IPv6 Addressing and Link Types in NETLMM

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per-MN subnet

- WG consensus for IPv6
- Advertize a per-MN subnet
  - Used for SLAAC (A=1) and on-link determination (L=1)

- **Issue 1: Multicast RA on shared links**
  - Unicast RA sent to RS’s source link local address
    - Source of RS MUST be link-local address (DNAv6)
  - Or Multicast RA sent to RS’s tentative source link layer address
    - Tentative SLLAO SHOULD be included (DNAv6)
per-MN subnet (2)

• **Issue 2: Discovery of on-link neighbors**
  – Two MNs attached to same shared link
  – Possible that MNs discover each others and communicate directly (without AR)
    • Happens because ND traffic is sent to Solicited-node or All-nodes multicast addresses
    • MN discovers a neighbor when it receives multicast ND message
  – Communication will fail when one MN attaches to different AR
  – Reachability of MN address gets restricted to link scope
    • Not a problem for link-local since their scope is link
    • Problem for global address whose reachability should be ensured
      – Communication between MNs will fail until NCE expires
Domain-wide address uniqueness

- Required on point-to-point links
  - Between \{MN_i, MAG_1, \ldots MAG_n\} for given i
- Required on shared links
  - Between \{MN_1, \ldots MN_m, MAG_1, \ldots MAG_n\}
- Link change
  - But MN subnet prefix does not change DNA
    will conclude link did not change
  → no DAD after link change

→ Issue 3: Possible address collision
  with new on-link neighbors (i.e. MAGs,
  and MNs when link is shared)
Enforce domain-wide address uniqueness

- Guaranteed for global addresses since per-MN prefix
- Required for link-local addresses
- On point-to-point links:
  - Configure same link-local address on each MAG of a domain, or
  - MAG defends other MAGs link-local addresses on their behalf
    - Proxy ND
    - Need support from NETLMM protocol (learning other MAGs addresses, SEND support)
- On shared links
  - MAG defends other MAGs and MNs link-local addresses on their behalf
    - Proxy ND
    - Need support from NETLMM protocol (learning other MAGs and MNs addresses, SEND support)
Shared link support

- Shared link turned into point-to-point link
  - Solves multicast RAs issue with per-MN prefix model
  - Use VLANs
  - (Disable bridging of frames by 802.11 APs)

- Support for shared link L2?
  - Has issues:
    - Issue 1: Multicast RA, solution is DNAv6
    - Issue 2: Discovery of neighbors, no solution
    - Issue 3: Domain-wide address uniqueness requires NETLMM protocol support
Time to discuss things

- Do we assume DNAv6?
- Do we want to support shared links?
- ...