Neighbor Management Policy for 6LoWPAN


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History:
IETF97: Presented the problem statement, without the draft
IETF98: First draft, sample reservation policy described
IETF99: WG Adopted
IETF100: Clarifications. Described non-storing mop implications...
IETF101: Updated security considerations...
IETF102: Implementation strategy and difficulties faced...
Briefly ...

• Doing neighbor management
  • On constrained devices with multihop networks
  • With limited neighbor cache size
  • With uneven node densities

• What happens without proper neighbor management?
  • Unstable network, routes do not converge
  • High control overhead, highly impacts PDR
What does the draft convey?

• A reservation based policy which helps to
  • Form neighbor adjacencies deterministically
  • Reduces unnecessary table churn, reducing control overhead

• Draft specifies NDP signaling guidelines

• Draft also talks about handling secure/unsecure NCEs and corresponding signaling
Implementation status

• Contiki already has a basic neighbor management policy
  • Some details are not covered in the implementation, such as
    • Handling of unsecure NCEs
    • Handling of NDP during pre-authentication phase

• Huawei has a private implementation which handles these scenarios
  • Working towards updating Contiki implementation to handle all scenarios

• Implementation team (Rabi/Rahul) decided to:
  • Keep a separate library which does neighbor management
  • This can be integrated with UIP/Contiki and if required with LWIP as well.
Other work in IETF that has implications...

• Current Problems with Neighbor management:
  • Reactive-Only policy has some limitations
  • What happens if the evicted neighbor keeps coming back periodically?
    • Without proactive signaling neighbor does not know of the resource crunch on the peer

• Some other work which we feel might help in the context
  • draft-richardson-6tisch-enrollment-enhanced-beacon
  • draft-richardson-6tisch-roll-enrollment-priority
  • This work might help with proactive discovery of resource constraints
Discussions

• Next steps:
  • Need Reviewers.

Thank You