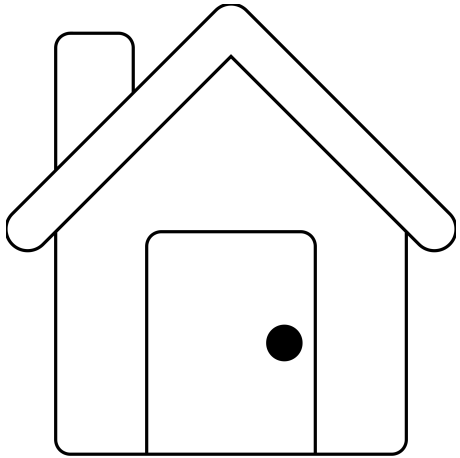
xNCP family updates

drafts: DNCP-01, HNCP-04
software: hnet reference implementation



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Draft Split: DNCP - HNCP

DNCP

- Transport Protocol (ex. HNCP)
  - generic definition (UDP, TCP, ...)
  - little to no multicast usage
  - Trickle timers
  - Merkle trees
  - network state / topology(+TLVs)
- Security
  - (D)TLS encryption & auth.
  - trust management:PSK, WoT, PKI
  - generic considerations

HNCP

- DNCP Profile
  - UDP / DTLS, ports, intervals…
- Homenet TLVs (PA, naming, SD)
- Router Requirements
- Security
  - generic considerations
  - border discovery (auto + manual)
  - IGP PSK-management

Draft Split: HNCP - Prefix Assignment

HNCP-04	PA-04
IPv4 and ULA Generation	Generic Algorithm
Address Assignment	Configuration Considerations
DHCP options handling	Apply and backoff timers
Downstream PD	Priority Support
RA & DHCP(v6) operation	

Latest Updates & TODOs

DNCP-01

Fixed keep-alive handling

Added simple read-only client support

Added optimizations for dense links

TODO: Bigger node data (>64KB)?

- now: node data updated as whole
- now: IPv6-fragmentation if UDP
- add multipart support (3rd tree)?

HNCP-04

Updated RA handling

- router assigning prefix sends RAs

TODO #1: fragmentation issue

- now: link-local uc fragmentation
- define in-protocol? switch to TCP?

TODO #2: stub routers

- stub IGP implementation?
- HNCP-based solution?
- also: we have downstream PD

Roadmap

Prefix Assignment is WGLCed

DNCP should be ready in the coming weeks

HNCP should follow in the coming months

Next reference implementation release will be out soon

Reference Implementation Updates

Updated to DNCP-01 / HNCP-04 draft

PA-04 implementation still in testing

Added support for DTLS using OpenSSL

Added support for PSK & Trust Consensus

Avoid lockout with reserved OpenWrt interface names

TODO:

- Finish & debug PA-04
- IGP PSK-Management

Reference Implementation Updates #2

Control plane based single-IGP election removed in hncp-03 and reference implementation.

No IGP chosen - yet hnet already upstream in e.g. OpenWrt

Incremental routing deployment (New!)

1. Simple HNCP-generated routes for HNCP-only testing
2. Support running one or more IGPs **in parallel** for interoperability

   e.g. interop Hackfest
3. Details in draft-barth-homenet-incremental-routing