IPv4 depletion and IPv6 adoption in the RIPE NCC service region

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RIPE
NCC

RIPE and RIPE NCC

About RIPE NCC

- One of the five Regional Internet Registries (RIR)
- RIPE NCC service region covers Europe, the Middle East and parts of central Asia
- Not-for-profit association, based in Amsterdam
- Funded from the membership fee
- 7.800 members throughout the region
- Neutral, impartial, open and transparent

The Five RIRs

RIPE NCC Activities

- Coordination of Internet Operations

- Distribution and registration of Internet number Resources: IPv4, IPv6 and AS numbers

- Measurements and statistical analysis

- We operate the K-root name servers

- Organise RIPE Meetings twice a year

- Provide a platform for the industry to exchange experiences and knowledge
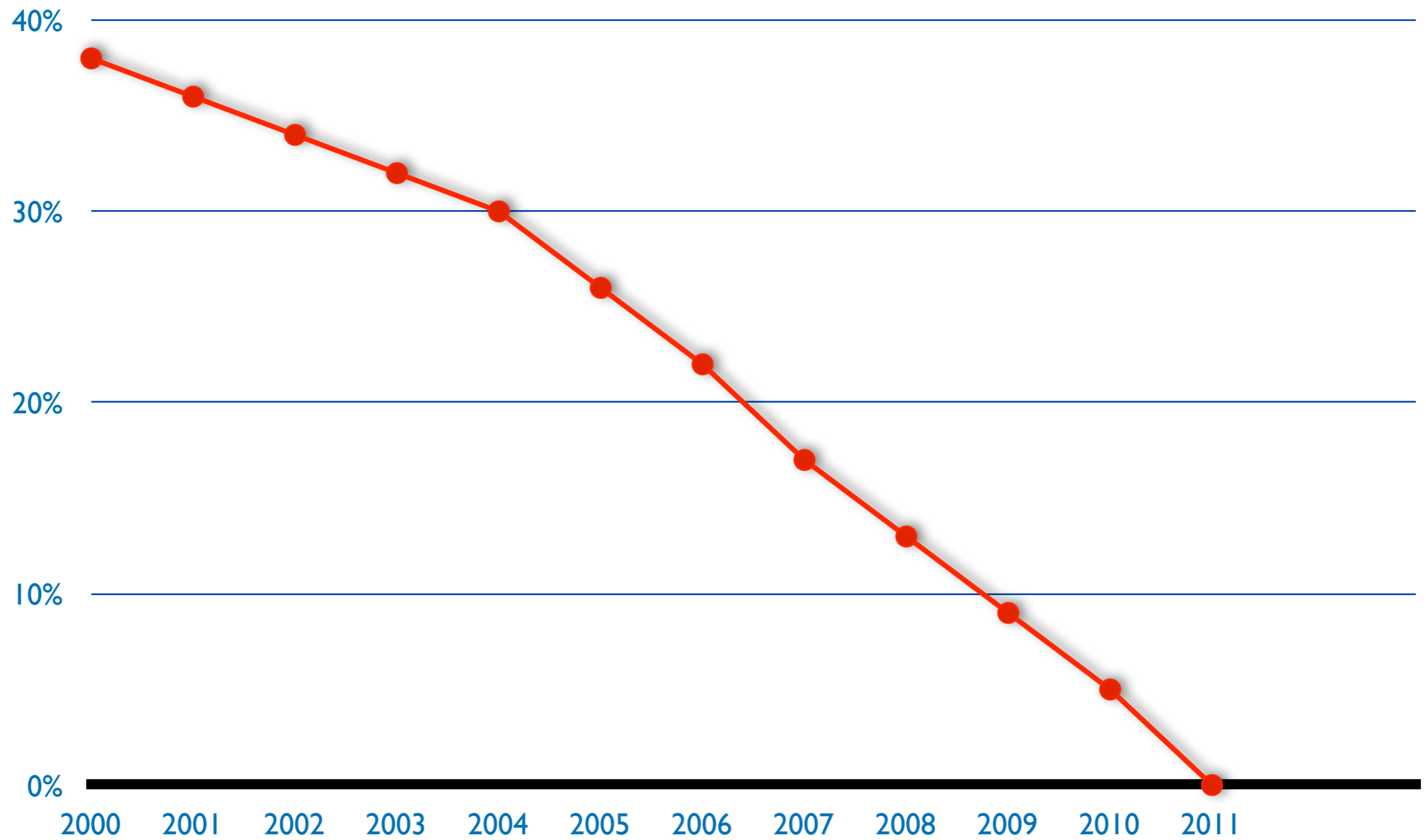
The RIPE Community

- The RIPE Community acts as the policy making body in the RIPE NCC service region

- RIPE has a chair, but is not a formal body

- Community is open to everyone

- Discussion via mailing lists and at the meetings

- Decisions are made by consensus

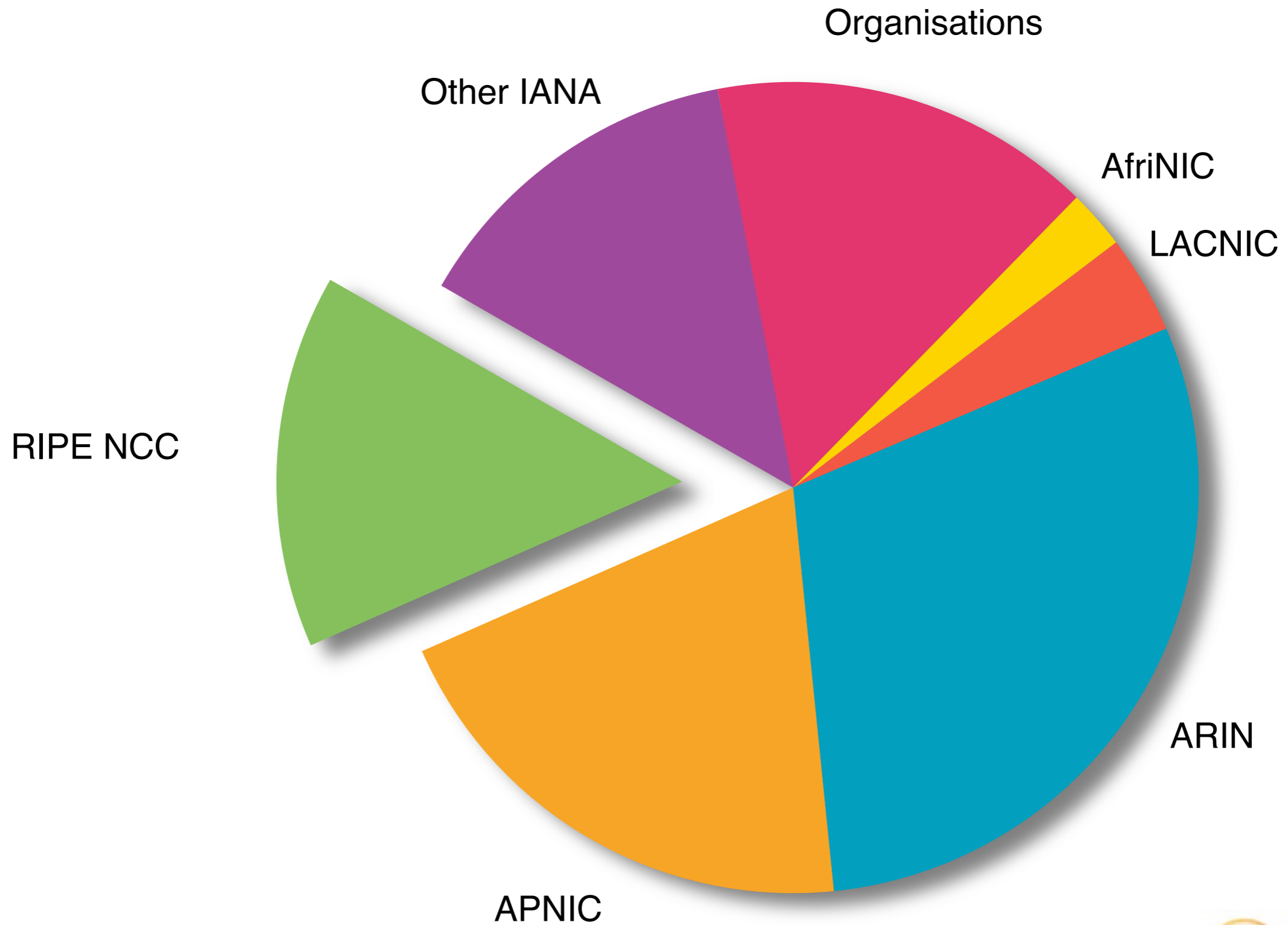- All that is required to join, is a working email address to subscribe to the mailing list

IPv4?
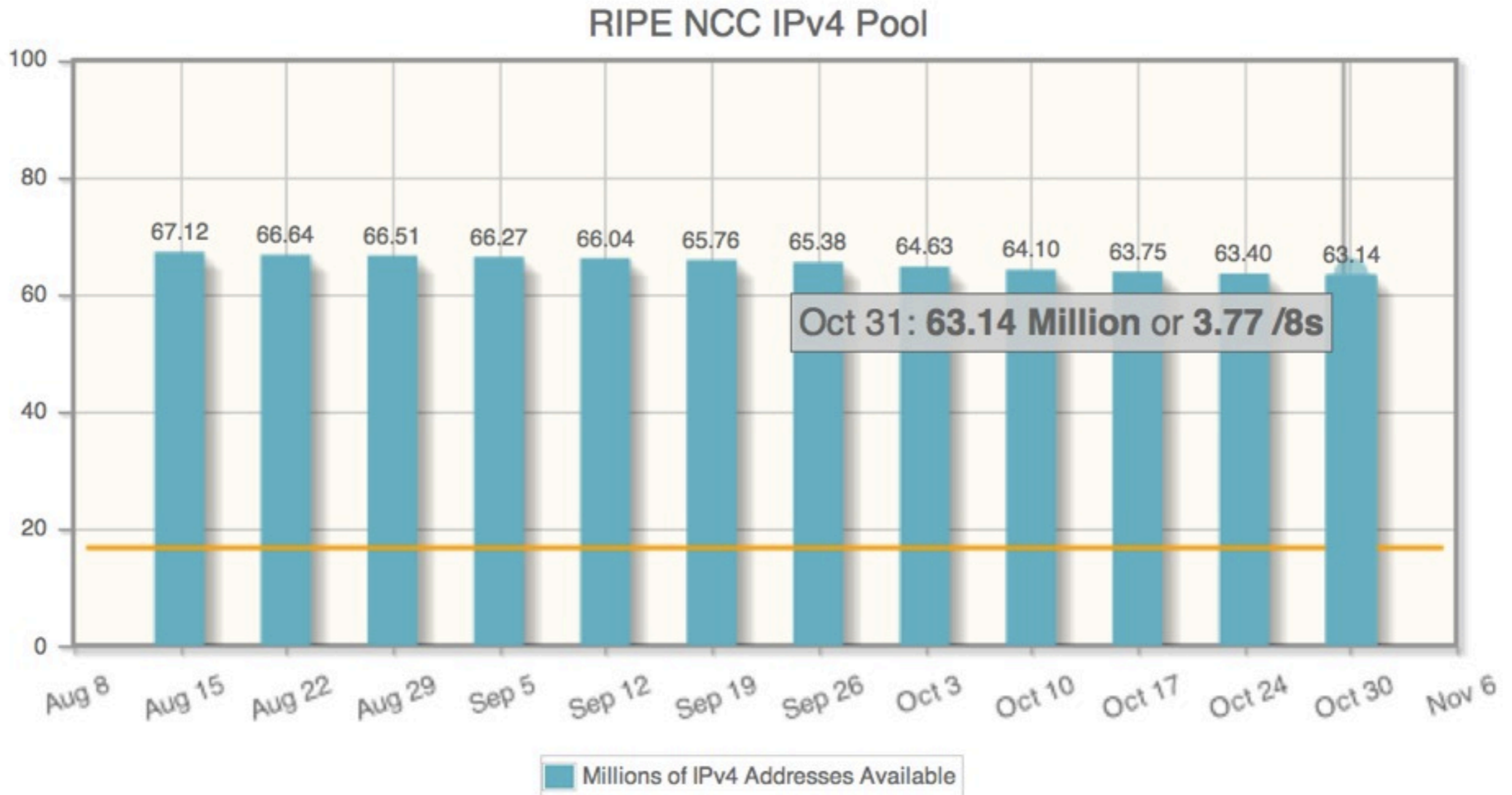
IANA IPv4 Pool

Our Slice of the IPv4 Pie

Wait and See?

RIPE NCC IPv4 Available Pool

24 Oct 2011

RIPE NCC IPv4 Pool

Bar chart showing Millions of IPv4 Addresses Available:

Date	Value
Aug 15	67.12
Aug 22	66.64
Aug 29	66.51
Sep 5	66.27
Sep 12	66.04
Sep 19	65.76
Sep 26	65.38
Oct 3	64.63
Oct 10	64.10
Oct 17	63.75
Oct 24	63.40
Oct 30	63.14

Oct 31: **63.14 Million** or **3.77 /8s**

Millions of IPv4 Addresses Available

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 /21

        - Evaluated by RIPE NCC

        - Update in RIPE Database

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

RIPE NCC's last /8

- We do things differently!

- Ensures IPv4 access for all members
  - 16000$^+$ /22s in a /8
  - members can get **one /22** (=1024 addresses)
  - must already hold IPv6
  - must qualify for allocation

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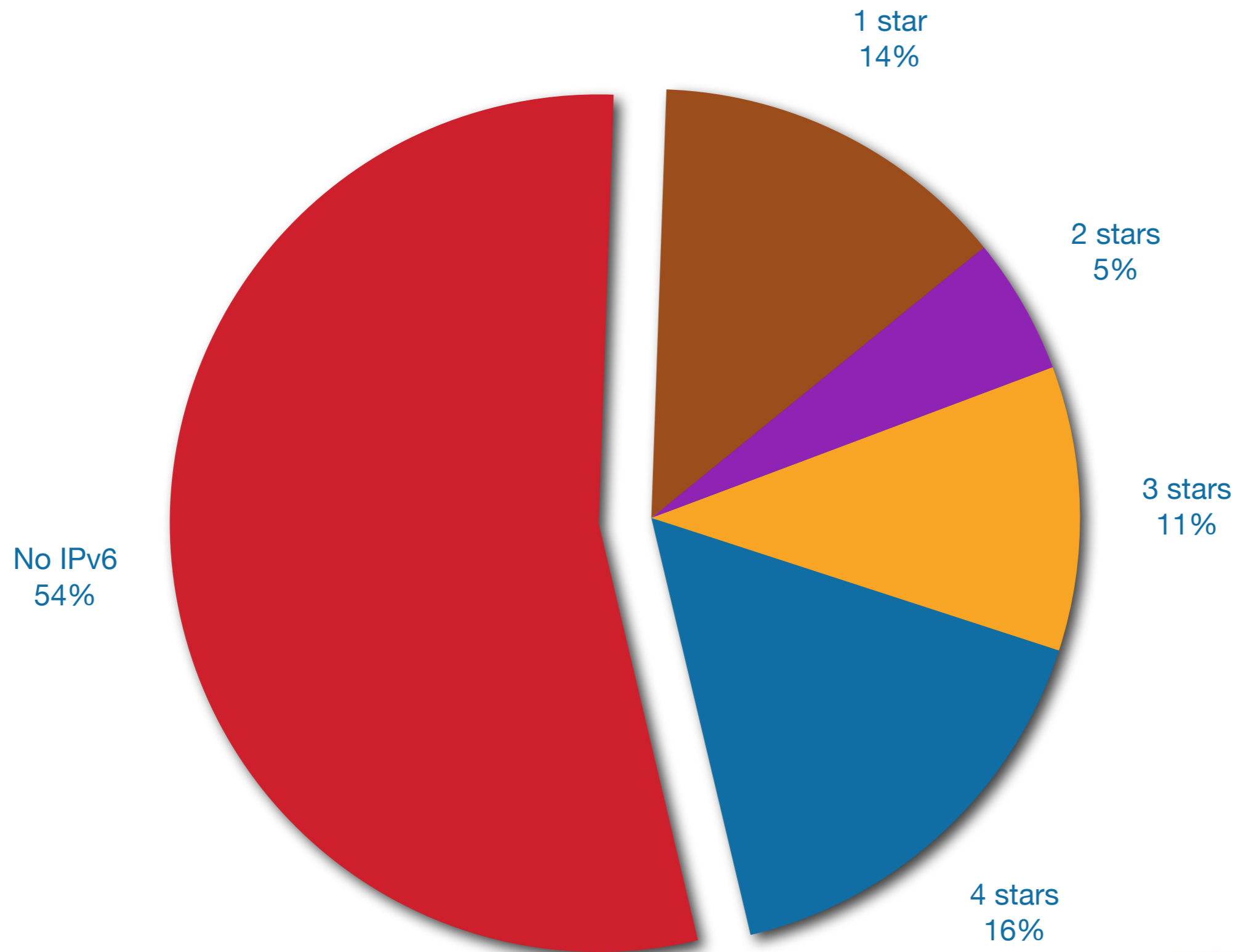 - if unused, will be distributed

- No PI
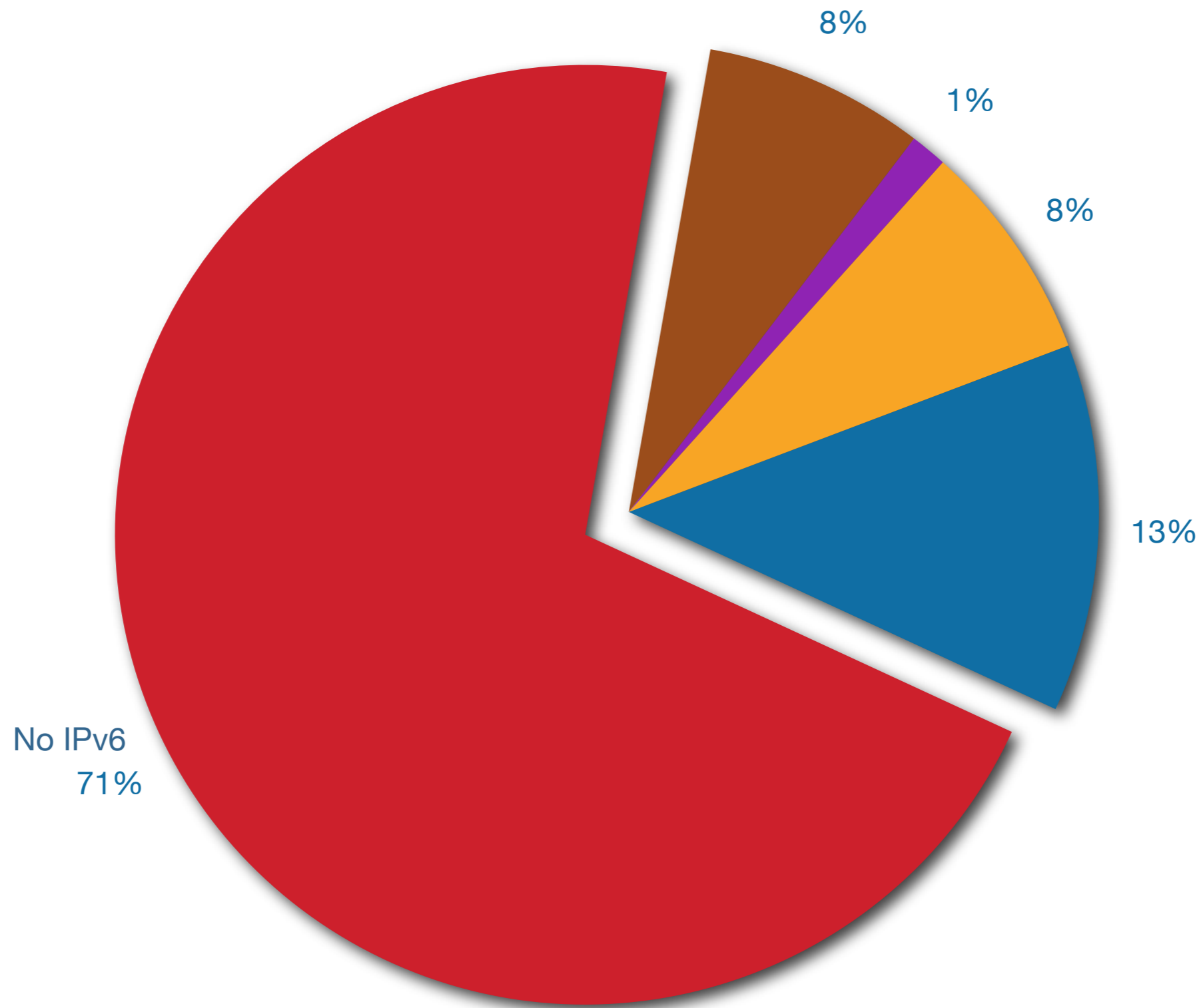
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IPv6!

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/**

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IPv6 RIPEness: 7804 LIRs

1 star
14%

2 stars
5%

3 stars
11%

4 stars
16%

No IPv6
54%

IPv6 RIPEness: Bulgaria (79 LIRs)

8%

1%

8%

13%

No IPv6
71%

World IPv6 Day on 8 June 2011

- Major organisations offered all content over IPv6 for a day
    - Google, Facebook, Yahoo!, Akamai, Limelight NW, etc
- Test drive
- IPv4 not "switched off"
- More info on:
    - **http://www.worldipv6day.org/**
    - content providers: dual stack & AAAA records in DNS

Bulgaria and World IPv6 Day

- Some participation - top 50 Alexa list

    - **www.google.bg**

        - disabled after World IPv6 Day

    - acad.bg

    - bren.bg

    - uni-sofia.bg

    - bulsat.com

        - bullet-zone.com

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

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Conclusions - What We Learned

- IPv6/dual-stack works just fine, but make sure that

  - It is properly tested and monitored (like IPv4)

  - Your network can reach all others (like IPv4)

- Dual-stack = Two chances for best performance

- Days like this "work"

  - Raise awareness

  - Give people a target to work towards

  - We're ready for a next IPv6 day/week/month/year

Engaging the community

- RIPE/RIPE NCC events
  - Training Courses for LIRs
  - MENOG IPv6 Roadshow
  - RIPE Meetings
- Other fora
  - Internet Governance Forum (IGF)
  - European Commission (EC)
  - Network Operator Groups (NOGs)
- IPv6 Act Now website

Questions?