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# Comparison of IPv6 Transition Technologies for IPv4aaS

draft-Imhp-v6ops-transition-comparison-02

## Document Goal

*“To provide operators with an unbiased reference document that assists their assessment of which IPv4aaS technology is the most appropriate for their requirements.”*

# Demystify the IPv4aaS Mess

Focus on the most popular technologies:

- 464XLAT
- DS-Lite
- Lw4o6
- MAP-E
- MAP-T

Ignoring the least popular methods:

- 4over6
- 4rd
- LISP
- GREoIPv6

# Document Sections

- Technology overview and basic comparison.
- High level architecture of each technology.
- Detailed analysis.
  - Highlight the differences between each technology.
  - Identify currently available support.
  - Highlight possible regulatory concerns.

# Key Points Discussed

- IPv4 Address Sharing
  - Location of NAPT44.
  - Tradeoff between port number efficiency and stateless operation.
  - Regulatory logging requirements and support.
  - Inbound “server” support.
- Performance / Scalability
  - Stateful vs Stateless.
  - Load sharing / Anycasting.
- Typical Deployments
- Provisioning Options
- Security Considerations
  - Code Size.

## Changes since -01

- Ian Farrer joined as an author.
- Additional details and figures were added to the description of the five IPv4aaS technologies.
- Restructured the description of the five IPv4aaS technologies and moved to a separate section.
- Completely rewritten the "High-level Architectures and their Consequences" section.
- Several additions and clarification throughout the "Detailed Analysis".

# Additional Work

- Performance & scalability measurements
  - Using methodology defined by RFC 8219
    - Implementation of a stateless NAT64 Tester in DPDK is in progress
    - We are looking for volunteers for implementing RFC 8219 compliant software testers for other technologies
- Security Analysis.
  - Using the methodology defined by:
    - G. Lencse and Y. Kadobayashi, "Methodology for the identification of potential security issues of different IPv6 transition technologies: Threat analysis of DNS64 and stateful NAT64", *Computers & Security* (Elsevier), vol. 77, no. 1, pp. 397-411, August 1, 2018, DOI: 10.1016/j.cose.2018.04.012
    - Free version is available: <http://www.hit.bme.hu/~lencse/publications/ECS-2018-Methodology-revised.pdf>
- Add a “Legacy Technologies” section outlining reasons for discounting them.
  - 4over6, 4rd, LISP , GREoIPv6, etc.
- Your suggestions?