Enhanced Dual Stack (EDS) and the Need for an HEv3 OS Implementation Profile

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https://datatracker.ietf.org/doc/draft-xiao-v6ops-eds/

Why EDS: Reducing IPv6 Deployment Risk

Current enterprise IPv6 deployment

- Rule-based IPv6/IPv4 selection, not performance
- Degraded IPv6 may still be preferred
- Heavy pre-validation before switching on IPv6
- Miss one problem → users see failures / delays

=> Front-loaded work; high-risk judgment moment

EDS objective

- If IPv6 works, use IPv6; otherwise, use IPv4
- Provide info why IPv6 not selected to support problem fixing

=> Little risk to deploy dual stack, fix problems over time

What EDS Adds: Three Complementary Enhancements

1. OS/platform HEv3 profile - HAPPY

- HEv3 in common host networking facilities: OS, platform library or transport stack
- Applications inherit HEv3 without code changes

2. Compatibility path - v6ops + 6man

- For getaddrinfo() + socket() + connect()
- Preserve APIs and app semantics
- Order candidates by policy + recent performance
- Avoid repeated degraded paths
- No real-time HE-style racing

3. Selective diagnostics - HAPPY / v6ops / 6man

- Show which address family was attempted and selected
- Explain failure, race loss, policy or historical de-prioritization
- Identify repeated IPv6 problems
- Limit reporting to useful, privacy-conscious information

Ask to HAPPY WG

1 Define the HEv3 OS/Platform Implementation Profile

- Goal: most apps benefit from HEv3 without implementation work
- How: HAPPY WG decides. Ideas:
  - Clarify eligible facilities: OS, library, transport stack
  - Define profile behavior: async DNS, candidate ordering, racing
  - Decide location: in HEv3 draft or another companion HAPPY doc

2 Define Selective Operational Diagnostics when IPv6 is not used

- Distinguish: failure / lost race / deprioritized / not attempted
- Provide context to find recurring IPv6 problems
- Define semantics, not a telemetry protocol
- Include privacy, authorization and data minimization

Please read the draft and comment. Thank you!