Current Issues with DNS Configuration Options for SLAAC
(draft-gont-6man-slaac-dns-config-issues)

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Background

- Two ND options convey DNS-related info:
  - RDNSS: Recursive DNS servers
  - DNSSL: DNS Search List
- These options include a “lifetime” value:
  - It is the amount of time during which the info is valid
  - It is selected as a function of “MaxRtrAdvInterval”:

    MaxRtrAdvInterval <= **Lifetime** <= 2*MaxRtrAdvInterval

Problem statement

- The RDNSS/DNSSL “Lifetime” has been found to be too short
- Packet loss causes DNS info to be discarded
- Problem exacerbated in some implementations
  - DNS failures considered a “hard error”, affecting both IPv6 and IPv4 connectivity

Potentian config oscillation problem

- RFC 6106 mandates that newly received info should replace existing info
- If more than one router sends RDNSS/DNSSL options, network config would oscillate
  - This does not happen with any other info learned with SLAAC

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- Discusses the problem
- Describes some alternative workarounds:
  - Change the semantics of the Lifetime field
  - Change the default Lifetime value
  - Use RSes for active probing
  - Sanitize the received Lifetime value
- We expect 6man to converge to **one** of them

Change the semantics of “Lifetime”

“**Lifetime**: amount of time during which the corresponding info is expected to be stable”

- If the lifetime expires:
  - The corresponding info should **not** be discarded
  - Newly received data should replace expired info
- Pros:
  - Addresses all potential problems
  - Receiving-side fix!
- Cons:
  - ?

Change the default “Lifetime” value

- Change the default “Lifetime” to 5*MaxRtrAdvInterval
- Pros:
  - ?
- Cons:
  - Sending-side workaround
  - May still fail with networks with huge multicast packet loss
  - Does not address the config oscillation problem

Sanitize the received “Lifetime” values

- Enforce a lower limit on the Lifetime value
- Pros:
  - Receiving-side fix
- Cons:
  - No hints for a proper limit
  - Does not address the config oscillation problem

Use RSes for active probing

- Send RSes when Lifetime-expiration is imminent
- Pros:
  - Receiving-side fix
- Cons:
  - Leads to increased traffic
  - Does not address the config oscillation problem
  - No other SLAAC info requires this “probing”

Moving forward

- Comments?
- Adopt this document as a 6man wg item?

Feedback?

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