Considerations on IPv6 Migration in Mobile Broadband Network

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Talking to the future

IPv6 Migration Solutions On Table

- Dual Stack
  - Temporarily allocate IPv4 address to UE for IPv4 Service
  - Dependent on Service network to upgrade to IPv6, if most service doesn’t support IPv6, IPv4 exhaustion will not be resolved.
  - Services provided by operators could be upgraded to IPv6 firstly.
- NAT64+DNS64
  - NAT64 Server needed to translate UE IPv6 address into IPv4;
  - Only support IPv6 client initiated service
  - Drafting stage in IETF

IPv6 Migration Solutions On Table

- DS-Lite
  - Possible Overlapping IPv4 Private address
  - IPv4 in IPv6 encapsulation, or GTP/GRE encapsulation
  - CGN behind PGW (v4 in v6) or combined with PGW (GTP/GRE/DSMIPv6), NAT4-4 in CGN
  - Drafting stage in IETF
  - Possible NAT chaining……
  - May not solve shortage of public IPv4 address
- A+P
  - A complementary solution to the DS-Lite
  - Same public IPv4 address to multiple UE
  - Less efficient than centralized NAT
  - IPv4 Address allocation procedure in 3GPP needs to be modified

IPv6 Migration Solutions On Table

- The Gateway Initiated DS-Lite
  - P-GW as a DS-Lite Client establishes a tunnel toward CGN on behalf of UE
  - Can be deployed into existing 3GPP networks
- PNAT
  - Intermediate layer between IPv4 application and IPv6 protocol stack in UE
  - No need to upgrade the applications from IPv4 to IPv6

IPv6 Migration recommendation

- Dual Stack with operator controlled services upgrading to IPv6
  - This are services with always on requirement
  - For example: IMS, IPTV, M2M…
- Temporary IPv4 for IPv4 Internet Services, with NAT support
  - With help of transition technologies like: A+P, DS-Lite, NAT64…

IPv6 Supported by ZTE CN

- ZTE xGW supports User Plane IPv6 from Day 1 (Fully compliant with R8 TS23.401):
  - PDN type: v4, v6, v4v6
  - IPv6 stateless allocation
  - DHCPv6 Client/Server
  - IP Parameter configuration via stateless DHCPv6
  - Support of Dual Address Bearer Flag
- PNAT
  - Collaborating with China Mobile
  - Developing PNAT44com and RTP/RTSP ALG, now under testing
- NAT64 is available

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Thanks!

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