xNCP family updates
drafts: DNCP-12, HNCP-09
software: hnet reference implementation

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What happened since Prague?

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
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) HNCP UC connections to anycast address

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

if HNCP 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 HNCP 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 HNCP 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!