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

Fernando Gont
SI6 Networks

Pavel Simerda
RedHat

IETF 84
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”:
    \[ \text{MaxRtrAdvInterval} \leq \text{Lifetime} \leq 2 \times \text{MaxRtrAdvInterval} \]
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/DNSSSL options, network config would oscillate
  - This does not happen with any other info learned with SLAAC
draft-gont-6man-slaac-dns-config-issues

- 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?

Fernando Gont
fgont@si6networks.com