LPWAN WG

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

BCP 9 (Internet Standards Process)

BCP 25 (Working Group processes)

BCP 25 (Anti-Harassment Procedures)

BCP 54 (Code of Conduct)

BCP 78 (Copyright)

BCP 79 (Patents, Participation)

https://www.ietf.org/privacy-policy/ (Privacy Policy)

Reminder:

Minutes are taken *
This meeting might be recorded **
Presence is logged ***

* Scribe; please contribute online to the minutes at: https://etherpad.tools.ietf.org/p/lpwan
** Recordings and Minutes are public and may be subject to discovery in the event of litigation.
*** From the Webex login

Agenda bashing

17:05	Opening, agenda bashing (Chairs) • Note-Well, Scribes, Agenda Bashing, Approval minutes from last meeting • Review todo • Status of drafts	5mn
17:10	SCHC padding - Dominique	10mn
17:20	SCHC Tickets and Discussed options – Ana	30mn
17:50	SCHC CoAP – Laurent	10mn
18:00	AOB	QS

Action items

- SCHC UDP checksum text
  - Pascal sent proposal to ML
- Find reviewers for drafts
  - CoAP
  - IP/UDP SCHC – Charlie Perkins confirmed for the moment (waiting for others)

draft-ietf-lpwan-ipv6-static-context-hc-13 Single padding proposal

Authors:
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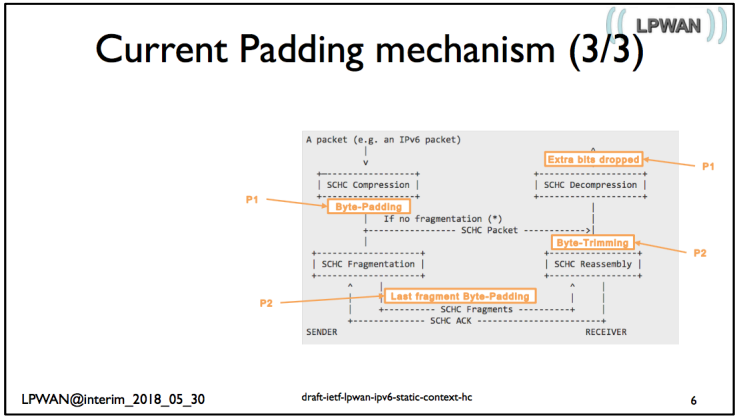
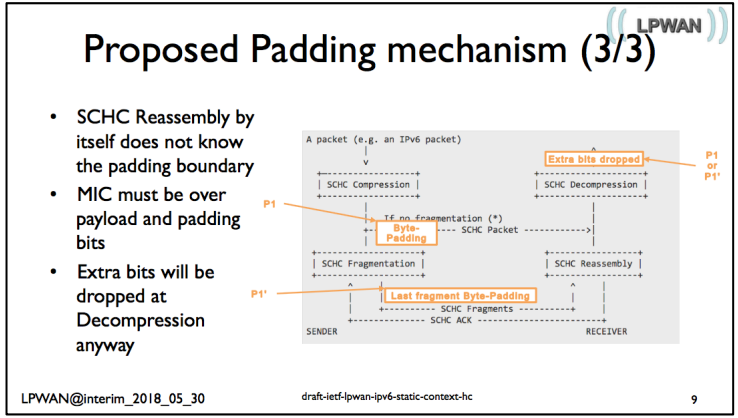
Carles Gomez <carlesgo@entel.upc.edu>
Ana Minaburo ana@ackl.io
Dominique Barthel <dominique.barthel@orange.com>

Discussed at last interim (May 30th)





- See last interim slides for technical description
  - https://datatracker.ietf.org/meeting/interim-2018-lpwan-05/materials/slides-interim-2018-lpwan-05-sessa-aggregated-slides (pages 7 to 21)

Benefits

- When padding to bytes, at most 7 added bits
  - Instead of at most 14
- Simpler, cleaner description
- Solves issue (?):
  - currently, fragmentation assumes byte padding

Status

- Acklio's implementers say change is no-brainer
- Text already written
  - In a git branch, ready to be merged
  - Diff available for everybody to inspect
- Interim meeting discussion showed *a priori* positive reaction to the proposed change
- Two weeks have elapsed since interim meeting
- Two additional wake-up calls on mailing list
- Got 6 positive answers on ML, 0 negative

Adoption of change?

- If yes
  - we'll schedule a work session with Ana to solve *merge conflicts* (editorial) between the master and the single_padding branches
    - mostly several ASCII art diagrams, which diverged in the two branches
  - New revision published end of this week

END of single padding slides

draft-ietf-lpwan-ipv6-static-context-hc-13

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Open Tickets

- #12 Padding place
- #20 Byte Boundary
- #21 C bit in ACK
- #22 Fragmentation use (TbC)
- #23 NB-IoT (TbC)
- #24 DTag (TbC)
- #25 Rules not synchronized (TbC)
- #26 Frags and Acks (TbC)
- #28 ACK-Always baseline mechanism description to be rephrased
- #29 Rephrase Bitmap Encoding section

- #15 SCHC technology specific parameters => updated to version 11 (ToDo: update to last version)

#22 Fragmentation Use

- The use of fragmentation over NB-IoT is useless because the L2 has its own segmentation protocol
  - Out of Scope but…
- Technology Specific Document for NB-IoT MUST:
  - Define the use of SCHC Compression and SCHC Fragmentation in the corresponding bearers and use case.

#23 NB-IoT

- The Multi-Rat Network Propagation is out of the scope of this draft, where Star topology is retained, but…
- Technology Specific Document for NB-IoT MUST:
  - Define the use of SCHC Compression and SCHC Fragmentation for this kind of propagation

#24 DTag

- What happens when Dtag is not present?
  - There can only be 1 SCHC Packet in transit. After all the fragments has been transmitted another SCHC Packet may be sent.
- Complete Ticket with answer
  - Close Ticket

#25 Rule ID Synchronization

- The usages and applications for the Rule ID space is out of the scope of this document
  - Need to be study and referenced in another document (re-charter)

#26 Matching Acks with Frags

- Rule ID is chosen during the Fragmentation procedure
- ACK copy the same Rule ID as the one used in the fragments
- The Rule ID gives the context to refer to
- ToDo: ACK must have the same Rule ID and Dtag values than the one used in the fragments

#28 ACK-Always baseline description to be rephrased

- Section 7.5.2 of version 13 specifies:
  - When the FCN reaches value 0 and there are more SCHC Fragments to be sent after, the sender transmits the last SCHC Fragment of this window using the All-0 fragment format, it starts the transmitted is the last SCHC Fragment of the SCHC Packet, the sender uses the All-1 fragment format, which includes a MIC.
- It seems that the sentence is incomplete or ill-formed.
- Yes, something was delete since version 11, from version 10 in red:
  - When the FCN reaches value 0 and there are more SCHC Fragments to be sent after, the sender transmits the last SCHC Fragment of this window using the All-0 fragment format, it starts the Retransmission Timer and waits for an ACK. On the other hand, if the FCN has reached 0 and it is the last fragment of the SCHC Packet, the sender uses the All-1 fragment format, which includes a MIC.

#29 Rephrase Bitmap Encoding section

- Section 7.4.3.1 (Bitmap Encoding) of version 13 states:
  - In order to reduce the resulting frame size, the encoded Bitmap is shortened by applying the following algorithm: all the right-most contiguous bytes in the encoded Bitmap that have all their bits set to 1 MUST NOT be transmitted.
- This phrasing gives to the reader the feeling that the bitmap can be encoded as a standalone bit string. It seems that this is not the case: the bytes with bits set to 1 should be removed from the bit string resulting from the concatenation of the ACK header and of the bitmap.
-

#12 Padding Place

- Single-padding proposal … (Dominique presentation)
- More discussion
  - Rewrite section 8. Padding is done before transmission either after SCHC Compression or after SCHC Fragmentation
  - Depends on L2
  - MIC computed with padding
  - Padding on the draft is a default solution, technologies may define another solution if needed (add Ticket 15)

#12 Padding Place

- Single-padding proposal
  - The ML has received some positive answers
  -

#20 Byte Boudary

- |<------ byte boundary ------->|
- Replaced with:
  - Option 1

    | next byte boundary ->|
  - Option 2

    | L2 Word ->|

- ML consensus is for Option 2

#21 C bit in ACK

- For the moment consensus
  - Option 1: AM, DB, CG, LT, JCZ
- So: Update Ticket 15 with the warning to adjust MAX_WIND_FCN accordingly, if L2 technology constrains Bitmap size

Next Steps

- Finish all the modifications and close the tickets
- Update Ticket 15 to last version
- Publish last version (when?)

–

- More Questions?
  - Thanks

draft-ietf-lpwan-ipv6-static-context-hc-13

Authors:
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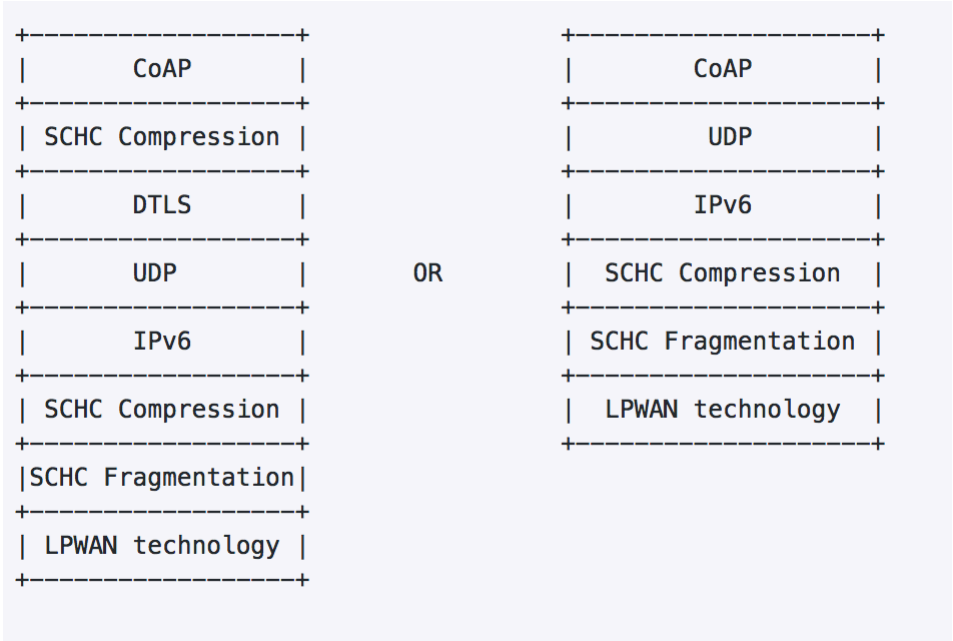
Ana Minaburo <ana@ackl.io>

Interim 13/06/2018

New section: SCHC Compression Process

- Use of SCHC for CoAP
- Use of SCHC for all the stack



Modification

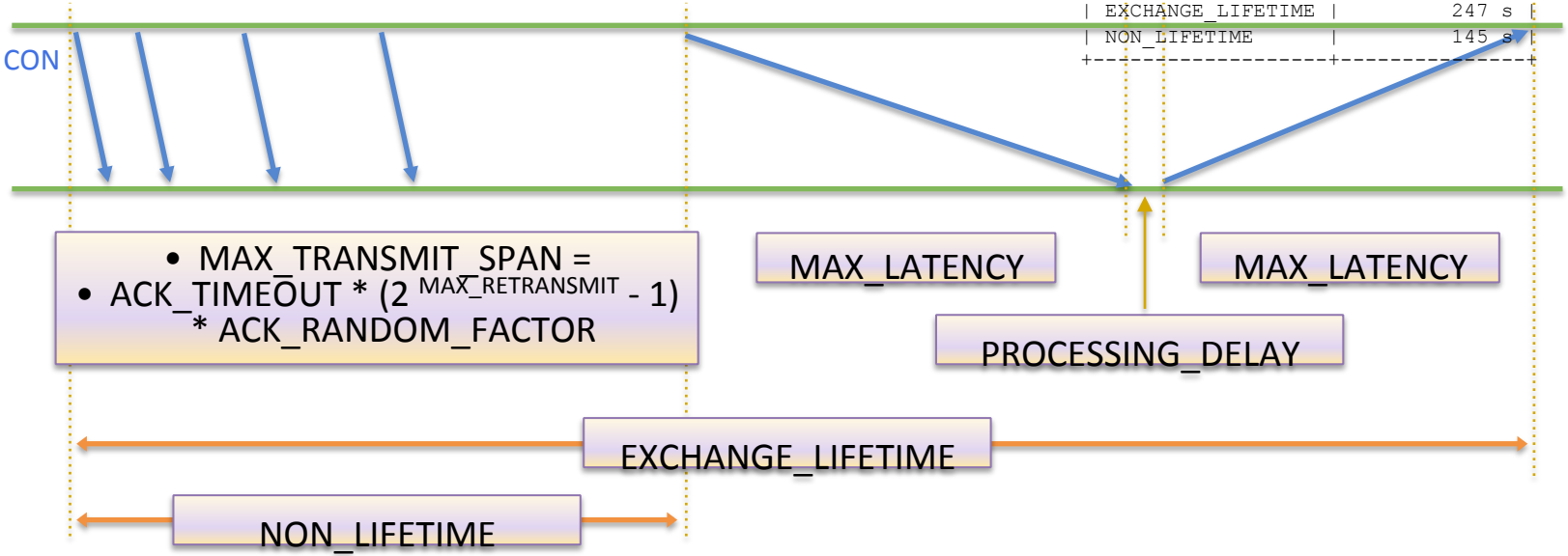
- Change text to explain the difference between CoAP and UDP/IPv6
- Explain how each field must be compress
  - Version: MUST be compressed
  - Type:
    - Explain how to split value in two sets and mapping list
    - Mandate a rule to send RST to client
  - Code:
    - Same as type
    - Mandate a rule to process error codes

Message ID

- Dev is client:
  - Size can be reduced with MSB
  - How to define the size ?
- Dev is server:
  - Use a proxy to reduce the size
  - More difficult to process
  - Security issue if flooding ? Rate limitation ?

Worst case

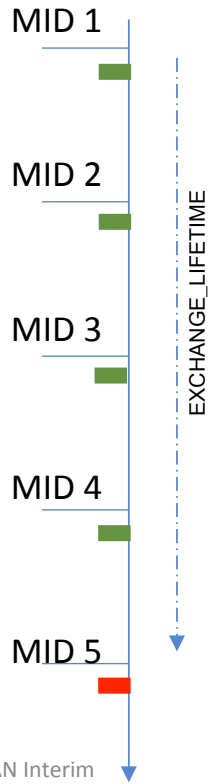
name	default value
MAX_TRANSMIT_SPAN	45 s
MAX_TRANSMIT_WAIT	93 s
MAX_LATENCY	100 s
PROCESSING_DELAY	2 s
MAX_RTT	202 s
EXCHANGE_LIFETIME	247 s
NON_LIFETIME	145 s



Sender: Do not re-use Message ID, Receiver : filter duplicate Message ID

[from Matthias Kovatsch]

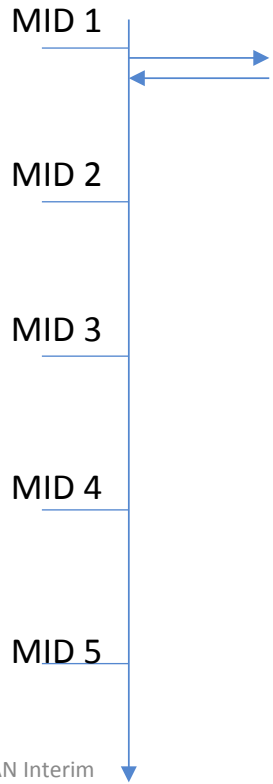
Message ID



Retransmission time < EXCHANGE_LIFETIME
-> anticipation window = EXCHANGE_LIFETIME / period

MID size = log2(anticipation window)

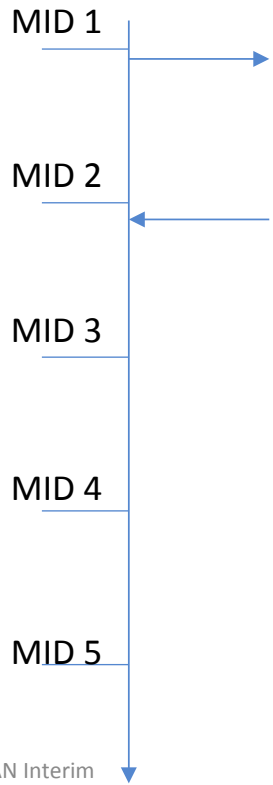
Message ID



LoRa Class A / Sigfox :

- Ack can be received in response to the uplink

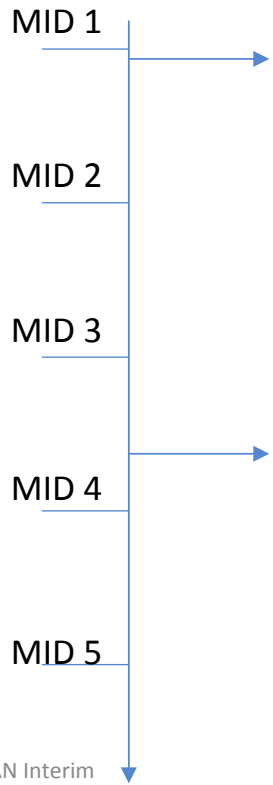
Message ID



LoRa Class A / Sigfox :

- Ack can be received in response to the uplink
- Ack can be delayed until the next transmission

Message ID



LoRa Class A / Sigfox :

- Ack can be received in response to the uplink
- Ack can be delayed until the next transmission

Hypothesis:

- Retransmission are sent within the regular periodic traffic

Worst case

name	default value
MAX_TRANSMIT_SPAN	45 s
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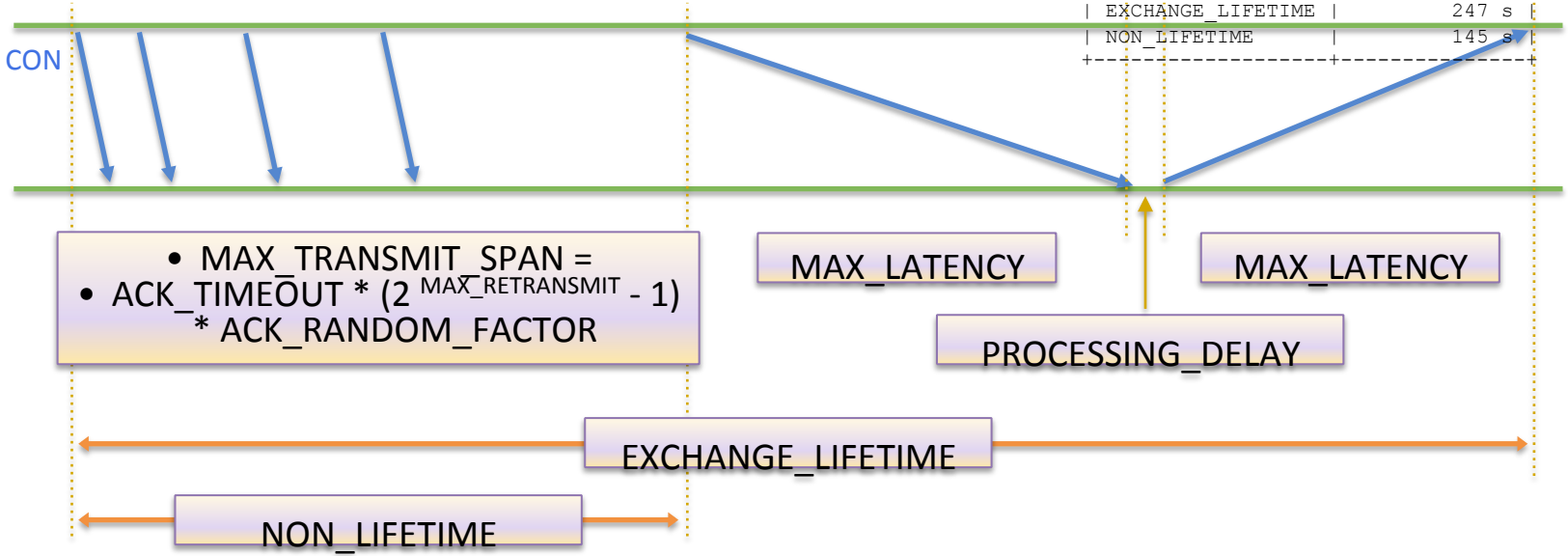

This computation can be done by the device and sent using TS option

[from Matthias Kovatsch]

Worst case

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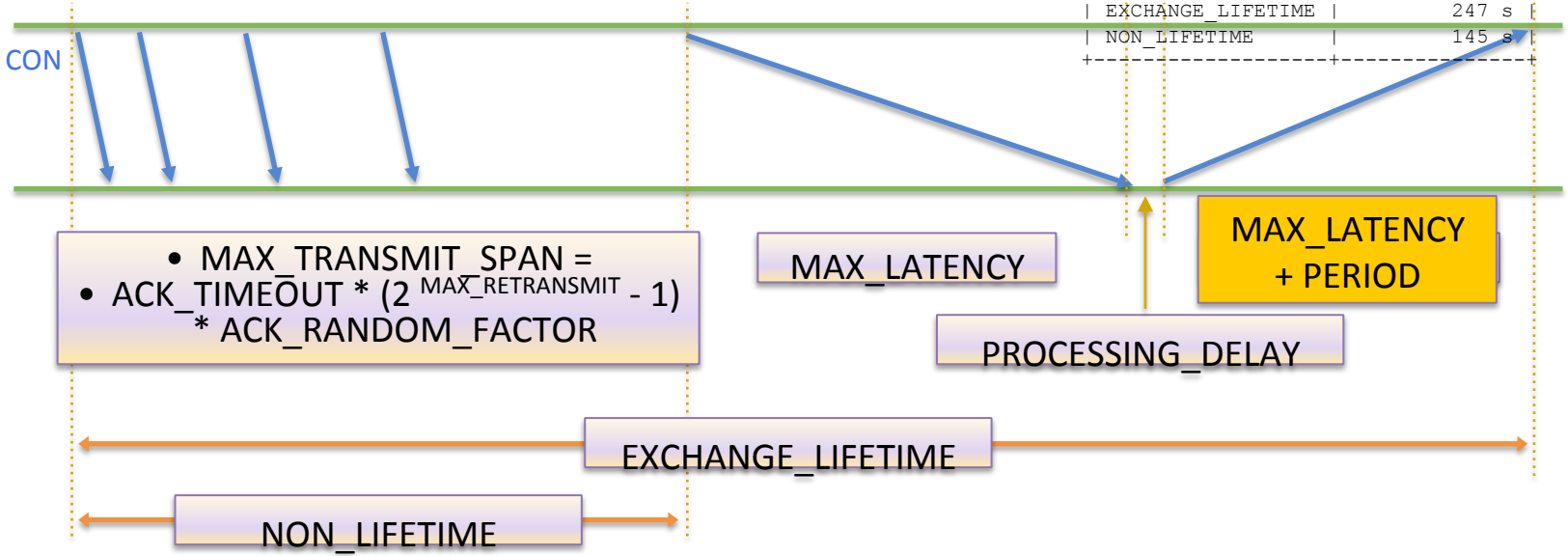

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[from Matthias Kovatsch]

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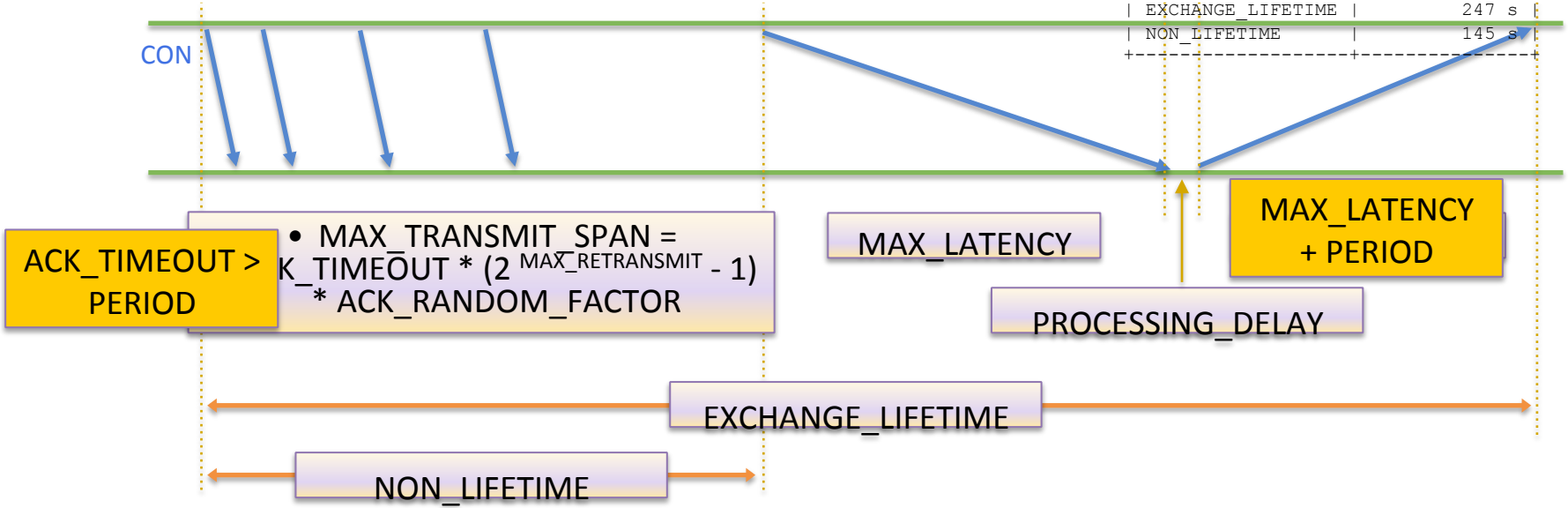

This computation can be done by the device and sent using TS option

[from Matthias Kovatsch]

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

Options: Accept and Content

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

Max-Age, Uri-Host and Uri-Port

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

- Note that Max-Age is in seconds, may be not in line with LPWAN
  - A new CoAP option with Max-Age in minute ?

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
  - Explain the length coding in the residue
  - New subsection for MSB/LSB

MO	CDA	TV	Compression Residue
Ignore	Value-Sent		Length + Residue
MSB(x)	LSB		Length + Residue
Match-mapping	Mapping Sent	List	Residue(index)

Proxy-URI and Proxy-Scheme

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

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

- Always ignore

Other RFC/Drafts

- Block: incompatible with LPWAN ?
  - Recommend LPWAN frag (better retransmission management) ?
- Observe:
  - Regular compression: MSB, mapping list, ignore
- NoResponse:
  - Regular compression
- Time Scale:
  - Regular compression
  - Push this draft in core ?
- Object Security (coming soon):
  - Regular compression

AOB ?