CoAP Compression

Authors:
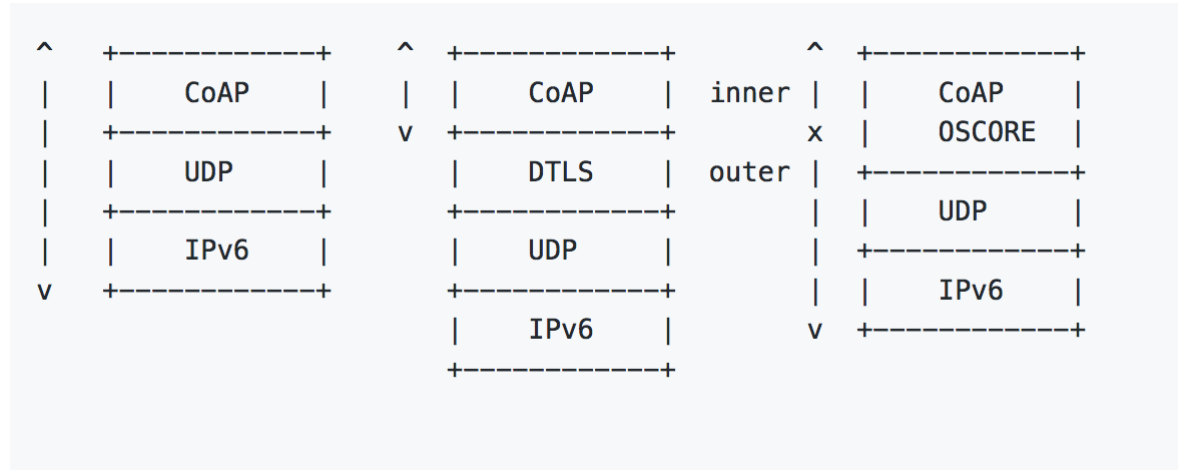Laurent Toutain <Laurent.Toutain@imt-atlantique.fr>
Ana Minaburo ana@ackl..io
Ricardo Andreasen <randreasen@fi.uba.ar>

IETF 102, Montreal, July 19TH, 2018

Modifications

- Change text to explain the difference between CoAP and UDP/IPv6
- Add OSCORE section
  - Ricardo Andreasen is co-author

```
^   +--------------+    ^   +--------------+          ^   +--------------+
|   |    CoAP      |    |   |    CoAP      |  inner   |   |    CoAP      |
|   +--------------+    v   +--------------+      x   |   |   OSCORE     |
|   |    UDP       |        |    DTLS      |  outer   |   +--------------+
|   +--------------+        +--------------+          |   |    UDP       |
|   |    IPv6      |        |    UDP       |          |   +--------------+
v   +--------------+        +--------------+          |   |    IPv6      |
                           |    IPv6      |           v   +--------------+
                           +--------------+
```

Modification

- Explain how each field must be compress
  - Version: MUST be compressed
  - Type:
    - Explain how to split value in two sets and mapping list
    - Mandate a rule to send RST to client
  - Code:
    - Same as type
    - Mandate a rule to process error codes

Message ID

- Dev is client:
  - Size can be reduced with MSB
- Dev is server:
  - Use a proxy to reduce the size

draft-ietf-lpwan-coap-static-context-hc-04

Token

- Number of active REST transaction

- Two fields
  - Token Length : regular field processed normally by SCHC
  - Token Value : length is given by a specific function TKL
    - This function use the value a Token Length after decompression
    - Avoid to put directly the size in the Field Length
      - Avoid conflict between a token length value and a field length in the rule

- Token can also be shortened by a proxy

draft-ietf-lpwan-coap-static-context-hc-04

Options: Accept and Content

LPWAN

- recommend mapping list to reduce the size
- If sent, must be viewed as a variable length field (in Bytes)

draft-ietf-lpwan-coap-static-context-hc-04

Size1, Size2, Max-Age, Uri-Host and Uri-Port

- Regular compression
  - Elided
  - Mapping-list/MSB
  - Ignored

Uri-Path and Uri-Query

- Core of CoAP Compression
  - Use position for each elements
  - Each element can be a matching list
- What do we do with /a/b/x and /c/d/x
  - Define a matching list for each element.
    - Reduce compression efficiency (2 bits instead of 1 in the example)
    - Allows unwanted decompression /a/d, /c/b
  - Define a matching list with several elements ["/a/b","/c/d"]
    - No modification to SCHC, more complex implementation
    - Position remains the same (x is in position 3)

Uri-Path and Uri-Query (continued)

- Variable length options
  - Use MSB, but
    - MSB unit is in bit
    - Variable unit is in byte
  - Mandate MSB to be a multiple of 8
  - Explained the length coding in the residue
- Ticket #27 -> close ?

Proxy-URI and Proxy-Scheme

- Regular compression
  - Equal
  - MSB
  - Matching list
  - Ignore

draft-ietf-lpwan-coap-static-context-hc-04

ETag, If-Match, If-None-Match, Location-Path and Location-Query

LPWAN

- Always ignore

draft-ietf-lpwan-coap-static-context-hc-04

Other RFC/Drafts

- Block: incompatible with LPWAN ?
  - Both are possible, for SCHC: ignore/value-sent
- Observe:
  - Regular compression: MSB, mapping list, ignore
  - Proxy to shorten the value
- NoResponse:
  - Regular compression
- Time Scale:
  - Regular compression

draft-ietf-lpwan-coap-static-context-hc-04

To do

- Language revision (Ivyalo):
  - Avoid MUST

- More examples?