draft-troan-homenet-sadr

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Multihoming model

• External networks provide aggregates
  – E.g., a /56 via DHCPv6 PD
• Internal routers autoconfigure /64s from all aggregates on all interfaces
• All hosts get one address per aggregate
• Host chooses source address, network uses SADR to send packets to correct external network
Forwarding - Notation

• (Source, Destination) / (S, D) routes
• (*, 2::/64) - normal destination based route
  – Matches packets to 2::/64 from anywhere
• (1::/56, ::/0) – source specific default route
  – Matches packets to anywhere from 1::/56
• (1::/56, 2::/64) – more specific S,D route
  – Matches packets from 1::/56 to 2::/64

• Forwarding must use two lookup keys
Forwarding - Which route wins?

- **SA**: 1::1, DA::: 2::1

- **RIB**:
  1. (*, 2::1/128)
  2. (1::1/128, ::/0)

- Probably #1
  - The goal is to work with ingress filtering
Forwarding

• Document says do longest match on DA first, then do longest match on the source constrained paths. If no match backtrack.

• Implementation can also do SA first.
  – Requires all (*,D) routes replicated in all SA tables.

• All routers must follow same rules, otherwise network will loop
  – A non-SADR router in the middle can cause a loop!
Populating routing tables

• Explicit (S,D) routes in routing protocol.
  – See *baker*-00
  – Ensures all routers support SADR (capability)

• Implicitly (hack alert!) Any external routes advertised by edge routers that also advertises usable prefixes is a S,D route.
  – Accept micro loops, since usable prefix and AS externals might not be inserted in the table exactly at the same time.
  – How do deal with legacy routers?
Host - Multi-homing issues

• ISP connection down
  – (S,*) disappears
  – Host will instantly get ICMP destination unreachable with code 0 (No route to destination) or 5 (Source address failed ingress/egress policy)
  – This doesn’t help, RFC 1122 says TCP MUST NOT abort connection on code 0 unreachable

• Deprecating addresses will fix problem for new connections
  – Delay for dampening?
  – Leave last source prefix alone?