Reliable Router Solicitations

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Suresh Krishnan, Dmitry Anipko, Dave Thaler
What happens today?

• Hosts send Router Solicitations on interface initialization
  – a host transmits up to MAX_RTR_SOLICITATIONS (defined to be 3) Router Solicitation messages
  – the RSs are separated by at least RTR_SOLICITATION_INTERVAL (defined to be 4 seconds)

• If there are no RAs received having waited MAX_RTR_SOLICITATION_DELAY (1 second) after sending the last RS
  – the host concludes that there are no routers on the link
What’s wrong?

• These initial RSs can be lost
  – There can be multiple L2 segments between the host and the Router
    • The host facing segment may come up before the router facing segment(s). i.e. No connectivity from host to router

• The hosts need to retransmit the RSs for reliability
Scenarios

• NBMA links
  – No periodic multicast Ras
  – RSs are needed to trigger the Ras

• Multicast links
  – Host will “heal” after receiving a multicast RA but there may be a significant delay in some networks
How to retransmit?

• To achieve resiliency to packet loss the host needs to continue retransmitting RSs until
  – a) it receives a Router Advertisement, (or)
  – b) until it is willing to accept that no routers exist on the link

• The retransmission algorithm needs to use some form of exponential backoff in order to keep RS related traffic at acceptable levels
Algorithm

• The RSs MUST use the retransmission algorithm specified in Section 14 on RFC3315 for retransmitting DHCPv6 SOLICITs
  – Tried and tested algorithm
  – Possibility for better code reuse

• The following variables are used as input to the algorithm
  – IRT: 4 seconds
  – MRT: 3600 seconds
  – MRC: 0
  – MRD: 0
Open Issues

• The host will continue retransmitting RSs (1/hour) on non-IPv6 links
• We do not know how to differentiate links with no IPv6 routers present currently and links where IPv6 will never be enabled
• Is this acceptable?
Next steps

• Any questions/comments?
• The authors would like to request adoption of the draft by the WG