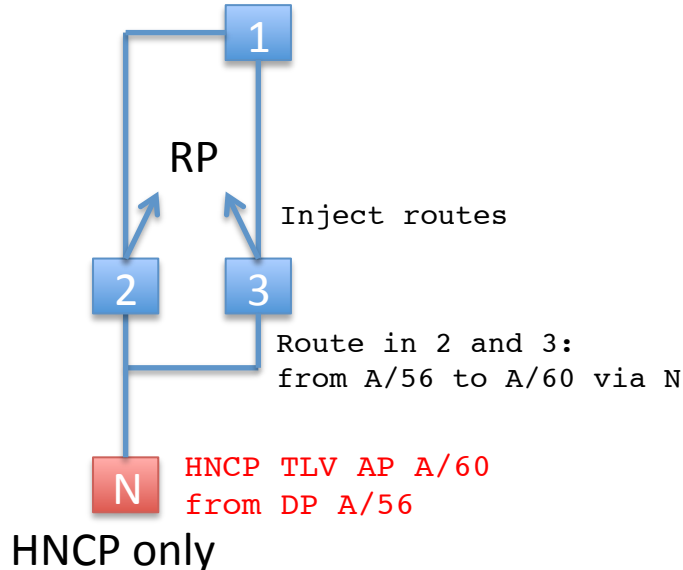# Homenet Routing Discussion

- Remaining possibilities
  - HNCP Fallback + Other routing protocol(s)
  - Other routing protocol (+ others ?)

- Need for lightweight routers support => 3 categories of devices
  1. Homenet routers (HNCP + Routing Protocol)
  2. Legacy routers (DHCPv6-PD) - Supported
  3. HNCP-only routers/hosts (HNCP) - NEW!

- HNCP-only routers/hosts need to:
  - Participate in HNCP (provide DP)
  - Get packets sent toward some destination prefix(es) – Route injection

Proposal 1: HNCP-only Routes Injection

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|  Type: ASSIGNED-PREFIX (43)   |          Length: >= 9         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        Link Identifier                        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|R|Rsv|A| Pref. | Prefix Length |                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+          Prefix Address        +
|                               |                               |
+                               +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                               |                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- Support HNCP-only for non-HNCP stub networks only.

- New R flag in assigned prefix.

- If neighbor sends Assigned Prefix with R bit set:
  – Add static route to neighbor
  – Advertise in RP

- If Assigned Prefix collision
  – No routing (As a safety – One single owner)

- Reminder: An assigned prefix is part of a delegated prefix.

- Questions:
  – Source-Specific routes ?
  – Prefixes not included in a DP ?

```
        ┌──────┐
        │  1   │
        └──────┘
          RP
               Inject routes
  ┌─────┐   ┌─────┐
  │  2  │   │  3  │
  └─────┘   └─────┘
          Route in 2 and 3:
          from A/56 to A/60 via N
  ┌─────┐
  │  N  │  HNCP TLV AP A/60
  └─────┘  from DP A/56

  HNCP only
```

Pierre Pfister – 13/11/2014

Proposal 2: Fallback + Optional RP

Proposal Proxying Steven Barth

1. Run Fallback on every HNCP-router; with metrics near 2^32
2. Routers can run chosen Homenet IGP in addition

- All routers (also constrained / IOT) can still be connected in any way
- Basic connectivity is always ensured
- Routers running IGP can benefit from optimized paths
- Loop-free if each "fallback-route" has metric > max. path metric of IGP
- HNCP does not stand and fall with choice of RP or their implementation
- Little complexity (Fallback ~200 LOC of C in reference impl.)