

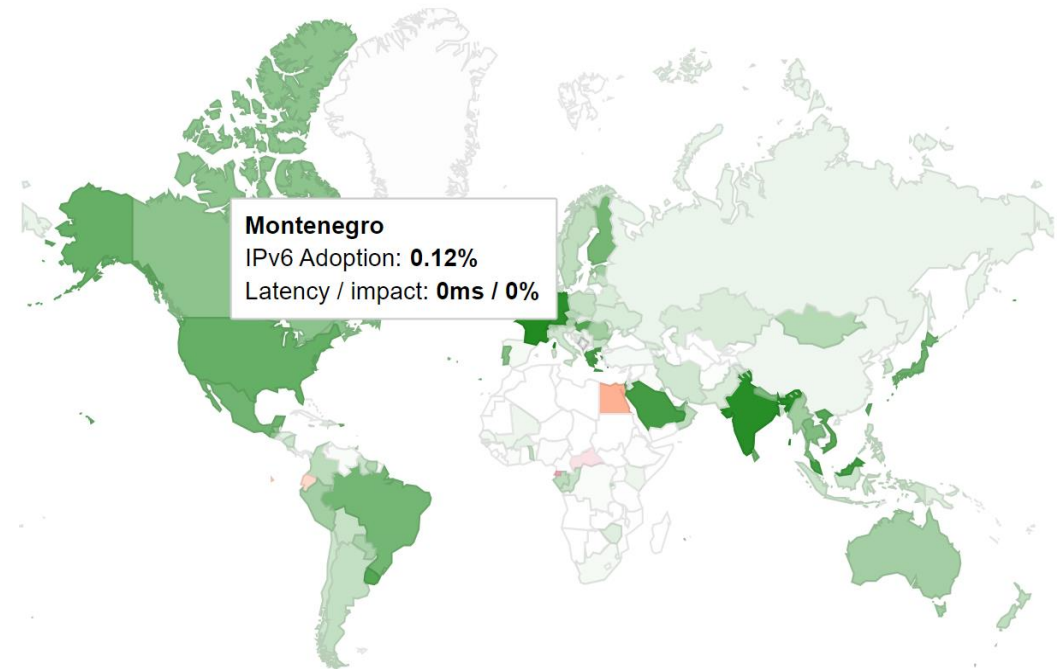
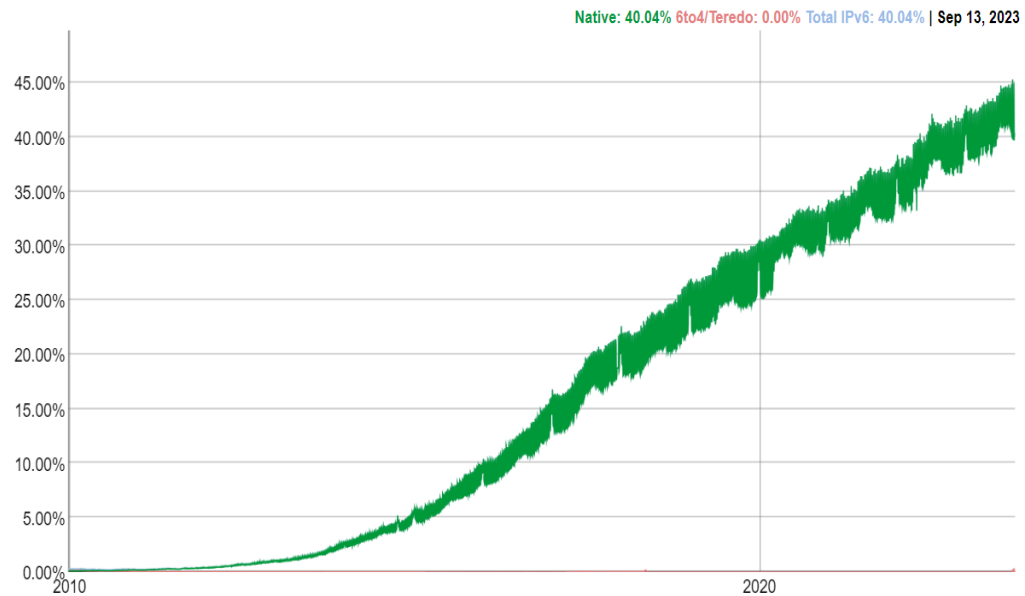
IPv6 transition – opportunities and challenges

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Where are we now with IPv6 adoption?



- The percentage of users that access Google over IPv6 is around 43% .
- IPv6 is used by 22.1% of all the websites
- Although IPv6 is future of Internet, adoption is slower than anticipated

Opportunities around IPv6

- Support for IoT and introducing new services
- Improved network performance and efficient routing
- Address space expansion
- No need for NAT, cost reduction
- Global connectivity and reachability
- Competitive advantage
- IPv6 expertise



Concerns about migrating to IPv6

- Hardware limitations in corporate and data center segment, dealing with legacy NEs
- Complexity and multi-vendor environment
- Required human and time resources
- Business requirements and costs associated to new infrastructure

- Security impact of IPv6
 - Dual-stacking
 - Header manipulation
 - Flooding
 - Mobility
 - DNS issues

OS IPv6 support

OS	Version	Claimed IPv6 ready	Installed by default	DHCPv6	ND RDNSS	Notes
Android	4.2	Yes ^l	Yes	No	Yes	Support for DHCPv6 (RFC 3315)
iOS	4.1	Yes	Yes	Yes	Yes	iOS supports stateless DHCPv6 since version 4 and stateful DHCPv6 since 4.3.1.
Windows Mobile	6.5	Yes	Yes	Lite	No	
Windows phone	8.1	Yes	Yes	Yes	No	

ONE Montenegro IPv6 allocation



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Total allocated subnets: 128K Total allocated subnets used: 0 Total allocated subnets free: 128K

⋮ [Create assignment](#)

IPv4

IPv6

ASN

[2a01:5da0::/32](#) >

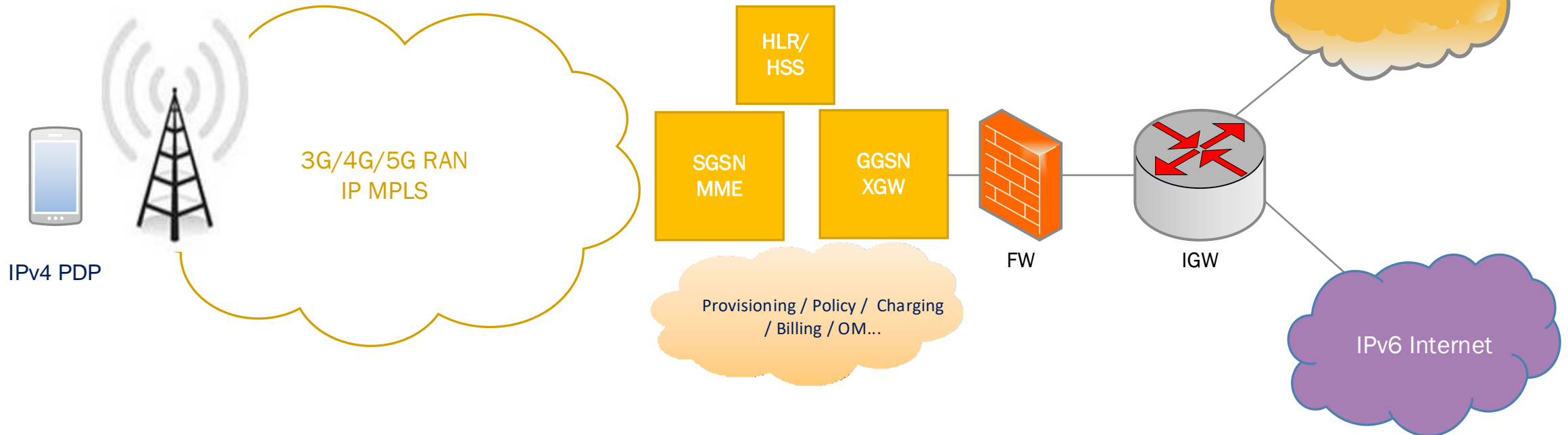
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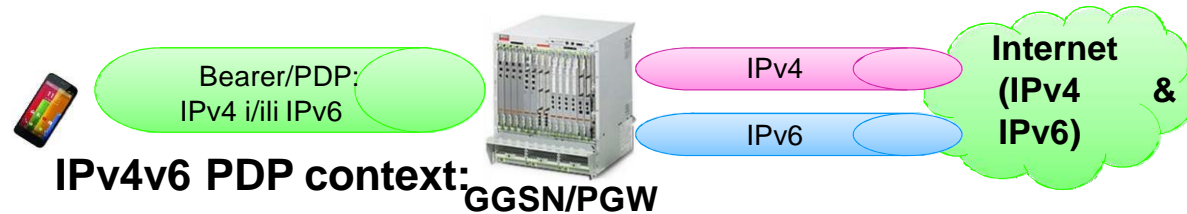
Current status of IPv6 in ONE network

- All network elements in core IP network support IPv6 functionality
- Dual stack active on Internet Gateway routers
- IPv6 peering was established with upstream provider in January 2021.
- IPv6 range assigned to One by RIPE is visible from our IGWs
- All Provider Edge (PE) routers in the IP MPLS network have support for IPv6
- In other network segments IPv6 is not activated



Transition option in ONE MBB network

- Preferred transition model is **dual-stack**



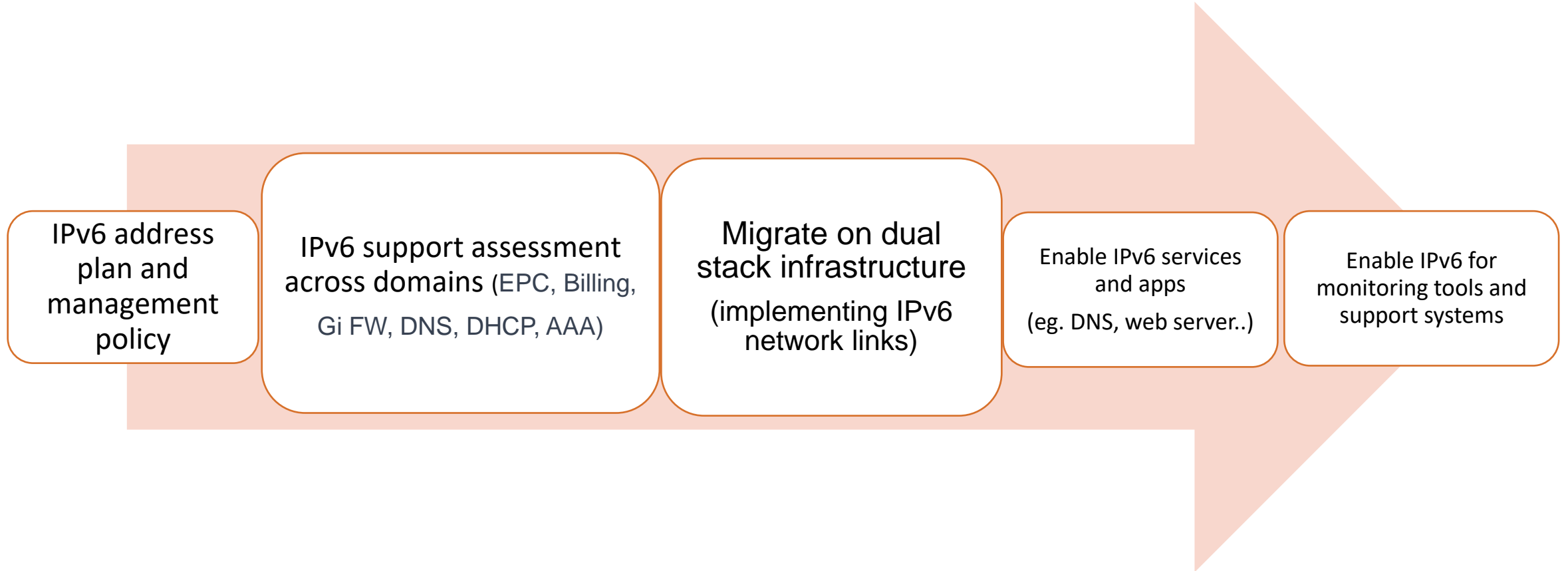
Dual Stack:

- IPv4 and IPv6 in parallel
- Bearer/PDP could be IPv4, IPv6 or both

- No changes on UE
- Without impact on 3GPP network architecture
- Does not introduce overhead (tunnel)
- Transport network agnostic
- No impact on QoS/bearer procedure between UE and PDN GW/SGW/GGSN
- With lowest risk on user experience during and after migration

Way forward

- Strategic planning and with “outside to inside” phased approach
- Launch Pilot project for transition (PoC deployment)



Thank you

