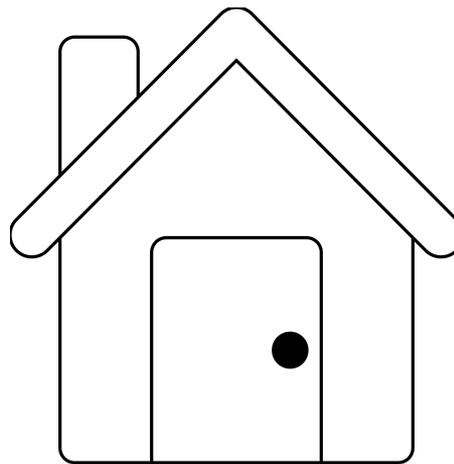


xNCP family updates

drafts: DNCP-12, HNCP-09

software: hnet reference

implementation



Steven Barth (speaker)
Markus Stenberg
Pierre Pfister

What happened since Prague?



uncaptioned image by slava (<https://flickr.com/photos/slava/496607907/>) [CC BY 2.0]

DNCP

- 4 new draft revisions
- technically through IESG review

HNCP

- 2 new draft revisions
- preparing for IESG review

In other news

- 2nd independent implementation
- DNCP stress test simulations
- More DNCP-based protocols

DNCP -12

Changes since -08

- Extensive Applicability section
 - detailing when and when not to use DNCP
- Reorganised TLV type registry
 - ~300 DNCP, ~500 per-profile, ~250 private use
 - reserved 6 type bits for protocol evolution
- Added profile guidance and example profile
- Many clarifications and explanations from IESG review

HNCP -09

Changes since -08

- Generic nesting of TLVs for extensibility
- Unification of string type TLVs (length-bytes, not null-terminated)
- Changed semantics of version / capability TLV

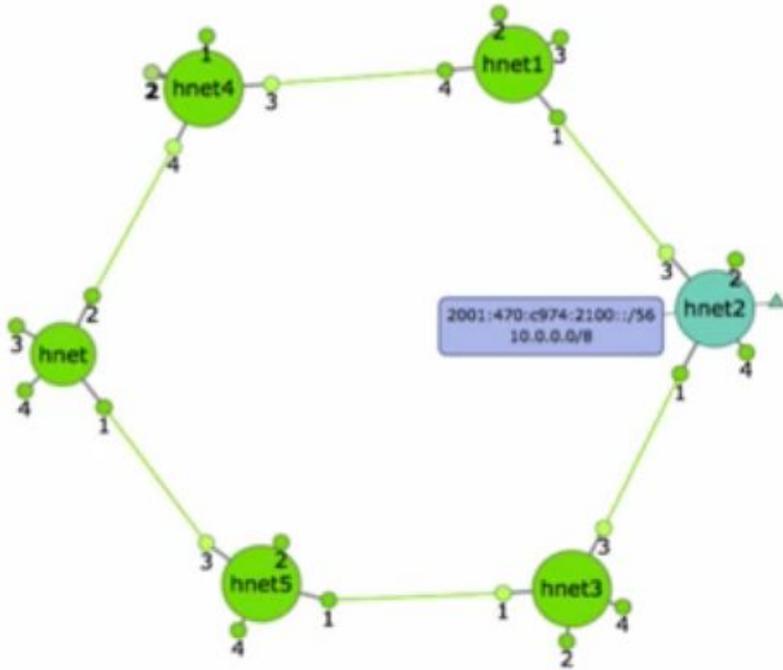
Reference Implementation Updates

Updated to match DNCP-12 / HNCP-09

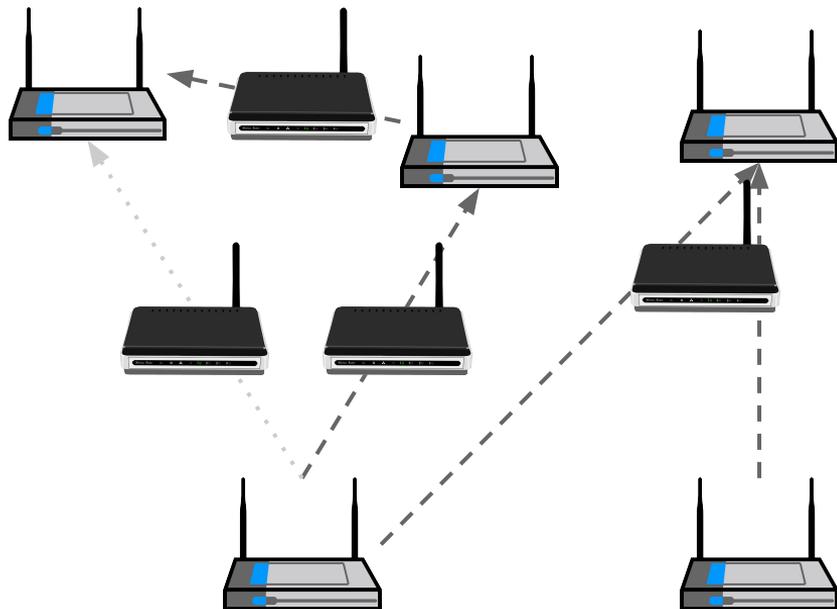
Various bugfixes

Improved naming support:
"zonestitching"

Experimental traversal of legacy
routers (not yet formalized...)



Legacy Router Traversal



Issue: user connects 2 homenet devices into its network separated by one or more legacy (IPv4?) routers:
→ split network, **how to work around?**

1. Use anycast HNCP **transport** to detect "upstream" HNCP routers
2. Handshake an unmanaged L2TPv3 over UDP session (session IDs + NATted ports)
3. Use tunnel as regular HNCP link
→ HNCP keeps tunnel alive
4. When HNCP connectivity is lost bring down tunnel

Tunnel Negotiation (IPv4 or IPv6)



Regularly try establishing (secured) HNPC UC connections to anycast address

`own router ID + any own v6 Router-Address TLV + L2TPv3 session-id`

if HNPC router with received ID + router address present in own network → ignore

Reply & start listening on own L2TPv3 port

`own L2TPv3 session-id + own L2TPv3 port`

Setup local L2TPv3 endpoint toward anycast address using received port / session-id

`[initiate regular HNPC link-local synchronization over tunnel]`

accept first L2TPv3-packet with correct port & session-id to detect NAT'ed IP + port

Setup local L2TPv3 endpoint towards source IP + port of accepted packet

`[initiate regular HNPC link-local synchronization over tunnel]`

Roadmap

DNCP:

- **Claim Victory!**

HNCP:

- Fix remaining issues from reviews
- Get it approved by IESG

Software:

- To quote Dave Taht **“more dogfooding”**



Thank you for your attention!
See www.homewrt.org for drafts & software!