

DHCPv6 Prefix-Length Hint Issues

draft-cui-dhc-dhcpv6-prefix-length-hint-issue

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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: Non 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!