News from service discovery front

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Agenda

* What has happened since IETF 89

    * hybrid-proxy-zeroconf-01: minor update

    * homenet-minimalist-pcp-proxy-00: PCP in a homenet

* What's left: Solution gap analysis

draft-stenberg-homenet-dnssd-hybrid-proxy-zeroconf-01

* NO real content changes!

  * Some editing

  * Changed physical interface names to logical ones in examples (eth0 => wlan0)

  * Fixed example addresses and prefixes in appendix A

  * Added some further discussion on 'why not mDNS proxying' in the appendix C.1

draft-stenberg-homenet-minimalist-pcp-proxy-00
PCP in a homenet

* Currently in an IPv6 homenet hosts do NOT have all information needed to choose PCP server correctly

    * Source specific routing in effect outside home, but no way to communicate it to hosts (and current hosts don't care)

* First-hop router needs to proxy PCP to PCP server appropriate for the chosen source address - choices:

    * draft-ietf-pcp-proxy defines proxy = full PCP client+server => e.g. libpcp ~9k LoC client + server Xk LoC

    * draft-stenberg-homenet-minimalist-pcp-proxy-00 defines 'minimalist', almost stateless PCP proxy

        * -00 version of draft is flawed due to assuming clients use always fixed port (two ways to fix it)

        * My implementation of it (https://github.com/fingon/minimalist-pcproxy) is just ~1k LoC of C

            * Design similar to our hybrid proxy implementation - assume 'someone else' provides the (source prefix, PCP server) mapping tuples

            * (In our case, we use the addresses of the routers that publish delegated prefixes in HNCP)

Solution gap analysis (1/2) mDNS/DNS-SD

* Currently DNS-SD (+mDNS services) usable

* mDNS-only using clients are **NOT** addressed - what's needed:

    * 'merge all hybrid proxy zones to one zone' (TBD in hybrid draft) +

    * 'merged DNS-SD zone served via mDNS' could address this

    * .. or the good old mDNS proxying, but I still consider it harmful

* Given default deny firewall, PCP allows the local services to be available outside home

    * However, **no way to control who can do it beyond per-host level**

        * draft-ietf-pcp-authentication process ongoing but slow

Solution gap analysis (2/2)
UPnP

* In theory, in-home case is simple

    * UPnP architecture - annex A 1.1 (2011)

        * ULA > GUA > link-local address preference

        * MUST do link-local multicast

        * MUST be **CAPABLE** to do site-local multicast (using GUA or ULA)

* In practice

    * IGDv2 is not source specific => need to do IGDv2 proxy (or IGDv2 -> PCP proxy, perhaps)

    * Installed base challenge - users won't be editing Windows registry to enable site-local

    * Based on strict spec reading, proxying link-local to site-local and back is not practical (MUST use RFC3484-ish addresses also in e.g. Location in SSDP)

        * => IPv4 works better out of the box, given IPv4 home-wide multicast, +- low TTLs

Conclusions

* DNS-SD / mDNS (both for client / server) is solvable

* UPnP is an open question

    * IGDv2 is easy enough, but

    * all clients are link-local only by default (IPv4 would work given multicast routing, *cough*)

* The solutions of PCP working group seem somewhat out of sync with what multi-ISP home network requires

    * Their underlying assumption seems to be that the PCP server addresses correspond with associated prefixes, and it's ok to retry with other servers too

    * Their PCP proxy spec light-weight, implementation heavy-weight

Any questions?