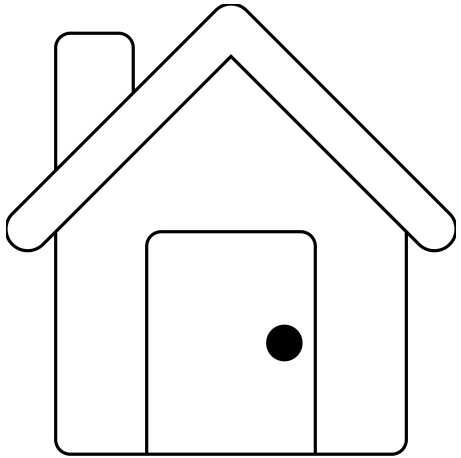
Host-Route based Wifi Roaming



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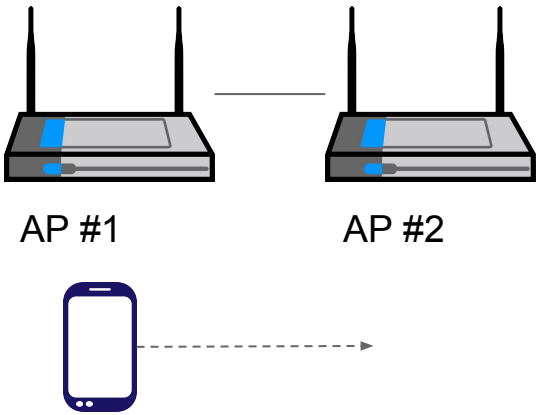
Problem



- Different IPv6 Prefixes on APs cause L3 renumbering on roaming clients
  → breaking existing TCP / UDP connections
- SLAAC must be used for configuration as least common denominator on clients
- However DHCP would require lease state sharing, proxying or a god-server anyway…
- So Layer 2 bridge AP networks?

Approach: Host Routes

- Additional state on AP required?

- Neighbor cache states reusable!
  - Announce host route if client is REACHABLE, STALE, DELAY or PROBE
  - Retract host route on final ND failure
  - Retract host route when there is a layer 2 disassociation detected

- Additionally
  - before pruning STALE cache entries (if necessary) try to promote them to REACHABLE beforehand
  - reserve reasonable amount of ND entries depending on max. associated stations

Some more fine-tuning: RAs

- Only send Prefix Information Option for roaming prefix(es)
  - Set A=1 and L=0 (all traffic through APs)
- Recommended: also use a fixed host identifier (lower 64-bits) for all APs
- Do not use anything stateful (DHCPv6, DHCPv4)
- Use NAT64 / DNS64 if possible if IPv4 connectivity is required
- However: this (deliberately) breaks multicast / broadcast between clients

And finally statelessly proxy DAD

- APs listen on WiFi for ND message with targets from the roaming prefix and forwards them to all other roaming APs via “global” unicast
  - Solicitations with the unspecified address as source
  - Advertisements with all-nodes MC address as destination

- APs listen on homenet interfaces for proxied ND messages sent by other APs and distributes them to the WiFi AP with the respective prefix
  - Solicitations are distributed with the unspecified address as source
  - Advertisements are sent with the all-nodes MC address as destination

Open Points

1. Usually L2 configuration (SSID, WPA key etc.) need to be synced as well.
   a. out of scope here, but HNCP could be used

2. Use modified host route state machine for "dumb" L2 APs?
   a. But then again they won't take part in #1 anyway…

2. What transport should be used for the DAD proxy messages?
   a. additionally what reliability parameters
   b. hosts usually only send **1** DAD packet and only wait limited time!

3. **Any interest** in picking this up?

Thank you for your attention!

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