IPv6 taskforce FR

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(by ARCEP and ISOC FR)

London
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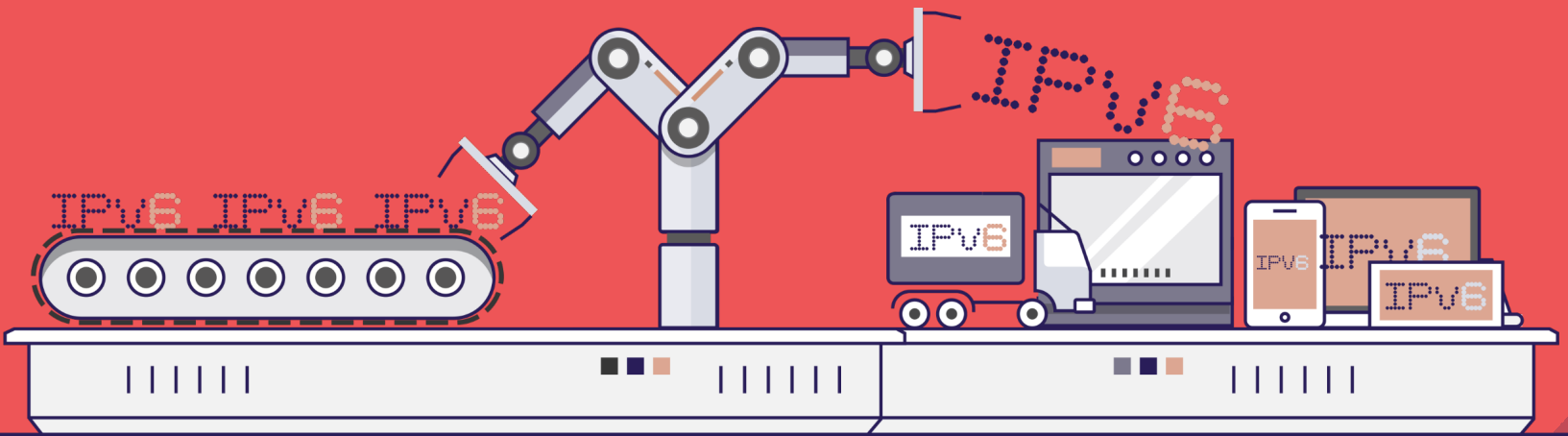


What will I address

::A ARCEP yearly IPv6 Barometer

::B Taskforce

::B:1 Handbook

::B:2 Next project

::D Carrier's choices

::E What's next for IPv6?

::A ARCEP Annual IPv6 BAROMETER

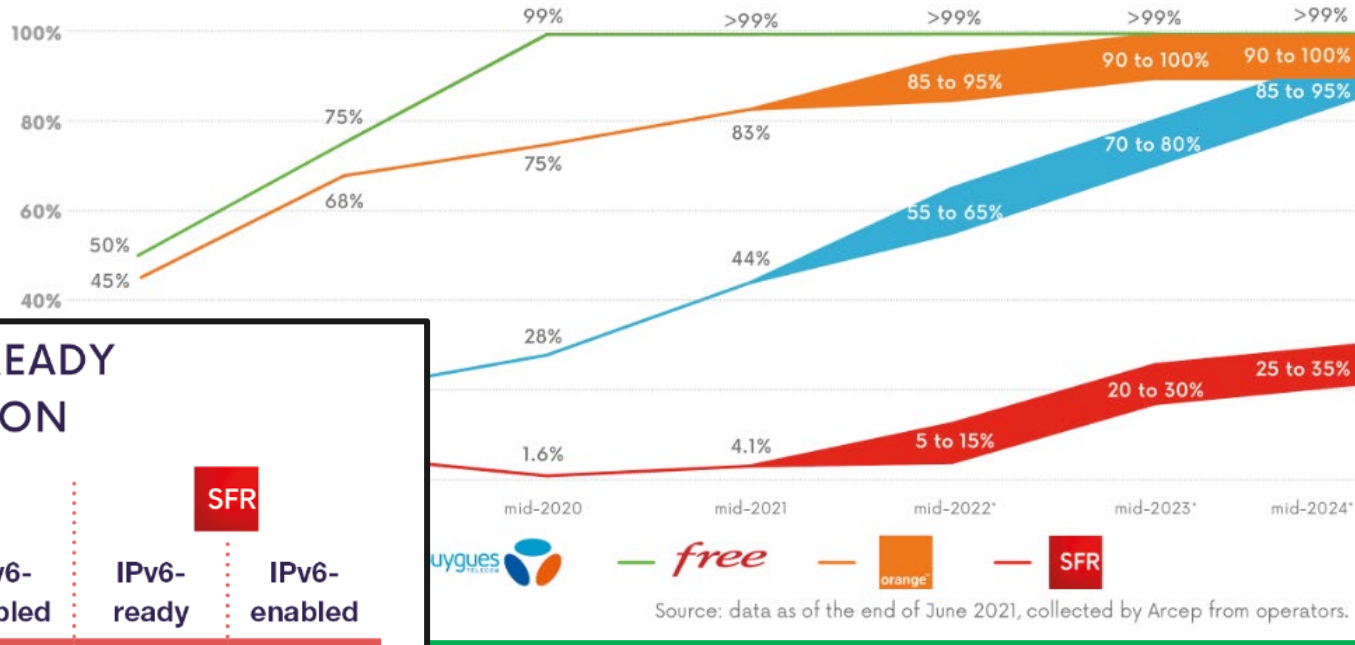
- Collect KPIs & forecasts
- Fine & granular report
  - Public VS Pro Customers
  - xDSL, Cable, FttH, mobile
  - Android, iPhone, (Both for Data and Tethering/hotspot)
  - Available VS enabled by default
  - IPv4 address sharing policy
  - Top domain AAAA and MX, IPv6 DNS server
- New questions in the next release

Some KPIs e.g

MOBILE NETWORK: PERCENTAGE OF IPv6-READY AND IPv6-ENABLED CUSTOMERS EVOLUTION

		bouygues		free		orange		SFR	
		IPv6-ready	IPv6-enabled	IPv6-ready	IPv6-enabled	IPv6-ready	IPv6-enabled	IPv6-ready	IPv6-enabled
Android	Mid-2019	100%	79%	0%	0%	100%	3%	0%	0%
	Mid-2020	100%	87%	0%	0%	100%	35%	2%	0.2%
	Mid-2021	100%	87%	100%	1%	100%	47%	100%	13%
	Mid-2022*	100%	85-95%	100%	not provided	100%	50-60%	100%	25-35%
	Mid-2023*	100%	85-95%	100%	not provided	100%	60-70%	100%	40-50%
	Mid-2024*	100%	85-95%	100%	not provided	100%	65-75%	100%	60-70%
Android tethering	Mid-2019	100%	79%	0%	0%	0%	0%	0%	0%
	Mid-2020	100%	87%	0%	0%	100%	15%	2%	0.2%
	Mid-2021	100%	87%	100%	1%	100%	35%	100%	13%
	Mid-2022*	100%	85-95%	100%	not provided	100%	40-50%	100%	25-35%
	Mid-2023*	100%	85-95%	100%	not provided	100%	50-60%	100%	40-50%
	Mid-2024*	100%	85-95%	100%	not provided	100%	60-70%	100%	60-70%

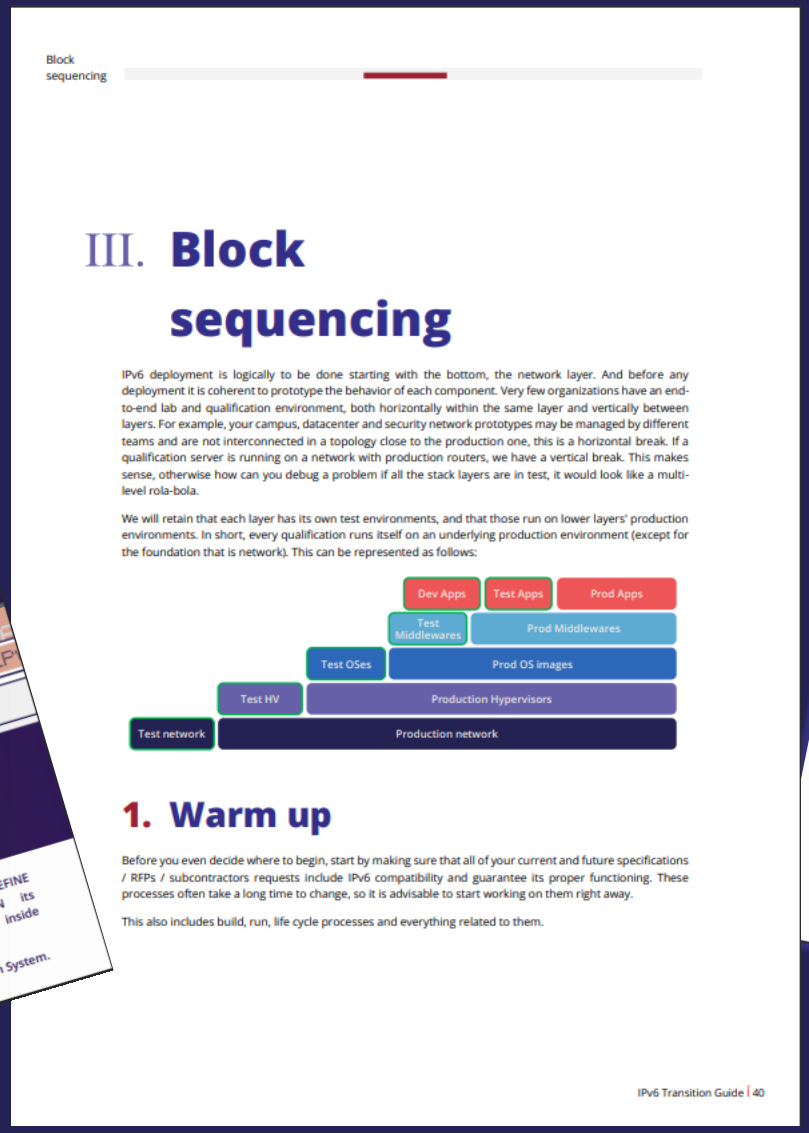
FIXED NETWORK: PERCENTAGE OF IPv6-ENABLED CUSTOMERS EVOLUTION

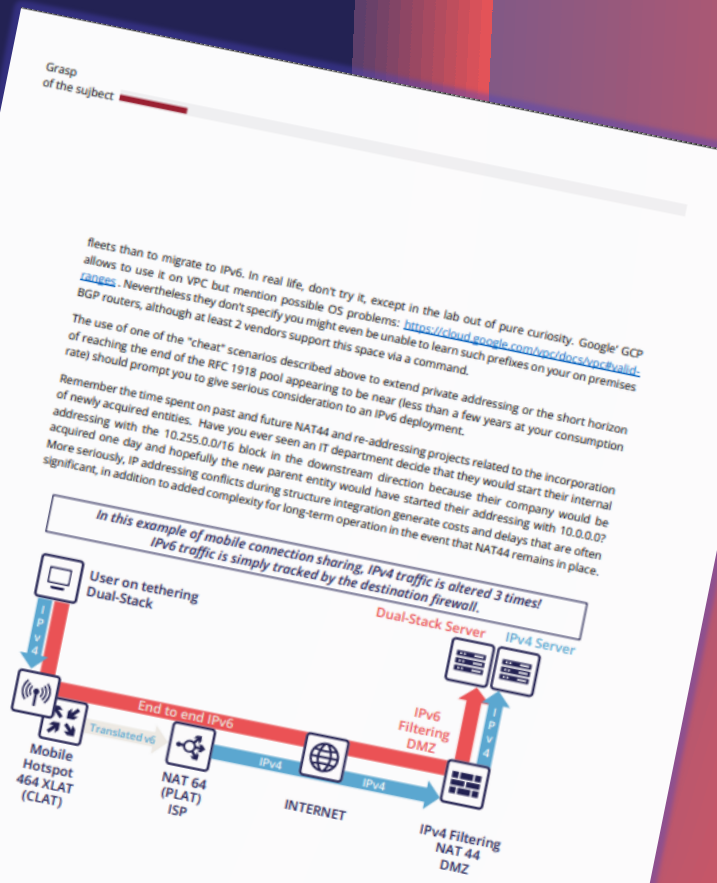


Source: data as of the end of June 2021, collected by Arcep from operators.

From late 2021 report

::B1 Handbook (124 pages)





en.arcep.fr/publications/task-force-ipv6.html

What's in ?
Double Stack or lighter :F00D: ?

- Help to know who you need and when
- Choose your path according to your needs
  - Scope, mechanism, process
  - Hiking through layers, in the right order
- Include many advices and best practices
  - Topology
  - Addressing
  - Security

Internal DC

- Servers
- VMs
- Containers
- Infra Services
- FW, IPS, SLB,...

DC access & Core NET

BACK HAUL

BACKBONE

Campus

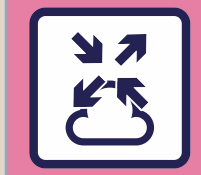
- Local Services
- LAN, Wi-Fi
- FW

Campus NET

Where to Deploy ?

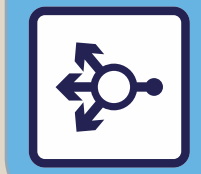
EDGE NETWORKS

Partner InterConnect



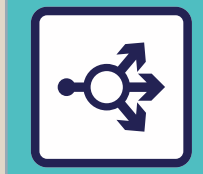
- Internet (IPsec, TLS,...)
- Private lines

Remote Workers



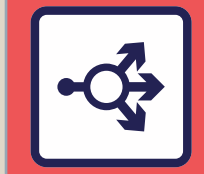
- VPN Gateways
- MDM
- Reverse proxies
- FW

Visible ressources



- Reverse proxies
- Front ends
- SLB
- DNS, MX
- FW

Common internet access



- Proxies
- SMTP, DNS
- FW

Cloud

Home Office

Client

Various

Some edges may be connected to internal DC with a shorter path, Campus may have local breakout internet, possibilities are endless...

Where do you need IPv6?

::B2 An ADRESS and then ?

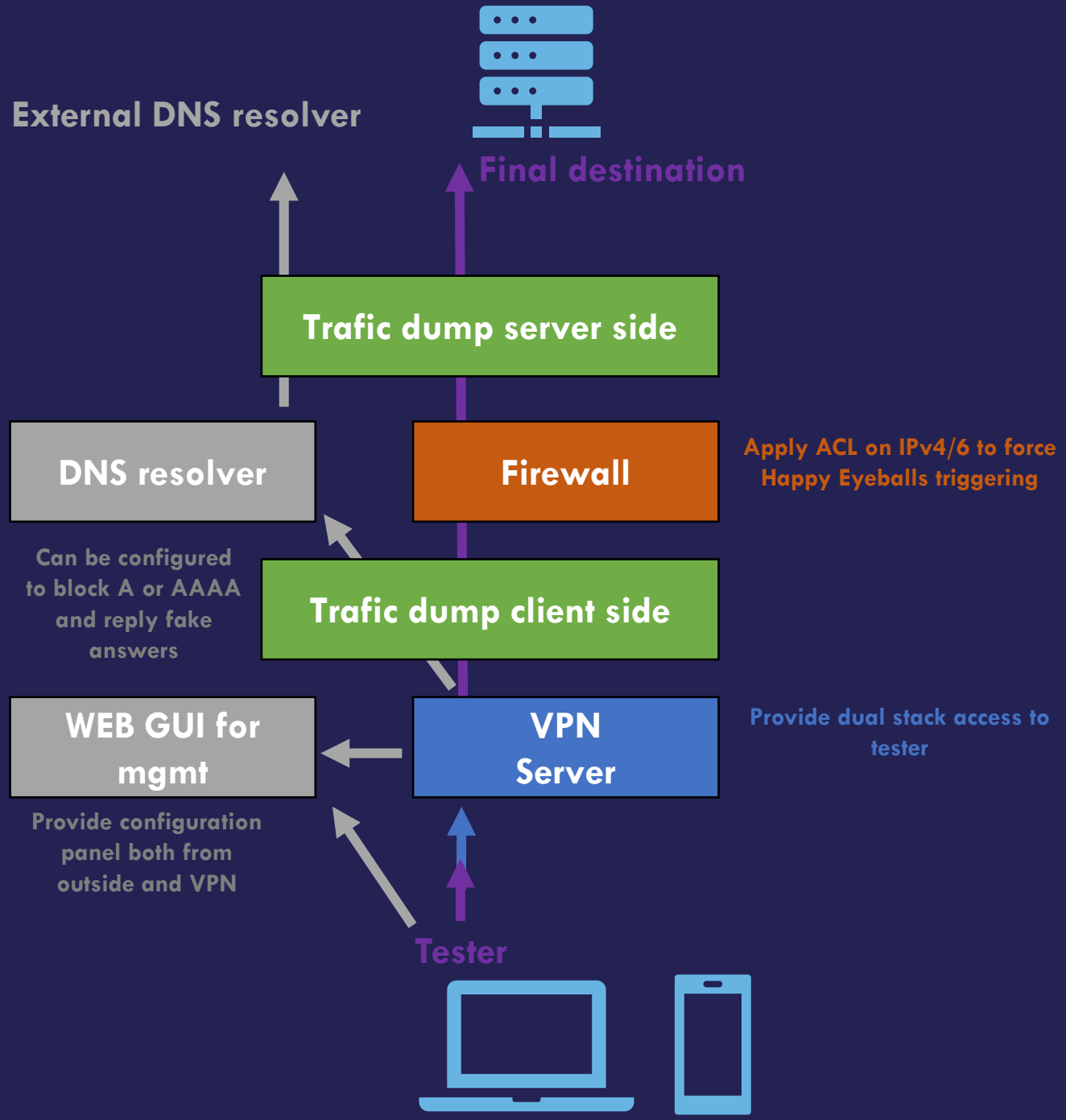
- Let people use all of IPv6
  - Router cascading with DHCPv6-PD, flush renumbering and many more
  - Port dynamic (PCP) and manual opening (tracking ND changes)
- Let developers try it
  - Provide easy testing connectivity through our next project
  - Check Happy Eyeballs

- Today, some consumer products softwares/games are still requesting you to disable IPv6!

::C Taskforce next project
Ensure same level user experience

- VPN Docker image to help developers to test IPv6
- Include IPv4/6 and DNS+stack cutoff to trigger Happy-Eyeballs
- Trafic capture included
- Web management portal
- Find compatible hosting services (L3 IP Docker no NAT, DHCP-PD)

Project is PoC candidate for ETSI IPE working group



::D Carrier's choices for broadband

- Many different technologies, different paths.
- DS-lite (include NAT44 on core, to avoid)
- Dual-stack and stick with it
- 6rd over IPv4 then dual-stack then 4rd over IPv6
- Dual-stack then MAP-T
- …
- Go stateless, 1 IPv4 < 32 customers
- Offload transition mechanism on CPE

What's next for IPv6?

- Specialized protocols
  - Transport, routing, higher functions
  - IoT, smart home, …
- SRv6
  - All in one collapse
  - Carriers, corps, mobiles,…
  - App awareness
  - Already in use in a few places

:FEED:BAC4::

- Join US
- Send your ideas, new topics to cover
- Translate

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Questions ?