Isolating Hosts in Layer-2 and Layer-3 to Simplify ND and IPv6 First-Hop Deployments

draft-xiao-v6ops-nd-deployment-guidelines-00
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Why & What

• Why
  • Many RFCs about known ND issues and solutions, no single place of reference
    • RFC6583, RFC 9099 help, but not complete
  • No draft on how to avoid issues; no deployment guidelines
  • This draft fills these 2 holes

• What
  • Analyze existing solutions and extract the wisdoms
    • Isolating hosts in L2 and L3 can be effective in preventing ND issues
  • Describe where to isolate hosts to avoid issues, and how to select suitable solutions for remaining issues.
  • Analyze impact of host isolation to IPv6 first-hop
Unique Contributions

• 1\textsuperscript{st} draft to distinguish L2 isolation and Unique Prefix Per Host (UPPH)
  • L2 isolation: a host cannot send packets via the L2 medium to other hosts. The 1\textsuperscript{st} hop router is the only node reachable in L2.
  • L3 isolation: separate hosts in different subnets, a.k.a UPPH
  • Due to MLSN (multi-link subnet), L2 isolation $\implies$ UPPH

• Analyzed pros and cons of L2 isolation & UPPH, and their applicability
  • Extract key points from 100+ debate messages about pros and cons of UPPH - valuable insights about ND

• Discussed how to avoid ND issues, and provided deployment guidelines
Suggestions for Reading the Draft

• Do not assume the draft advocates host isolation everywhere
  • Guidelines provided on where not to use host isolations

• Do not assume L2 isolation → UPPH

• Give the draft some benefit of doubt when you have a disagreement
  • We did months of fact checking about what we wrote

• Please review and comment
  • Thanks go to Ted Lemon, Brian Carpenter, Michael Richardson and private commenters

• We welcome further contributions