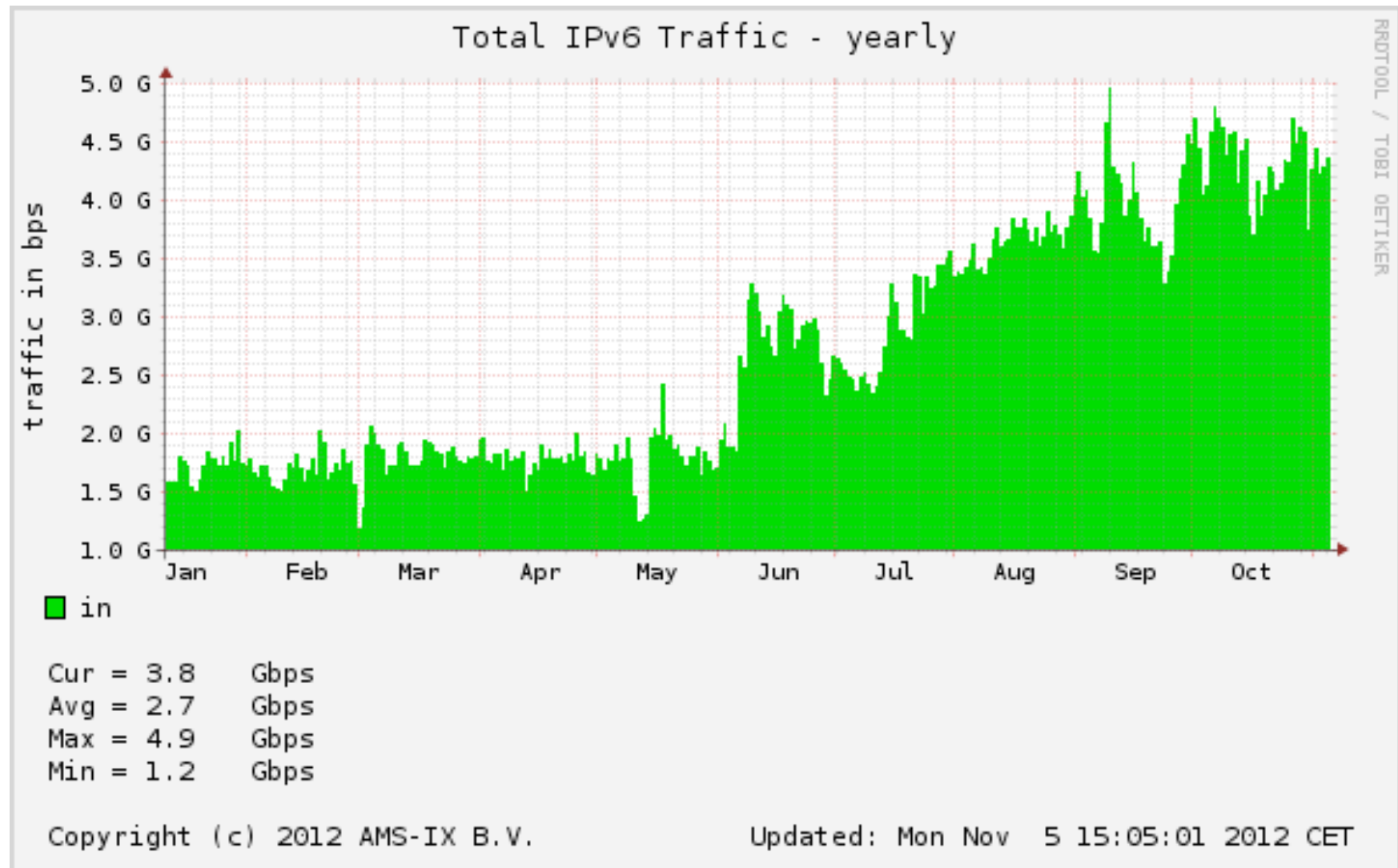
Percentage of websites reachable over IPv6

Percentage of web sites in Alexa 1M that can be reached over IPv6

Source: https://labs.ripe.net/Members/emileaben/world-ipv6-launch-lasting-effect-on-content
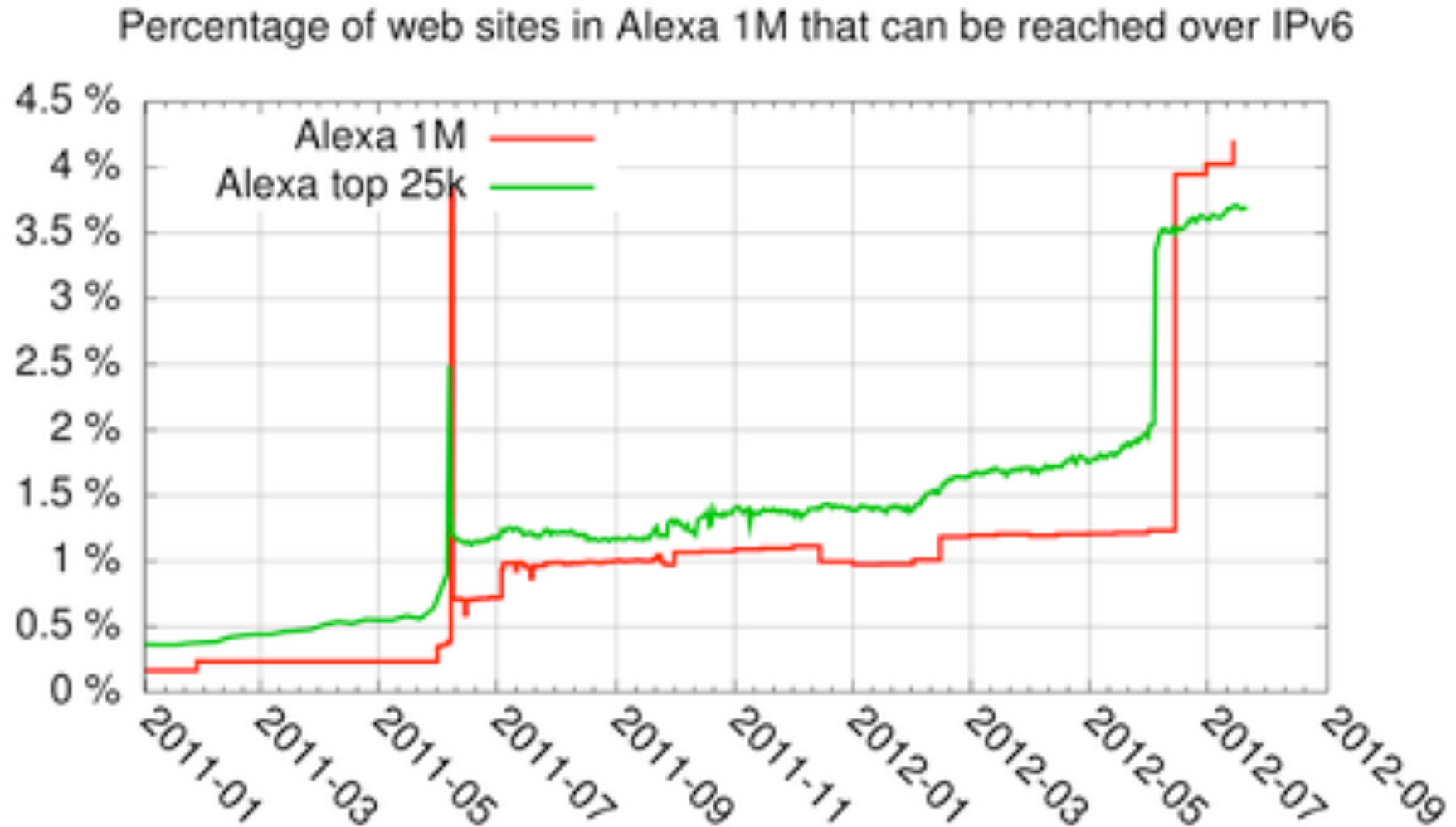
Conclusions - What We Learned

- IPv6 works just fine.

- Dual-stack = two chances for best performance

- Most sites kept IPv6 enabled

- Some sites did not enable IPv6 during the event

More Questions?

Come to our 1 day free IPv6 training!

Only for RIPE NCC members:
www.ripe.net/training

Follow us!

@TrainingRIPENCC

The End!

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Y Diwedd

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Finis

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Соңы

વ્હ્પ્૨

Liðugt

Ende

Finvezh

Кінець

Konec

Kraj

Ënn

Fund

پایان

Kpaj

Lõpp

Beigas

Vége

Son

An Críoch

הסוף

Fine

Endir

Sfârşit

Fin

Τέλος

Einde

Конец

Slut

Slutt

დასასრული

Pabaiga

Fim

Amaia

Loppu

Tmiem

Koniec