IPv6 Policy and Statistics

Ingrid Wijte | July 2018 | IPv6 Roundtable - Tel Aviv
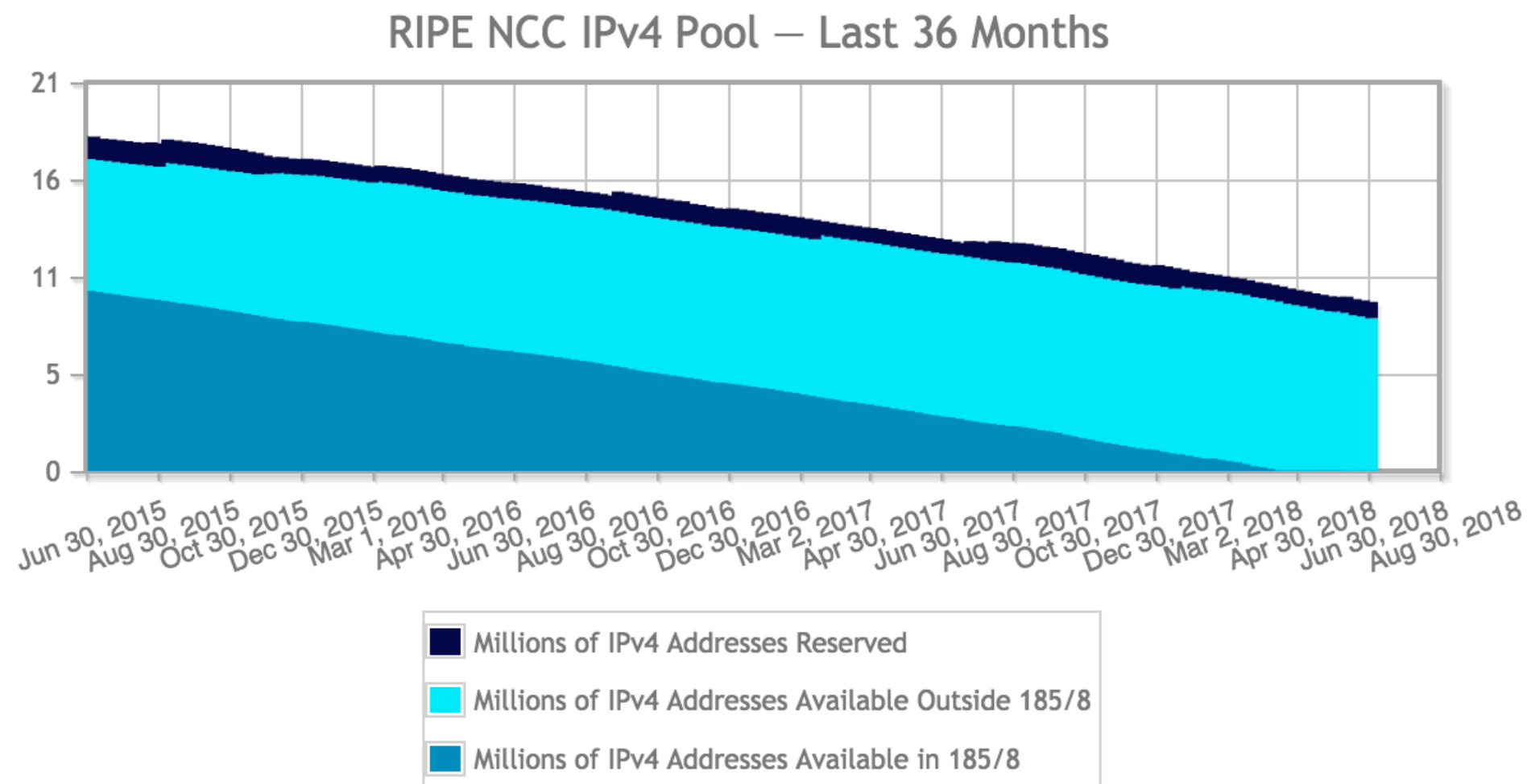
About the RIPE NCC

- One of five Regional Internet Registries (RIRs)

  - Serving Europe, the Middle East and parts of Central Asia

  - 76 countries

- Allocates and assigns IPv4, IPv6 and AS Numbers

- Supports and promotes the RIPE Policy Development Process (PDP)

- Secretariat for the RIPE community
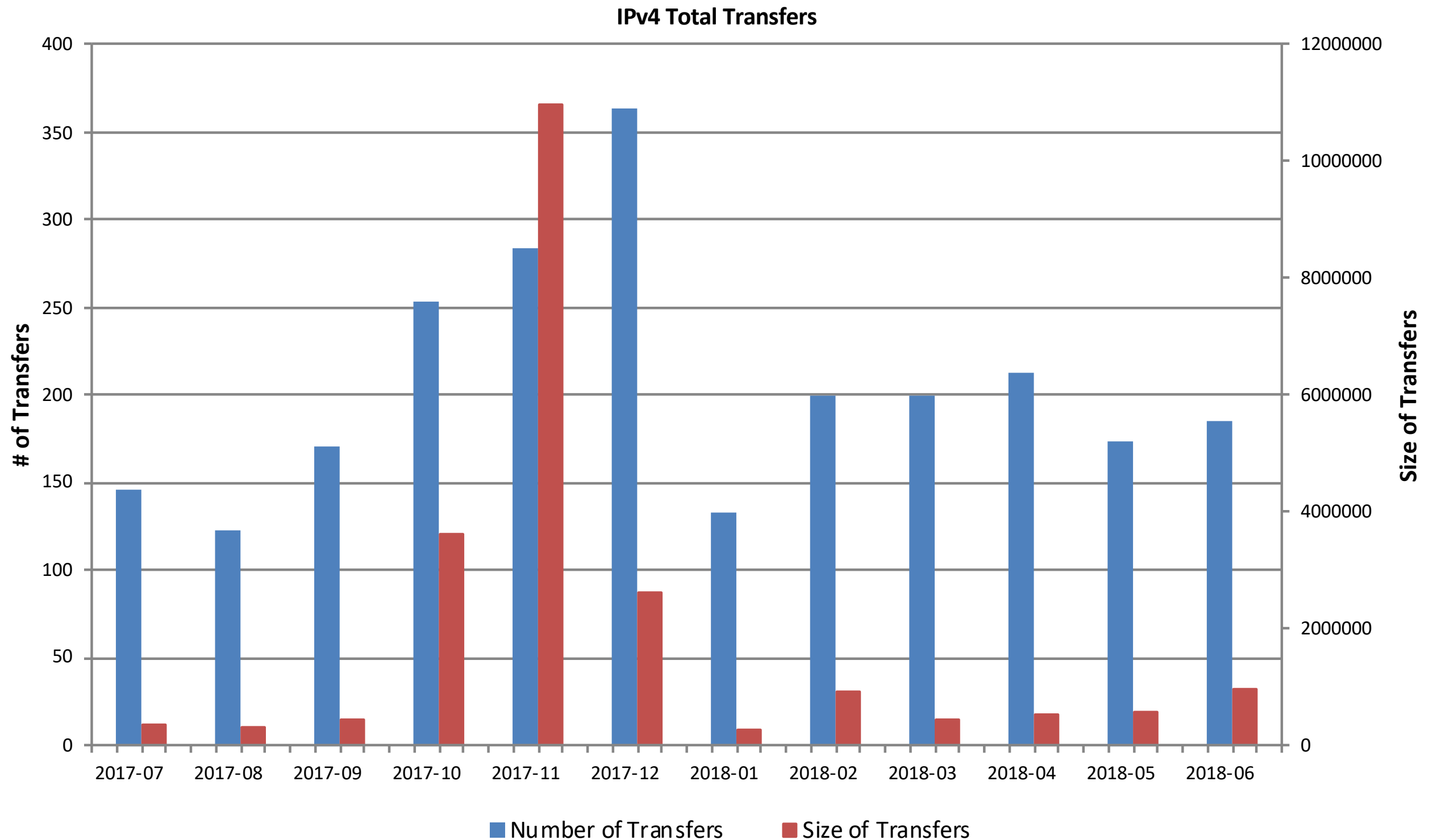
- Maintains the RIPE Database

Status of our IPv4 Pool

- New and existing LIRs can receive one final /22 allocation from our remaining pool

- Around two years supply remaining

RIPE NCC IPv4 Pool — Last 36 Months

Legend:
- Millions of IPv4 Addresses Reserved
- Millions of IPv4 Addresses Available Outside 185/8
- Millions of IPv4 Addresses Available in 185/8

IPv4 Transfers

IPv4 Total Transfers

IPv4 Transfers in Israel

- **Internal transfers**
  - Total addresses: 24,704 (/18,/19,/25)
  - Number of transfers: 19

- **Incoming transfers**
  - Total addresses: 24,320 (18,/20,/21,/22,/23,/24)
  - Number of transfers: 20

- **Outgoing transfers**
  - Total addresses: 12,800
  - Number of transfers: 18

# Connecting the Next Billion

- Around 4,157 billion Internet users today

    - 54% of the world's population

- Mobile phones are Internet devices that require IP addresses

- The Internet of Things (IoT) will potentially bring billions of new devices online

    - How will the Internet look like in 5-10 years?

Network Address Translation

- Extends the capacity of the IPv4 address space by sharing an IPv4 address between clients

- Fairly common technology, used everywhere

- Breaks the end to end connectivity model

- It doesn't allow communication with IPv6!

- You are probably going to need it in some form

Large Scale NAT

CUSTOMER PROVIDER INTERNET
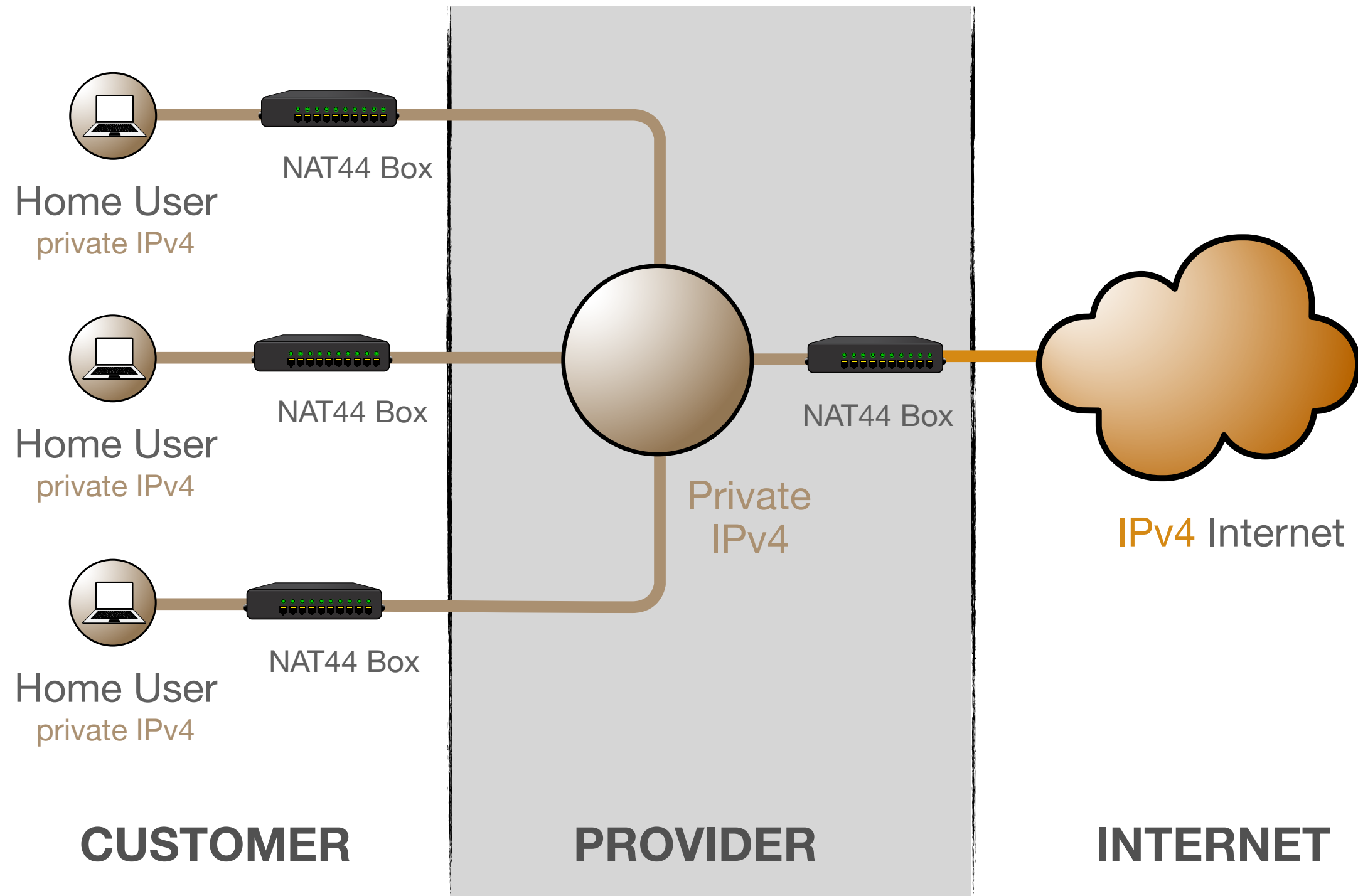
The Internet of Things

Libelium Smart World

http://www.libelium.com/top_50_iot_sensor_applications_ranking
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Why IPv6?

IPv6 is happening right now!

IPv4 exhaustion

Growth in connected devices

IPv6 deployment
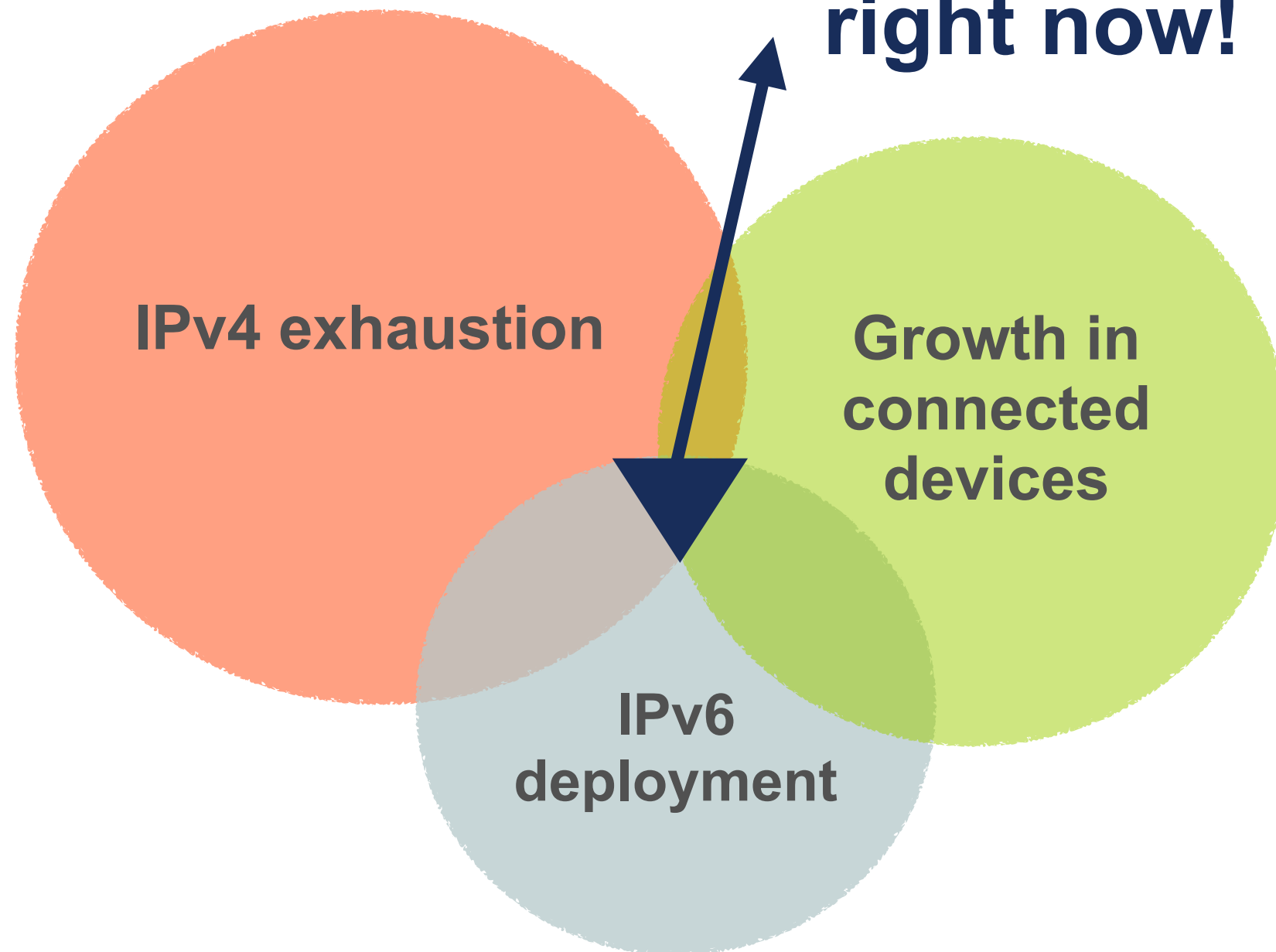
Predictions
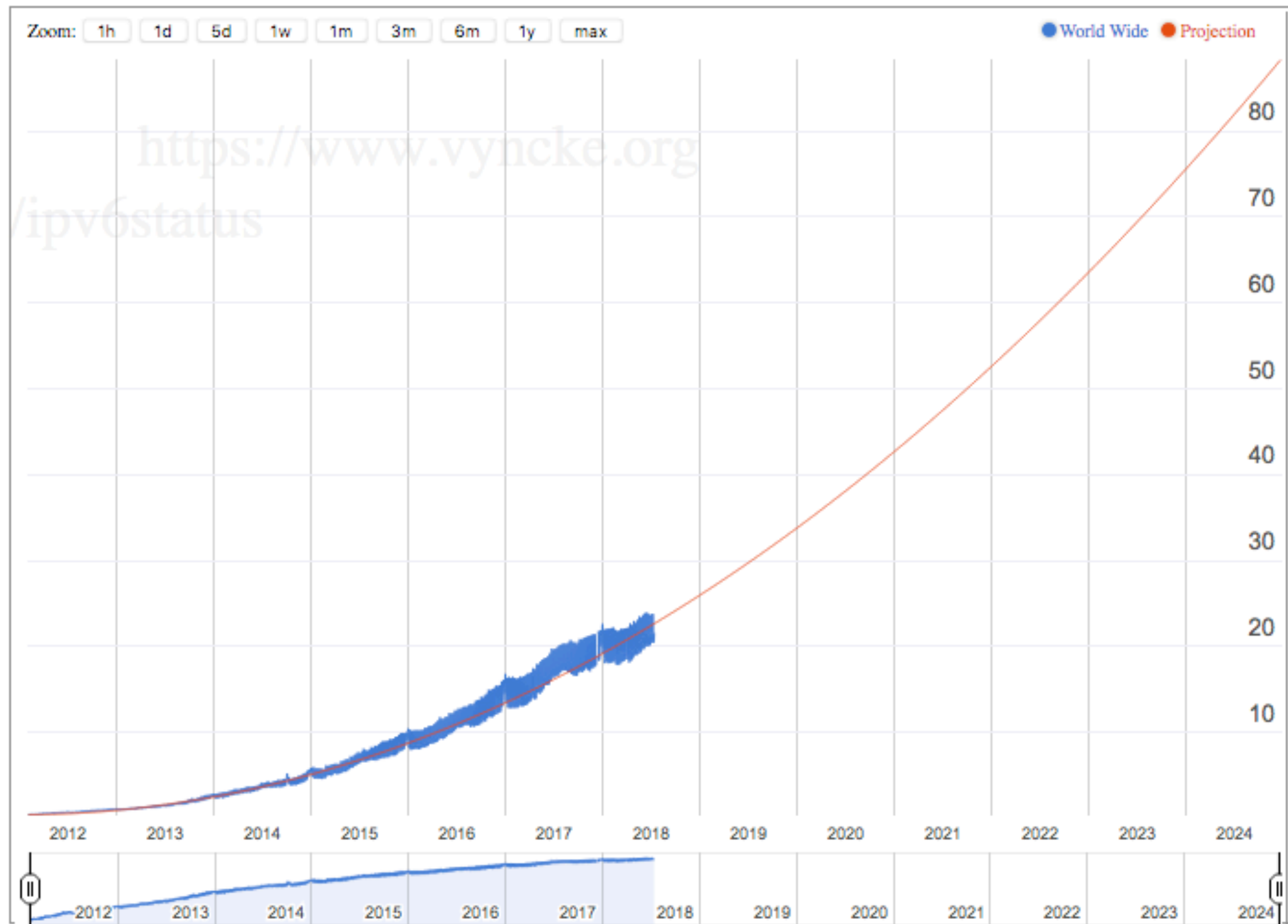
Projection of IPv6 %-age of IPv6-Enabled Web Browsers (courtesy Google) in World Wide
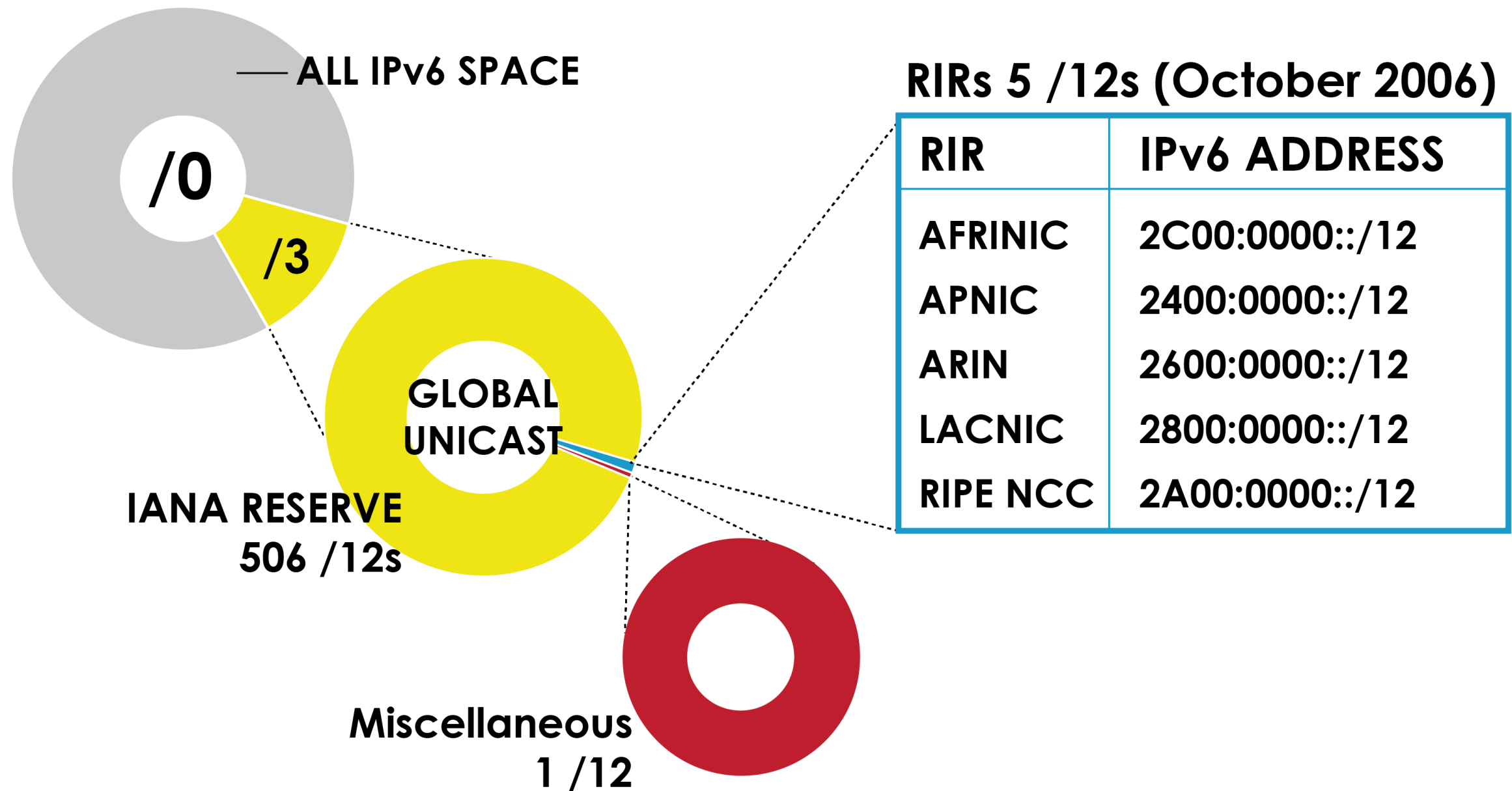
RIPE IPv6 Policy

- Minimum allocation size is a /32 and up to a /29 without additional justification

  - More if justified by customer numbers and network extension

  - Additional bits based on hierarchical and geographical structure, planned longevity and security levels (same policy for subsequent allocations)

- Every assignment must be registered in the RIPE Database

- Minimum PI assignment size is a /48
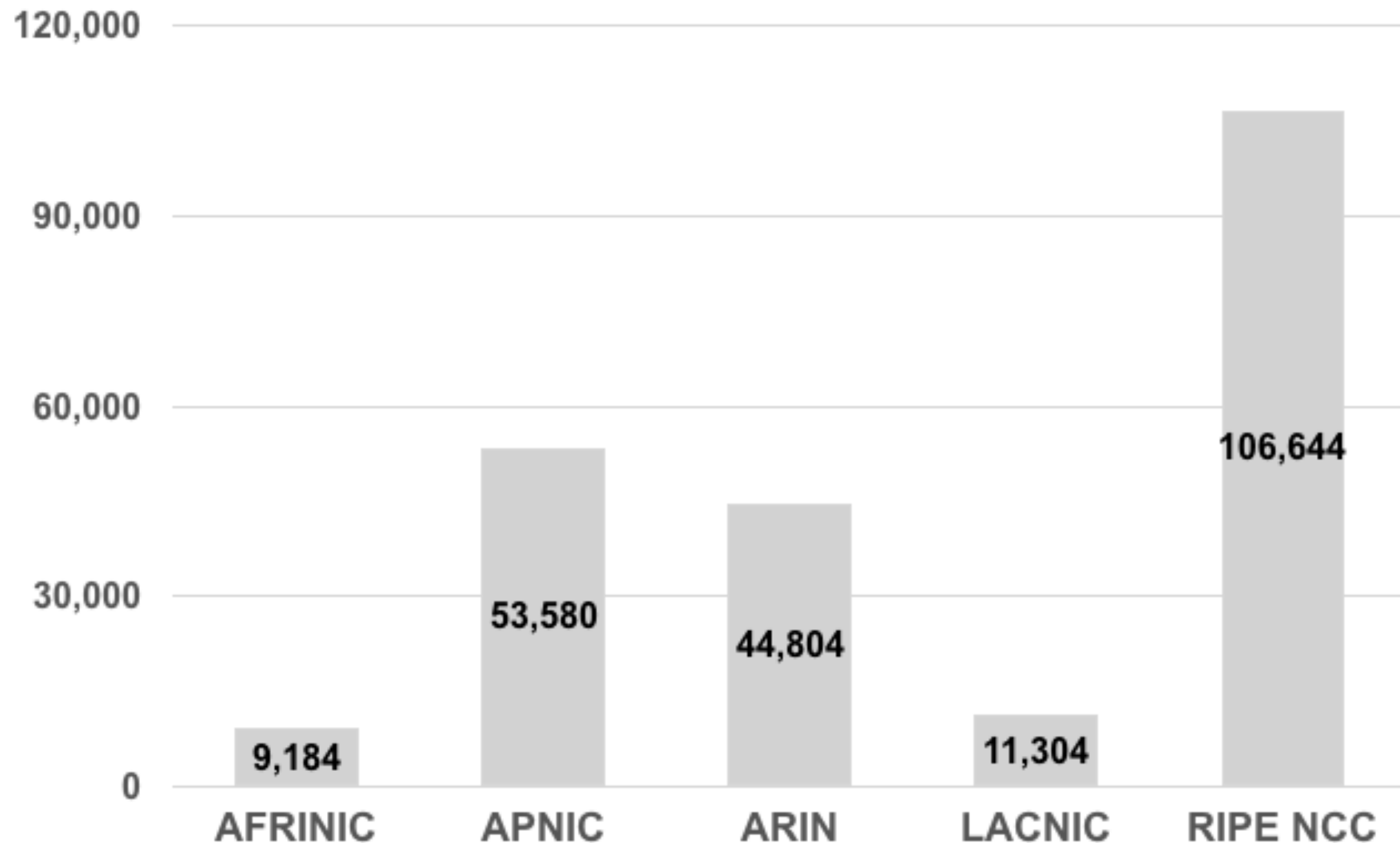
RIPE IPv6 Policy - Recent Updates

- "IPv6 Sub-assignment Clarification"

  - The provision of separate addresses to customers is not considered a sub-assignment

- "Organisation-LIR Clarification"

  - The right to receive IPv6 allocations will apply per LIR

IPv6 Address Distribution

ALL IPv6 SPACE

/0

/3

IANA RESERVE
506 /12s

GLOBAL
UNICAST

Miscellaneous
1 /12

RIRs 5 /12s (October 2006)

RIR	IPv6 ADDRESS
AFRINIC	2C00:0000::/12
APNIC	2400:0000::/12
ARIN	2600:0000::/12
LACNIC	2800:0000::/12
RIPE NCC	2A00:0000::/12

Total Allocated IPv6 Space in /32s

AFRINIC: 9,184
APNIC: 53,580
ARIN: 44,804
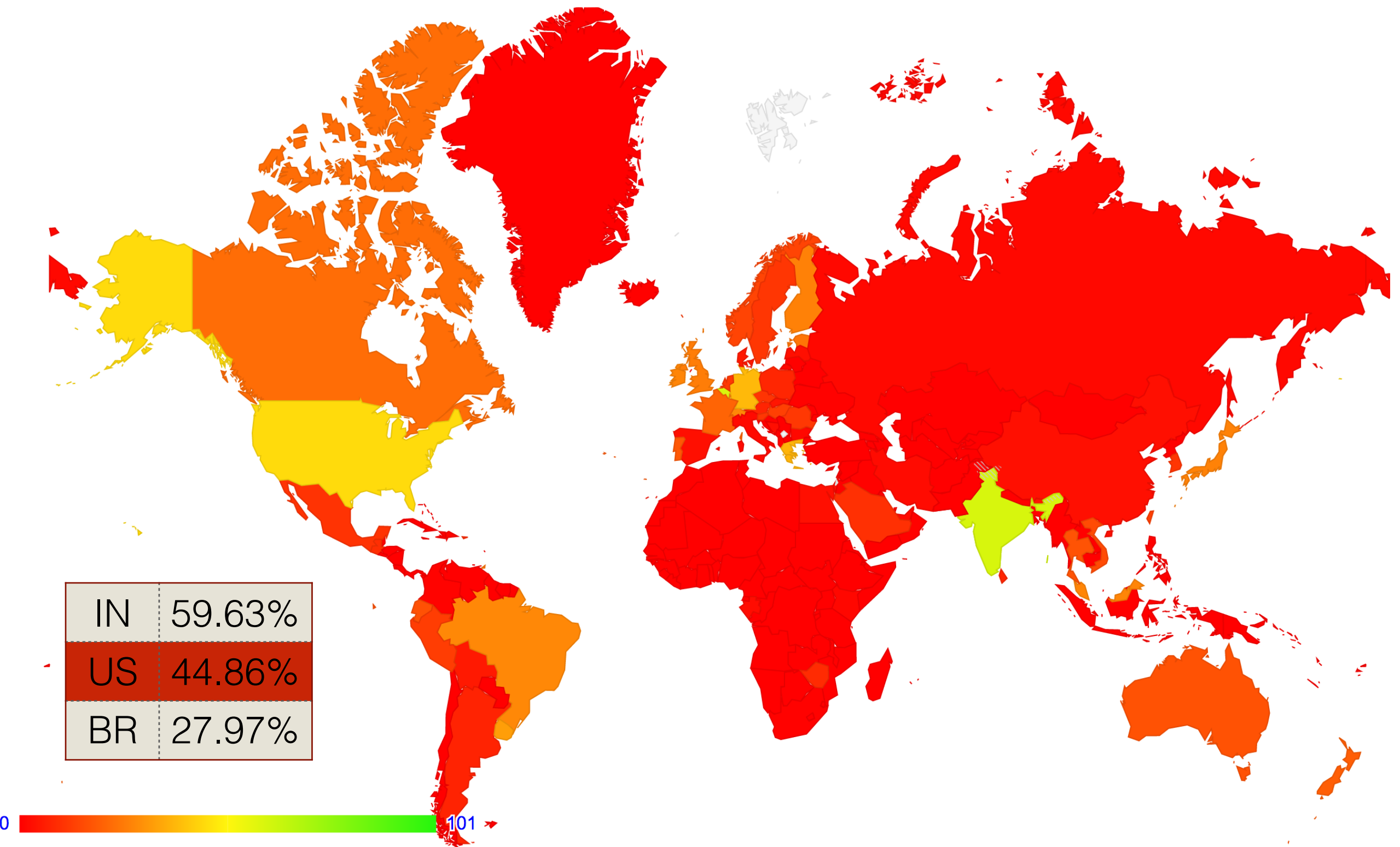LACNIC: 11,304
RIPE NCC: 106,644

IPv6 Distribution by the RIPE NCC

- 13,772 / 19,435 of our members have received IPv6 (71%)

- 49% of all issued IPv6 resources are announced

  - 57% of assignments are announced

  - 47% of allocations are announced

- 26% of all networks in our service region are announcing IPv6 prefixes
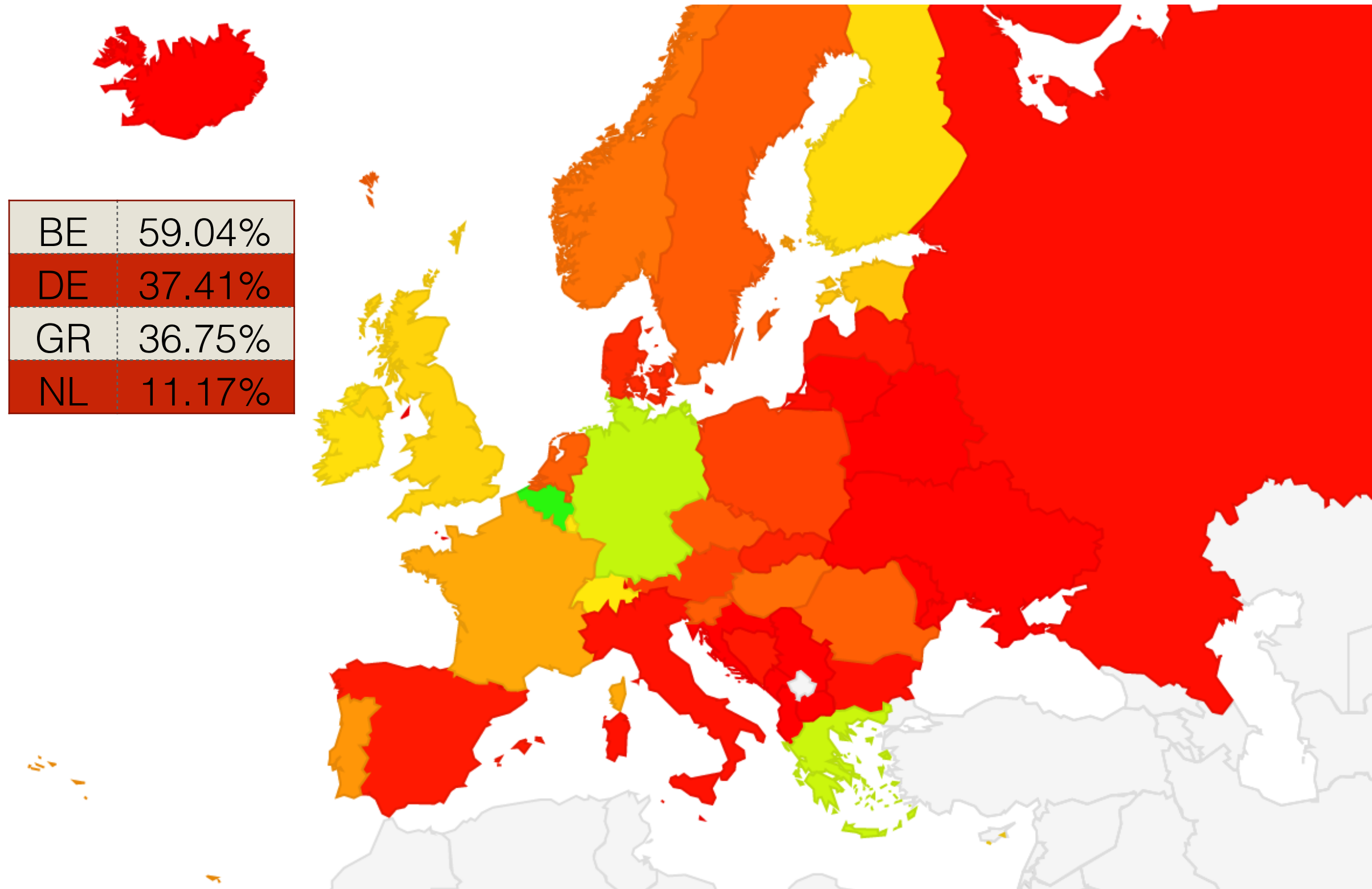
IPv6 Capable Rate - Global

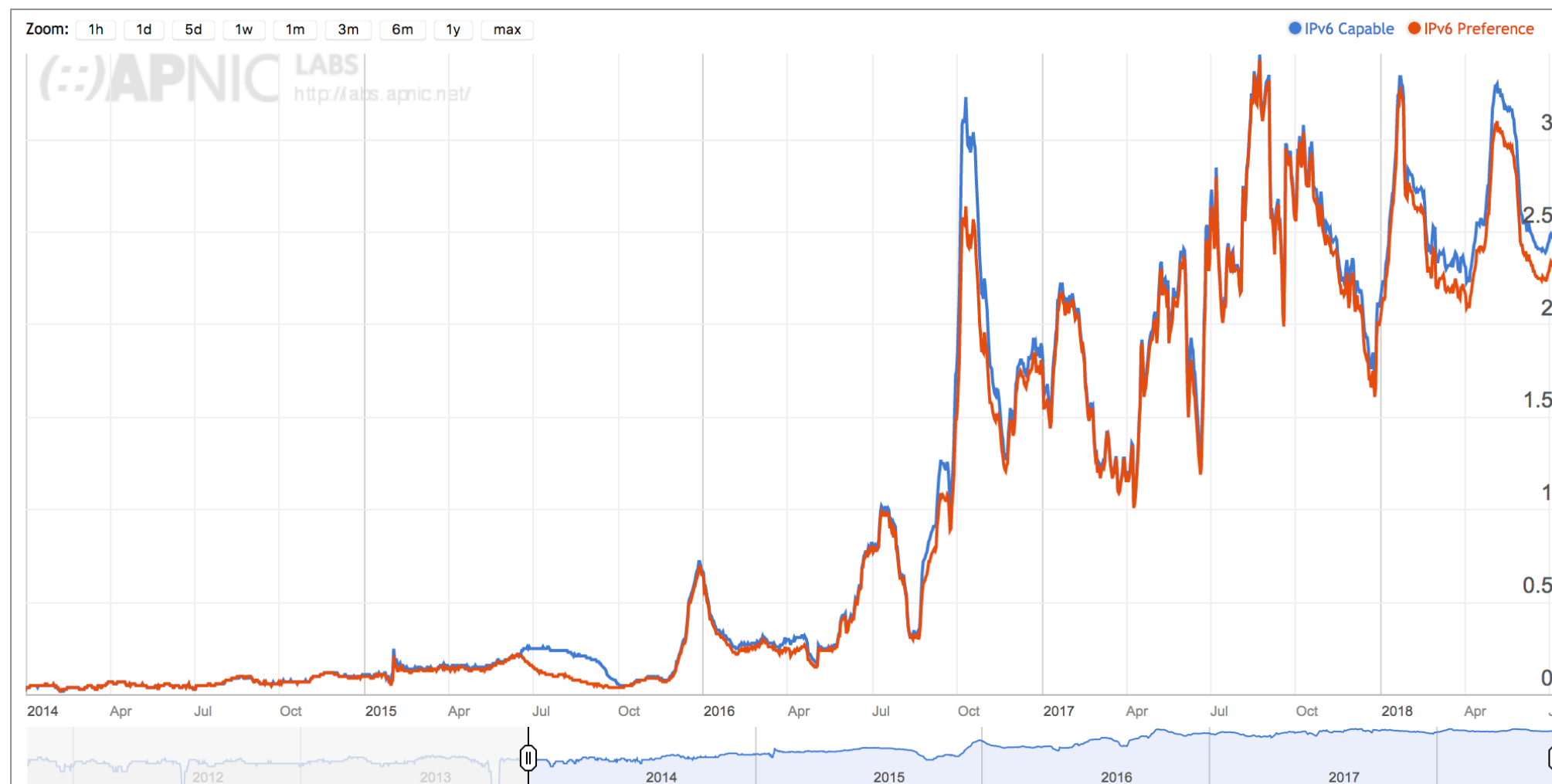|	
IN	59.63%
US	44.86%
BR	27.97%

0   101

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

IPv6 Capable Rate - Europe

BE	59.04%
DE	37.41%
GR	36.75%
NL	11.17%

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

IPv6 Capable Rate - Israel

- Israel: 2.38%

Use of IPv6 for Israel (IL)

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

IPv6 RIPEness (ripeness.net)

All (19293 LIRs)

No IPv6, 5665, 30%
1 star, 5266, 27%
2 stars, 1897, 10%
3 stars, 2927, 15%
4 stars, 3538, 18%

Israel (119 LIRs)

No IPv6, 36, 30%
1 star, 38, 32%
2 stars, 10, 8%
3 stars, 22, 19%
4 stars, 13, 11%
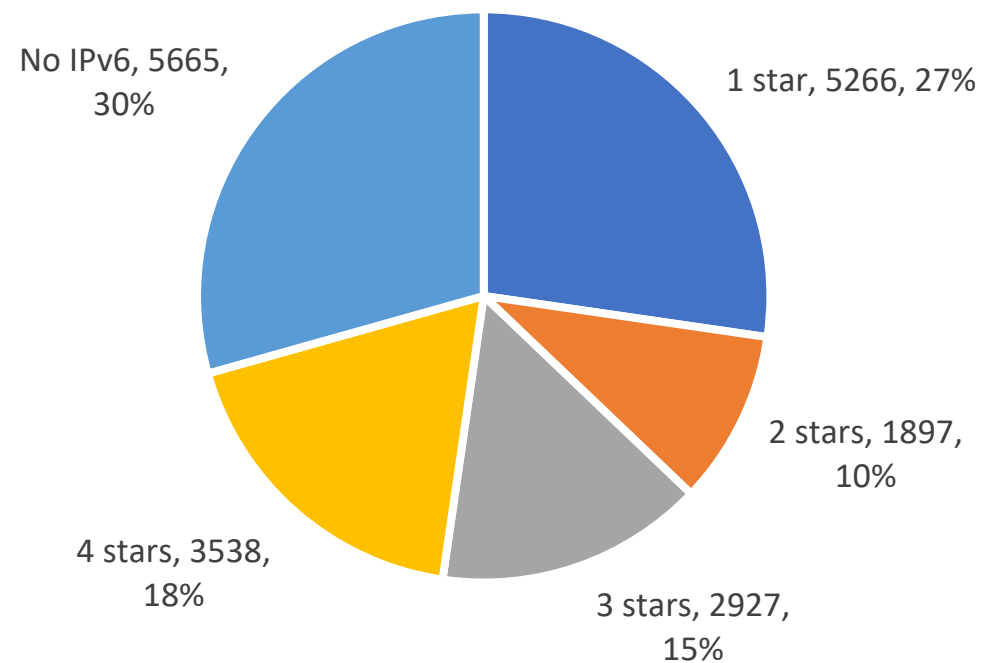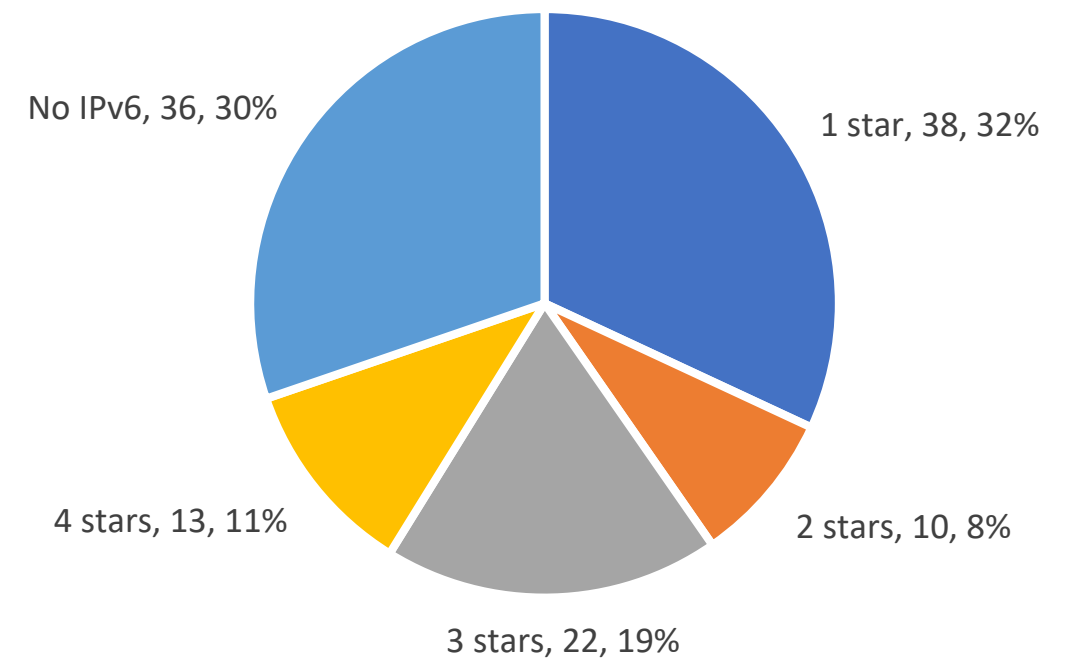
- One star if the member has an IPv6 allocation

- Additional stars for:
  - IPv6 prefix is announced on router
  - A **route6** object is in the RIPE Database
  - Reverse DNS is setup
  - Five stars if > 16% of content or access is over IPv6

Trends and Observations

- Growing interest in large IPv6 allocations

- Governments becoming more active in preparing nationwide plans

- Organisations are planning ahead — but the "scars" of IPv4 are still there

- Knowledge around IPv6 is still limited

- Efforts to stockpile IPv6 by some organisations

Promoting IPv6

- Specialised IPv6 team within the RIPE NCC

- Attending conferences and events to raise awareness

- Training courses, free attendance for members

- Guidance during the evaluation of large IPv6 requests

- Advice while processing IPv4-related requests

- IPv6 Support for Governments programme

Questions

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