# IPv6 @ VOO

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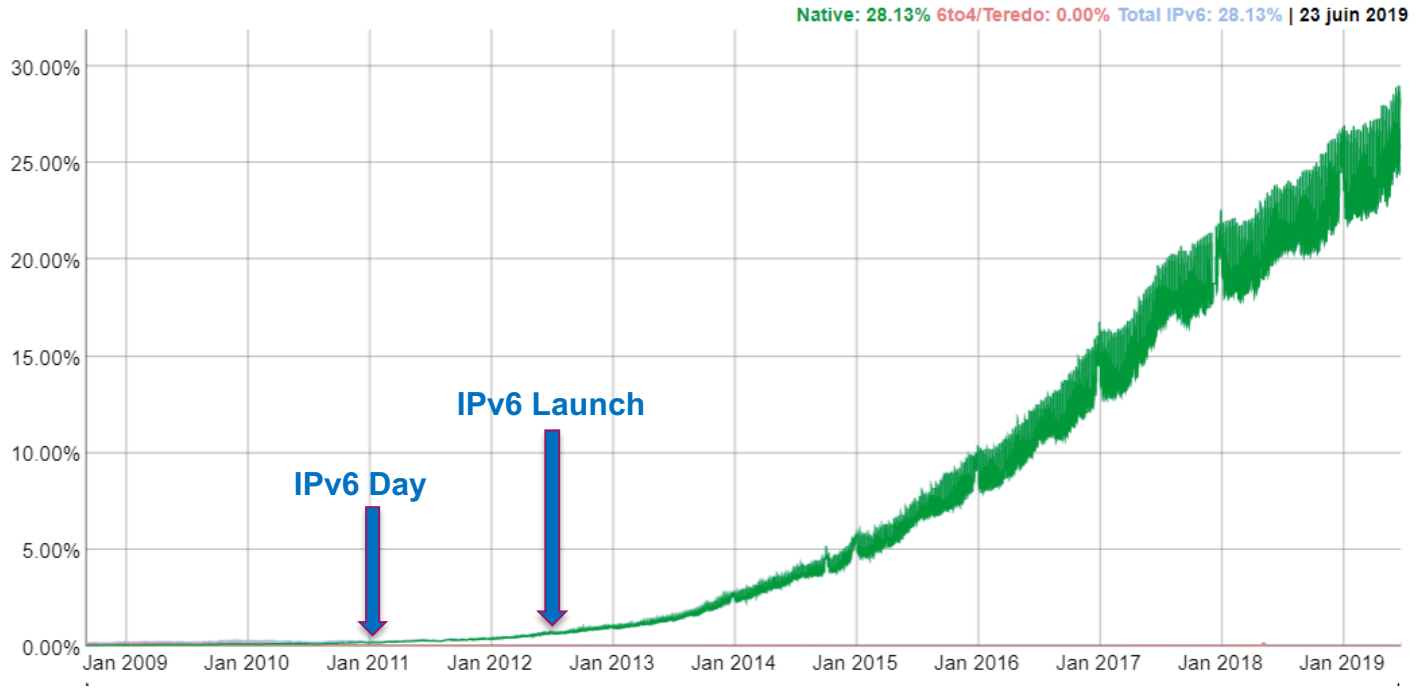
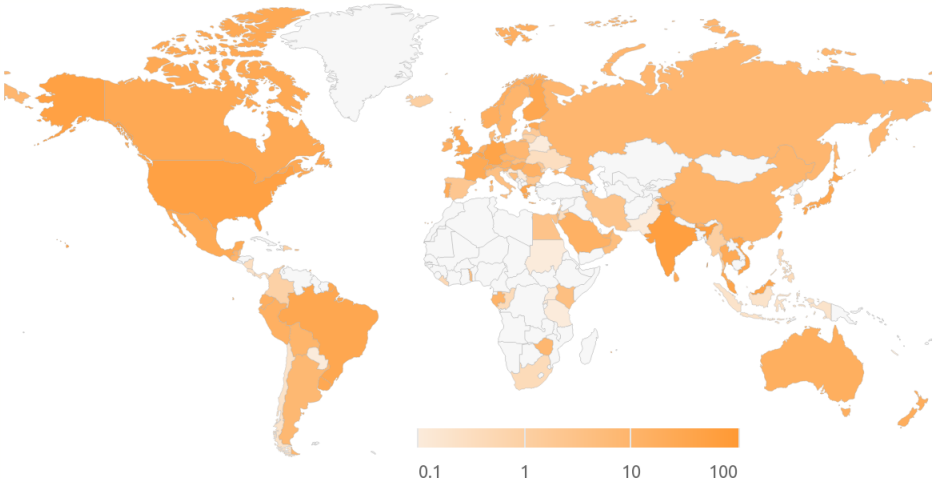
# IPV6 ADOPTION

Source: Google - https://www.google.com/intl/en/ipv6/statistics.html



# RANKING WORLDWIDE

Source: https://www.akamai.com/uk/en/resources/our-thinking/state-of-the-internet-report/state-of-the-internet-ipv6-adoption-visualization.jsp



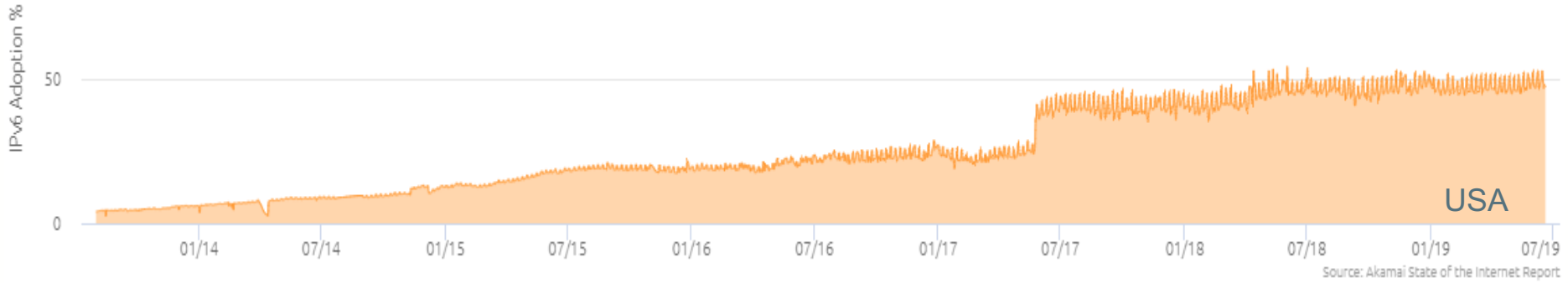

| RANK | 2019 IPV6% | 2019 COUNTRY | 2018 IPV6% | 2018 COUNTRY |
|---|---|---|---|---|
| 1 | 59.8% | India | 46.4% | Belgium |
| 2 | 49.8% | United States | 40.4% | United States |
| 3 | 47.5% | Saint Barthelemy | 36.6% | India |
| 4 | 43.7% | Belgium | 32.2% | Greece |
| 5 | 40.1% | Germany | 25.5% | Germany |
| 6 | 38.6% | Viet Nam | 21.7% | Luxembourg |
| 7 | 38.2% | Malaysia | 20.8% | Switzerland |
| 8 | 34.5% | Greece | 20.7% | Finland |
| 9 | 32.5% | Taiwan | 19.9% | Brazil |
| 10 | 30.3% | Finland | 18.7% | Canada |

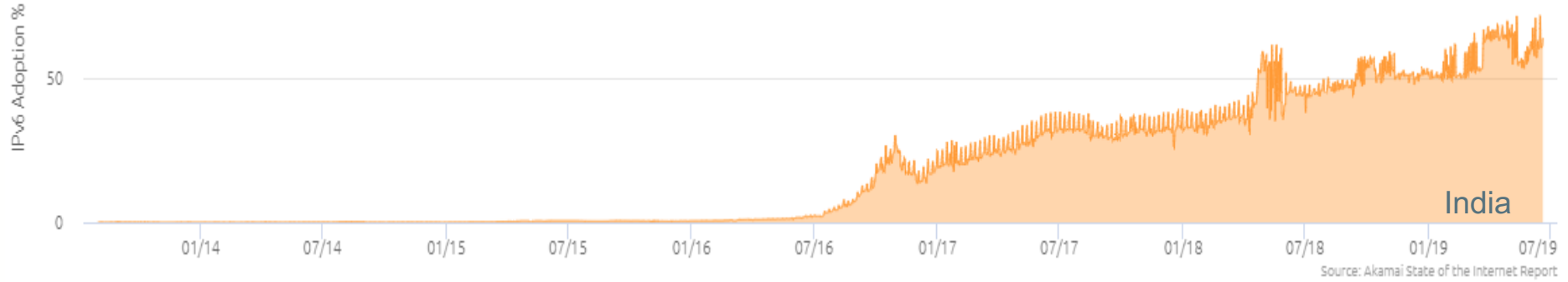
- Belgium no longer # 1 ☹ … not a big deal !
- USA : Huge and sustained increase over the last 2 years
  - Over 80% of traffic from Verizon Wireless to major online content providers now uses IPv6 (1)
  - *T-Mobile USA* is in the process of turning IPv4 off within their mobile network, operating IPv6-only (1)
- India : even faster growth, since early 2017
- New challengers:
  - Clearly Asia: Vietnam, Malaysia, Taiwan
  - Spectacular growth since early/mid 2018

(1) https://www.internetsociety.org/resources/2018/state-of-ipv6-deployment-2018/

# USA VS INDIA – IPV6 GROWTH

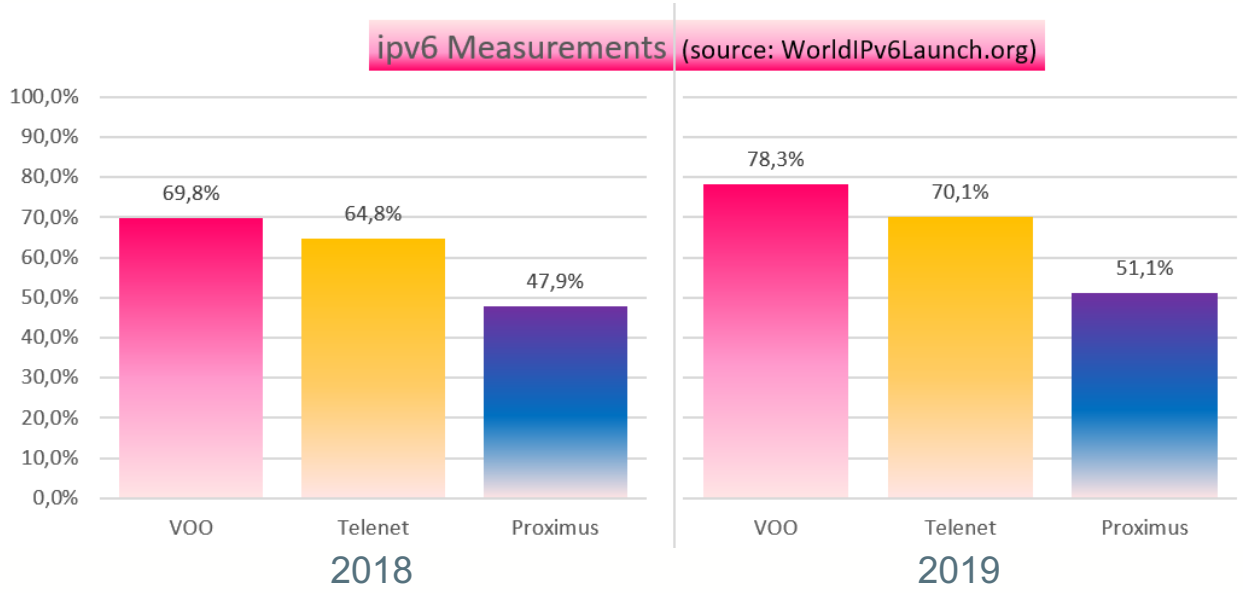
Source: https://www.akamai.com/uk/en/resources/our-thinking/state-of-the-internet-report/state-of-the-internet-ipv6-adoption-visualization.jsp



# RANKING IN BELGIUM

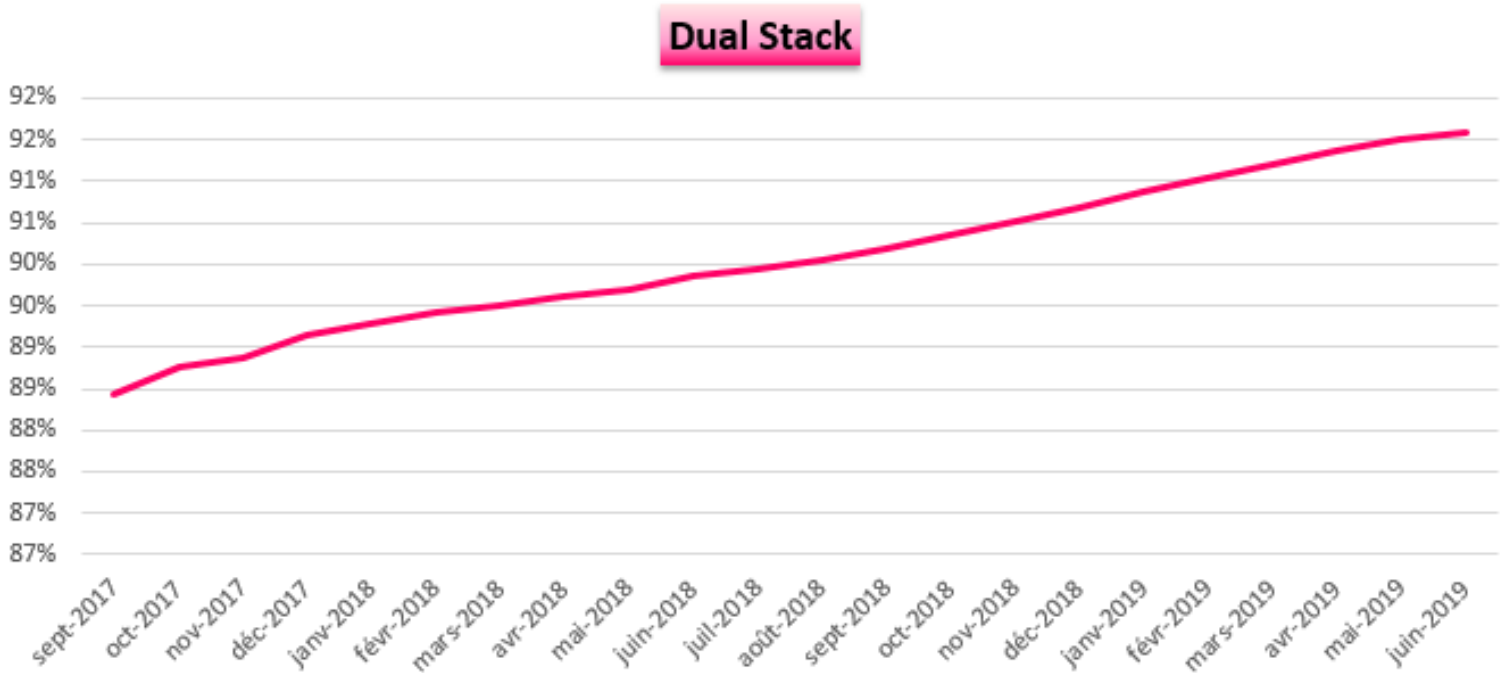
- Voo still #1, according to WorldIPv6Launch.org (as of June 12th 2019)
  - Composite computation based on requests received by Akamai, APNIC, Facebook and Google
- But all parties continue to increase




Source: https://www.worldipv6launch.org/measurements/

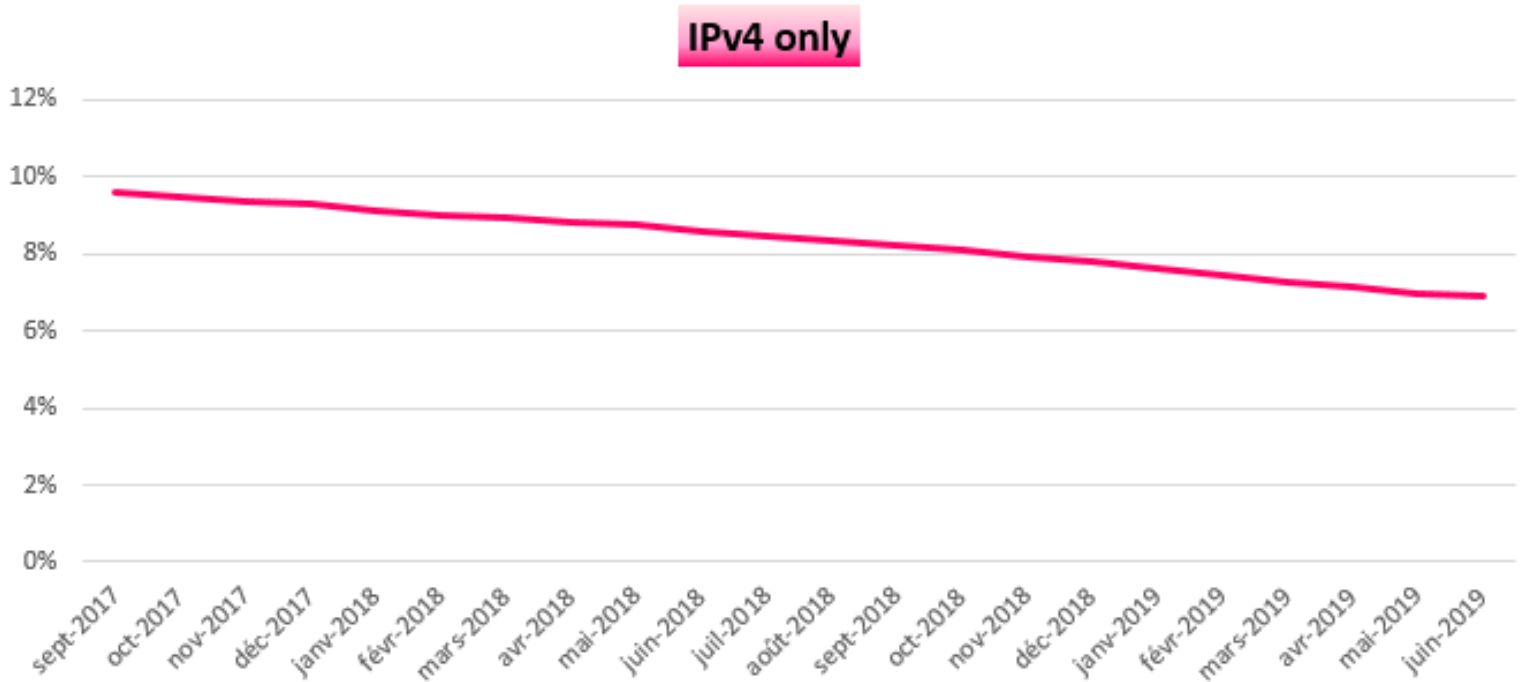
# CABLE MODEMS AT VOO

- IPv6 enabled modems (AKA Dual Stack)
  - Sustained (and linear) growth :



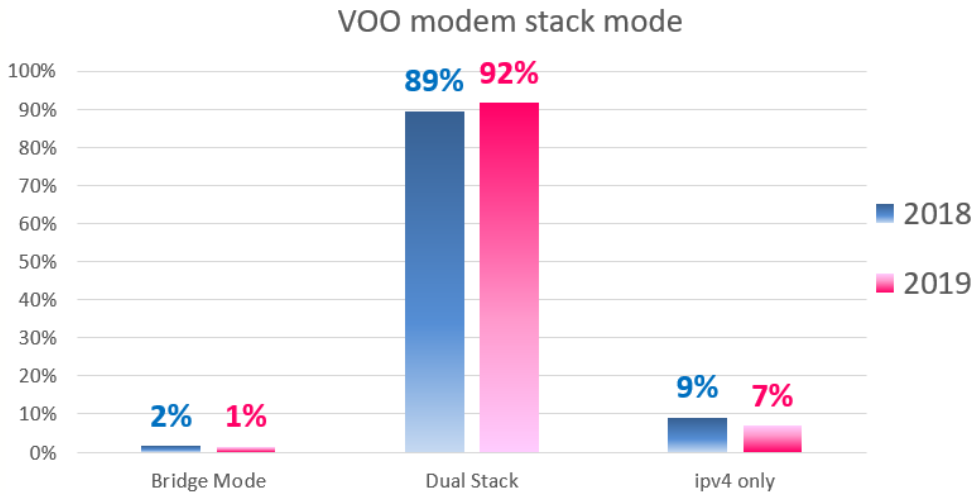
# CABLE MODEMS AT VOO

- Good news: « ipv4 only » subscribers base continues to decrease



# CABLE MODEMS

- Steady growth of v6 enabled modems
  - At least 92%
  - Bridged mode may use IPv6 or not
- 7% of our customers have opted-out from IPv6
  - Decreasing in relative and absolute numbers



# TODAY VOO'S PICTURE

- Evolution on multiple axis
  - Continued increase on ipv6 enabled modems front
  - Corollary : v6 traffic @VOO increases similarly

- Room for (drastic ?) improvement still :
  - Enable ipv6 on VOO mobile
  - This might trigger a real shift of v4/v6 balance (look at what's happening in the US !)
  - Some testing took place already
    - Requires quite some engineering resources
      - Design development
      - Testing prior to rollout is key: Can't take the risk to affect users' experience and ultimately cause brand damage
    - Requires official support and endorsement from executive levels

# WHAT'S NEXT ?

- ipv6 enabled subscribers will likely continue to increase
  - That is the good news ☺
- Long term subscribers base growth
  - Can we get rid of ipv4, at some point ?
  - If not: we have at least to favor v6 traffic against v4
    - NAT and CGN becoming more and more challenging (and costly !) to maintain
- NATing v6 to v4 (DNS64/NAT64) : is it the way to go ?
  - Not all devices support this
  - Even for devices supporting it, not all applications do
- Alternative: dual stack and "just let it go" ?
  - More and more major content providers will have to be v6 enabled, anyway
    - No choice, as otherwise they might become isolated from (part of) the Internet, at some point
    - This will likely be the main driver to increase overall v6 traffic

# THANK YOU!

# QUESTION?