Home Networking Control Protocol

draft-ietf-homenet-hncp-01

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(see https://github.com/fingon/ietf-drafts for draft sources & individual diffs)

Changes from non-WG draft (-00)

Version-TLV: defined as 32-bit number + user-agent string

Node data is distributed regardless of matching version number however only node data with matching version number is actively evaluated.

Opaque User-Agent string for debugging purposes.

Router-Address TLV: added Link-ID value to TLV-data

Link-ID is added to announce the specific link to which a router address is assigned to. This is equivalent to Link-ID for the Assigned Prefix-TLV.

Service Discovery TLVs: changed requirement level to MAY

SD TLV support was “MUST” or “SHOULD” -> SD is now optional

Refining Border Discovery (-01)

Motivation: reasonable security without cryptography

- Prevent malicious nodes from injecting fake uplinks
- Prevent compromised ISPs from claiming to be part of the homenet
- Solution: interfaces SHOULD be configurable as fixed external or internal

1. Fixed External Mode

- Never run HNCP or IGP here, always do stateful firewalling

2. Fixed Internal Mode

- Never accept an uplink here, MAY support more fine grained categories...

Fine grained internal categories (-01)

1. Guest (trust noone, provide internet access)

don’t run HNCP / IGP, never accept uplinks, restrict / disable apps like SD

disallow traffic between guest <-> internal (only allow from/to uplinks)

2. Ad-Hoc (allow meshed networks)

run HNCP / IGP, never accept uplinks, modify app behavior like PA

indicate links on the interface are potentially non-transitive

3. Leaf (proposed for -02, trust only clients)

don’t run HNCP / IGP, never accept uplinks

make this the default for non-ethernet interfaces (e.g. WiFi)?

Compatibility with legacy routers (-01)

Considered Usecases

- Legacy router behind homenet
- Homenet behind legacy router

SHOULD provide network access to legacy routers

- Offer sub-delegated prefixes via DHCPv6-PD on internal interfaces and announce them via HNCP on the legacy router’s behalf

MAY implement Hybrid Interface Category

- fixed-internal, run HNCP / IGP, accept uplinks without changing to external
- allow sharing a link between homenet and trusted legacy routers

Reference Implementation Updates

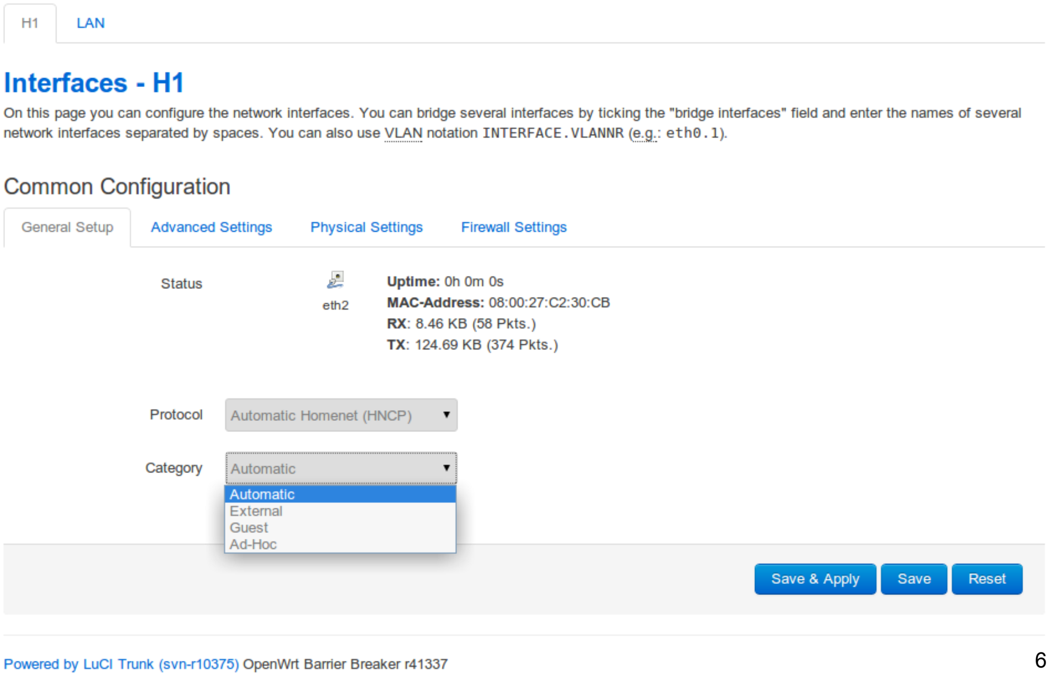
Synchronized implementation with draft -01

OpenWrt implementation

Added web interface support

Experimental support for MAP-E/T and LW4over6 IPv4-uplinks

Lots of bugfixes...



Interfaces - H1

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

Status eth2

Uptime: 0h 0m 0s
MAC-Address: 08:00:27:C2:30:CB
RX: 8.46 KB (58 Pkts.)
TX: 124.69 KB (374 Pkts.)

Protocol: Automatic Homenet (HNCP)

Category: Automatic

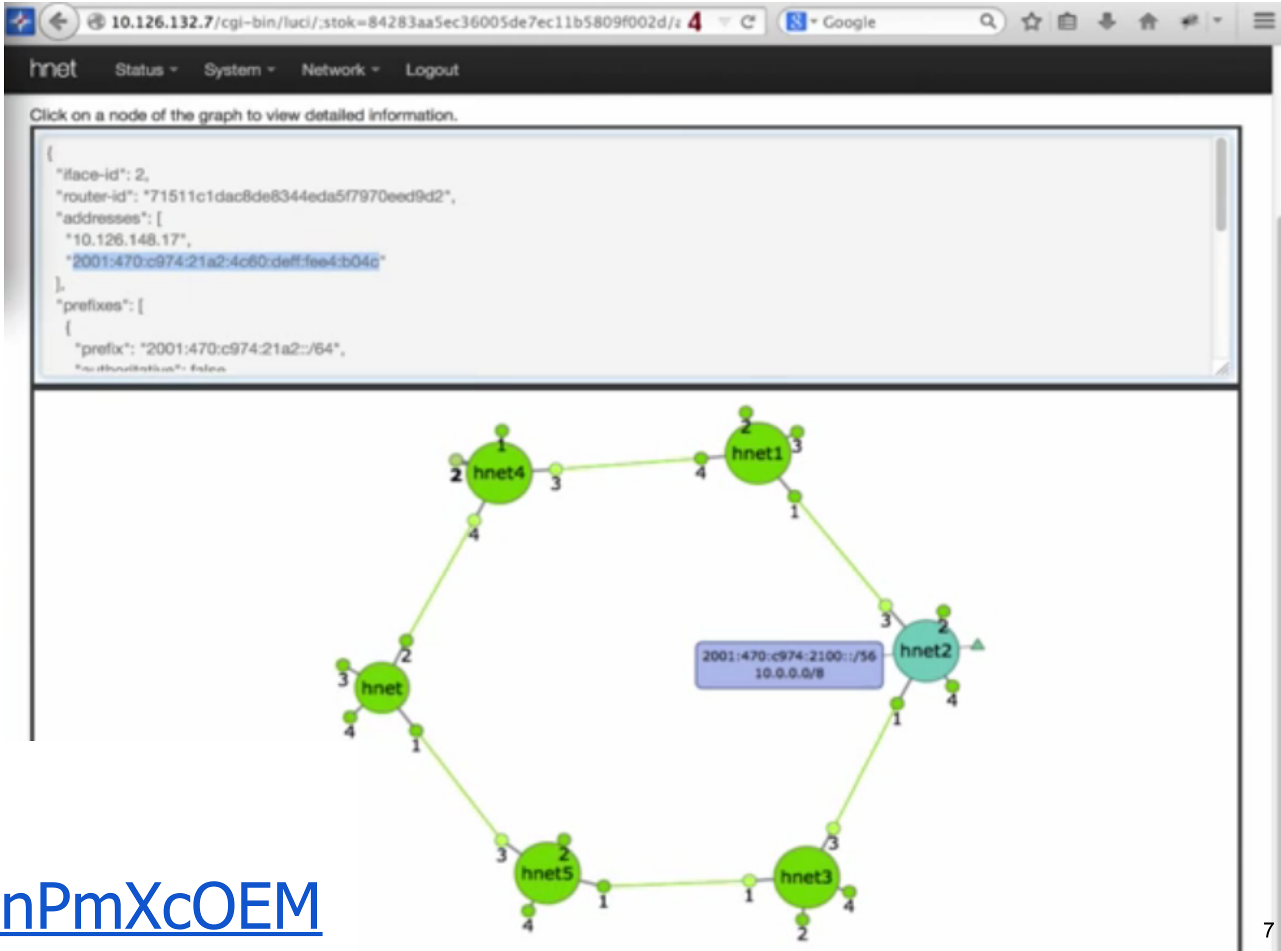
Powered by LuCI Trunk (svn-r10375) OpenWrt Barrier Breaker r41337

One More Thing

JSON-Export
for monitoring

Interactive status
WebUI page

Demo:
http://youtu.be/jJ-nPmXcOEM



10.126.132.7/cgi-bin/luci/;stok=84283aa5ec36005de7ec11b5809f002d/

Click on a node of the graph to view detailed information.

```
{
 "iface-id": 2,
 "router-id": "71511c1dac8de8344eda5f7970eed9d2",
 "addresses": [
  "10.126.148.17",
  "2001:470:c974:21a2:4c60:deff:fee4:b04c"
 ],
 "prefixes": [
  {
   "prefix": "2001:470:c974:21a2::/64",
   "authoritative": false
```

2001:470:c974:2100::/56
10.0.0.0/8

Thank You

Do you have questions or feedback?

We’ll be around for more discussions or in case you are interested in trying out the implementation.

Please also visit www.homewrt.org for source code, binaries and some documentation.