

# Considerations of Gradual IPv6-only Deployment in 5G Mobile Networks

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# Document Core Objective Review

- The purpose of this draft is to explore how to gradually and incrementally deploy 4G LTE-based IPv6-only technology in 3GPP 5G networks.
- It's based on our operational experience, analyzing the challenges encountered and discussing potential solutions
  - IMEI-based Network-side Configuration (Section 5.2): Utilizing device identifiers to identify CLAT-capable terminals.
  - Option 108 (DHCPv4) Method (Section 5.3): Briefly reviewed its principles and limitations.
  - Delivering PREF64 and DNS64 via RA (Section 5.4): Introduced this as a key solution, leading to the next chapter.

# Key Content of This Update (-02 Version)

- Building on the previous version, this update further refines and deepens the deployment solutions, particularly by adding a detailed analysis and configuration considerations for the APN isolation method. The main updates include:
  - PDP Context / APN Isolation Method (Section 5.1): Key Update. We delved into how to leverage inherent 3GPP APN/DNN mechanisms to assign different logical networks to various user groups. We detailed its advantages and complexities
  - Added Deployment Scenario Analysis (Section 6.5): Elaborated on the specific value of this solution in scenarios like "coexistence of IPv6-only and dual-stack users," "phased rollout of DNS64 services," and "multiple DNS server tiers."

# Pilot Lessons: The APN Isolation Approach

## Background

- In early trials, we attempted to control the scope of IPv6-only enablement by assigning dedicated APNs to individual users.
- For example: pilot users received "ipv6only.apn," while regular users used the default dual-stack APN.

## Issues Encountered

- High operational burden: Required per-user subscription data modifications, making dynamic adjustments difficult.
- A significant number of existing terminals in the market do not support CLAT functionality. However, operators currently lack effective discovery mechanisms to determine whether a given terminal is CLAT-capable. Without such visibility, it is risky to unilaterally provision IPv6-only APNs for users, as this may lead to service failure.
- Moreover, users may switch terminals—from a CLAT-enabled device to a non-CLAT device—during the lifecycle of a subscription, as this may lead to service failure.

# What is the next?

- Seeking Feedback: We highly value the working group's opinions on the pros, cons, and applicability of the various deployment solutions, especially the APN isolation method versus the RA option mechanisms.
- Adopted as a WG draft and refine this document into a guide that truly provides value to deployers. We welcome your input on:
  - What other deployment pain points should be included?
  - Are our lessons learned broadly applicable?

Thank You