

LPWAN WG

WG Chairs:

Alexander Pelov <a@ackl.io>

Pascal Thubert <pthubert@cisco.com>

AD: Suresh Krishnan
<suresh@kaloom.com>

Note Well

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

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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) <ul style="list-style-type: none">• Note-Well, Scribes, Agenda Bashing• Last time todos• Status of drafts• IETF 104	10mn
17:15	Data model for SCHC (Laurent)	20mn
17:35	Preparation of IETF 104	10mn
17:45	AOB	15mn

WG progress

Milestones

Date	Milestone
Nov 2019	Submit CoAP compression mechanism to the IESG for publication as a Proposed Standard draft-ietf-lpwan-coap-static-context-hc
Done	Submit IP/UDP compression and fragmentation mechanism to the IESG for publication as a Proposed Standard draft-ietf-lpwan-ipv6-static-context-hc
Done	Submit LPWAN specification to the IESG for publication as an Informational Document
Done	Adopt CoAP compression mechanism as a WG item
Done	Adopt IP/UDP compression and fragmentation mechanism as a WG item
Done	Adopt LPWAN specifications as WG item

Tentative schedule

- February 15th
 - Recharter – **Waiting for IOT Directorate Review**
 - Carsten reviewed Compression, working on Fragmentation
- By IETF 104 cutoff:
 - All SCHC over foo docs refreshed - **DONE**
 - ICMP / management draft? - **?**

IETF 104 Meeting

16:10-18:10 Tuesday Afternoon session II

M	Karlin 3	art	avtcore	Audio/Video Transport Core Maintenance
M	Grand Ballroom	int	lpwan	IPv6 over Low Power Wide-Area Networks
LL	Congress Hall 1	irtf	t2trg	Thing-to-Thing
M	Karlin 1/2	ops	grow	Global Routing Operations
LL	Congress Hall 3	rtg	bess	BGP Enabled Services
LL	Congress Hall 2	sec	tls	Transport Layer Security
L	Berlin/Brussels	tsv	alto	Application-Layer Traffic Optimization
L	Athens/Barcelona	tsv	dtn	Delay/Disruption Tolerant Networking

Data Model

Laurent Toutain

Why a data model

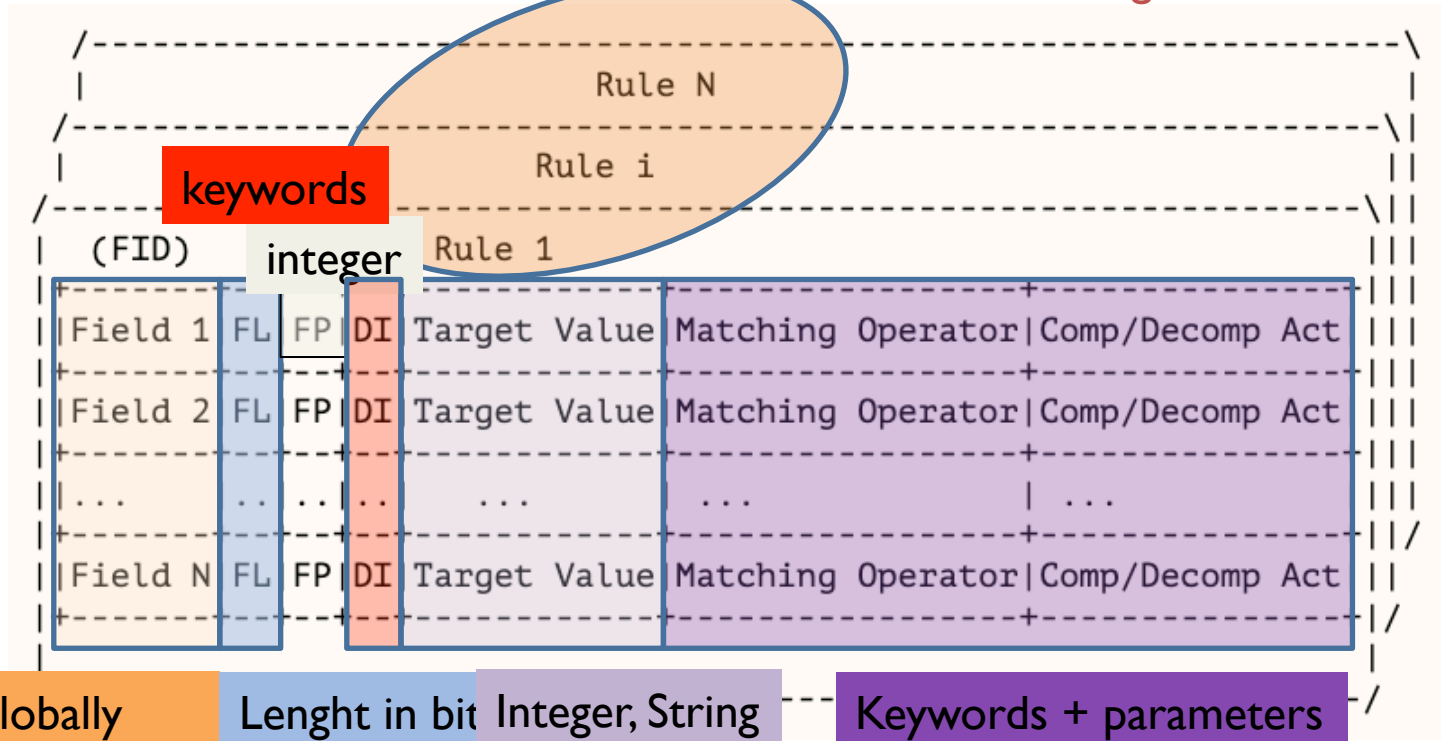
- draft-ietf-lpwan-ipv6-static-context-hc-18 focuses on compression and fragmentation mechanisms.
 - Rules are defined in an “abstract” manner
- Data model to represent the rules:
 - Cover draft-ietf-lpwan-ipv6-static-context-hc-18 and coap
 - Compression
 - Fragmentation
 - Easily extendable:
 - New fields, new MO, new CDA,...
- Yang and COREConf:
 - Study the impact on CBOR of Yang choices.

Fragmentation

Compression

ruleID => value/length

keywords



Globally unique field ID:

Length in bit Function

Integer, String Array

Keywords + parameters

Yang model

```
pyang --generate-sid-file 60000:100 --list-sid -f  
tree simple.yang
```

Yang tree

```
module: simple
```

```
  +--rw schc-context
```

```
    +--rw all-rules* [rule-id]
```

```
      +--rw rule-id                uint16
```

```
      +--rw rule-id-length?        uint8
```

```
      +--rw (rule-nature)?
```

```
        +--:(fragmentation)
```

```
          | +--rw dtagsize?         uint8
```

```
          | +--rw wsize?           uint8
```

```
          | +--rw fcnsz?           uint8
```

```
          | +--rw (mode)?
```

```
            +--:(no-ack)
```

```
            +--:(ack-always)
```

```
            +--:(ack-on-error)
```

```
        +--:(compression)
```

```
      +--rw rule-entries* [field-id field-position direction-indicator]
```

```
        +--rw field-id                field-id-generic-type
```

```
        +--rw field-length?          field-length-type
```

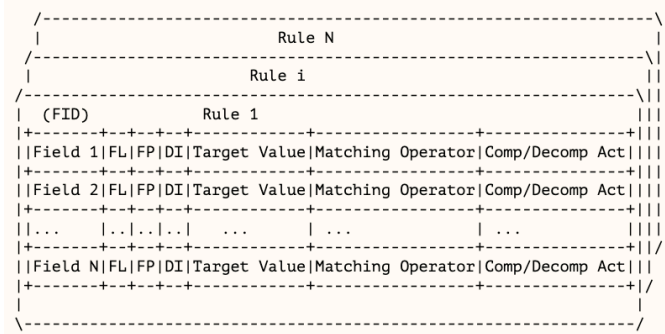
```
        +--rw field-position          uint8
```

```
        +--rw direction-indicator    direction-indicator-type
```

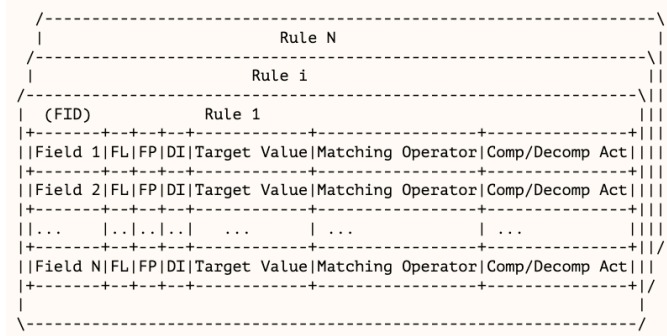
```
        +--rw target-value?          target-value-type
```

```
        +--rw matching-operator?     matching-operator-type
```

```
        +--rw matching-operator-value? target-value-type
```



SID values



SID	Assigned to
60000	identity /compression-decompression-action-sid-type
60001	identity /field-id-sid-type
60002	identity /field-id-sid-type/field-id-ipv6-version
60003	identity /field-length-sid-type
60004	identity /matching-operator-sid-type
60005	node /schc-context
60006	node /schc-context/all-rules
60007	node /schc-context/all-rules/rule-id
60008	node /schc-context/all-rules/rule-id-length
60009	node /schc-context/all-rules/rule-nature/compression/rule-entries
60010	node /schc-context/all-rules/rule-nature/compression/rule-entries/compression-decompression-action
60011	node /schc-context/all-rules/rule-nature/compression/rule-entries/compression-decompression-action-value
60012	node /schc-context/all-rules/rule-nature/compression/rule-entries/direction-indicator
60013	node /schc-context/all-rules/rule-nature/compression/rule-entries/field-id
60014	node /schc-context/all-rules/rule-nature/compression/rule-entries/field-length
60015	node /schc-context/all-rules/rule-nature/compression/rule-entries/field-position
60016	node /schc-context/all-rules/rule-nature/compression/rule-entries/matching-operator
60017	node /schc-context/all-rules/rule-nature/compression/rule-entries/matching-operator-value
60018	node /schc-context/all-rules/rule-nature/compression/rule-entries/target-value
60019	node /schc-context/all-rules/rule-nature/fragmentation/dtagsize
60020	node /schc-context/all-rules/rule-nature/fragmentation/fcnsz

Yang tree – rule

```
module: simple
```

```
  +--rw schc-context
```

```
    +--rw all-rules* [rule-id]
```

```
      +--rw rule-id          uint16
```

```
      +--rw rule-id-length?  uint8
```

```
      +--rw (rule-nature)?
```

```
        +--:(fragmentation)
```

```
          | +--rw dtagsize?    uint8
```

```
          | +--rw wsize?      uint8
```

```
          | +--rw fcnsizel?   uint8
```

```
          | +--rw (mode)?
```

```
            +--:(no-ack)
```

```
            +--:(ack-always)
```

```
            +--:(ack-on-error)
```

```
        +--:(compression)
```

```
          +--rw rule-entries* [field-id field-position direction-indicator]
```

```
            +--rw field-id          field-id-generic-type
```

```
            +--rw field-length?    field-length-type
```

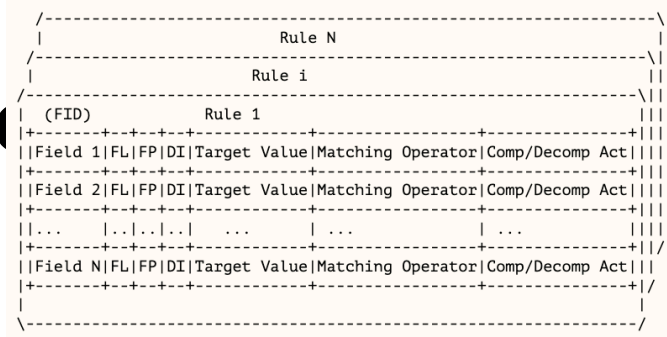
```
            +--rw field-position    uint8
```

```
            +--rw direction-indicator
```

```
              +--rw target-value?  target-value-type
```

```
              +--rw matching-operator? matching-operator-type
```

```
              +--rw matching-operator-value? target-value-type
```



```

grouping rule-id-type {
  leaf rule-id {
    type uint16;
    description "rule ID value aligned with rule-id-length";
  }
  leaf rule-id-length {
    type uint8;
    description "rule ID length in bytes";
  }
}
  
```

Yang tree – Field

```
module: simple
```

```
+--rw schc-context
```

```
+--rw all-rules* [rule-id]
```

```
+--rw rule-id          uint16
```

```
+--rw rule-id-length?  uint8
```

```
+--rw (rule-nature)?
```

```
  +--:(fragmentation)
```

```
    | +--rw dtagsize?    uint8
```

```
    | +--rw wsize?      uint8
```

```
    | +--rw fcnsiz?     uint8
```

```
    | +--rw (mode)?
```

```
      +--:(no-ack)
```

```
      +--:(ack-always)
```

```
      +--:(ack-on-error)
```

```
  +--:(compression)
```

```
+--rw rule-entries* [field-id field-position direction-indicator]
```

```
  +--rw field-id          field-id-generic-type
```

```
  +--rw field-length?    field-length-type
```

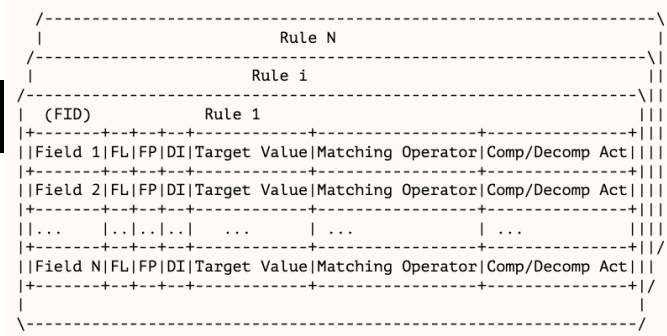
```
  +--rw field-position    uint8
```

```
  +--rw direction-indicator direction-indicator-type
```

```
  +--rw target-value?    target-value-type
```

```
  +--rw matching-operator? matching-operator-type
```

```
  +--rw matching-operator-value? target-value-type
```



Field ID

```
typedef field-id-num-type {
    type enumeration {
        enum ipv6-version    { value 1; }
        enum ipv6-diffserv   { value 2; }
        enum ipv6-flowlabel  { value 3; }
        enum ipv6-length     { value 4; }
        enum ipv6-nextheadr  { value 5; }
        enum ipv6-devprefix  { value 6; }
        enum ipv6-deviid     { value 7; }
        enum ipv6-appprefix  { value 8; }
        enum ipv6-appiid     { value 9; }
        enum udp-devport     { value 10; }
        enum udp-appport    { value 11; }
        enum udp-length     { value 12; }
        enum udp-checksum   { value 13; }
    }
}

// generic value TV definition

identity field-id-sid-type {
    description "used to extend SCHC default Field ID
with SID";
```

```
typedef field-id-generic-type
type union {
    type identityref {
        base field-id-sid
    }
}
type field-id-num-type;
}
```


Field ID - extention

```
module simple-extended {
    yang-version "1";
    namespace "urn:acklio:ietf:lpwan:schc:rule-extended";

    prefix "simple-extended";

    import simple {
        prefix simple;
        revision-date 2016-10-31;
    }

    revision 2019-03-12 {
        description "Initial version.";
    }

    identity field-id-coap-version {
        base simple:field-id-sid-type;
    }
}
```

Field Length

```
typedef field-length-function-num-type {
    type enumeration {
        enum variable { value -1;}
        enum tokenlength { value -2;}
    }
}

identity field-length-sid-type {
    description "used to extend field length functions";
}

typedef field-length-type {
    type union {
        type uint8;
        type field-length-function-num-type;
        type identityref {
            base field-length-sid-type;
        }
    }
}
```

Target Value

```
//-----  
// Target value Types  
//-----  
  
typedef target-value-type {  
    type union {  
        type uint8;  
        type uint16;  
        type uint32;  
        type uint64;  
        type string;  
    }  
}
```

Type for bitmap ?

MO and CD

```
module: simple
```

```
+--rw schc-context
```

```
+--rw all-rules* [rule-id]
```

```
+--rw rule-id          uint16
```

```
+--rw rule-id-length?  uint8
```

```
+--rw (rule-nature)?
```

```
+--:(fragmentation)
```

```
| +--rw dtagsize?      uint8
```

```
| +--rw wsize?        uint8
```

```
| +--rw fcnsizel?     uint8
```

```
| +--rw (mode)?
```

```
| +--:(no-ack)
```

```
| +--:(ack-always)
```

```
| +--:(ack-on-error)
```

```
+--:(compression)
```

```
+--rw rule-entries* [field-id field-position direction-indicator]
```

```
+--rw field-id          field-id-generic-type
```

```
+--rw field-length?    field-length-type
```

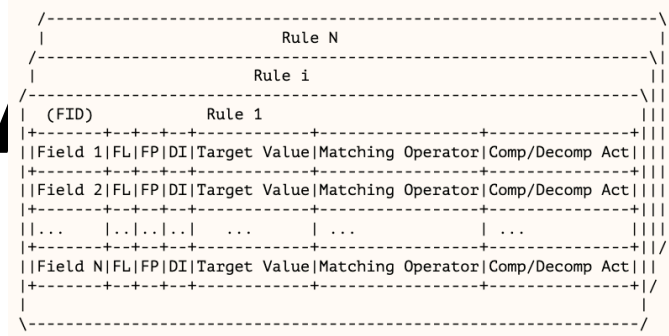
```
+--rw field-position    uint8
```

```
+--rw direction-indicator direction-indicator-type
```

```
+--rw target-value?    target-value-type
```

```
+--rw matching-operator? matching-operator-type
```

```
+--rw matching-operator-value? target-value-type
```



Next Steps

- Check validity of Yang model
- Study impact of COREconf.

Preparation for IETF

Tentative Agenda

- * [16:10] Administrivia [10min]
- Note-Well, Scribes, Agenda Bashing
- Status of drafts
- IETF 104

- [16:20] draft-ietf-lpwan-ipv6-static-context-hc (Dominique) [15min]
- [16:35] draft-zuniga-lpwan-schc-over-sigfox (Juan-Carlos) [5min]
- [16:40] draft-petrov-lpwan-ipv6-schc-over-lorawan (Ivaylo) [5min]
- [16:45] draft-minaburo-lpwan-schc-nbiot-hc (Ana) [10min]
- [16:55] draft-toutain-lpwan-schc-yang-data-model (Laurent) [10min]
- [17:05] draft-gomez-rto-considerations-lpwan (Carles) [10min]
- [17:15] raft-ietf-lpwan-coap-static-context-hc (Laurent) [10min]
- [17:25] rechartering status and discussion (the Chairs + AD) [QS]

AOB ?