DNS Belgium and IPv6

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DNS Belgium

- ccTLD for .be and geoTLD for .brussels and .vlaanderen
- Non-for-profit organisation established in 1999 by:

  - ISPA Belgium
  - Agoria
  - BELTUG

    Feweb recently became a member of our organisation

- Core infrastructure:

  - Name service
  - Domain name registration system
  - Support services

- Website: www.dnsbelgium.be

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IPv6 Facts DNS Belgium

- 14/04/2004: IPv6 addresses are accepted by the .be registration system and AAAA-records in the be zone.

- 14/09/2004: first .be name server (brussels.ns.dns.be) reachable over IPv6 in cooperation with Belnet.

- 26/06/2008: 2nd .be anycast name server (x.dns.be)

- 04/11/2011: DNS Belgium office mail server

- 29/02/2012: DNS Belgium web sites

- 16/04/2012: DAS and WHOIS service

- 22/01/2013: EPP service

- 18/08/2013: All .be anycast name servers

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IPv6 RIPEness by RIPE labs

- RIPE (**R**egional **I**nternet **R**egistry) delegates IP ranges to ISPs, corporates, organisations, ... (**L**ocal **I**nternet **R**egistry)

- RIPE labs: Stars and stats per country on the IPv6 uptake

- DNS Belgium: 5 stars (max), how to get these:

  - 1st star: IPv6 address space allocation

  - 2nd star: route6 object in the Routing Registry

    e.g.: 2a02:6e0::/48 (.be domain name registration system)

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IPv6 RIPEness by RIPE labs

- DNS Belgium: 5 stars (max), how to get these (cont'd):

  - 3rd stars: reverse DNS

    e.g.: whois -h whois.ripe.net 0.e.6.0.2.0.A.2.ip6.arpa

  - 4th stars: prefix visible in the Routing Information System:

    - e.g.: whois -h riswhois.ripe.net 2a02:6e0::/48

  - 5 stars: offer content or IPv6 Internet Access

- More info: http://ipv6ripeness.ripe.net/

IPv6 RIPEness – rating 2014-09-22
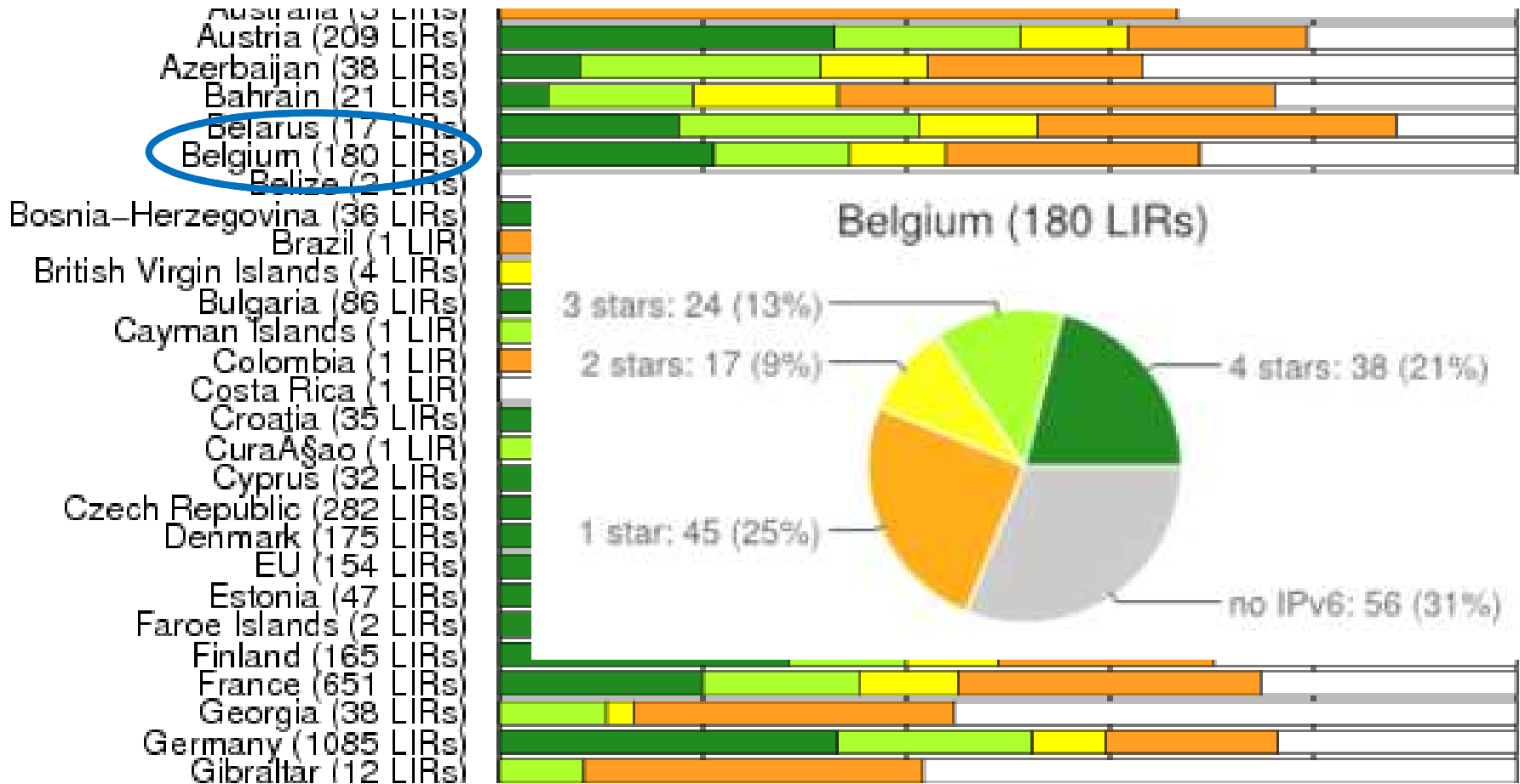
38 Belgian LIRs have 4 stars of which 36 have 5 stars.

Belgium is performing better than the European average.

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IPv6 Awareness

- Participated to both IPv6 days of the Internet Society:

  - 8 June 2011: World IPv6 Day

  - 6 June 2012: World IPv6 Launch Day

  - http://www.worldipv6launch.org/

- IPv4 exhaustion vs "Internet of Things"

  - RIRs are delegating their last IPv4s /8 or /12

  - In 2020: 50 billion devices need an IP address, more than 10 times IPv4 address space (4,2949 billion)

  - IPv6 is needed, number of IPv6 addresses: 340.282.366.920.938.463.463.374.607.431.768.211.456

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IPv6 Pitfalls

- Knowledge and Experience is key, IPv6 is not on all levels like or compatible with IPv4!
- Security:
    - not all firewall's, intrusion detection systems, auditing systems, ... are (yet) IPv6 capable.
    - Tunneling techniques might bypass the firewall, IPv6 might be active on a network without knowing.
- Not all mail servers are fully functional on IPv6
- Rate-limiting is hard on IPv6
- IPv6 Brokenness: default preference for IPv6 can result in bad user experience

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IPv6 Statistics

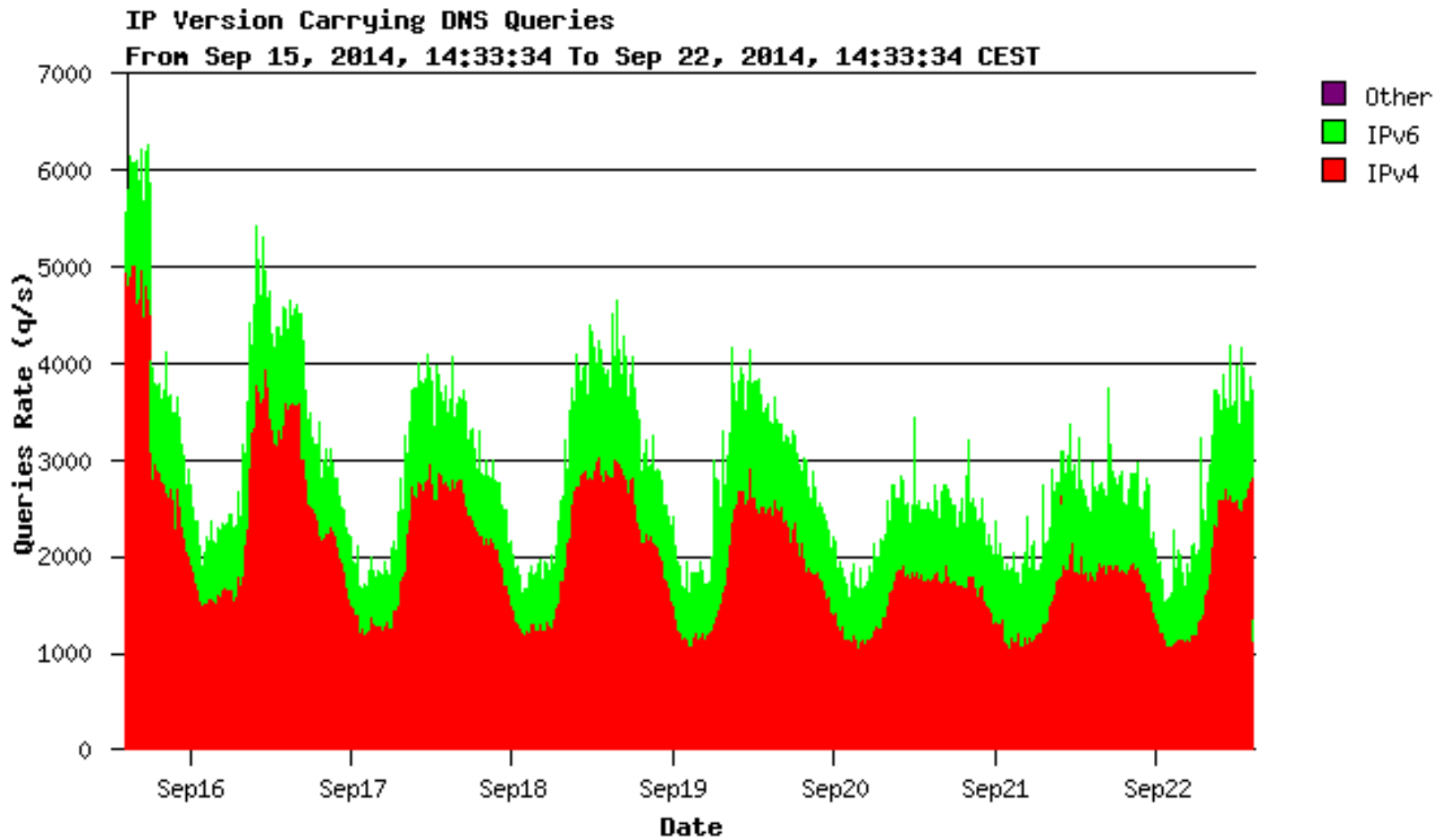- IPv6 enabled domain names (not websites)

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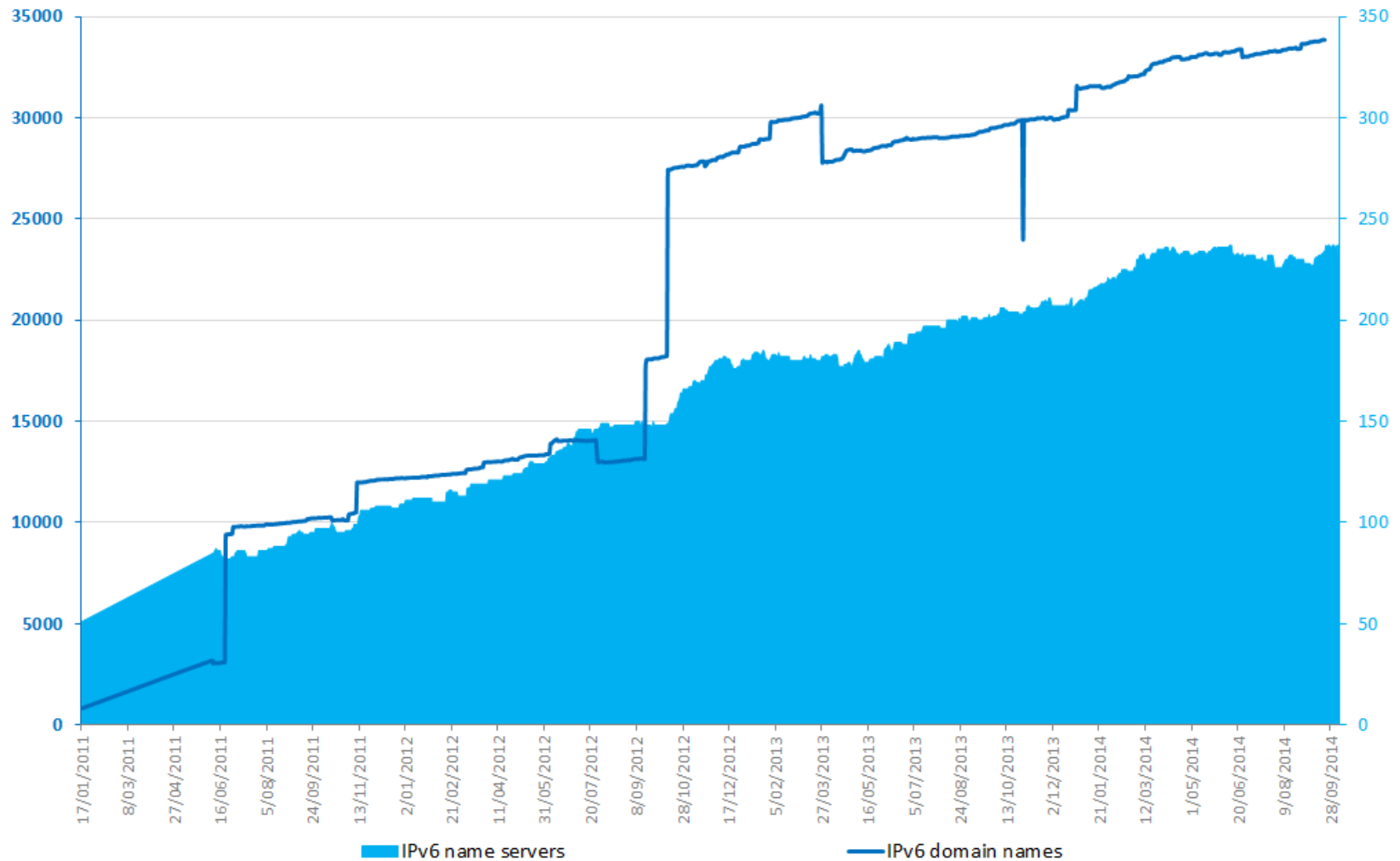
IPv6 Statistics

IPv6 .be websites:

- Almost 30K (2,14%) of the 1.4M .be websites are hosted on IPv6 enabled webservers

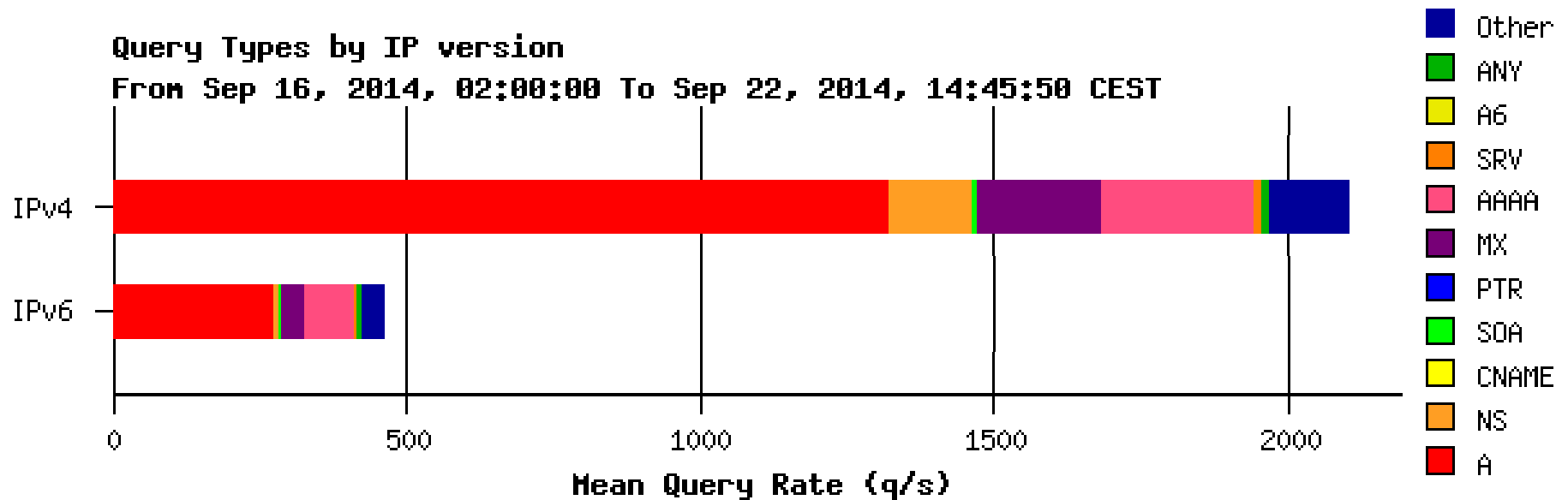- These 30K IPv6 reachable websites are hosted on almost 7000 different webservers

IPv6 Statistics

- IPv4 vs IPv6 queries:
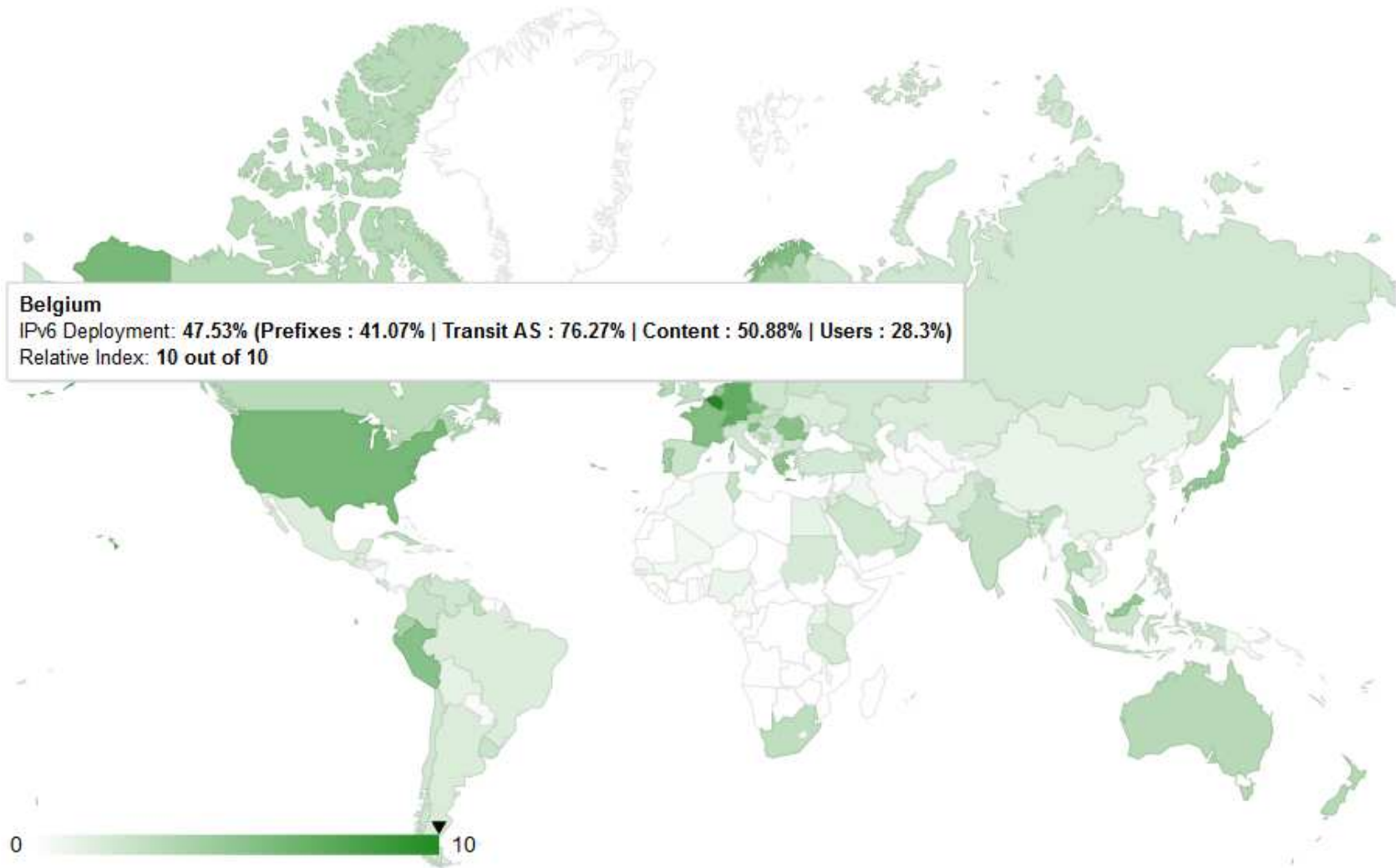
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IPv6 Statistics

- IPv4 vs IPv6 Query Types:

- On average 22% of the queries originates from IPv6 networks
- IPv4: average A-records: 1330 q/s, AAAA-records: 260 q/s (19,5%)
- IPv6: average A-records: 270 q/s, AAAA-records: 90 q/s (33%)

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IPv6 Statistics

- View on IPv6 adoption (source: http://6lab.cisco.com/stats)

Belgium
IPv6 Deployment: **47.53%** (Prefixes : **41.07%** | Transit AS : **76.27%** | Content : **50.88%** | Users : **28.3%**)
Relative Index: **10 out of 10**

0   10

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END – Thank you for listening