

LPWAN SCHC Fragmentation

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Status (I/II)

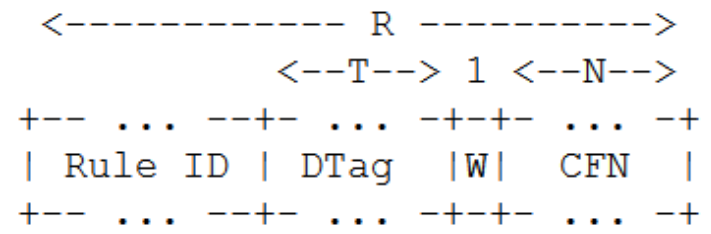
- Since IETF 98 (Chicago)
 - Revisions -03, -04, -05
 - Reviews
 - Diego Dujovne: -03
 - Dominique Barthel: -05
 - Input (WG interims, on the list, offline)
 - Pascal Thubert, Alexander Pelov, Juan Carlos Zúñiga, Carsten Bormann, Gengyu Wei, Arunprabhu Kandasamy

Status (II/II)

- **Current status**
 - Last revision published is -05
 - Updates ready for -06 after DB's review
 - Available on github.com/lp-wan/ip-compression
 - Overall: stable

Main updates since -02 (I/II)

- Packet mode removed
- Multiple window sizes supported
- Highest CFN in the window lower than 2^N-2
 - E.g. it can be 23 (with N=5), allows a 24-bit bitmap
- W and DTag added
 - Both in fragments and ACKs
- Timers added
 - Ack on error
 - Ack “always”



A fragment (not the last one)

Main updates since -02 (II/II)



- Parameters
 - MAX_ACKS_PER_WINDOW
 - MAX_ACK_REQUESTS
 - MAX_FRAG_RETRIES
- Abort
- Downlink fragment transmission

Main updates for -06 (I/II)

- FCN instead of CFN
 - Fragment Compressed Number
- Highest FCN in the window
 - MAX_WIND_FCN
- Sender in Window mode – ACK on error
 - Assumption: ACK wait time smaller than time to transmit a complete window
 - Careful consideration of L2 technology characteristics

Main updates for -06 (II/II)

- Outstanding question:
 - MAX_FRAG_RETRIES
 - Currently, only in ACK “always”
 - ACK on error:
 - Currently, the receiver sends an ACK and expects frag retries
 - Might also be a way to deplete the battery of an end-device?
 - a) Define MAX_FRAG_RETRIES also in ACK on error?
 - b) Define it, allowing up to “infinite” retries, and defer to SCHC over foo documents?
 - c) Handle this at an implementation level?

Thanks!

Comments?

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Back-up slide: frag header formats

No ACK

```

<----- R ----->
      <--T--> <--N-->
+-- ... --+- ...  +- ... -+
| Rule ID | DTag | CFN |
+-- ... --+- ...  +- ... -+
  
```

A fragment (not the last one)

```

<----- R ----->
      <- T -> <- N -> <----- M ----->
+---- ... --+- ...  +- ... +----- ... -----+
| Rule ID | DTag | 11..1 | MIC |
+---- ... --+- ...  +- ... +----- ... -----+
  
```

Last fragment

Window mode

```

<----- R ----->
      <--T--> 1 <--N-->
+-- ... --+- ...  -+-+ ... -+
| Rule ID | DTag |W| CFN |
+-- ... --+- ...  -+-+ ... -+
  
```

A fragment (not the last one)

```

<----- R ----->
      <- T -> 1 <- N -> <----- M ----->
+---- ... --+- ...  -+-+ ... +----- ... -----+
| Rule ID | DTag |W| 11..1 | MIC |
+---- ... --+- ...  -+-+ ... +----- ... -----+
  
```

Last fragment

Back-up slide: overhead analysis

- Uplink fragmented IPv6 packet transmission
- 12-byte MTU (UL), 8-byte MTU (DL)

