Support for adjustable Maximum router lifetimes per-link
draft-krishnan-6man-maxra-03

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Background

- **IPv6 Neighbor Discovery (RFC4861)**
  - Specifies the maximum time allowed between sending unsolicited multicast Router Advertisements
  - It also specifies the maximum router lifetime
- **It allows the limits to be overridden by link-layer specific documents (i.e. per link-type)**

Why?

- Multicast is very inefficient on certain links
  - (e.g. Wi-Fi) [draft-vyncke-6man-mcast-not-efficient-01]
- Due to fixed protocol constants defined in RFC4861 it is very difficult to relax the multicast timers for ND
- This document specifies updates to IPv6 ND
  - for relaxing the maximum time allowed between sending unsolicited multicast RAs (MaxRtrAdvInterval)
  - as well as for relaxing the maximum router lifetime (AdvDefaultLifetime)

The relationship between *AdvDefaultLifetime* and *MaxRtrAdvInterval*

- We use a ratio K that is defined as

  K= (AdvDefaultLifetime/MaxRtrAdvInterval)

  to express how many RAs can be guaranteed to be sent before the router lifetime expiry

How to select K?

- On a perfectly stable network, on a theoretically perfect link with no losses
  - It would be sufficient to have K just above 1
- On a real link which allows for some loss
  - Use K>=2 in order to minimize the chances of a single router advertisement loss causing a loss of the router entry

K and packet loss

- K can also be characterized based on packet loss probability and required reliability

- On a network with 1% packet loss probability
  - K==1 -> Outage probability==1%, Reliability=99%
  - K==2 -> Outage probability==0.01%, Reliability=99.99%
  - K==3 -> Outage probability==0.0001%, Reliability=99.9999%

Updates to RFC4861

- Update the constants to

  MaxRtrAdvInterval <= 65535

  MaxRtrAdvInterval < ***AdvDefaultLifetime*** *<= 65535*

- Relaxes RA sending behavior

  – *AdvSendAdvertisements* can be set to FALSE while still allowing router to respond to solicited RAs

Open comments

- The document has addressed all the comments received as of the deadline

- Two reviews received during IETF week (Thank you!!)
  - Jinmei Tatuya's review
  - Ian Farrer's review concerning relationship to DHCPv6 prefix delegation

Next Steps

- Questions?

- Adoption as working group draft?