

A Routing Header Dispatch for 6LoWPAN

[draft-thubert-6lo-routing-dispatch](#)

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What is 6LoRH?

Initially

A compression mechanism for RPL info in data packets
RH3, RPL (HbH) option (but not control packets)

Covering RPL specific needs

RPL stamps instance ID for multi-topology routing
RPL stamps Rank for loop avoidance and lazy repair
RPL routers insert and remove headers

What is 6LoRH?

Now

A vector for packet info used by routers as opposed to hosts
Easy to manipulate, add and remove compressed headers
Extensible (TLV format)

A SubIP?

Probably not. Packets transformation works both ways.
IP packets could be processed in uncompressed space
Though it is expected to be done in compressed space

What's new Since IETF 93?

Adopted a context switch system for 6LoWPAN

- Consensus at IETF 93
- RFC 4944 is page 0 (default) at the beginning of the Packet
- 16 pages available

Pages are delimited in a 6LoWPAN packet by a dispatch value that indicates the next current Page. The Page number is encoded in a Dispatch Value Bit Pattern of 1111xxxx where xxxx is the Page number, 0 to 15, as follows:

```
  0 1 2 3 4 5 6 7
+-+--+--+--+--+--+
|1|1|1|1|Page Nb|
+-+--+--+--+--+--+
```

What's new Since IETF 93?

Content for page 1 is defined

- After the Delimiter, NALP, MESH and FRAG space can be used again
- 6LoRH uses only 33% of page 1
- Cost is 1 Octet / packet (as opposed to esc which is 1 octet/header)

RFC 6282 is identically mapped in both pages 0 and 1

Compatible with Jonathan's proposal of sur-compression

Encoded Packet format

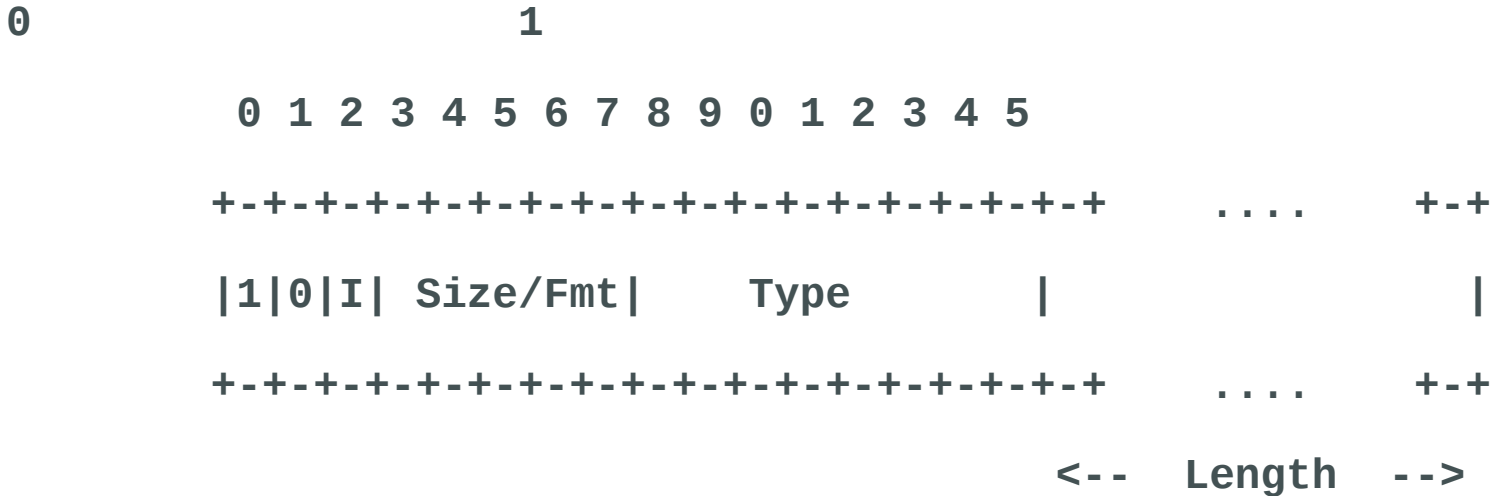
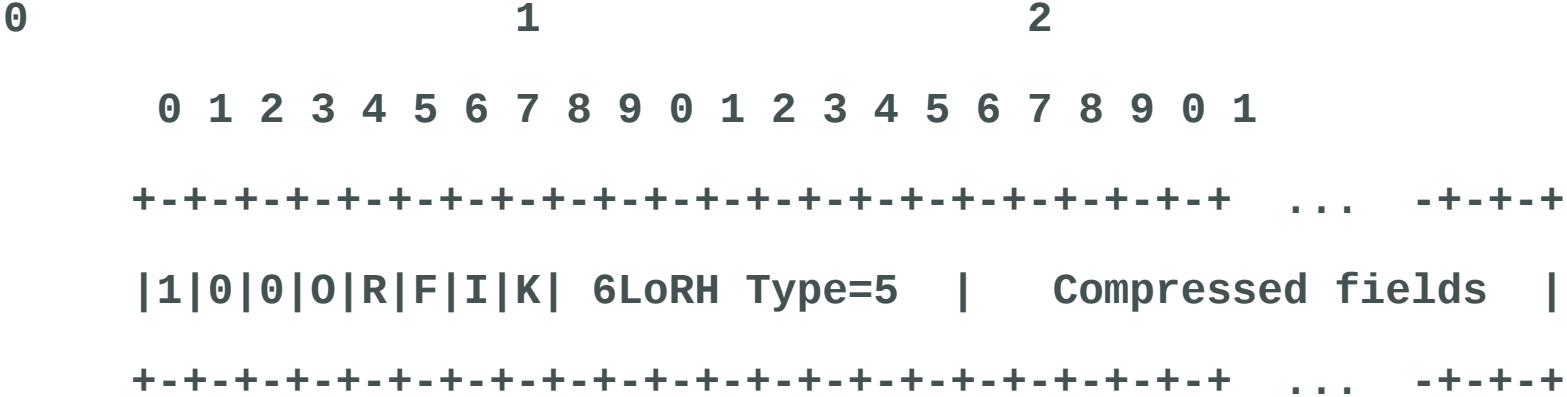


Figure 2: 6LoWPAN Routing Header

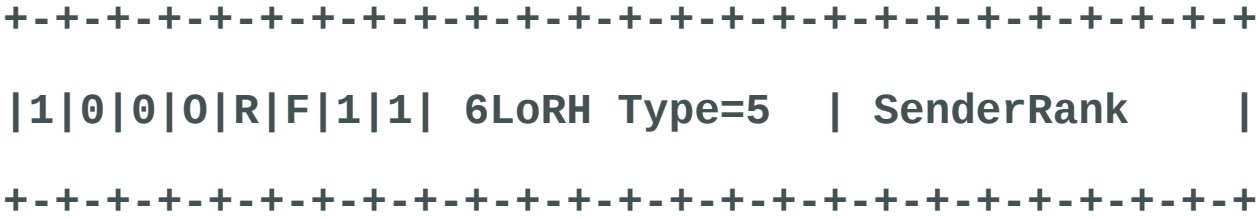
I Flag:

The I flag is set to indicate that a 6LoWPAN Routing Header may be ignored and skipped in parsing. If it is ignored, the 6LoRH is forwarded with no change inside the LLN.

Compressed RPI



The 0, R, and F bits as defined in [RFC6550], Section 11.2.



I=1, K=1: The most compressed RPI-6LoRH

IP in IP

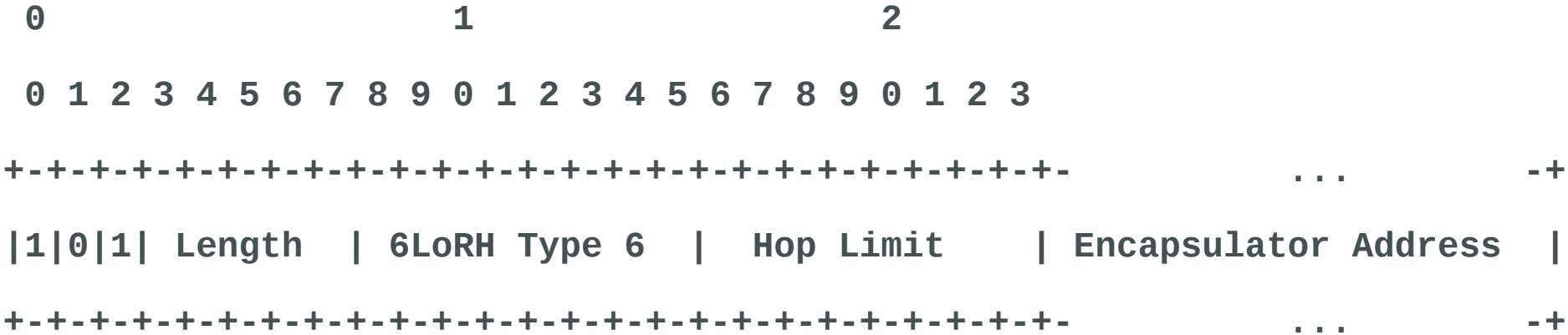


Figure 11: The IPinIP-6LoRH

Example compressed packets

```

+- ...  +- ...  +-+-+ ...  +-+-+-+ ...  +-+-+-+-+ ...  +-+-+-+-+-+ ...
|11110001| IPinIP | RH3(128bits)| RH3(3*16bits)| Dispatch + LOWPAN_IPHC
|Page 1  | 6LoRH  | 6LoRH      | 6LoRH      | RFC 6282
+- ...  +- ...  +-+-+ ...  +-+-+-+ ...  +-+-+-+-+ ...  +-+-+-+-+-+ ...

+- ...  +- ...  +-+ ...  +-+ ...  +- ...  +-+-+-+-+-+-+-+-+-+-+-+ ...
|Frag type|Frag hdr |11110001| IPinIP | RPI   | Dispatch + LOWPAN_IPHC
|RFC 4944 |RFC 4944 | Page 1 | 6LoRH  | 6LoRH  | RFC 6282
+- ...  +- ...  +-+ ...  +-+ ...  +- ...  +-+-+-+-+-+-+-+-+-+-+-+ ...

                                     <- RFC 6282 ->
                                     No RPL artifact

```

Call for decisions

Should we split the page system in a separate drafts?

WG adoption

Needed for RPL interop test (e.g. hosted by 6TiSCH/ETSI)
6TiSCH plugtest content for Berlin being defined now