DHCPv6 Prefix-Length Hint Issues

draft-cui-dhc-dhcppv6-prefix-length-hint-issue

Yong Cui, Tianxiang Li, Cong Liu
Motivation

• RFC3633
  • allows a client to send a prefix-length hint to the server to indicate its preference for delegated prefix length;
  • Unclear about the client and server behaviors in situations involving the prefix-length hint;

• This document
  • Summarizes existing unclear edges cases involving the prefix-length hint
  • Provides guidance on client/server behavior
  • Optional guideline, no mandate requirement
Solicit

• Situation: client requires a prefix length different from its previous prefix

• Problem:
  • Client: How should the client indicate whether it wants a different prefix or the previous prefix?
  • Server: Whether to honor requested prefix-length hint or return the previous prefix?
Solicit-proposed solution

• Client behavior:
  • Prefer specific length
    • prefix-length field: preferred prefix-length value
    • IPv6 prefix field: zero
  • Prefer previous prefix
    • prefix-length field: length of the prefix
    • IPv6 prefix field: previous prefix value

• Server behavior:
  • If client included prefix-length hint, try to honor hint
  • If client requested for a prefix
    • try to provide the requested prefix first
Advertise

• Problem: None of the received prefixes match the prefix-length hint

• Proposed solution - Client behavior:
  • Could use the received prefix
    • Choose prefix length closest to the prefix-length hint
  • Could not use the received prefix
    • Ignore the Advertise messages and continues to Solicit for the preferred prefix at defined intervals to avoid traffic congestion
Renew

• Situation: client prefers prefix length different from current using prefix;
  • E.g. Hint not honored during Solicit
  • Preferred prefix might become available during Renew

• Proposed Solution:
  • Client should include two IA_PD Prefix options, in the same IA_PD option
    • One containing the current prefix
    • Other containing the prefix-length hint
Renew

- The server could do one of the following depending on server policy:
  1. Renew just the original delegated prefix
  2. Renew the original prefix and assign a new prefix of requested length.
  3. Give the original prefix 0 lifetimes, and assign a new prefix.
  4. Give the original prefix 0 preferred-lifetime, a short non-zero valid-lifetime, and assign a new prefix.
Next step

• Reviews and Comments are appreciated
  • Whether we've covered all the possible issues in the "problem description" section
  • whether the "proposed solutions" are feasible

• Thank you!