

Neighbor Management Policy for 6LoWPAN

<https://tools.ietf.org/html/draft-ietf-lwig-nbr-mgmt-policy-00>

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IETF100

History:

IETF97: Presented the problem statement, without the draft

IETF98: First draft, sample reservation policy described

IETF99: WG Adopted

IETF100: Clarifications

Some background...

- Top memory elements (Contiki for cc2538dk)
 - Routing Table (1rec=52B, 100rec=5200B)
 - Neighbor Table (1rec=64B, 100rec=6400B)
 - Packet Buffers (IPv6 MTU = 1024B)
 - Blah, blah...

Why Neighbor Management?

- Challenges

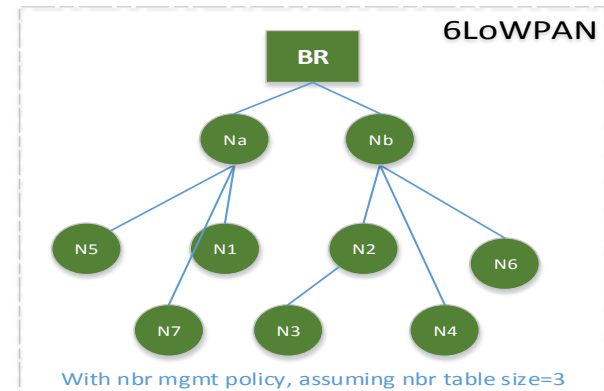
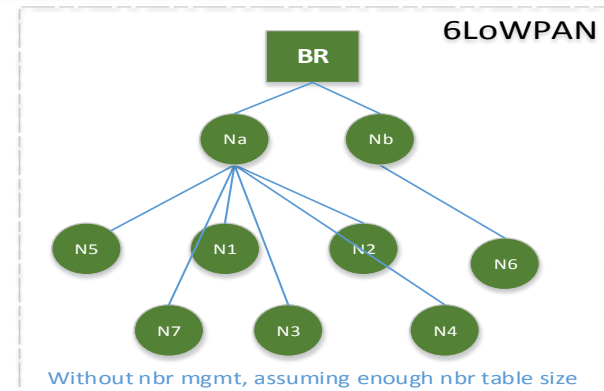
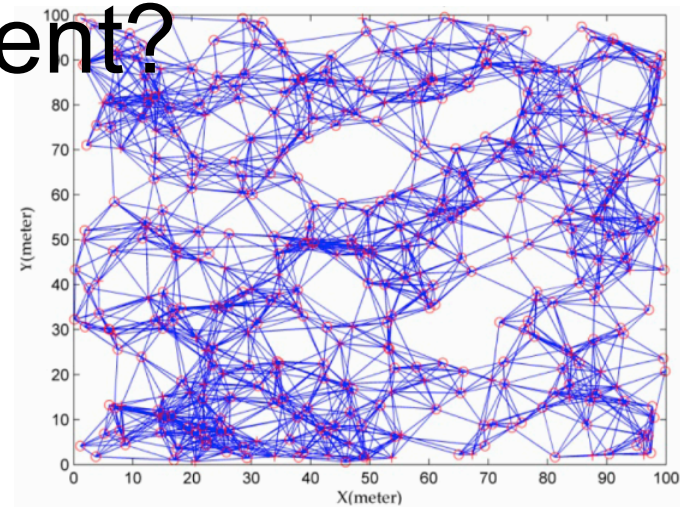
- High node density networks
- Limited memory for nbr cache

- Expectation of neighbor mgmt

- Improved network stability, reduced churn in routing adjacencies
- Once the neighbor is accepted, the associated resources are guaranteed

- Trivial policies

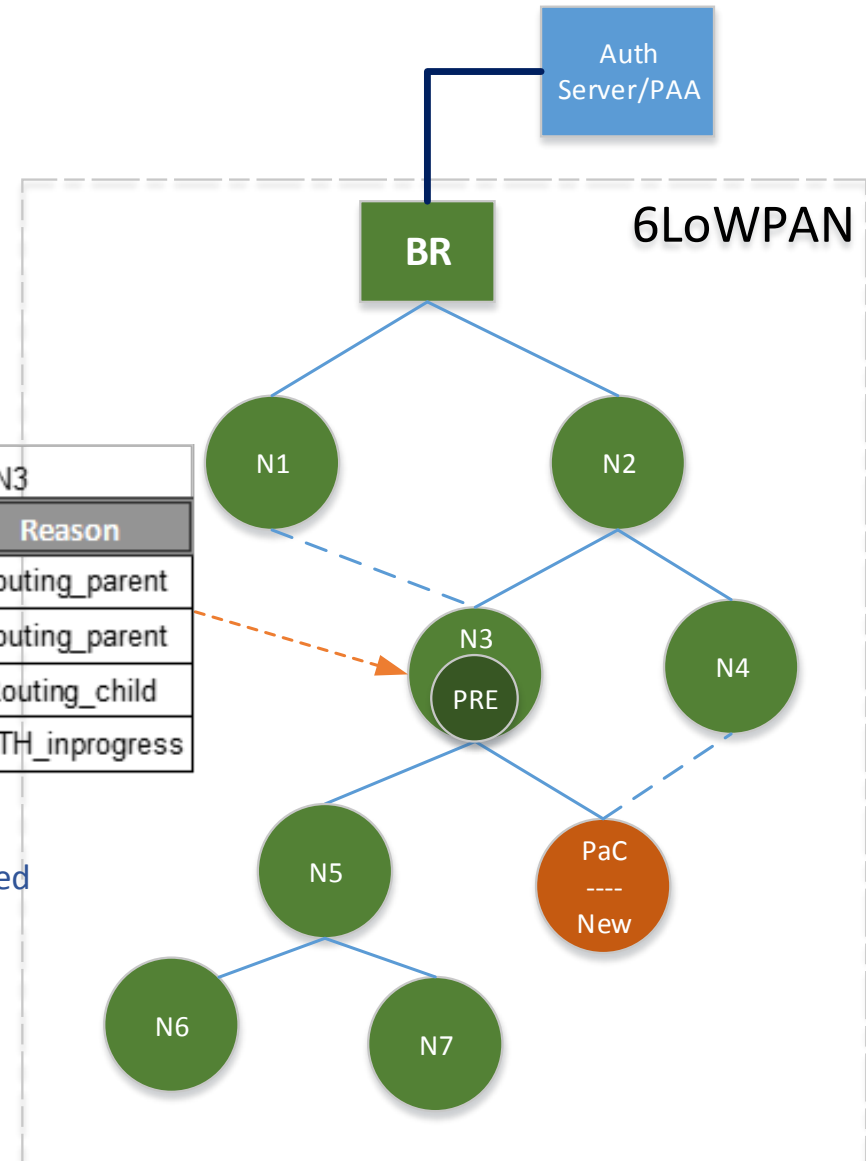
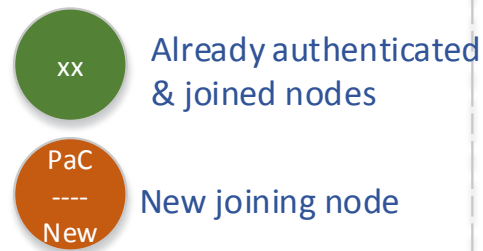
- Replace LRU entry
- First come first serve



Holistic approach towards neighbor mgmt

PRE = PANA Relay Element aka Join Proxy
 PaC = PANA Client aka Pledge
 PAA = Auth Server aka Join Registrar/Coordinator

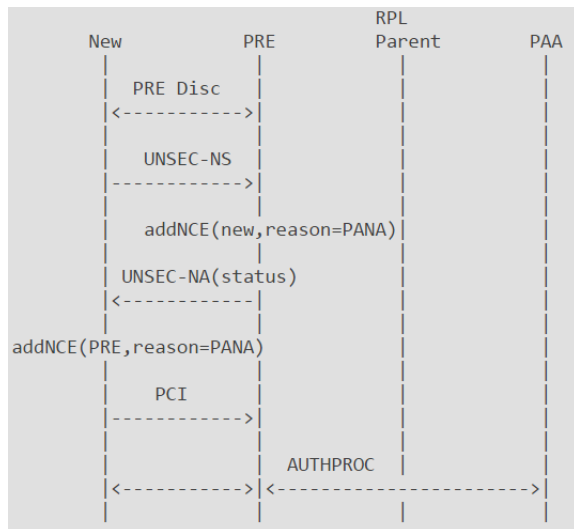
Neighbor cache @ N3		
MAC addr	LL IP addr	Reason
N1_mac	N1_llip	Routing_parent
N2_mac	N2_llip	Routing_parent
N5_mac	N5_llip	Routing_child
PaC_mac	Pac_llip	AUTH_inprogress



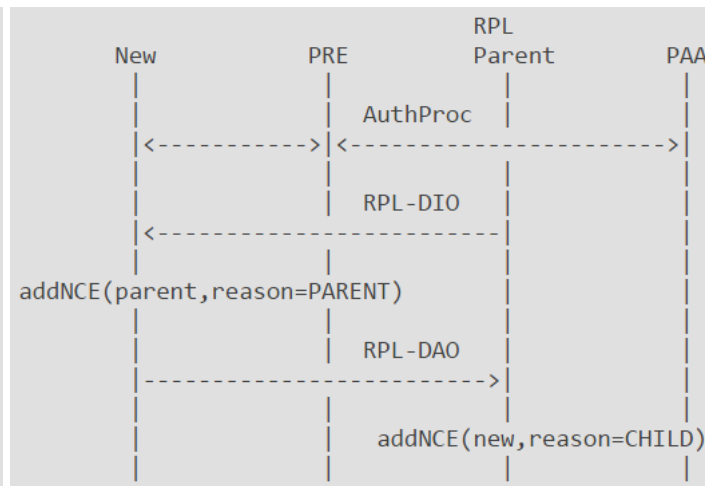
Signaling recommendation for Neighbor mgmt

- Implicit mechanism
- Implicit mechanism works only if there is a way to send negative status if NCE addition fails
 - For e.g. PANA, there is no way for PRE to respond back with negative status.
 - NDP signaling also signals failure, if required.

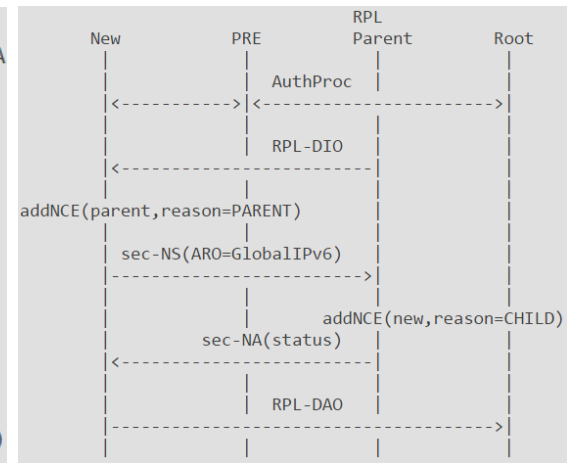
PRE Discovery



Storing MOP

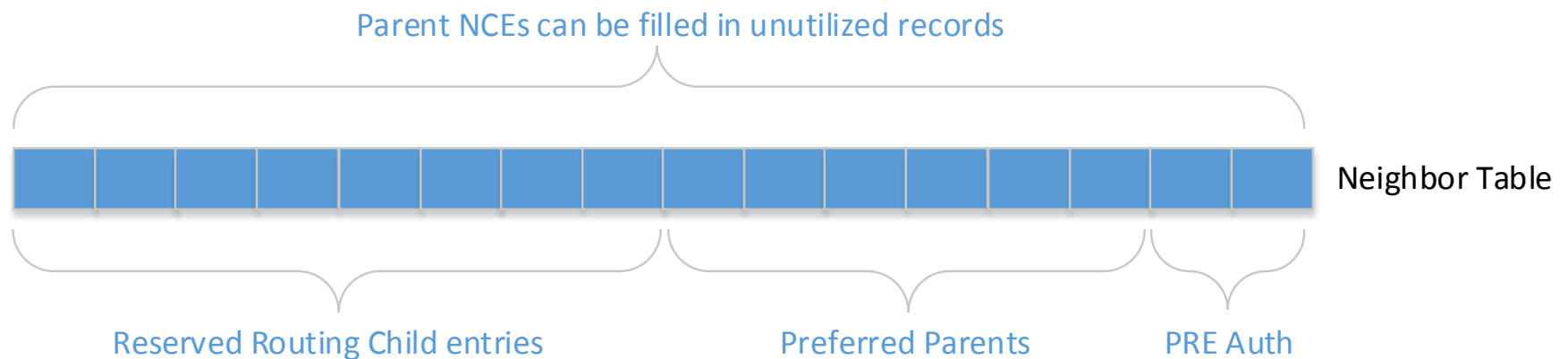


Non-Storing MOP



Proposed policy...

- Basic principles
 - Reservation based policy
 - Identify impact of eviction
 - Categorization based on it...
 - Insertion reason (RPL_parent, RPL_child, Other) is attached with every NCE



Issues with reactive policy

- Whatever I presented as of now is reactive ...
- There are limitations ...
- Guidance:
 - A proactive approach to signal NCE metric

Discussions

- Contiki implementation ongoing. Major part of it already in master.
- One proprietary implementation is already there ...

Thank You