

# LPWAN WG

WG Chairs:

Alexander Pelov <a@ackl.io>

Pascal Thubert <pthubert@cisco.com>

AD: Suresh Krishnan  
<suresh@kaloom.com>



# Note Well

Any submission to the IETF intended by the Contributor for publication as all or part of an IETF Internet-Draft or RFC and any statement made within the context of an IETF activity is considered an "IETF Contribution". Such statements include oral statements in IETF sessions, as well as written and electronic communications made at any time or place, which are addressed to:

- The IETF plenary session
- The IESG, or any member thereof on behalf of the IESG
- Any IETF mailing list, including the IETF list itself, any working group or design team list, or any other list functioning under IETF auspices
- Any IETF working group or portion thereof
- Any Birds of a Feather (BOF) session
- The IAB or any member thereof on behalf of the IAB
- The RFC Editor or the Internet-Drafts function

All IETF Contributions are subject to the rules of [RFC 5378](#) and [RFC 8179](#).

Statements made outside of an IETF session, mailing list or other function, that are clearly not intended to be input to an IETF activity, group or function, are not IETF Contributions in the context of this notice. Please consult [RFC 5378](#) and [RFC 8179](#) for details.

A participant in any IETF activity is deemed to accept all IETF rules of process, as documented in Best Current Practices RFCs and IESG Statements.



**I E T F**

A participant in any IETF activity acknowledges that written, audio and video records of meetings may be made and may be available to the public.



## Reminder:

Minutes are taken \*

This meeting is 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

17:00	Opening, agenda bashing (Chairs) <ul style="list-style-type: none"><li>• Note-Well, Scribes, Agenda Bashing, Approval minutes from last meeting</li><li>• Review todo</li><li>• Status of drafts</li></ul>	10mn
17:10	LPWAN Overview - WGLC status and updates	5mn
17:15	Fragmentation optimization (Laurent/Ana)	10mn
17:25	Finite State Machine Discussion (Laurent)	20mn
17:45	Update on adding a length field for rules (Arun)	5mn
17:50	Update on SCHC fragmentation (Carles)	10mn
17:xx	AOB	QS

# Last meeting Action items

- ~~Chairs to book the meeting for IETF 100, 80 people, 2:30Hours~~
- ~~Alper to send an email to the list with proposed editorials~~
- ~~Chairs to Ask Stephen to publish the doc with Alper's comment\*~~
- ~~Arun to resend his mail asking for the length indication in the rule~~
- ~~Chairs to ask the group to review the FSM in today's material posted on the IETF~~

# IETF 100

Sessions - View (meeting: 100)			
Working Group Name:	IPv6 over Low Power Wide-Area Networks (lpwan)		
Area Name:	Internet Area		
Number of Sessions Requested:	1		
Length of Session 1:	2.5 Hours		
Number of Attendees:	80		
Conflicts to Avoid:			
Other WGs that included IPv6 over Low Power Wide-Area Networks in their conflict list:	dmm, intarea, homenet, curdle, babel, roll, trill, 6lo, cbor		
Resources requested:	<i>None so far</i>		
People who must be present:	<i>None</i>		
Special Requests:			
Activities Log			
Date	Time	Action	Name
Sep 12, 2017	09:49:05	New session was requested	Pascal Thubert

# LPWAN Overview

Editor: Stephen Farrell  
(many contributors)

# WGGLC status and updates

- Doc passed WGGLC
- Got Alper's edits
- Stephen to push out a new rev now
- Then chairs to shoot in the pub-req



# SCHC

## Fragmentation optimization

Authors:

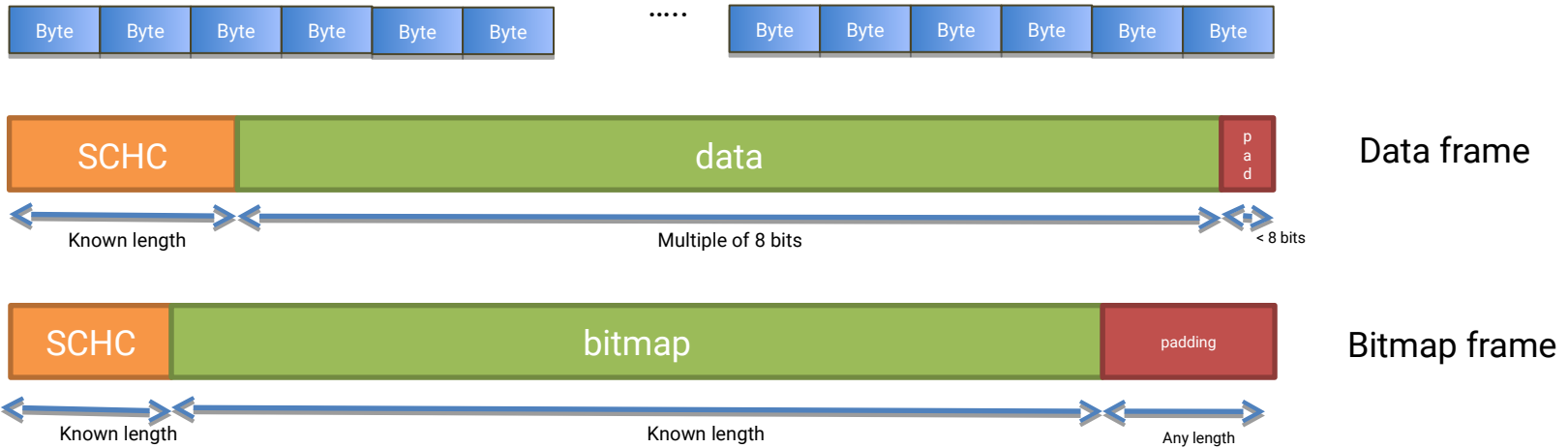
Ana Minaburo <ana@ackl.io>

Laurent Toutain <laurent.toutain@imt-atlantique.fr>

Carles Gomez <carlesgo@entel.upc.edu>

# Padding issue

- LPWAN is aligned on bytes
- SCHC ruleid/Dtag/W/LCN may break this alignment.



# All-x frag optimization

- All-x frag are used to request ack from receiver
  - In normal fragmentation process All-x should contain:
    - 1 byte for All-0 frag
    - MIC-size + 1 byte for All-1 frag
  - Sending empty ack for bitmap transmission:
    - All-0 frag (SCHC+pad [no data]) or
    - All-1 frag (SCHC+MIC+pad [no data])
      - Empty All-1 frag (SCHC+pad) is abort message.



# SCHC

## Finite State Machine Discussion

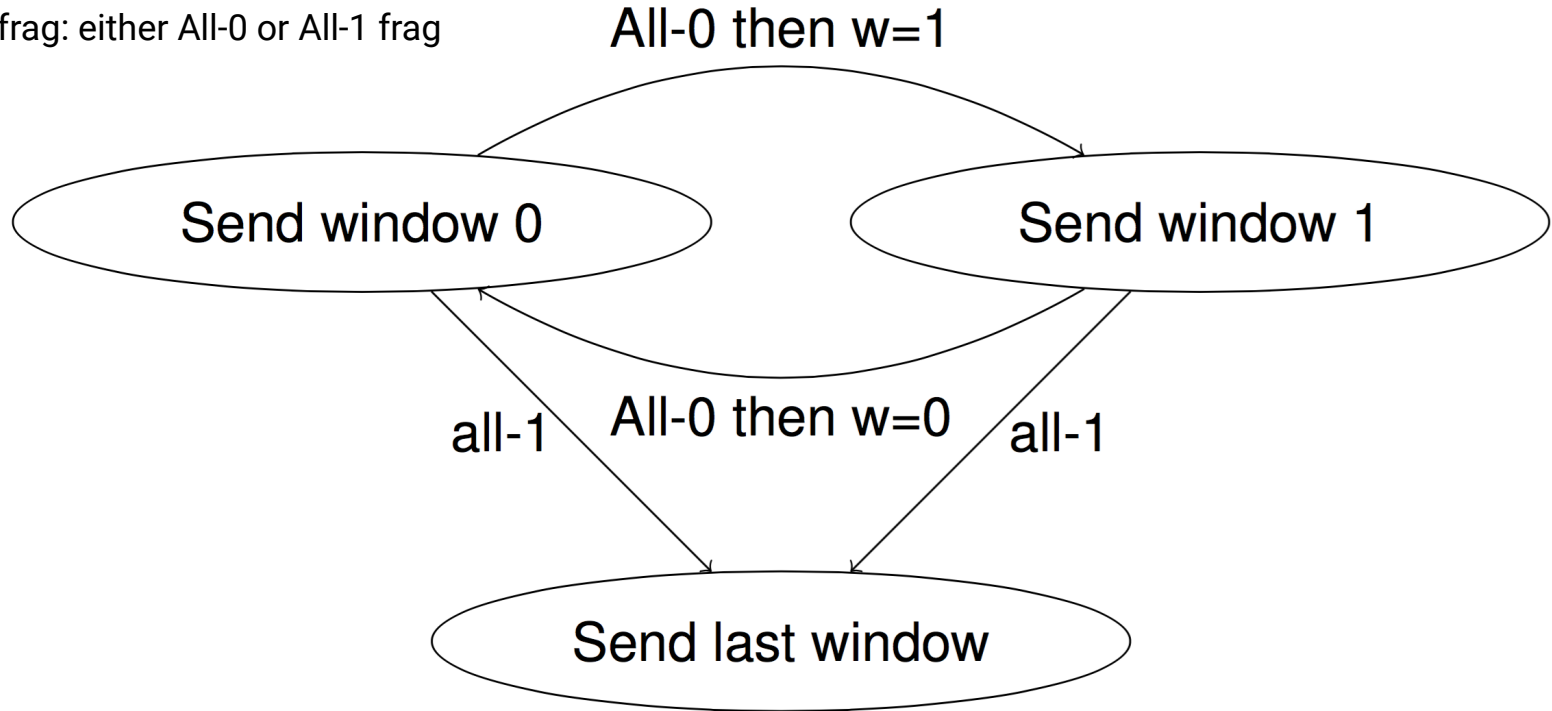
Authors:

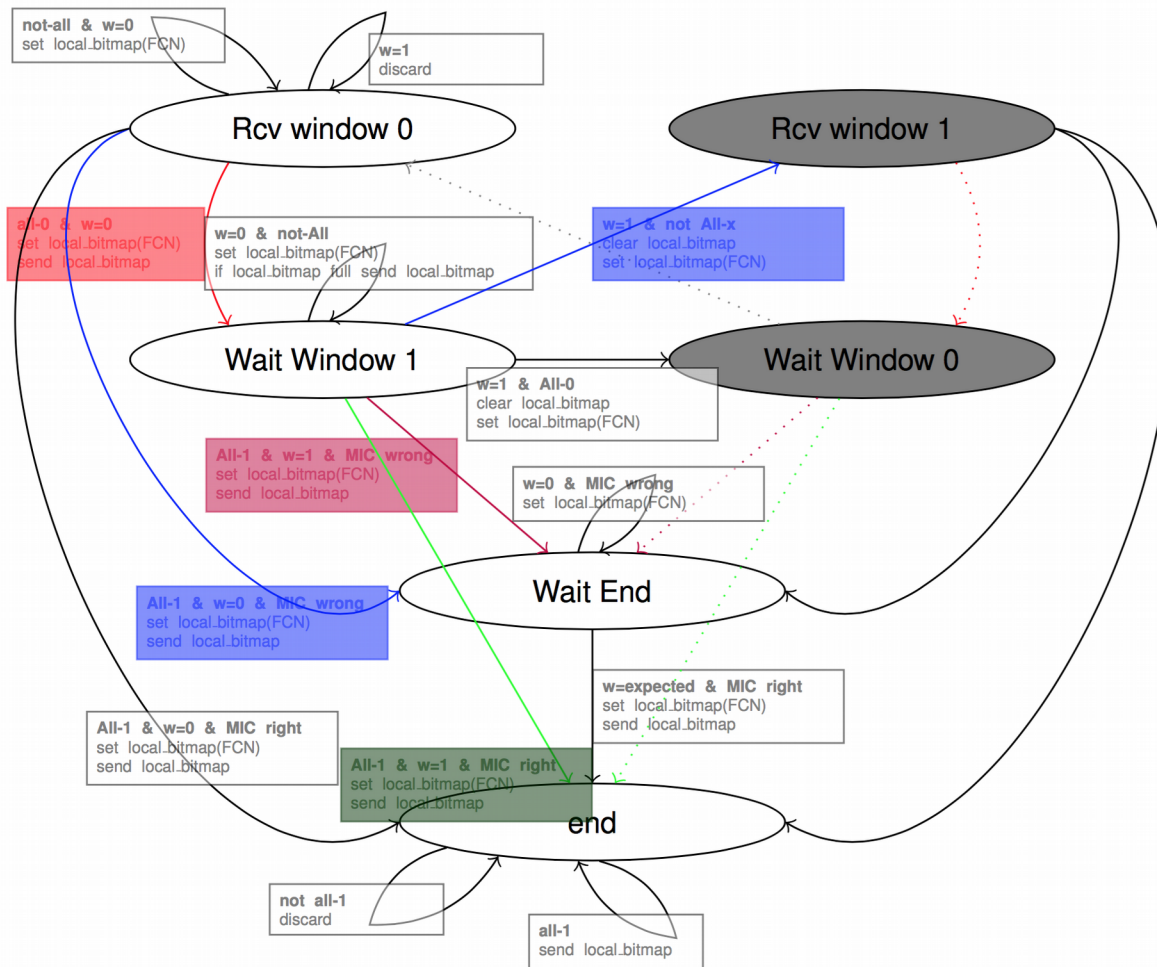
Ana Minaburo <ana@ackl.io>

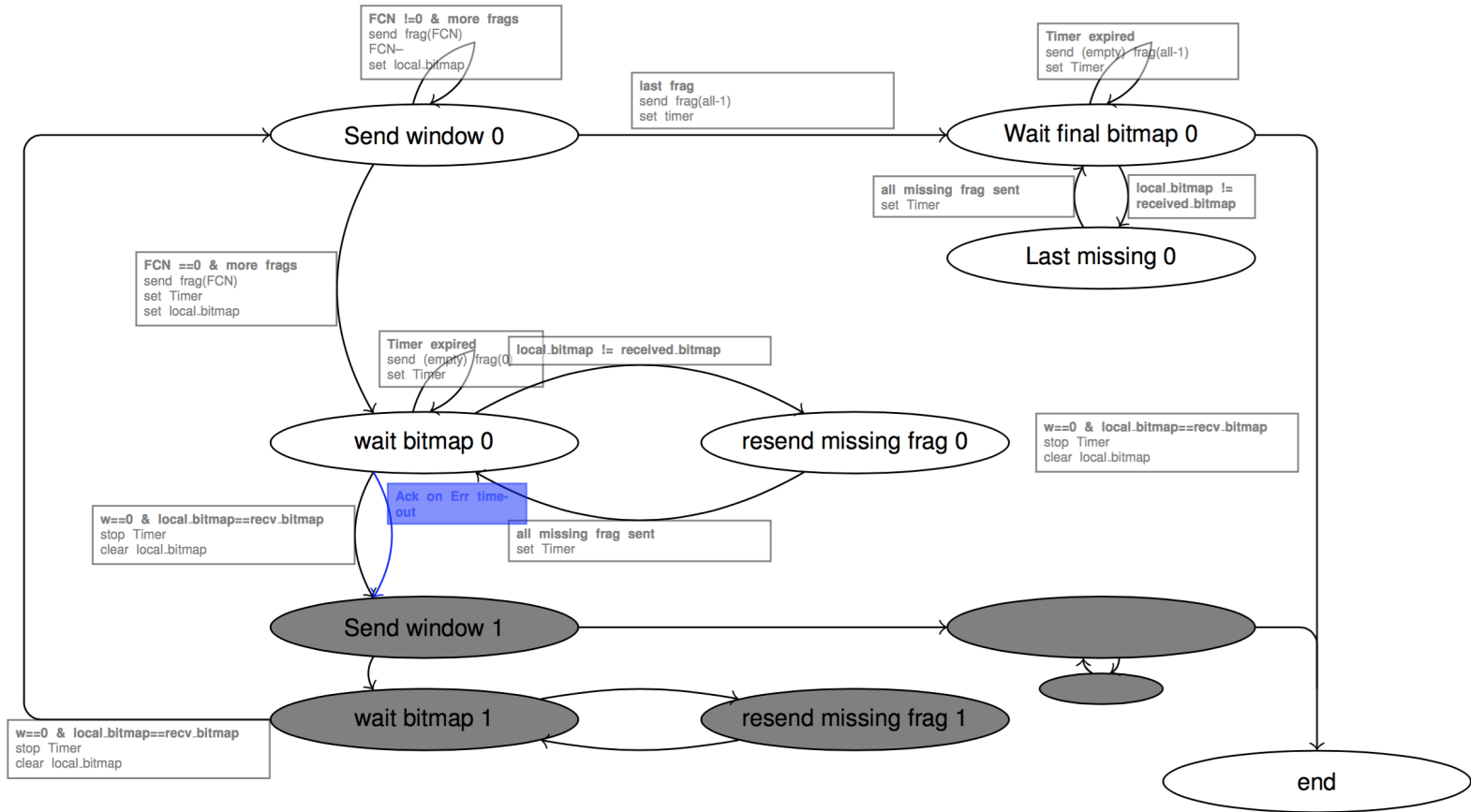
Laurent Toutain <laurent.toutain@imt-atlantique.fr>

Carles Gomez <carlesgo@entel.upc.edu>

- Notation:
- All-0 frag: all the bits of FCN are set to 0
- All-1 frag: all the bits of FCN are set to 1
- All-x frag: either All-0 or All-1 frag









# SCHC

## Update on adding a length field for rules

Authors:

Ana Minaburo <ana@ackl.io>

Laurent Toutain <laurent.toutain@imt-atlantique.fr>

Carles Gomez <carlesgo@entel.upc.edu>

# proposals

- indicate the way how the length shall be derived;
  - variable
    - refer section 4.5, pg 12 of the draft-06.
  - static
    - C/D learns the length by other means.

# proposals

- adding length column separately might increase the memory consumption significantly if there are many rules.
- Re-use MO (matching operator) column to specify the length

# proposals

- MO: check\_length alias ck\_ln

Field	TV	MO	CDF	dir	Sent
CoAP version	01	equal	not-sent	bi	
CoAP Type		ignore	value-sent	bi	TT
CoAP TKL	0	equal	not-sent	bi	
CoAP Code	ML1	match-map	matching-sent	bi	CC CCC
CoAP MID	0000	MSB(7 )	LSB(9)	bi	M-ID
CoAP Uri-Path	path	ck_ln(4)	value-sent	down	PATH

# proposals

- M0: check\_length alias ck\_In
- Some questions:
  - ref: section 4.5.4, one can avoid specifying length in LSB function. How to handle it ?
    - overload M0 ck\_len(x,y) ? x=msb\_val, y=actual\_len
  - any approximate #rules for a lpwa device ?
    - to see if adding additional column would have significant impact on memory

**Thanks!**  
**Comments?**

# SCHC

## Update on SCHC fragmentation

Authors:

Ana Minaburo <ana@ackl.io>

Laurent Toutain <laurent.toutain@imt-atlantique.fr>

Carles Gomez <carlesgo@entel.upc.edu>

# Status

- Last version published is -06
- Further updates already available on GitHub:
  - <https://github.com/lp-wan/ip-compression>



# Technical updates

- Recommended ACK Always timer to be reasonably short
- Window mode – ACK on error
  - Added MAX\_FRAG\_RETRIES
  - Discussed also in the Security Considerations section

# Editorial updates

- Abstract
  - Minor improvement (fragmentation part)
- Merged sections 5.2 and 5.3
  - 5.2. Reliability options: definition
  - 5.3. Reliability options: discussion
- Added examples (Appendix B)
  - Window mode – ACK “always”
    - Last window behavior

# Thanks!

## Comments?

Authors:

Ana Minaburo <ana@ackl.io>

Laurent Toutain <laurent.toutain@imt-atlantique.fr>

Carles Gomez <carlesgo@entel.upc.edu>

**AOB ?**