

# IPv6 Deployment Survey (Residential/Household Services)

## How IPv6 is being deployed?

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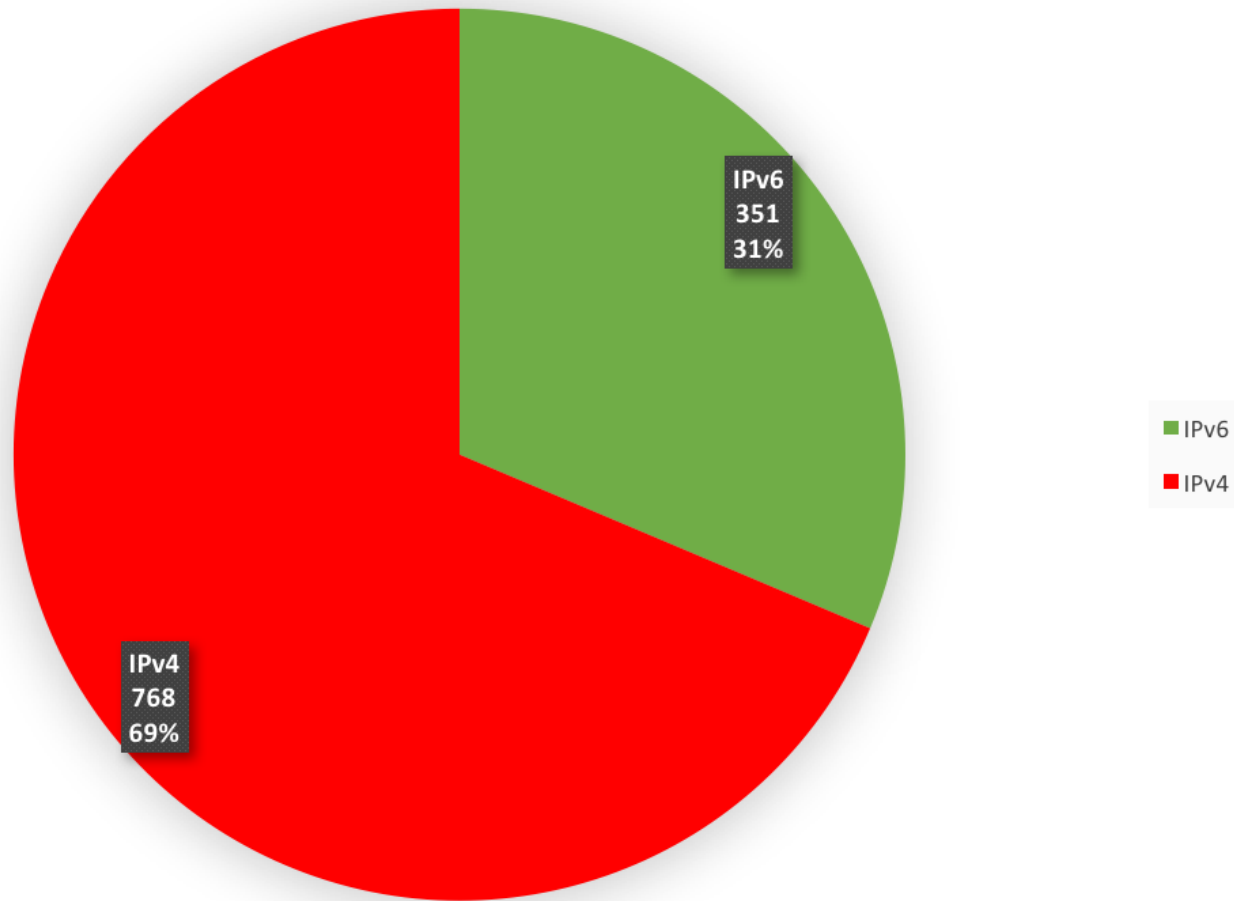
**Consulintel, CEO/CTO**

# Survey Contents

- Basic ISP data (name, country, RIR)
- Technology of the customer link
- Is it a commercial service or a “pilot”
- IPv6 WAN link
- IPv6 customer addressing
- IPv4 service
- Transitioning and provisioning
- IPv6 DNS services
- Other data (optional contact details)

Note: Survey not intended for service to mobile phones, however, 2G/3G/4G response can be provided for service via a “CPE/modem”

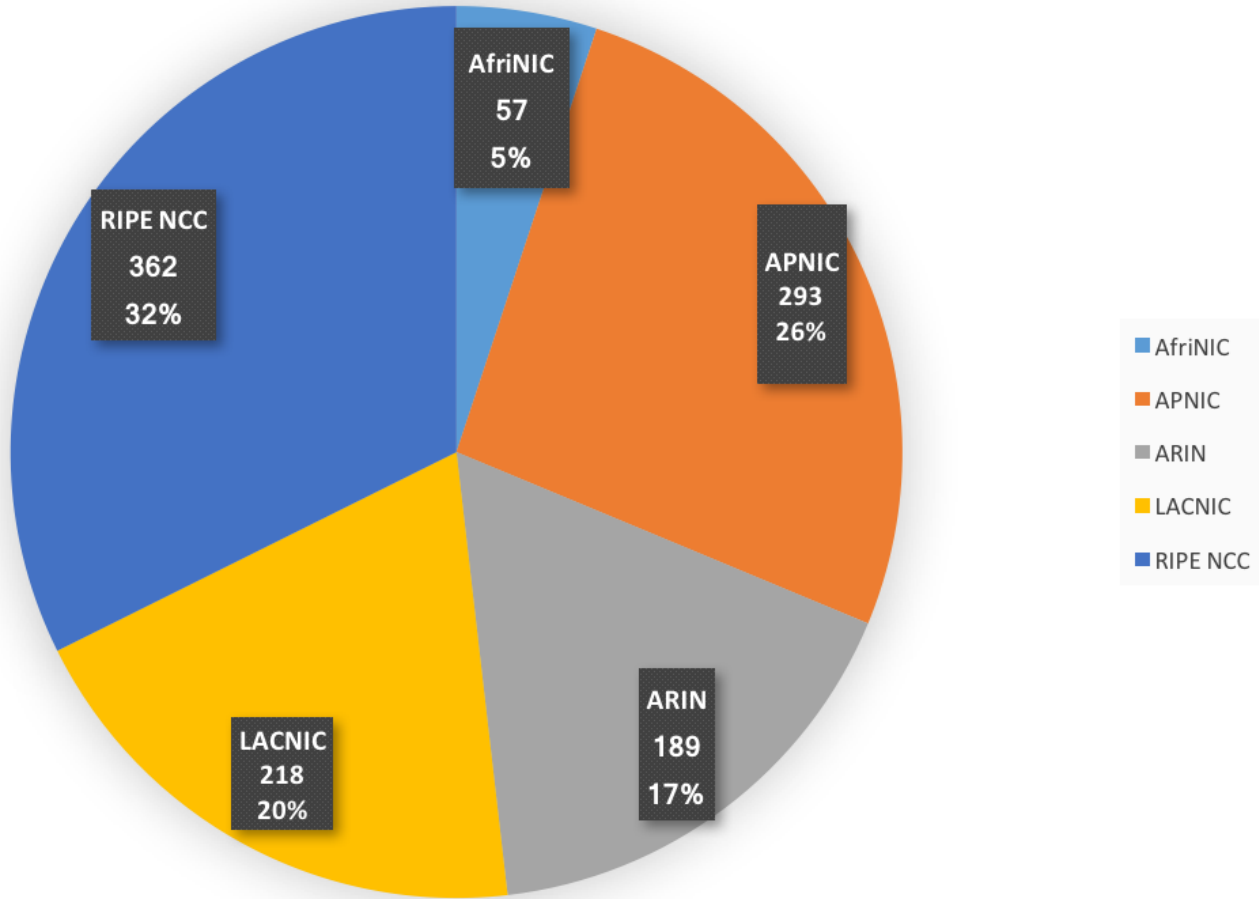
## IP version of Survey Responder

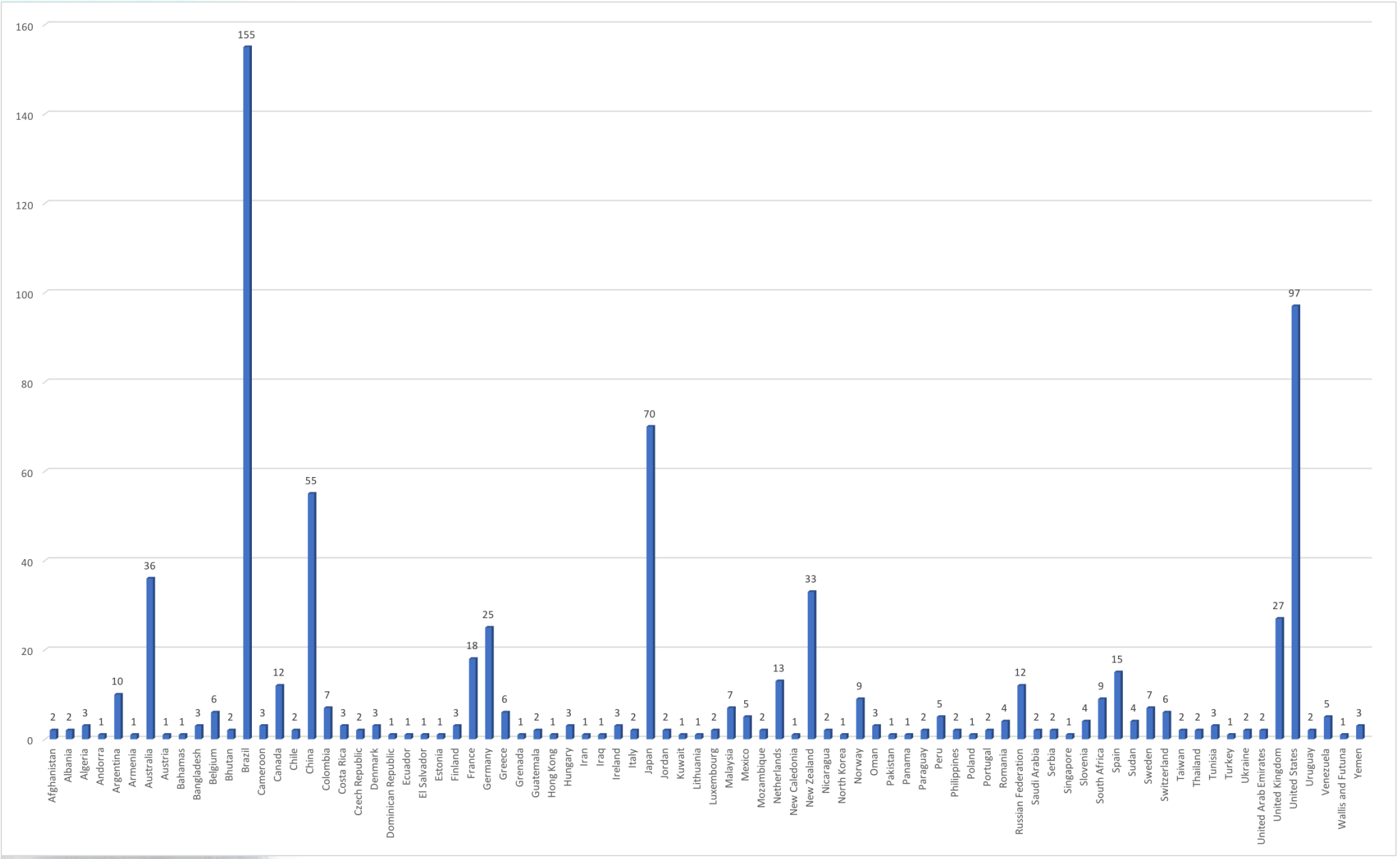


# Who is responding?

- Looking at whois ...
- ISP employees
  - From their own network most of the time
- Customers
  - Most of the time from their own residential networks
- Most of the responder “networks” have both IPv4 and IPv6 allocations
  - Responding with IPv4 from ISP network probably means, even if they have deployed IPv6 to residential customers, may be not in (all) the corporate LANs.
- Other observations, looking at bind and apache logs:
  - Happy-eye-balls timeout ...
  - Is that anymore needed? Time to retire it?
  - Hiding IPv6 network problems?

# RIR

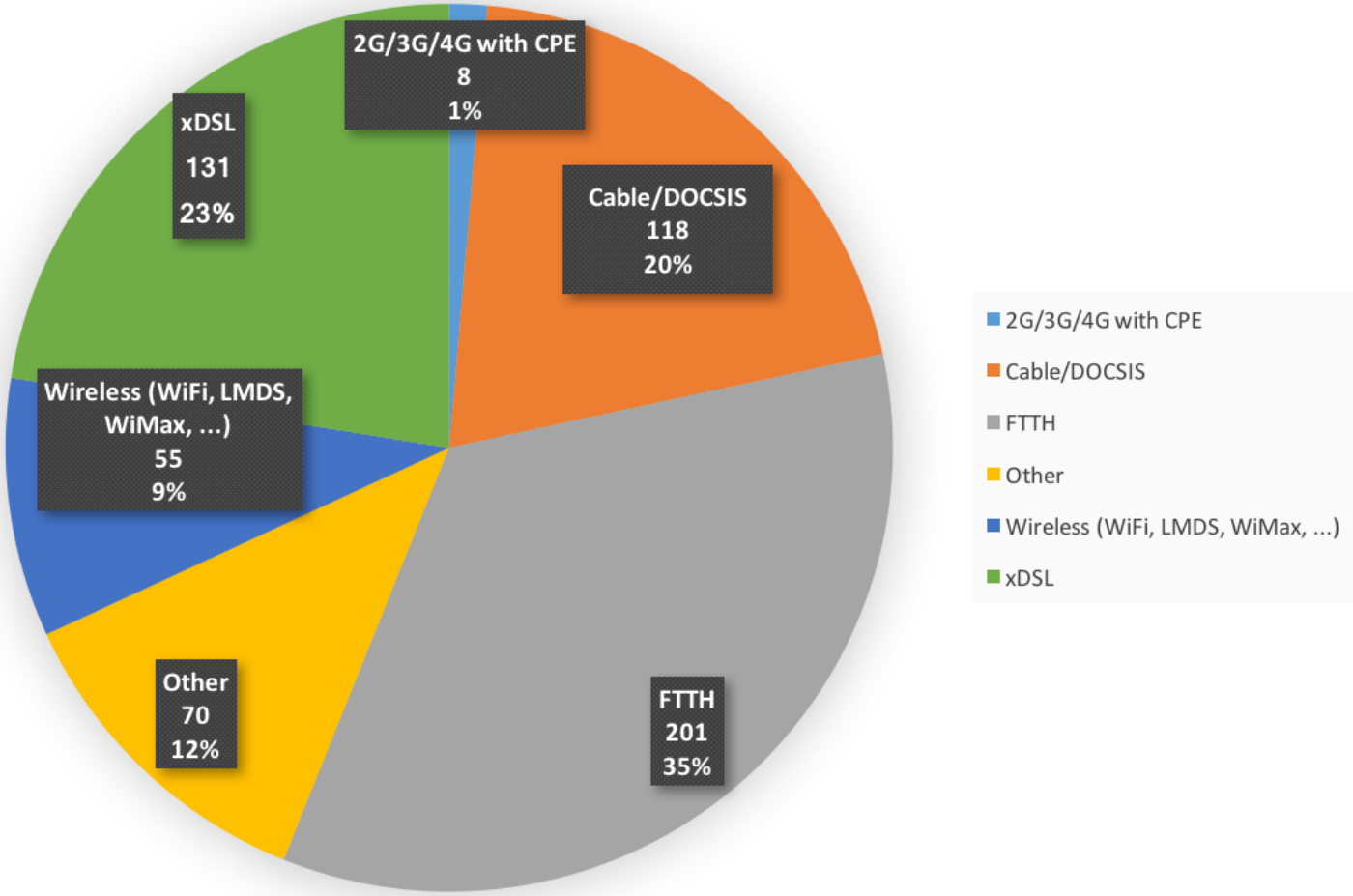




# Regional/Country analysis

- Is this meaning there are some regions/countries with a higher degree of residential deployment?
  - APNIC (Australia, China, Japan, Malaysia, New Zealand). Missing responses from Korea.
  - ARIN (US, Canada)
  - LACNIC (Argentina, Brazil, Colombia, Guatemala, Paraguay, Peru, Venezuela). Missing responses from Ecuador and Mexico.
  - RIPE NCC (Belgium, Denmark, Finland, France, Germany, Greece, Luxembourg, Netherlands, Norway, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, UK)
- Or instead regions/countries not doing it?
  - AfriNIC
  - LACNIC

# Technology

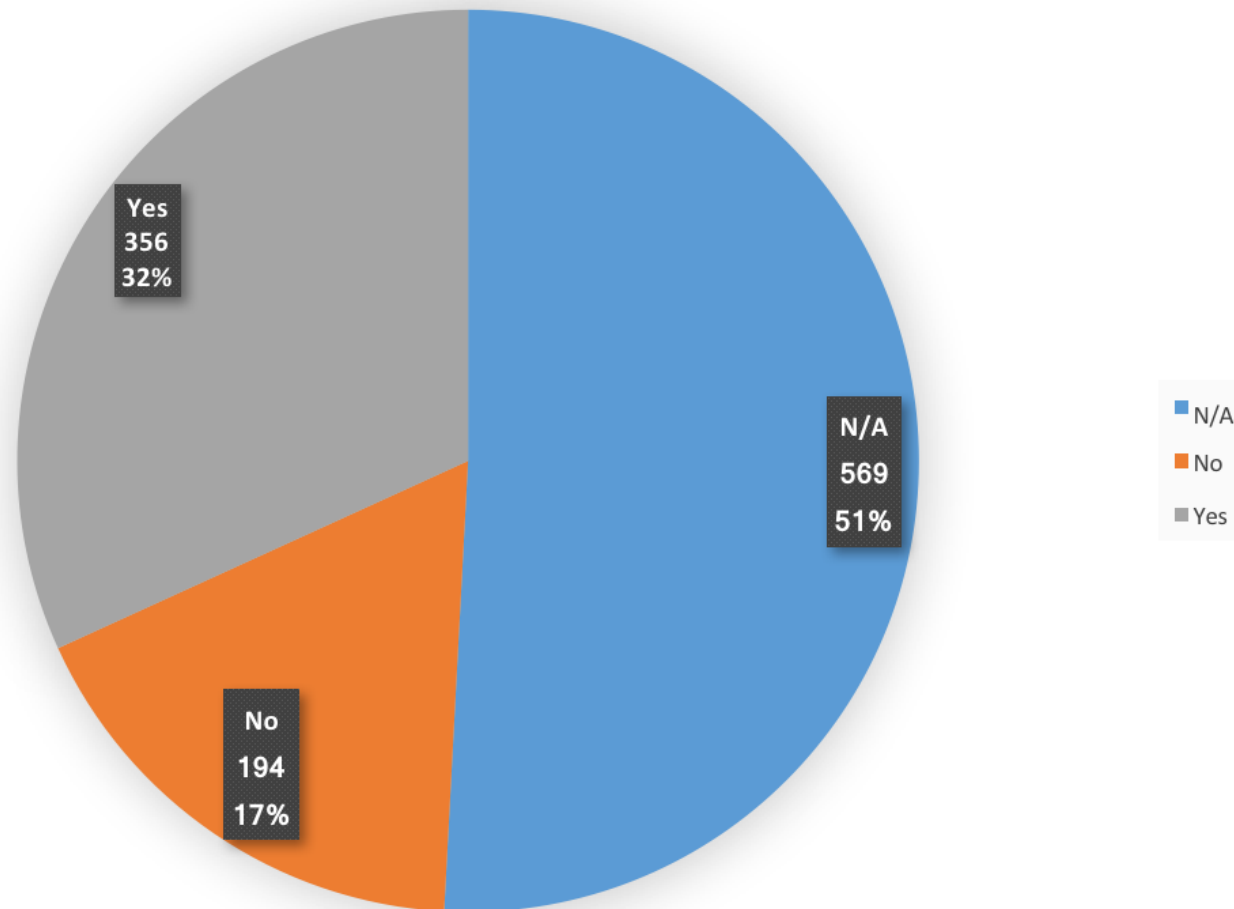




# Deployment differences by technology

- More deployment by “newer” technologies:
  - FTTH
  - xDSL
  - Cable/DOCSIS
  - Wireless (WiFi, LMDS, WiMax, ...)
- → Avoids investing in replacing CPEs
- Are there problems/dificulties with some specific access technologies?
  - According to the responses, I don't think so ...
- Vendor or transition technologies issues with some access technologies?
  - Nothing reported

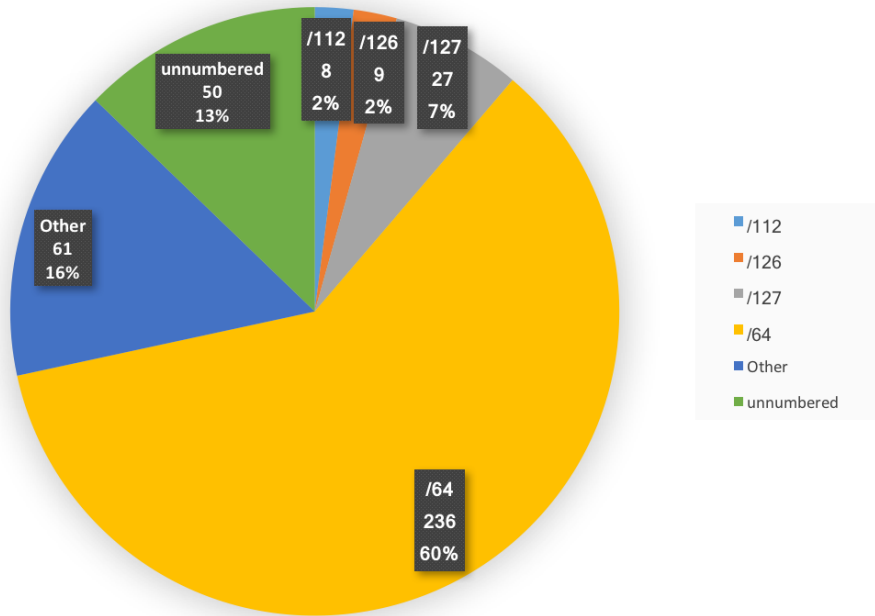
## Is IPv6 already a commercial service?



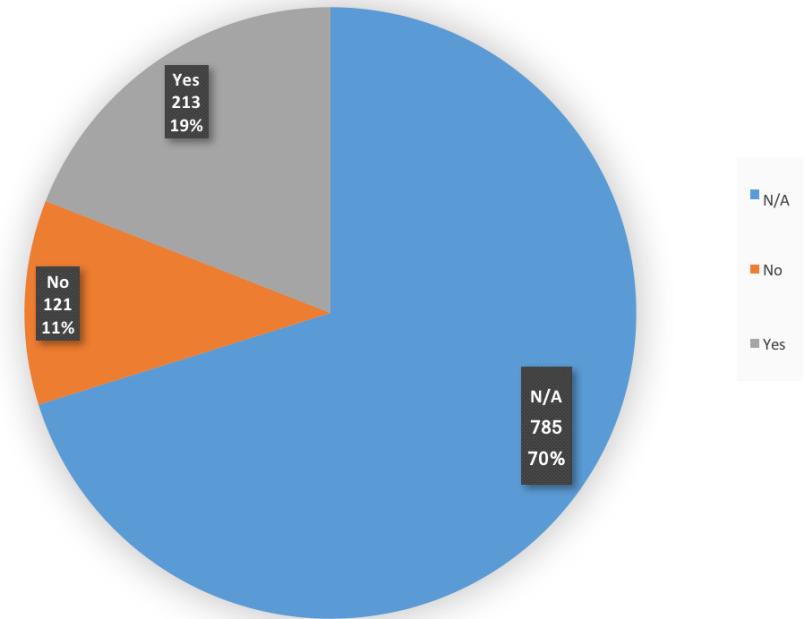
# Why still not commercial?

- 51% responses → No Answer, mainly customers or even employees of ISPs which really don't know.
- 32% Yes, already commercial
- 17% No commercial -> checked with some of the responders, they will go to commercial, typically it is a trial, but they plan to deploy (few months from now)

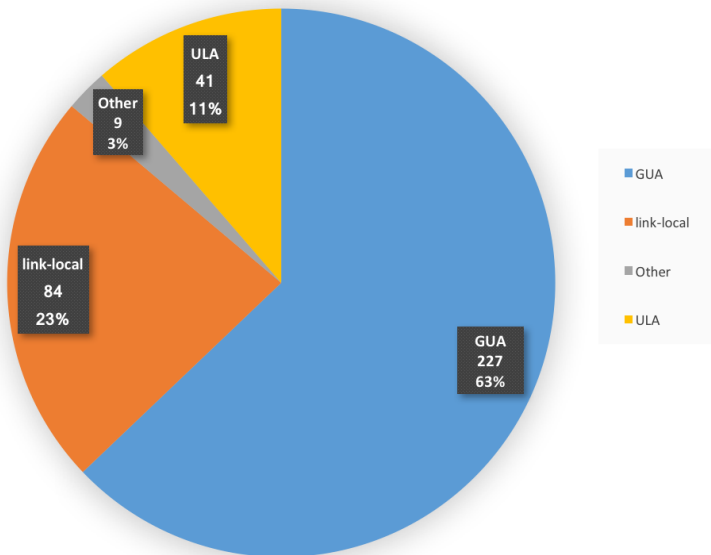
### WAN Prefix Size



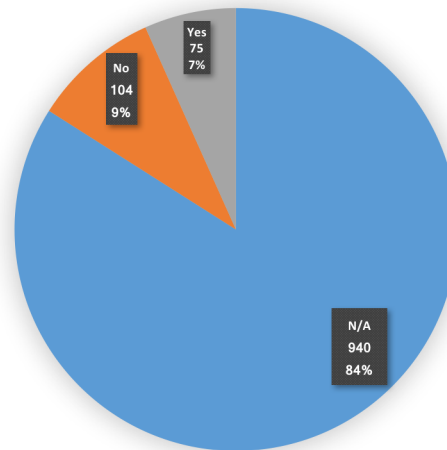
### WAN Prefix Stable



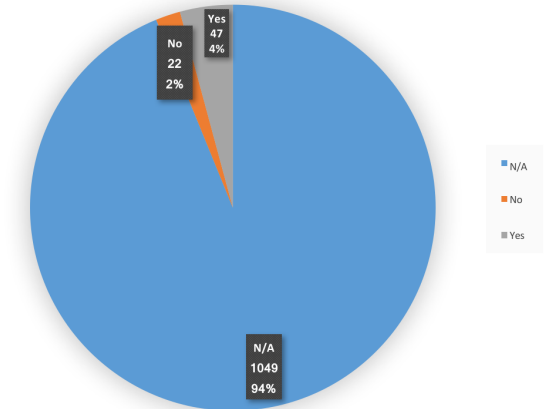
### WAN Addressing Type



### WAN from same pool as customer prefixes



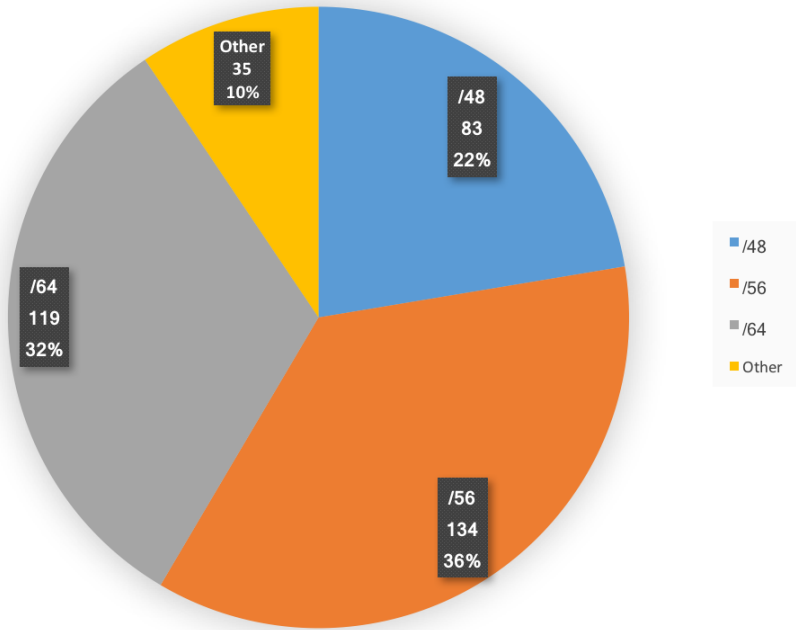
### WAN /64 from customer prefix



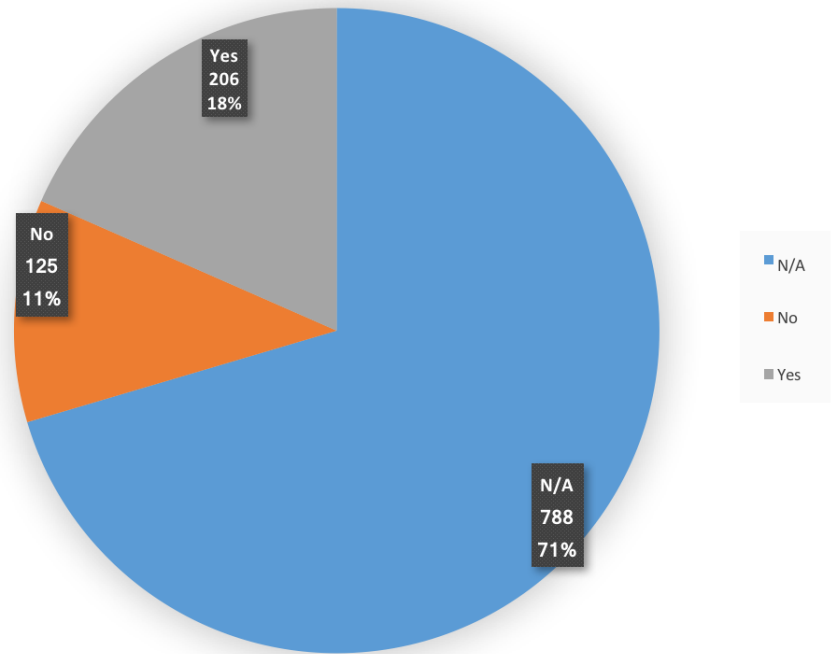
# WAN prefix issues

- Remarkable -> /64 60%
- What means other?
  - /128, /62, /60, /56, /48, /32 ... No comments
- Why not stable (11%)? -> Note 70% no answer
  - Provisioning systems?
- 63% using GUA
- Interesting figures about using the /64 from the customer allocated prefix
- Distribution of those technical aspects not related to any specific country/region

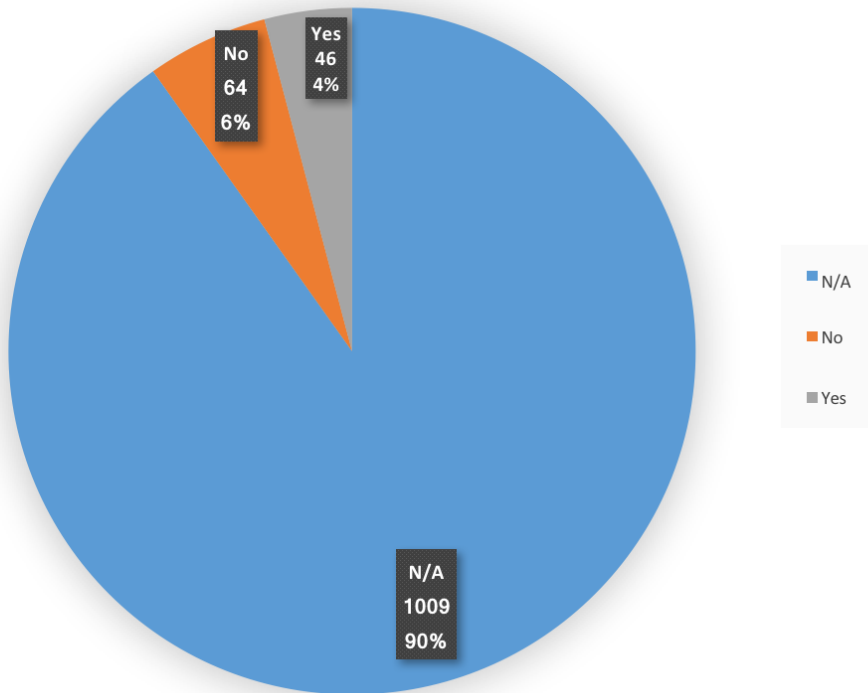
LAN Prefix Size



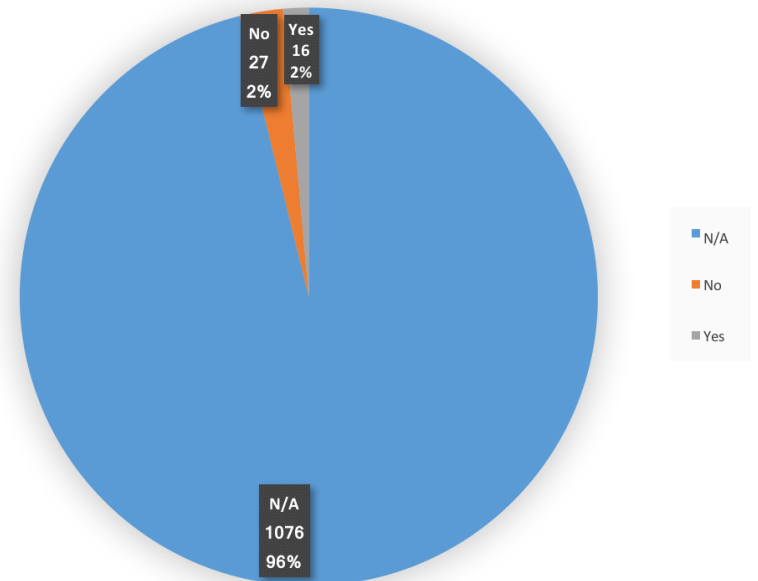
LAN Prefix Stable



Can the customer opt to have it "stable"?



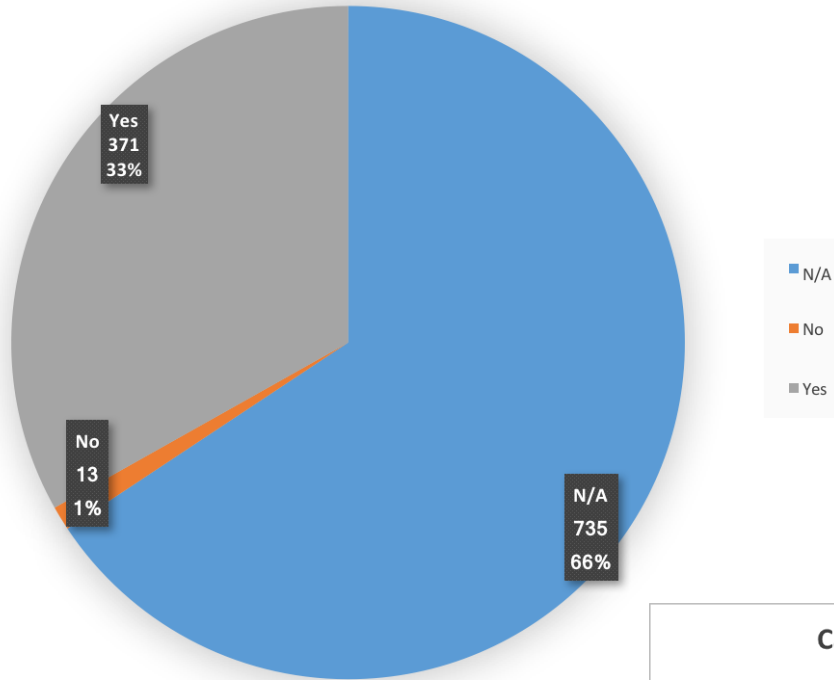
Extra cost (on top of stable IPv4)?



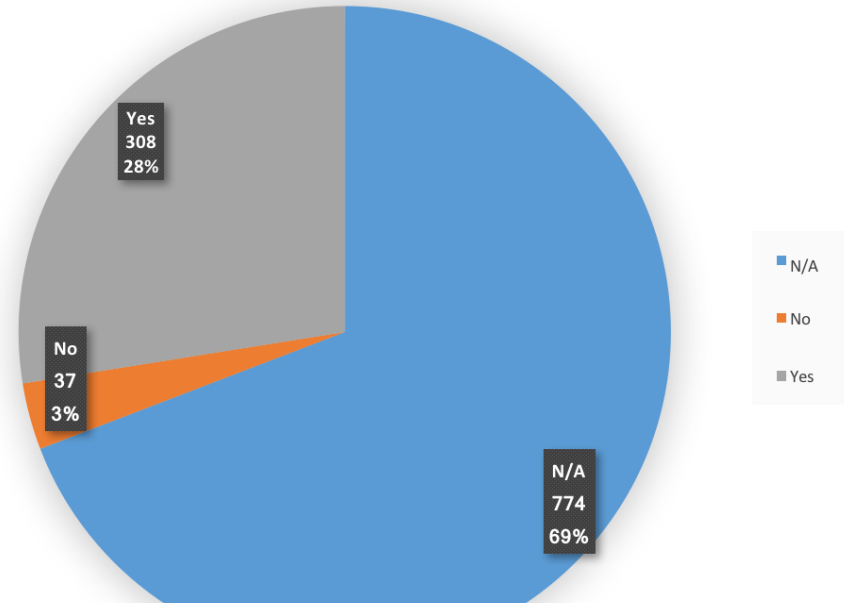
# LAN prefix issues

- What are the “other” sizes?
  - A few /60 and /62 (others ... /29, /44, /57, /127, /128)
  - Surprising (1) response -> shared /64
- Are we doing right/wrong? It is related to specific regions or countries?
  - 32% /64 mainly in LACNIC, some countries in APNIC
  - 36% /56 ARIN/RIPE NCC
  - 22% /48 mainly “more advanced” countries (Australia, New Zealand, Germany, Finland, Denmark, France, UK, China, Japan)
- Are we realizing that services work better with “stable” addressing?
  - AfriNIC, RIPE NCC and APNIC mainly stable
  - ARIN mainly not-stable
  - LACNIC half and half
- Why not allowing stable even as an “extra”?
  - Training issues? IPv4 mind-set?
  - Extra cost, very few

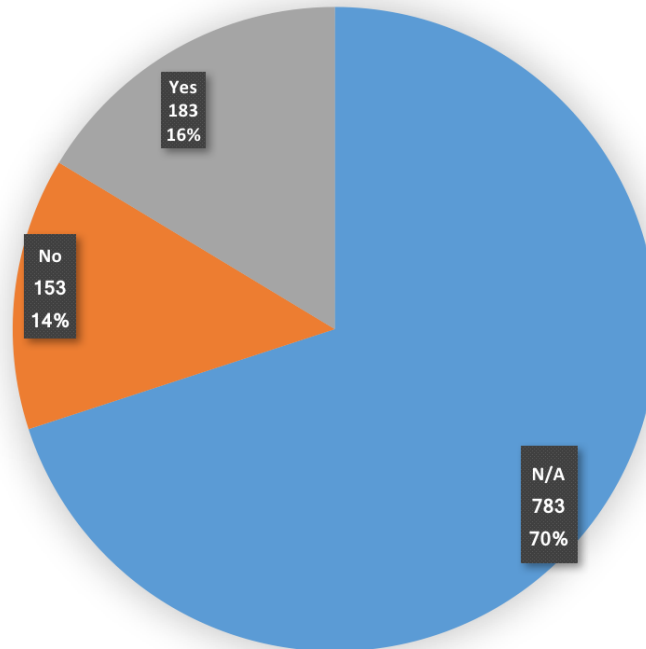
IPv4 service provided?



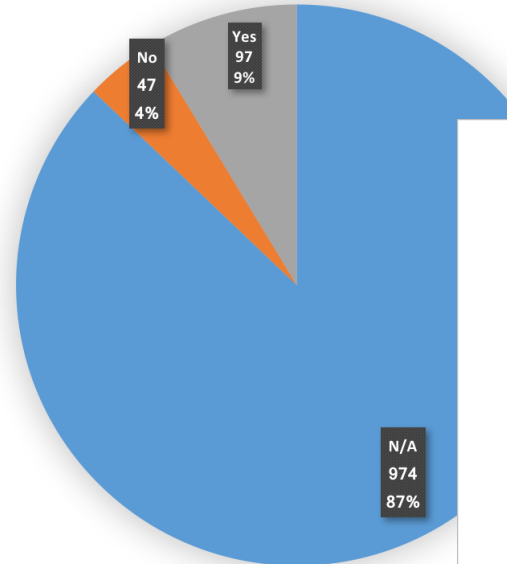
Public IPv4 address at CPE WAN?



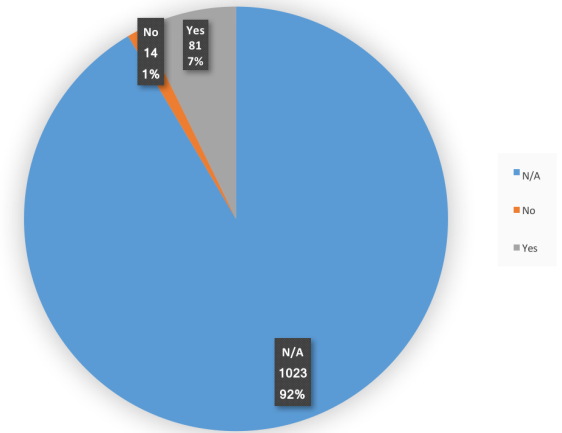
IPv4 address is "stable"?



Can the customer opt to have IPv4 "stable"?

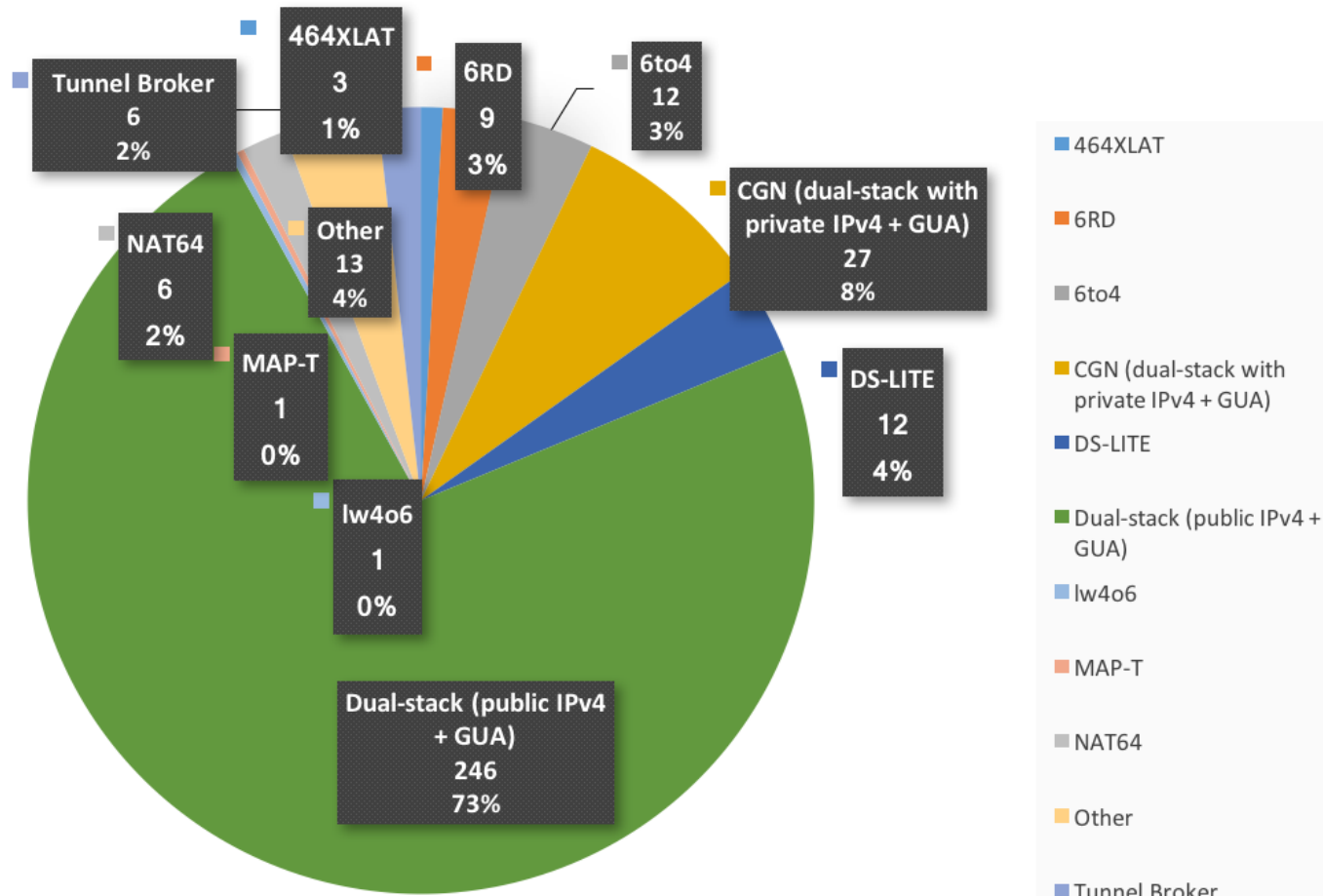


Extra cost for stable IPv4?





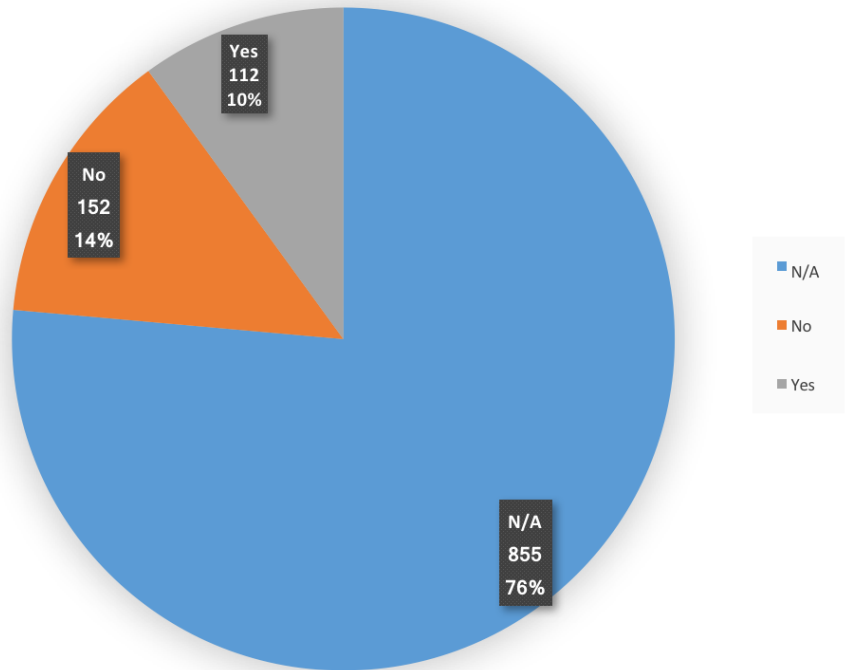
## What transition mechanism?



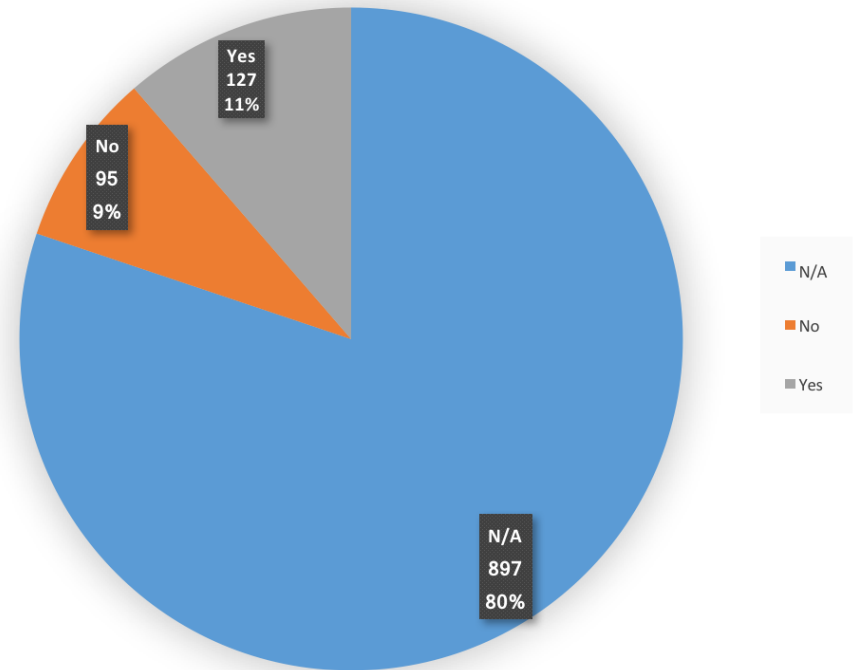
# Transition and IPv4 issues

- It is a trend not providing IPv4 in the access?
  - It means some transition technologies being used which don't require IPv4 in the access.
- Not related to specific regions/countries
- What other “transition” technologies?
  - Actually none, just “bad answers”
- CGN deployment increasing?

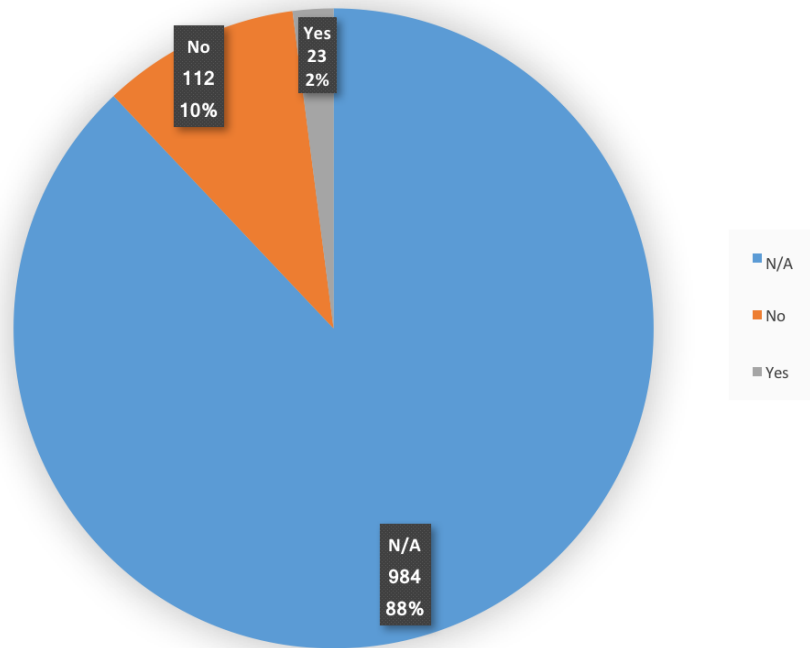
### IPv6 reverse DNS?



### NS Delegation for stable IPv6 prefix?



### DNAME for non-stable IPv6 prefix for PTRs?



# DNS

- Seems to follow “LAN IPv6 stable prefix”
- Reverse DNS as an extra service?

# Conclusions

- In general “correct” deployment
  - Some exceptions
- Misunderstandings on IPv6 technology/marketing/other reason:
  - IPv6 prefix size
  - Stability of prefix
- More “advanced” countries seem to do it smartly, less “misunderstandings”

# Thanks !!

**Survey link:**

<http://survey.consulintel.es/index.php/175122>

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