Options and Issues for compression of ROLL artifacts

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IETF 92
2015
http://www.sandelman.ca/SSW/ietf/roll/ROLL-6lo-options-for-compression.pdf

Summary of Virtual Interim meeting (ROLL)

- Occured online 2015-02-10.
- It was a three hour webrtc (JITSI)
- Attended by 10 people.
- Deep dive into problem and solution space.
- https://www.ietf.org/proceedings/interim/2015/02/10/roll/proceedings.html

Results from this meeting:

1. IP-in-IP encapsulation is needed in more cases than many thought: pretty much *all* the time. ZigbeeIP specified this. The IETF needs to be clear. Result is ROLL (re-)CHARTER to do this, being considered.
2. Not having IP-in-IP and RH3 compression is fatal flaw of NHC, NHC++ could fix it.
3. but, if IP/RPI/RH3/IP/.. is common header pattern, we should compress it as a unit to get better results.
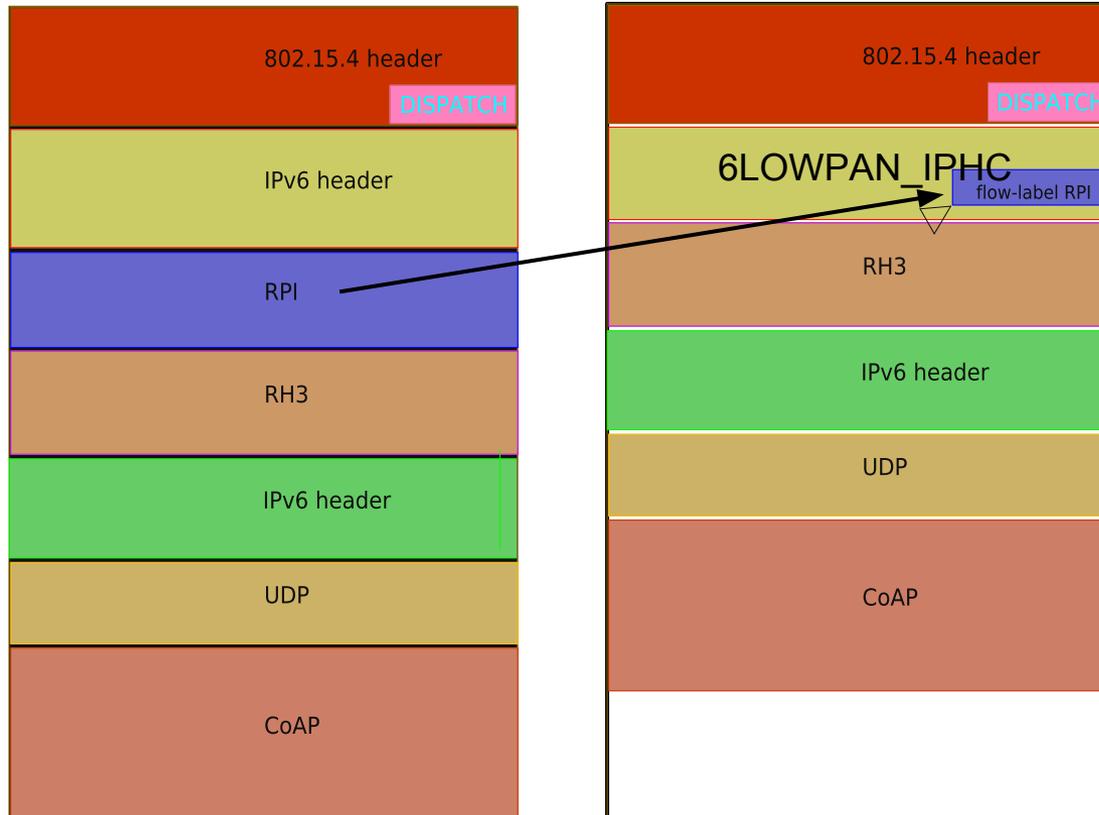
Solution details: thubert-6lo-rpl-nhc

- NHC originally proposal to add a new 6282 Next Header Compression for just 6553.
- NHC++ (to be defined), would provide additional "NHC" headers to compress:
  - RH3
  - IPv6 header
- NHC++ probably can not be done with "greedy" approach, but with "conservative" approach, it can be made to easily fit.
  - NHC++ would likely only consume one EID value (only two are left)
    - (see RFC6282, section 4.2)
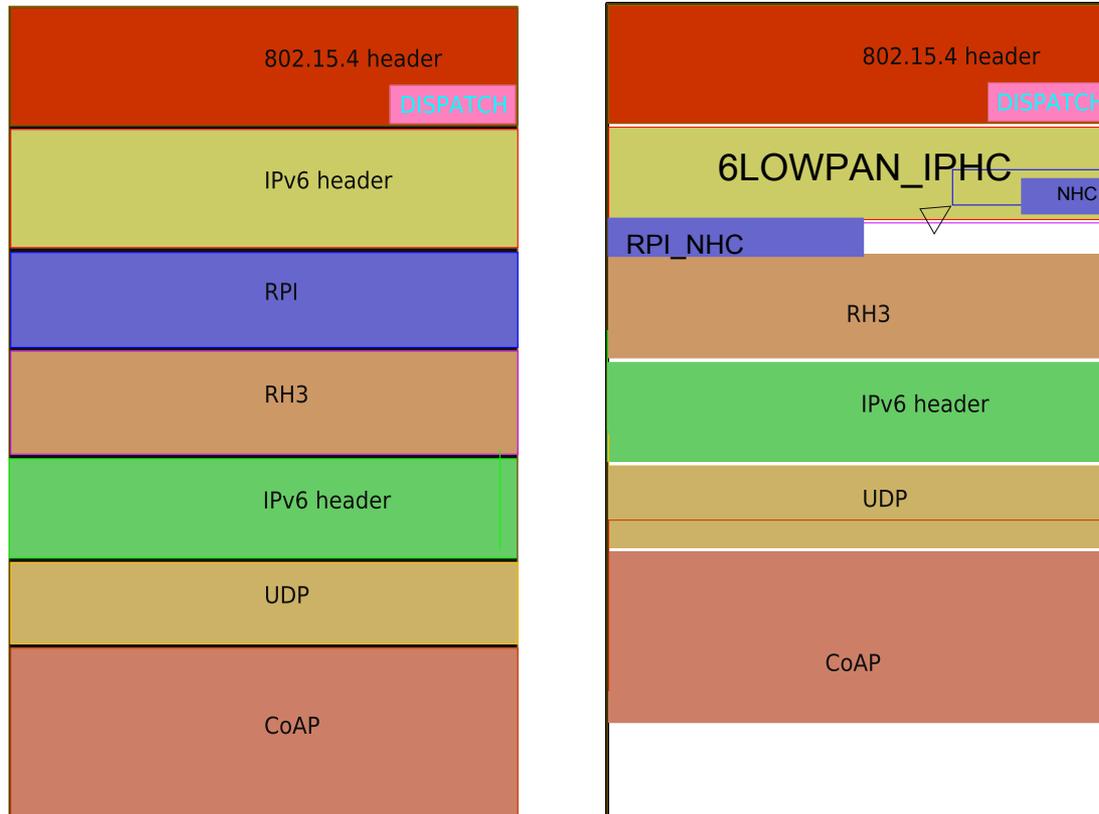
Current base solution

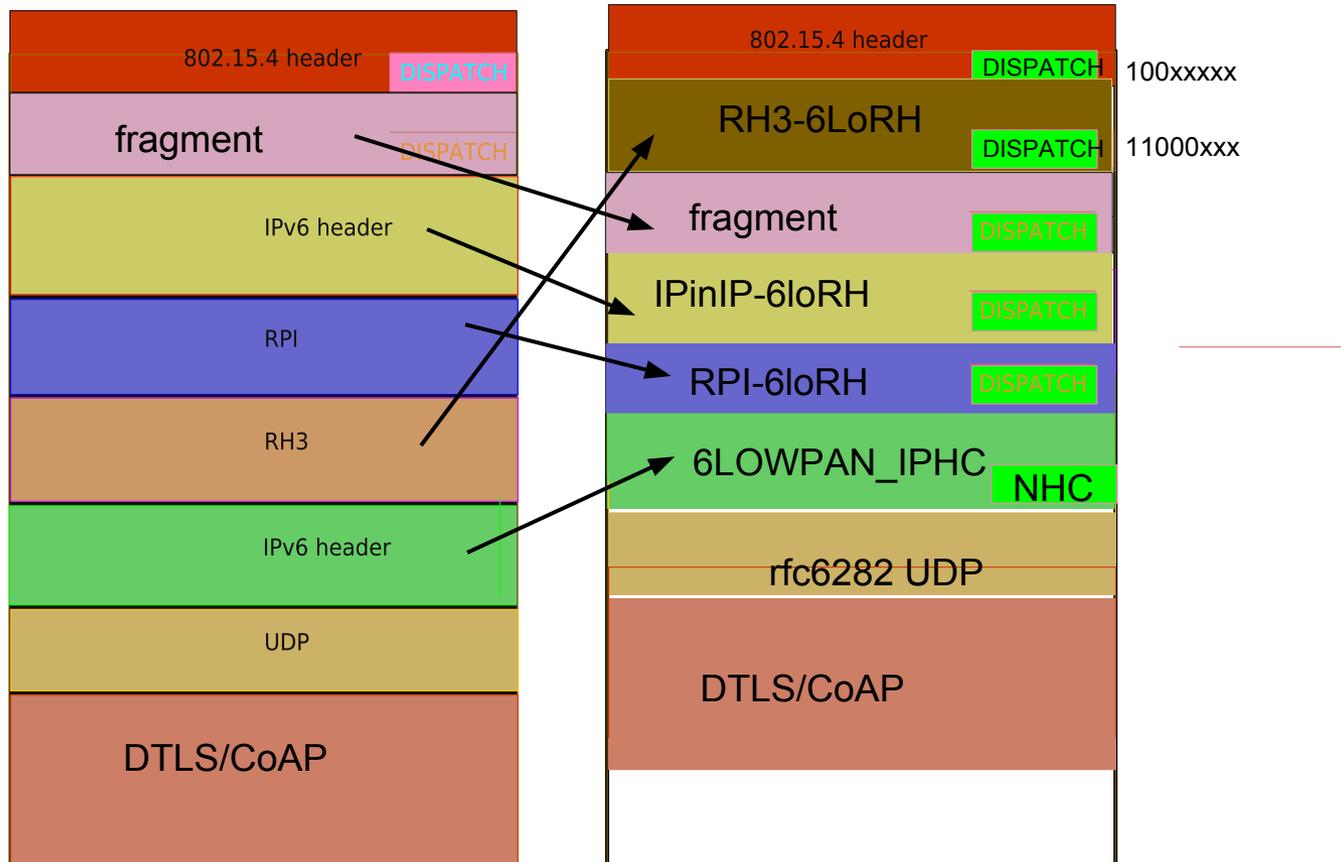4
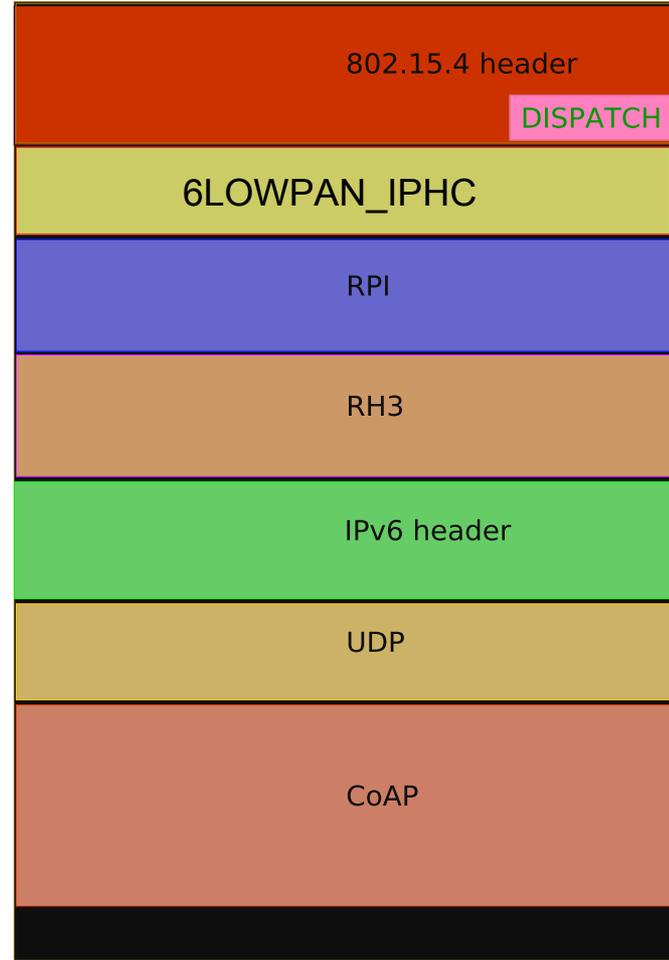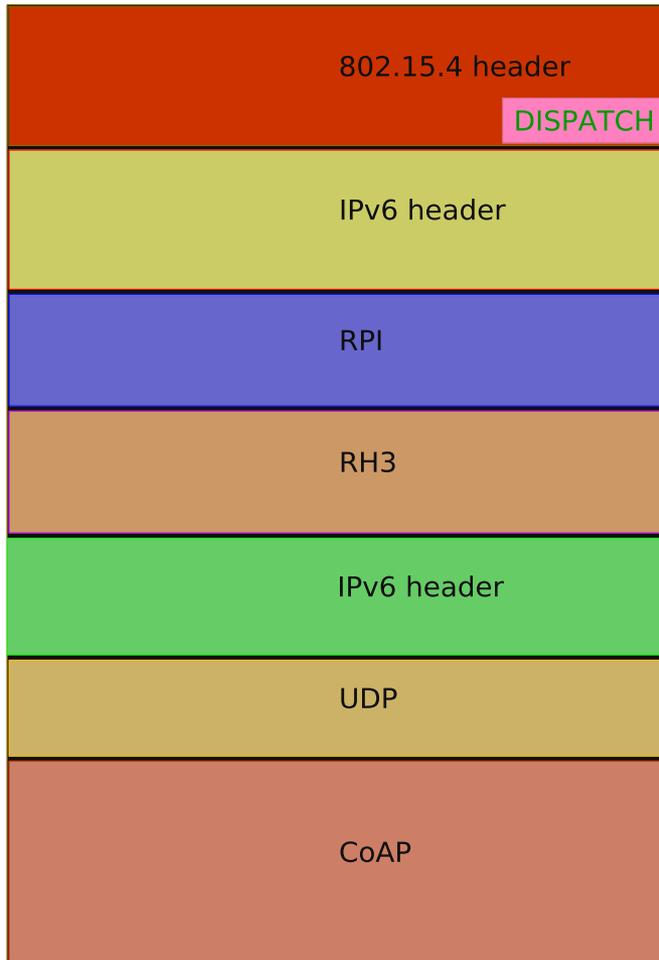
Note: IGNORES FRAGMENTATION HEADERS
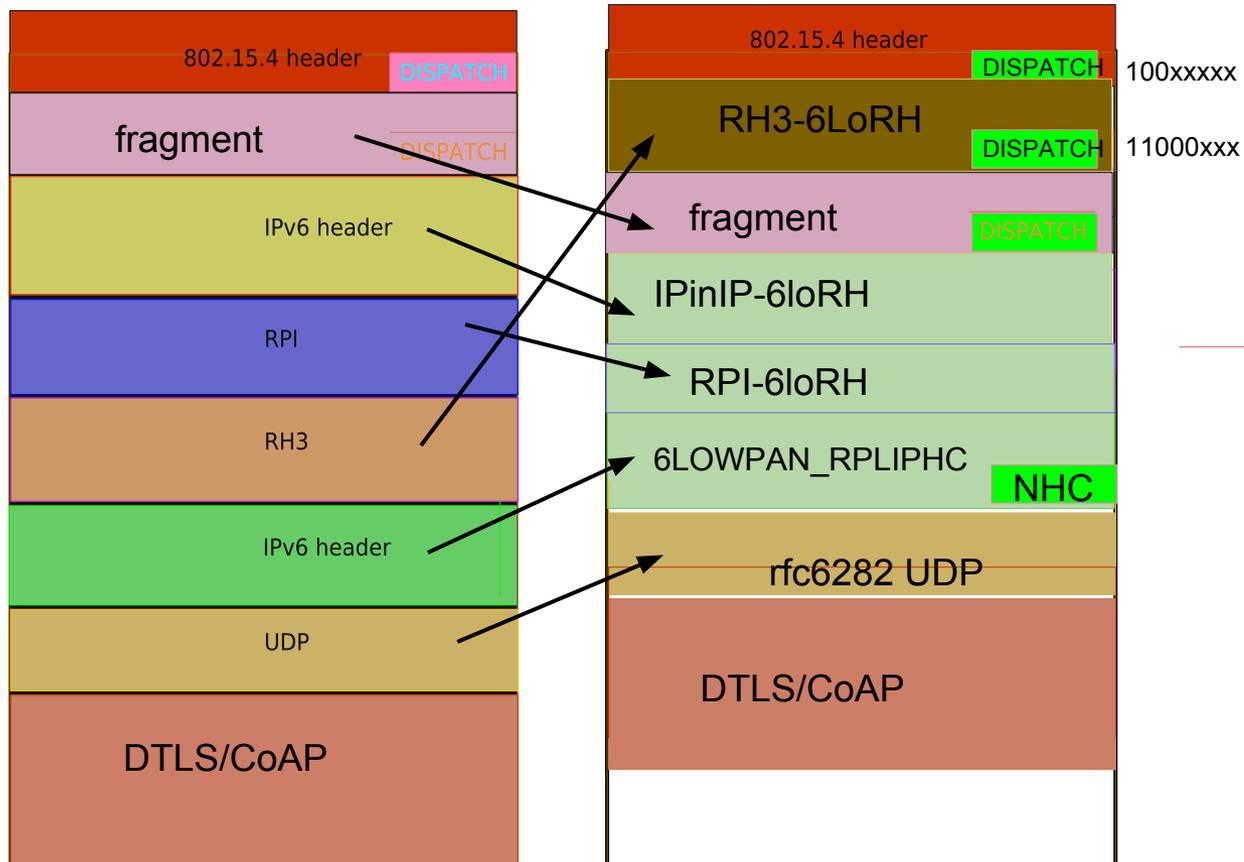
Flow Label Proposal

NHC solution: architectural view

Dispatch: architectural view

Left stack (top to bottom):
- 802.15.4 header — DISPATCH
- fragment — DISPATCH
- IPv6 header
- RPI
- RH3
- IPv6 header
- UDP
- DTLS/CoAP

Right stack (top to bottom):
- 802.15.4 header — DISPATCH — 100xxxxx
- RH3-6LoRH — DISPATCH — 11000xxx
- fragment — DISPATCH
- IPinIP-6loRH — DISPATCH
- RPI-6loRH — DISPATCH
- 6LOWPAN_IPHC — NHC
- rfc6282 UDP
- DTLS/CoAP

BYTE SIZES ARE NOT TO SCALE

Dispatch: second possible view

NEXT STEPS?