Prefix and Address Assignment in a Home Network

draft-pfister-homenet-prefix-assignment-00

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89th IETF - London

Motivations for this update

- Allow the algorithm to run on other protocols than just OSPF

- Adding IPv4 support

- And a few other points…

  - Manual configuration support
  - DHCPv6 excluded prefix support (RFC 6603)
  - DHCP-PD in the home (to be specified)

Changes motivated by our implementation

Introducing the 'Flooding Protocol'

- Propagating configuration information to the home network

  - Available delegated prefixes
  - Prefixes assigned on links
  - Addresses used by routers
  - DHCP prefix-specific information

- It can be

  OSPF (draft-arkko-homenet-prefix-assignment-04)

  ISIS ?

  HNCP (current implementation)

Adding IPv4 support

What we needed	What we added	Bonus !
Support IPv4 prefixes	Generic algorithm for v4 and v6 `10/8 <=> ::ffff:a00:0/104`	Support any prefix length (used for DHCP-PD in the home or Prefix Exclusion)

Support DHCPv4	Elect a per-link DHCP server.
	`- Based on router ID`
	`- Stable`
	Used for mdns as well.
		DHCPv6 as well (stateful conf., DNS, prefix coloring, etc…)

Assign addresses to routers	Address Assignment Algorithm `- Same as prefix assignment, but simpler`	Works whenever SLAAC is not supported

Other additions

Manual configuration

- Make an assignment that overrides other assignments.

DHCPv6-PD sub-delegation in the home (For incremental deployment)

1) A router assigns the prefix he wants to delegate.
2) The prefix is delegated to a leaf router.

DHCP-PD excluded prefix (RFC 6603)

- The excluded prefix is advertised as *authoritative*.

Some more details

Because some links/routers may be more important than others…

- Adding prefix assignment's *priority value*

Because we want to enforce manual configuration

- Adding prefix assignment's *authoritative bit*

These new values involve new possibilities

- Supports scarcity avoidance mechanism when no more /64s are available.

What doesn't change

All previous features from *draft-arkko-homenet-prefix-assignment* are maintained

- *Multi-homing*
- *ULA prefix generation*
- *Assignment's stability*

…

And some of them are enhanced

- *Per-prefix DHCPv6 information (like prefix coloring)*

Thank you !

Open-source implementation is now upstreamed.

(*hnetd* package in *OpenWrt routing feed*)

Mailing list, how-to & support: www.homewrt.org