

# Homenet Work In Progress

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# Sub-agenda

- Homenet Marketing document
- Implementing Homenet in OpenWRT
- Homenet and IoT

# Homenet Marketing Document

- Presented the Homenet Marketing problem in Bangkok
- There was substantial interest in the work
- I wrote up a document for IETF 104
- `draft-lemon-homenet-review-00`
- Attempts to systematically compare various multi-router home network solutions to what we've done
- It's a good start
- Please contribute

# Homenet in OpenWRT

- In Bangkok, didn't have any code running
- A lot of stuff has been implemented since then
- None of it is actually running in OpenWRT yet
- Would be nice to get some code running somewhere
- What's done, what's missing?

# Name

- we have home.arpa; we can use it

# Authority

- HNCP provides most of the information we need for populating home.arpa
- We don't have a way to get the information into a DNS auth server
- We can fake this for the single-router case as a proof-of-concept—the existing discovery proxy can be an authoritative server for this information
- If we are going to do stateful authoritative service for home.arpa, we need the extension to HNCP that does this, and it's not specified or done
- For the stateless case, we're still missing what we need to delegate per-link subdomains.

# Reachability

- Simple naming doesn't specify a way for names on the homenet to be resolved off the homenet
- This is fully implemented in OpenWRT already

# Link naming

- This needs to be implemented using HNCP
- We haven't specified how HNCP does this
- We can fake this for a single link or single router
- But for real support, this is all new work
- Link names are used to:
  - List the browsing domains for the homenet
  - List the registration domains for the homenet
  - Delegate per-link subdomains

# Per-link authority

- This requires that one dnssd proxy be designated for each link, which would be done by HNCP
  - Not done or specified
- It also requires that the authoritative server for home.arpa delegate each link's zone.
  - We don't have a solution for this for more than one router.

# Reverse Mapping

- None of what's described in simple naming is implemented
- Need to be able to advertise reverse name mapping registration protocol
- Requires a stateful authoritative server
- Not very important

# Name Resolution

- Resolution for local names—aside from the issues with setting up authority and delegation, this is done
- Resolution for global names—the current Discovery Proxy is also a recursive resolver, so this is done as well
- One minor gap that needs to be addressed, but is trivial: getting the IP addresses of the ISP’s resolvers into the Discovery Proxy
  - I suspect this actually will Just Work, but haven’t tested it yet.
- An additional loose end is that if we have stateful authoritative name service for home.arpa, then discovery proxies running on routers other than the authoritative router will need to direct queries to home.arpa to that router, rather than to the ISP.

# DNS Push

- This is required to get feature parity with mDNS when doing service discovery with the Discovery Proxy
- Our Discovery Proxy implements DNS Push
- So, done.

# Round Robining

- For off-network queries, normal DNS resolution is done, which includes round-robinning
- For on-network queries, only one server is ever authoritative for a link, so I think this is actually not a problem, if the delegation is done.

# Provisioning Domains

- Not done, and not our fault
- If we use mDNSResponder for name resolution, I think it can actually support this
- But we need the PvD RA option
- This is not yet in last call

# Service Registration Protocol

- We have an SRP proxy that could update an authoritative server, but it's incomplete
- There is a possibility that support for SRP might be added to BIND 9, which could be used
- This could also be done in mDNSResponder
- So, this is not done

# Next steps

- Writing this slide deck actually showed me what I need to do to update the document
- Doing what's described here will finish the process
- Dave Täht has threatened to help
- So maybe there's hope that we'll be able to demo this in Montreal

# Homenet and IoT

- There are two things that I think are necessary to support IoT devices
- Isolation
  - IoT devices, particularly on WiFi, should not be reachable by all hosts
  - but do need to be reachable by some
  - Would be nice to use MUD to address this problem
  - We need to be able to isolate nodes on the same SSID from each other to fully implement this
  - Is this possible?
- Routing
  - 6lo “routing” proposes to use a single wired/wifi backbone as a layer 2 bridge for IoT devices.
  - I’m skeptical that this is a good idea
  - We should investigate this further

# Next Steps for the WG

- I would like to see homenet, in some form, become real
- That is not going to happen at Linksys, Eero, Ubiquiti
  - Prove me wrong, please!
- It can happen in OpenWRT
- If it happens in OpenWRT, a lot of cheap and super-expensive routers could wind up supporting Homenet
- This might motivate the big multi-wireless vendors to follow, if it starts to cost them market share
- Alternatively, maybe there are ISPs who would want this if it could be shown to work well and not generate phone calls
- So, it is imperative that we get this working on OpenWRT
- If we don't, we might as well close the working group
- This is just my opinion: I do not speak for the major router vendors
- If you are interested in this, let's work together before Montreal
- Let's do the hackathon in Montreal