IPv6 Homenet with IS-IS

Feedback requested – Get involved now!

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Homenet – Overview

https://datatracker.ietf.org/doc/draft-baker-rtgwg-src-dst-routing-use-cases/
Homenet – Addressing

**ISP A**
- A:A:A::/48
- B:B:B::/48
- DHCPv6/PD

**ISP B**
- A:A::/64
- B:B::/64
- C:C::/64
- DHCPv6/PD

**The Internet**

**“TV-ISP”**
- A:A:1::/64
- B:B:1::/64
- C:C:1::/64
- DHCPv6/PD
- C:C::/48
Overview of Homenet Principles and Ideas

- Global addresses for IPv6
- Src-Dest routing for IPv6
- Auto-Configuration
- Naming and Service Discovery

→ Please give Homeusers enough IPv6 space!
Home Network Control Protocol

Defines HNCP protocol

- Link-State Protocol over UDP
- Runs on IPv6 link-local unicast and multicast addresses
- Assigns IP (v4 & v6) addresses on the homenet

Destination/Source Routing


Defines SRC-DEST routing lookup

- For IPv6 only
- Routes without SRC-DEST are treated as a SRC of ::/0
- Defines how to lookup best route
  - DEST match first, SRC second
- Routes with SRC not ::/0 are ignored for Multicast
**Adds new Sub-TLV to IPv6 Reachability TLV for Source Prefix**

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |

+--------------------------------------------------+
| Type | Length | Prefix Length | Prefix |
+--------------------------------------------------+
IS-IS Reachability with critical Sub-TLVs


Defines a new Sub-TLV which is marked “critical”

- Used for the Source Sub-TLV in SRC-DEST routing
- If this Sub-TLV is unsupported, then the complete reachability TLV needs to be dropped
Defines Network, Authentication and Net-Duplication

- Area-Address: 13 octets of 0
- System ID: Based on a local MAC address
- NSEL: “00”
- Level-1

Net-Duplication

- New Router-Hardware-Fingerprint TLV sent
  - Sent on first originated Level-1 LSP
  - NOT based on MAC address
Want to try it out?

**HNCP Protocol:**
https://github.com/sbyx/hnetd/

**ISIS Src-Dest Standalone:**
https://git.netdef.org/projects/OSR/repos/isis

*(requires Quagga Zebra with Src-Dest support – get it here)*
https://git.netdef.org/projects/OSR/repos/srcdest

**OpenWRT System:**
https://git.netdef.org/projects/OSR/repos/openwrt-buildroot
Thank You

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Get Involved:
- IETF Homenet WG
- IETF ISIS WG
- IETF Routing WG