IP Addressing

An Overview

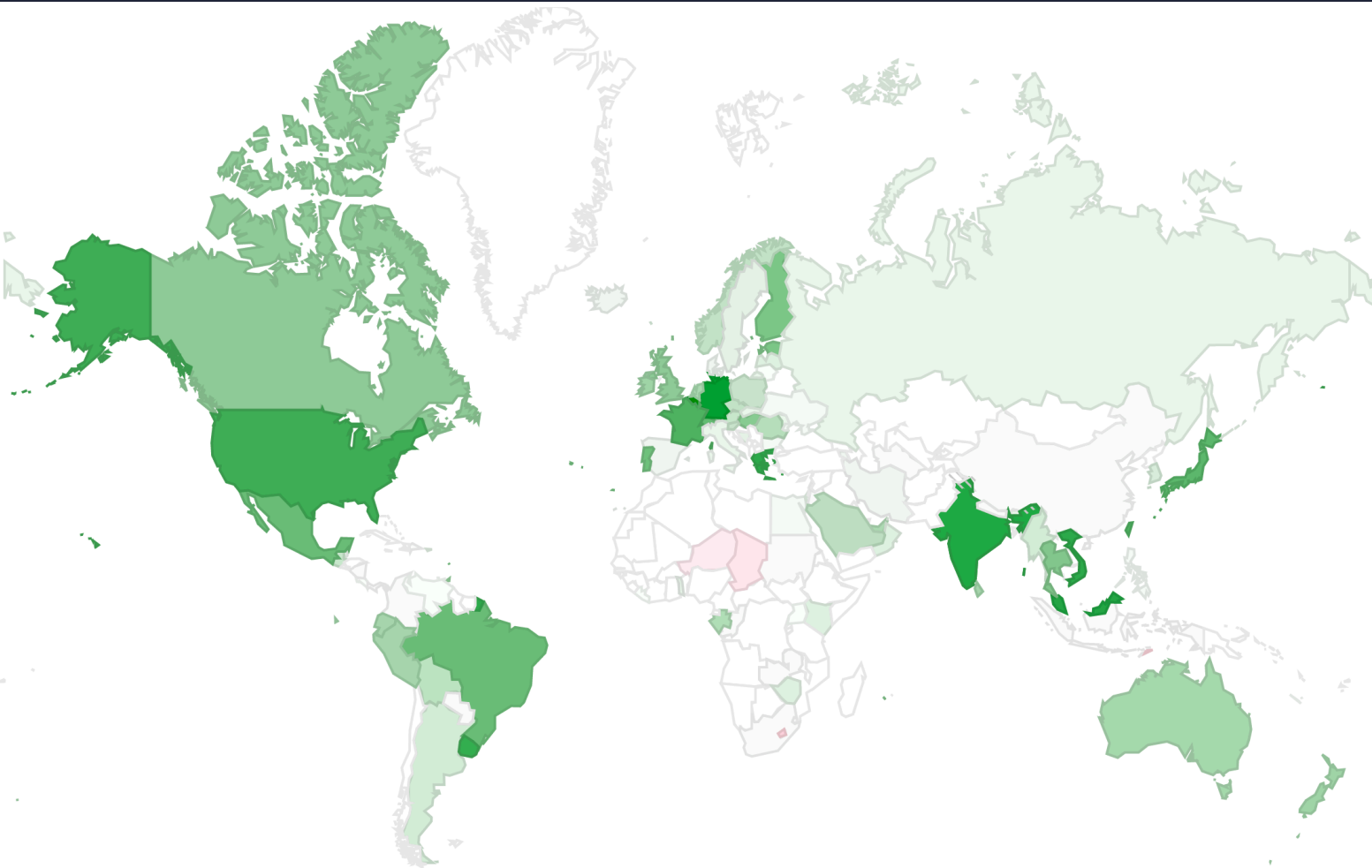Chris Buckridge | ITU Regional Workshop | 2 October 2019

RIPE NCC's IPv4 Address Pool

https://www.ripe.net/manage-ips-and-asns/ipv4/ipv4-available-pool
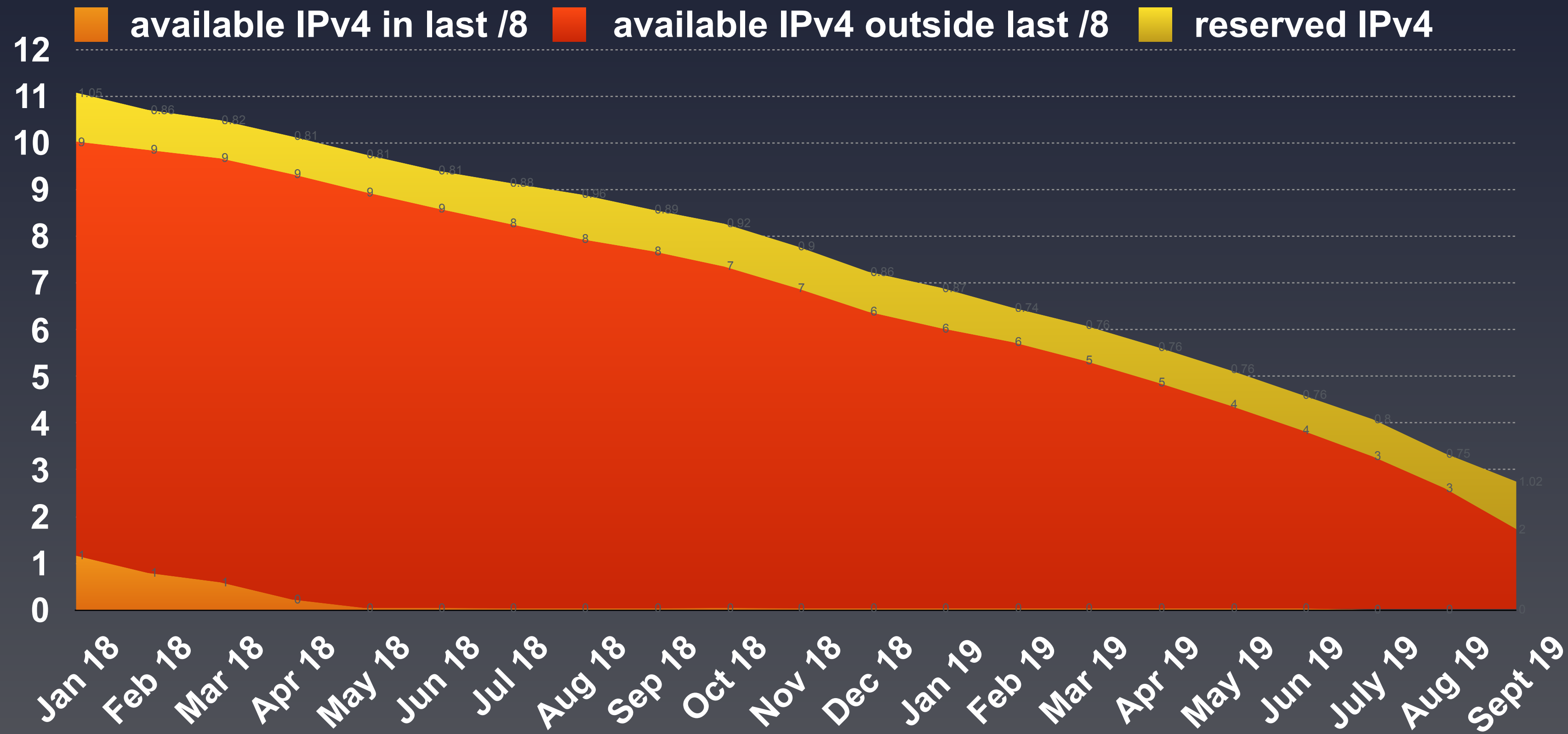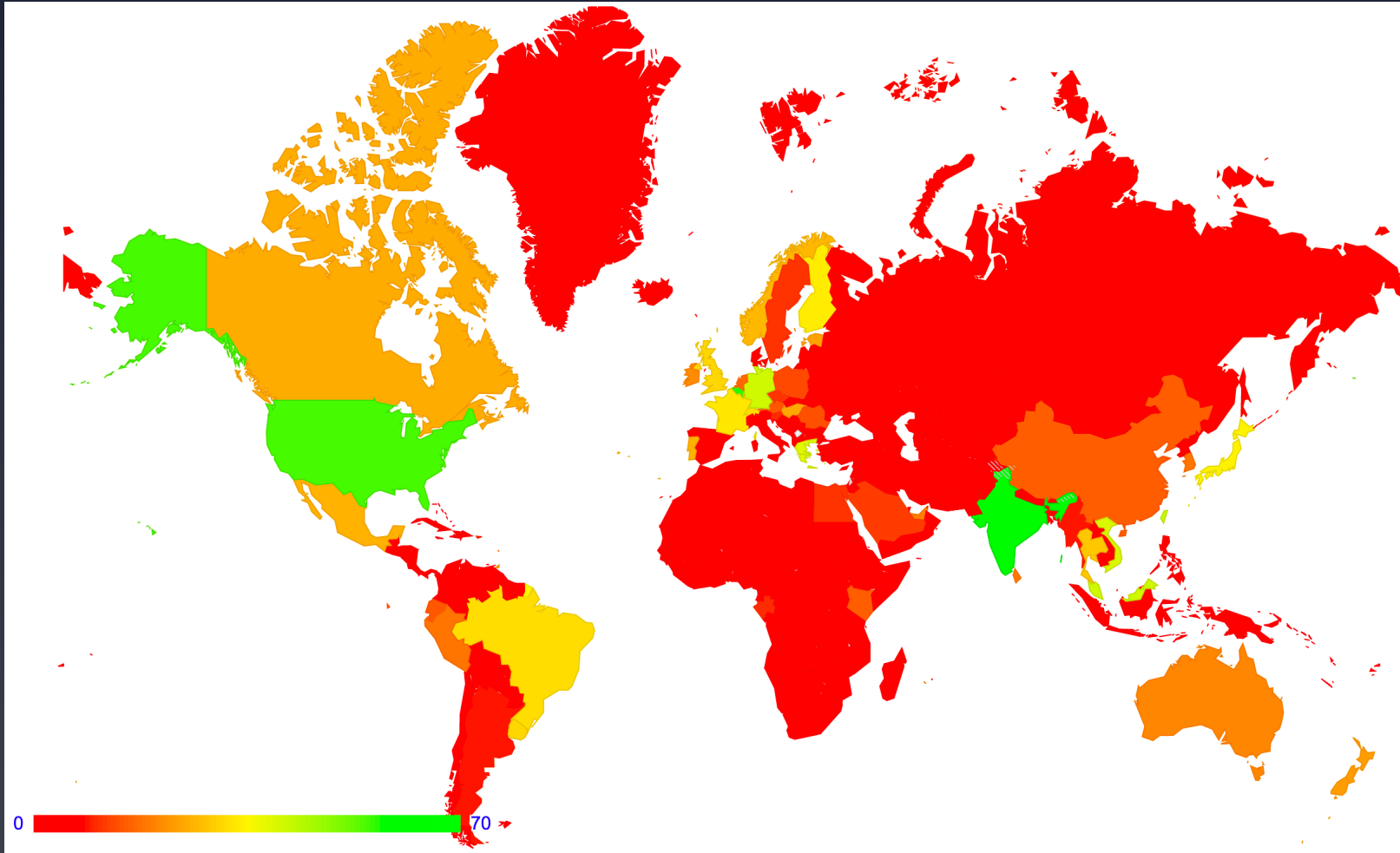
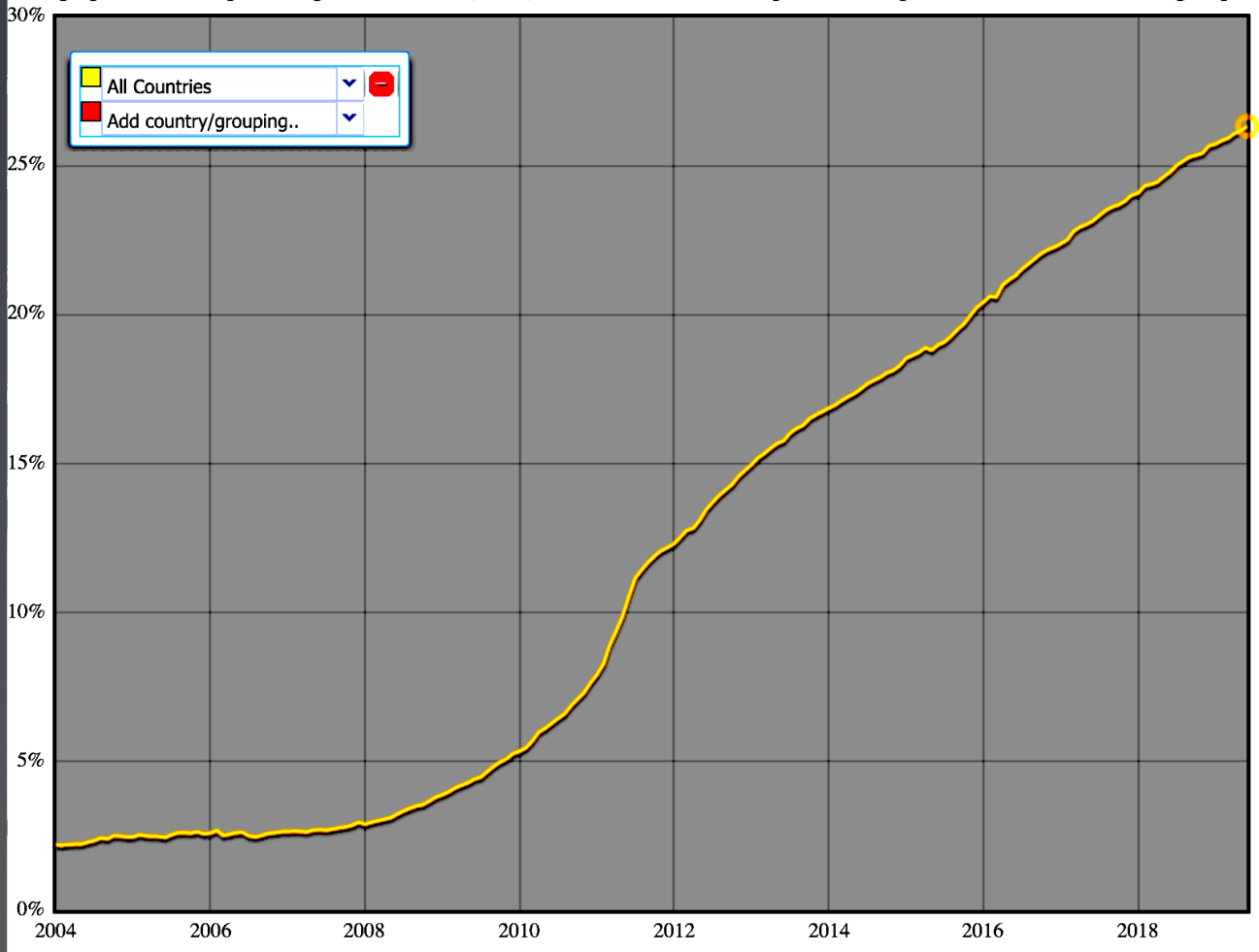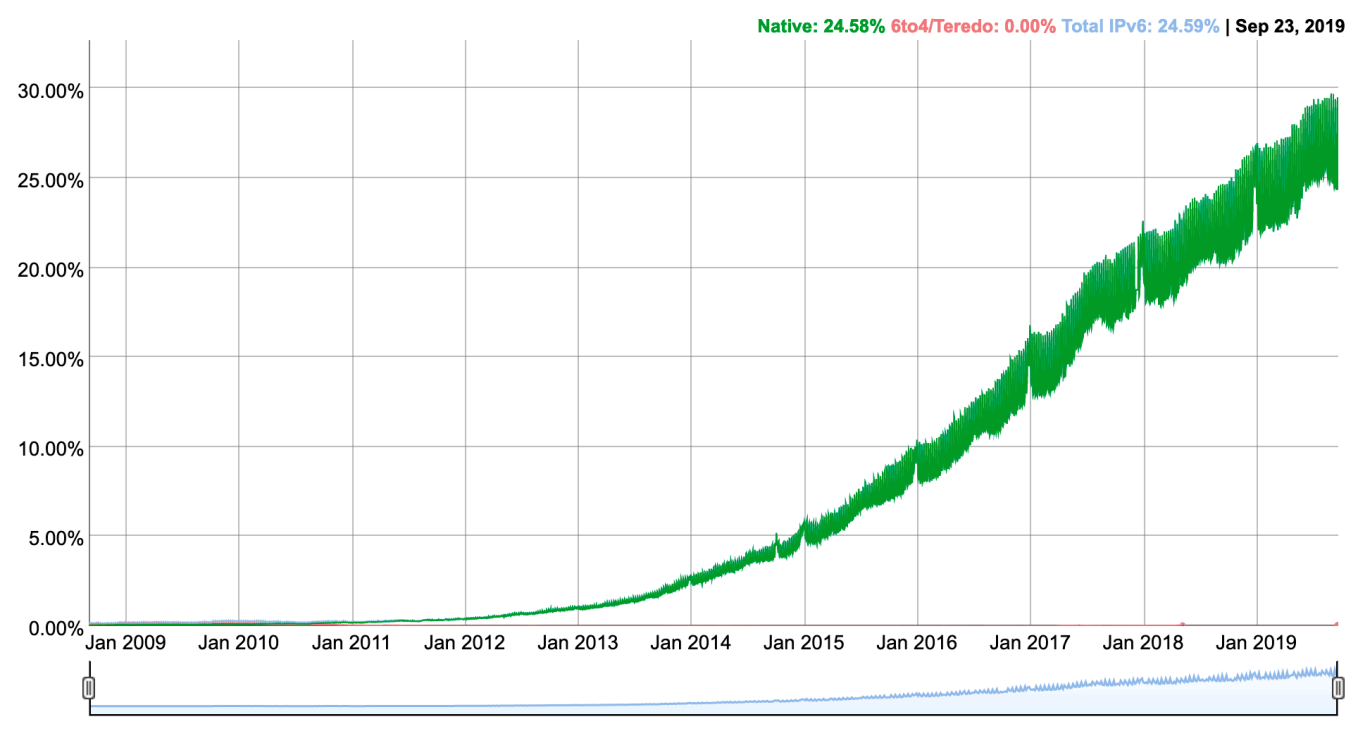# Global IPv6 Adoption

Percentage of user that access Google over IPv6

Percentage of "IPv6 capable" users
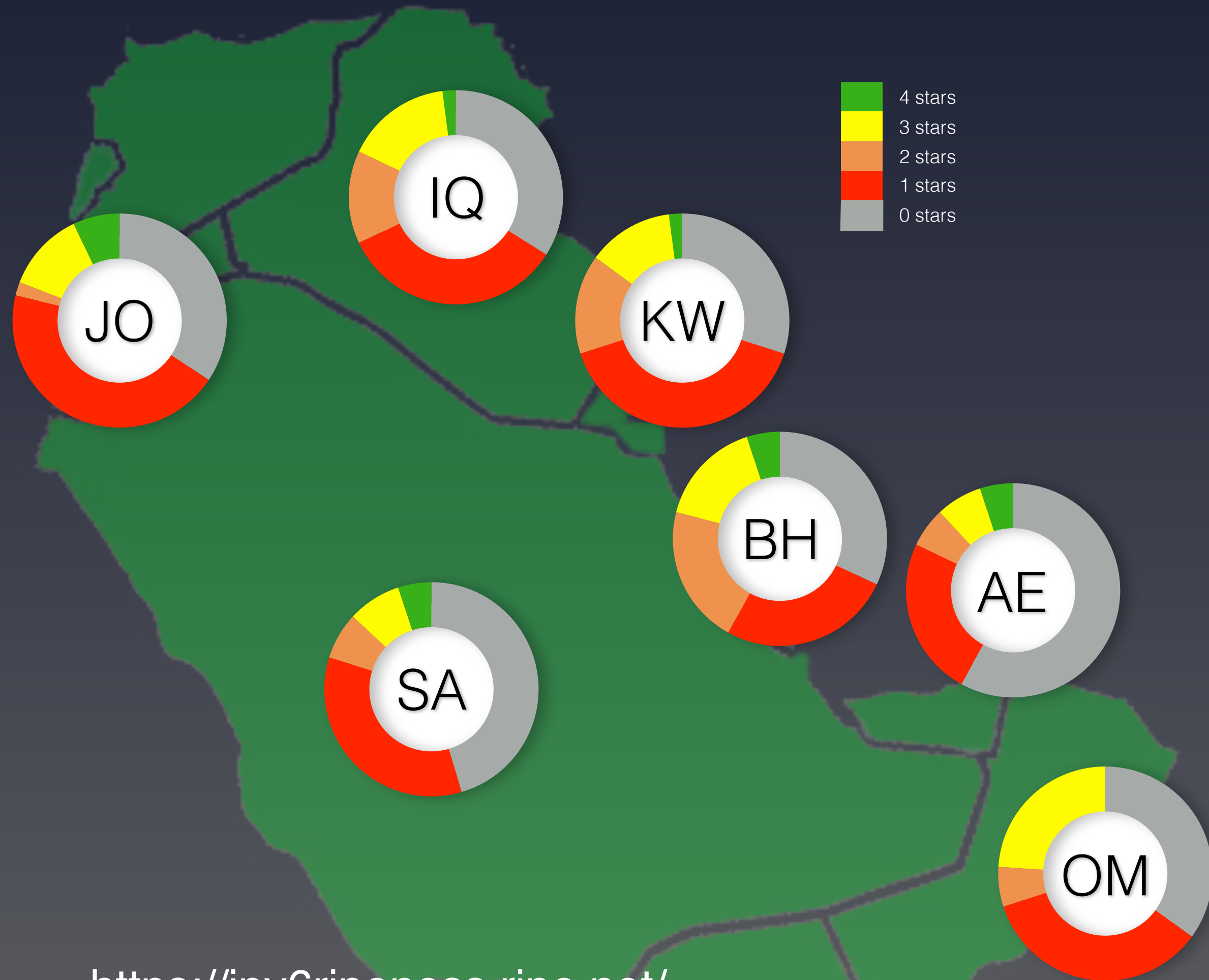

Percentage of of users that access Google over IPv6

Percentage of Autonomous Systems announcing IPv6

IPv6 Adoption in the Region

Legend:
- 4 stars (green)
- 3 stars (yellow)
- 2 stars (orange)
- 1 stars (red)
- 0 stars (grey)

CC	Country	IPv6 Capable
AE	United Arab Emirates, Western Asia, Asia	19.40%
SA	Saudi Arabia, Western Asia, Asia	11.99%
OM	Oman, Western Asia, Asia	4.98%
AM	Armenia, Western Asia, Asia	3.32%
JO	Jordan, Western Asia, Asia	0.50%
LB	Lebanon, Western Asia, Asia	0.43%
CY	Cyprus, Western Asia, Asia	0.12%
GE	Georgia, Western Asia, Asia	0.01%
SY	Syrian Arab Republic, Western Asia, Asia	0.01%
YE	Yemen, Western Asia, Asia	0.01%
QA	Qatar, Western Asia, Asia	0.01%
PS	State of Palestine, Western Asia, Asia	0.01%
IQ	Iraq, Western Asia, Asia	0.00%
TR	Turkey, Western Asia, Asia	0.00%
KW	Kuwait, Western Asia, Asia	0.00%
AZ	Azerbaijan, Western Asia, Asia	0.00%
BH	Bahrain, Western Asia, Asia	0.00%

https://ipv6ripeness.ripe.net/

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

IP Address Transfer Market

A quick diversion…

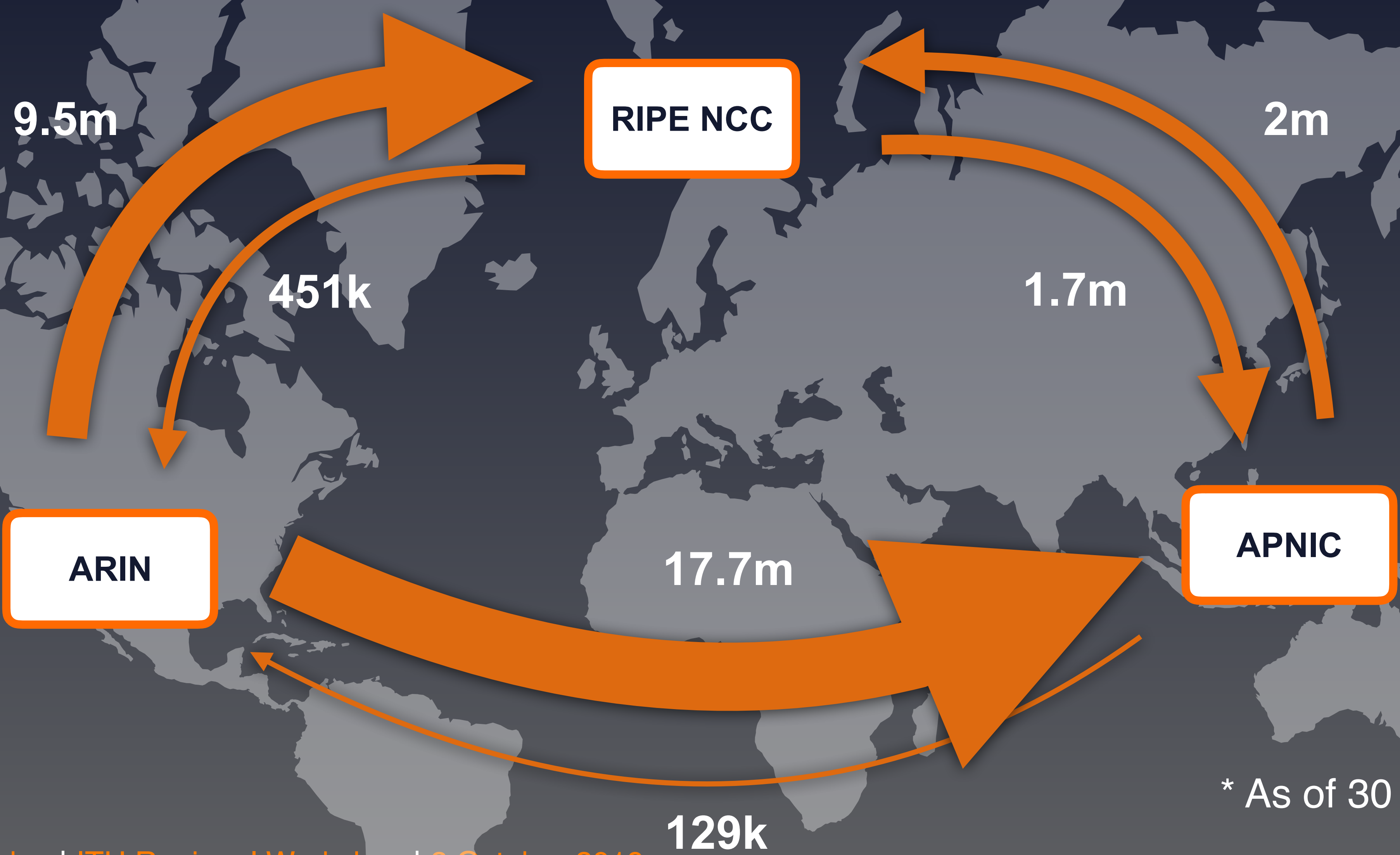# What is an IP Address Transfer?

- The registration of a block of IP addresses in an RIR registry changes from one resource holder to another

    - Possibly in another RIR registry

- A financial transaction between the resource holders may accompany the change in registration

    - The RIRs have no role in the financial side of transfers

IPv4 Transfers In/Out

USA
3,744,000
exported

Romania
6,829,568
exported

Saudi Arabia
4,013,568
imported

United Arab Emirates
501,248 imported

Iran
2,481,152
imported

Inter-RIR Transfer Flows

RIPE NCC

ARIN

APNIC

9.5m

451k

2m

1.7m

17.7m

129k

* As of 30 June 2019

A New Paradigm for IP(v4) Addresses

Plentiful, available as needed → **A scarce resource**

No inherent monetary value → **Seen as a commodity to be bought or sold**

Hierarchical distribution → **More complex movement between all parties**

Choosing IPv6

The Operators' Choice

Purchase IPv4 through
the transfer market

Deploy IPv6

Invest in Carrier-Grade NAT

Challenges in IPv6 Adoption

- Need for education, training

- Time and expense of deployment

  - Internal: Internal arrangements, use case scenarios, Proofs of Concept and an actual roll-out plan (all internal)

  - External: Vendor support, new releases and updates, technology maturity

- Overcoming [mis-placed] concerns about IPv6 security

- Human nature! (resistance to change)

How Can You Help?

- Different approaches to the "national IPv6 strategy" approach

  - Informal coordination between different stakeholders

  - "Government-first" approach, with public sector leading by example

  - Top-down legislative approach

  - Working with international expert stakeholders (including RIPE NCC!)

- Whatever your approach, you need to break the chicken-and-egg stand-off!

Questions ❓

chrisb@ripe.net