

Packet Delivery Deadline Time in 6LoWPAN Routing Header

draft-ietf-6lo-deadline-time-05

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Overview

- Deadline-6LoRHE type for 6LoWPAN dispatch page 1
 - Carries Packet Delivery Deadline Time
 - Optional Packet Origination Time
- Enables delay-aware forwarding and scheduling decisions
- Operates on time-synchronized constrained networks
- Handles different time zones over heterogeneous networks

Draft History

- ❑ **IETF 97** - Presented the first version of draft : <draft-lijo-6lo-expiration-time >
- ❑ **IETF 98 & 99** – 4 revisions
 - Included Origination Time (OT)
 - Provided Header compression mechanism
 - Network ASN included as new Time Unit (TU) representation
 - Provided Header compression mechanism
- ❑ **Implemented** the draft in OpenWSN platform for a 6tisch network and the code has been merged with OpenWSN
- ❑ **IETF 100 - Adopted as a WG Document** : <draft-ietf-6lo-deadline-time>
- ❑ **IETF 101** – 1st revision
 - Few editorial corrections and added references for time synchronization protocols
- ❑ **IETF 103** – 3rd revision
 - Editorial corrections and updates based on the review comments
- ❑ **IETF 104** – 4th revision
 - Replaced OT field by OTD, allowing a more compressed representation
 - Added new section on Synchronization Aspects
 - Updates based on the review comments

Current Status

- Under IESG Evaluation

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Status	IESG evaluation record	IESG writeups	Email expansions	History
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Discuss

Alissa Cooper
Roman Danyliw
Magnus Westerlund

Yes

Suresh Krishnan

No Objection

Deborah Brungard
Warren Kumari
Mirja Kühlewind
Barry Leiba
Alexey Melnikov
Alvaro Retana
Adam Roach
Éric Vyncke

Summary: Has 3 DISCUSSES. Needs one more YES or NO OBJECTION position to pass.

Alissa Cooper

Discuss (2019-05-15 for -04)

The Gen-ART reviewer made the following observation, which I'd like to discuss:

There is a serious problem with the last 5 paragraphs of section 8, "Synchronization Aspects": they seem to assume that the time representation for the Deadline Time and Origination Time values will wrap around, that is, that the representation is the absolute value modulo the size of the field. In addition, there is a lack of clarity how the new epoch point will be chosen after the value wraps around. This seems to contradict the earlier sections of the document which speak of the values as if they are always to be considered as absolute values on a time scale selected by the TU field, viz., either the NTP time scale (in seconds) or the network's ASN numbering.

It's possible that four of these paragraphs are intended to only apply to the use of TU = 00, the NTP time scale, and perhaps that usage of the header is understood not to be completely specified yet.

However, the final paragraph discusses TU = 10 (the ASN time scale),

Draft Reviewers

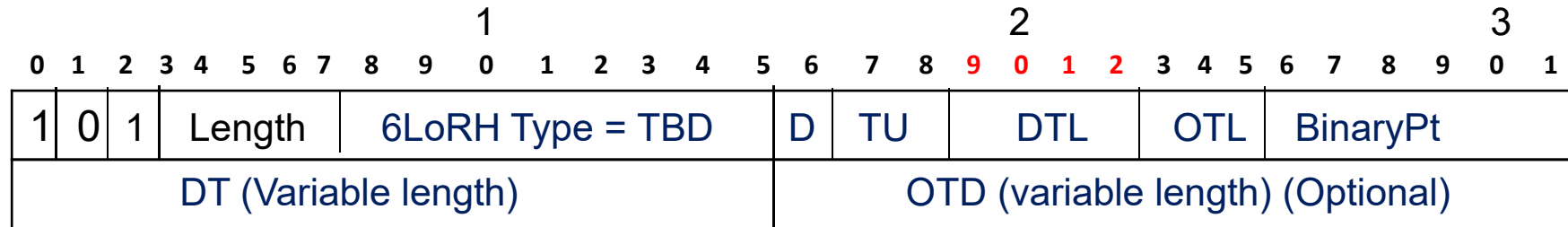
- Dale Worley
- Éric Vyncke
- Alexey Melnikov
- Barry Leiba
- Warren Kumari
- Mirja Kühlewind
- Deborah Brungard
- Magnus Westerlund
- Roman Danyliw
- Alissa Cooper

Thanks to all reviewers !!

Draft Updates

- Included additional relevant material in security considerations regarding expected deployment scenarios and the effect of disclosing additional information during the travel of a packet.
- Reworked the specification for using time ranges shorter than the maximum allowed by the choice of Time Units (TU)
- Revised the figures and examples to use new parameters
- Reordered the field definitions for the Deadline-6LoRHE
- Responded to numerous reviewer comments to improve terminology and editorial consistency

Deadline-6LoRHE Format



D flag (1 bit)	Drop flag 1 : MUST drop the packet if the deadline time is elapsed 0 : MAY ignore and forward	Binary Pt (6 bits)	A signed integer indicating the position of binary point within the value for the DT 0 : Number of bits of the integer part and number of bits of fractional part of DT are same + ve: Number of bits of the integer part for the DT is increased by value of BinaryPt - ve : Number of bits of the integer part for the DT is decreased by value of BinaryPt
TU (2 bits)	Indicates the time units for DT and OT 00 : Time represented in seconds and fractional seconds 01 : Reserved 10 : Network ASN 11 : Reserved	DT (Variable length)	Deadline Time value (8..64-bit)
DTL (4 bits [bbbb])	[bbbb] = Length of DT field 0000 : Length of DTL is "1 hex digits (4 bits)" : 1111 : Length of DTL is "16 hex digits (64 bits)"	OTD (Variable length)	Origination Time as a negative offset from the DT value (Optional) (0..28-bit)
OTL (3 bits [bbb])	[bbb] = Length of OTD field 000 : OTD field is absent : 111 : Length of OTL is "7 hex digits (28 bits)"		

Comments and Questions

Thanks !!!