



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Global IPv6 Deployment

Status Overview

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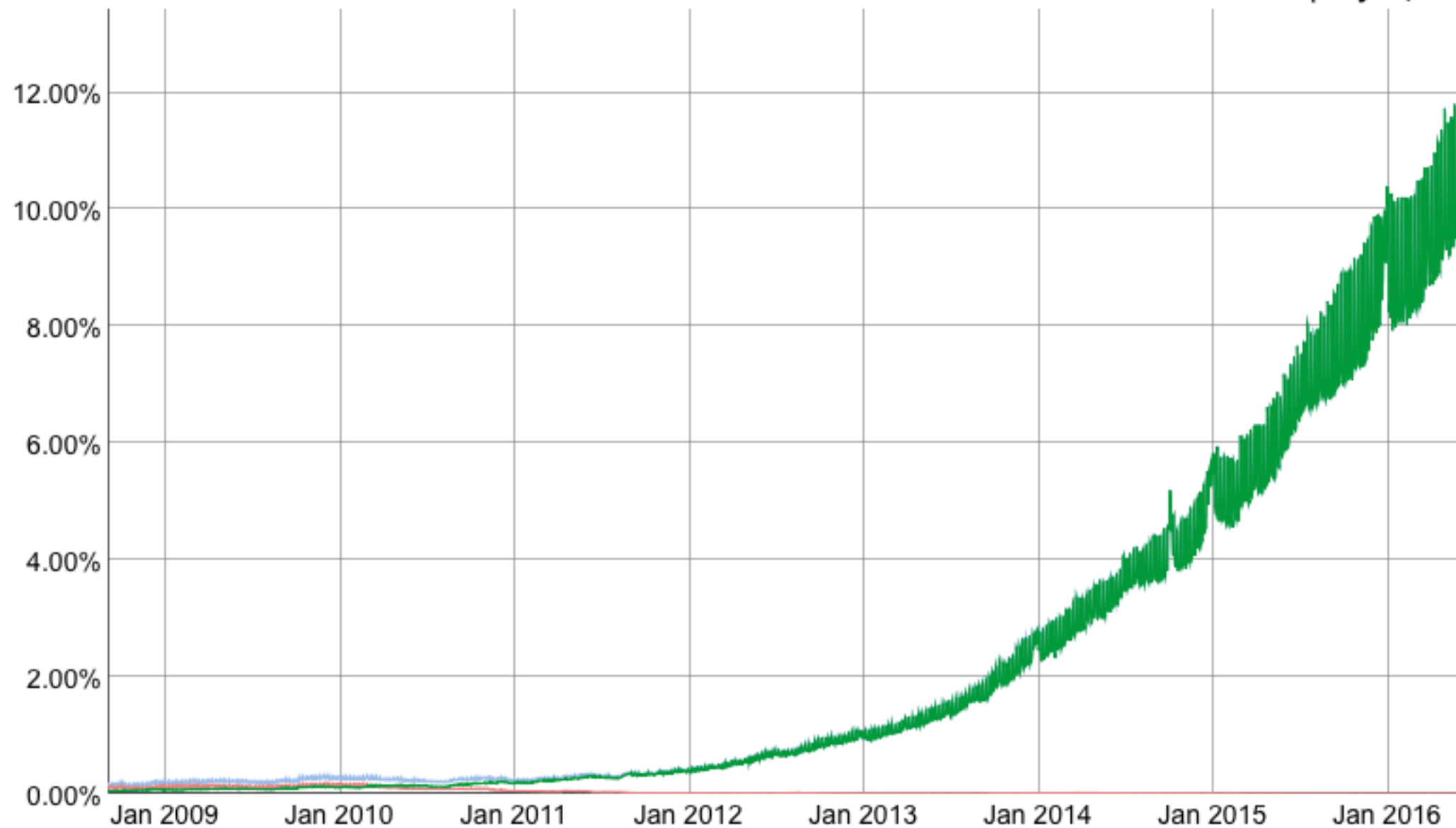
OECD Ministerial Meeting, Cancun Mexico | June 2016

IPv6 Is On The Rise



Percentage of users that access Google using IPv6

Native: 10.49% 6to4/Teredo: 0.01% Total IPv6: 10.50% | May 30, 2016



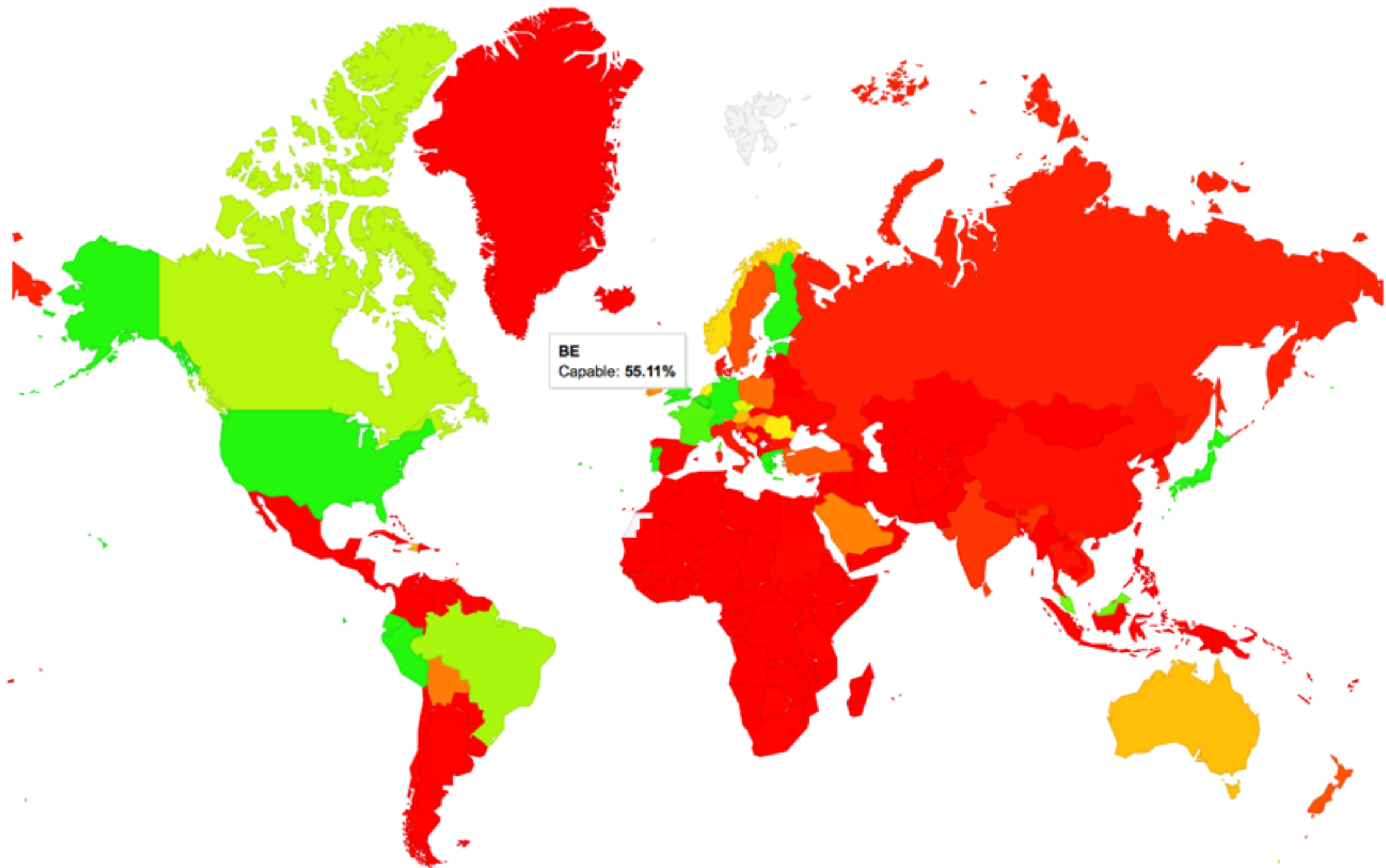
Source: Google (<http://www.google.com/ipv6/>)

Most Cited Reasons Not To Deploy



- The cost of IPv6 deployment is too high
 - Need investment in new software and hardware
- Too much risk for our business
 - Technology is not ready for mass market
- “We are not Google, Facebook, Comcast, Netflix, etc”
 - Does size really matter?

A View On Global Deployment



Source: APNIC Labs (<http://labs.apnic.net>)

OECD Member States



	Percentage of IPv6
Australia	5,82%
Austria	5,79%
Belgium	55,11%
Canada	9,83%
Chile	0,10%
Czech Republic	8,83%
Denmark	0,61%
Estonia	17,32%
Finland	17,17%
France	13,40%
Germany	34,50%
Greece	28,53%
Hungary	4,60%
Iceland	0,02%
Ireland	4,30%
Israel	0,62%
Italy	0,73%

	Percentage of IPv6
Japan	16,61%
Korea	1,11%
Luxembourg	26,23%
Mexico	0,03%
Netherlands	7,85%
New Zealand	2,51%
Norway	6,75%
Poland	3,32%
Portugal	25,80%
Slovak Republic	0,18%
Slovenia	2,66%
Spain	0,07%
Sweden	2,49%
Switzerland	31,45%
Turkey	2,70%
United Kingdom	17,83%
United States	32,83%

Source: APNIC Labs (<http://labs.apnic.net>)

Case: Belgium (55%)



- Providers followed each other in deploying:
 - Brutele (mid '13), Belgacom (late '13) and Telenet (early '14)
 - Belgacom (42%) slightly lacking on the others (~70%)
- Telenet and Belgacom are similar size
 - Brutele is about 1/8th of the market
- The majority of the commercial access market products have IPv6 enabled by default

Case: Germany (34%)



- All 3 major access providers deploy IPv6:
 - Deutsche Telekom, Kabel Deutschland and Liberty Global
 - First two started in early 2013, Liberty Global joined last year
- Two different technologies (Cable and DSL) managed to deploy at same time
 - What made Liberty Global (UPC) wait?
- Market seems to work
 - Competing products have matching features

Case: Portugal (26%)



- Market largely divided amongst 3 operators:
 - Meo (Portugal Telecom), NOS (PT media - cable) and Vodafone PT
- Only Meo provides IPv6 services (mid '14)
 - About 80% of their users have IPv6 deployed
 - MEO market share is around 40%
- The numbers seem to match
 - What about the market?

What About Countries?



- Germany, Belgium, Netherlands and United Kingdom are roughly comparable
 - GDP ranges from 51k (NL) to 46k (UK) per capita
 - Internet penetration is at maximum levels
 - Markets largely served by 2 to 4 operators
- Difference in IPv6 is huge
 - Netherlands is only at 7.4% (started Q4 2015)
 - United Kingdom (17.8%) started Q4 2015 as well
(United Kingdom so far only sees deployment in 1 operator: Sky)

Is The Economy (GDP) a Factor?



- Portugal (22k/capita) and Greece (21k) are outperforming Denmark (60k)
 - Denmark has 0,6% deployment, Greece is at 28,5%
- Peru (6k/capita) is 19,35% IPv6 ready
 - Norway is at 6,75% deployment
 - Ecuador is at 20,8%, Bolivia at 3.8%
- Deployment really depends on the large ISPs
 - Regardless of economic circumstances

What Is Happening?



- IPv6 is quickly becoming a reality
 - Major markets have significant deployment
- There appear to be no major consequences of deploying IPv6 inside a commercial network
 - The technology is there and it is working
- IPv4 depletion does not have to be an obstacle to further grow your business
 - The alternative is commercially viable

What We Don't Understand



- Comparable markets behave differently
- Comparable operators choose differently
 - In the same market
 - Using similar technology and equipment as others
- No knowledge of regulatory pressure
 - Everybody adopts IPv6 on their own initiative