

Packet Delivery Deadline Time in 6LoWPAN Routing Header

draft-ietf-6lo-deadline-time-04

Lijo Thomas <lijo@cdac.in>

Satish Anamalamudi <satishnaidu80@gmail.com>

S.V.R Anand <anand@ece.iisc.ernet.in>

Malati Hegde <malati@ece.iisc.ernet.in>

Charles E. Perkins <charliep@computer.org>

6lo WG meeting - IETF 104
25.03.2019

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** - 1st and 2nd revision
 - Included Origination Time (OT)
 - Provided Header compression mechanism
- ❑ **IETF 99** - 3rd and 4th revision
 - 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

Draft Reviewers

- Dale Worley (Gen-ART)
- Charlie Kaufman (Security Directorate)
- Dan Frost (Routing Directorate)
- Tal Mizrahi
- Abdussalam Baryun

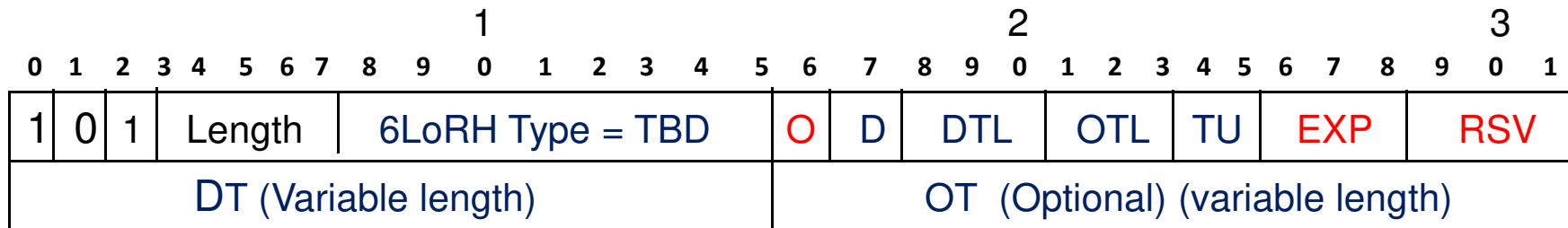
Thanks to all reviewers !!

Draft Updates

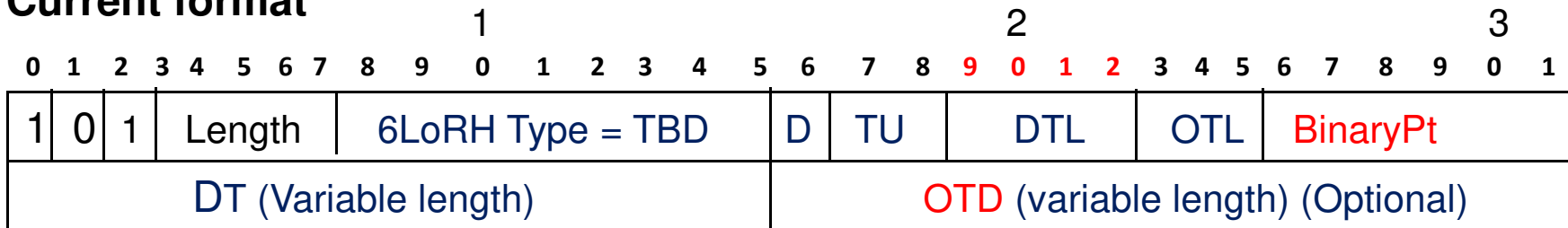
- ❑ Replaced OT (Origination Time) field by OTD (Origination Time Delta), allowing a more compressed representation that needs less processing during transitions between networks.
- ❑ Changed representation for DTL, OTL, DT, OTD. Eliminated EXP in favor of BinaryPt.
- ❑ Revised the figures and examples to use new parameters
- ❑ Added new section on Synchronization Aspects to supply pertinent information about how nodes agree on the meaning of $t=0$.
- ❑ Responded to numerous reviewer comments to improve editorial consistency and improve terminology.

Deadline-6LoRHE Format

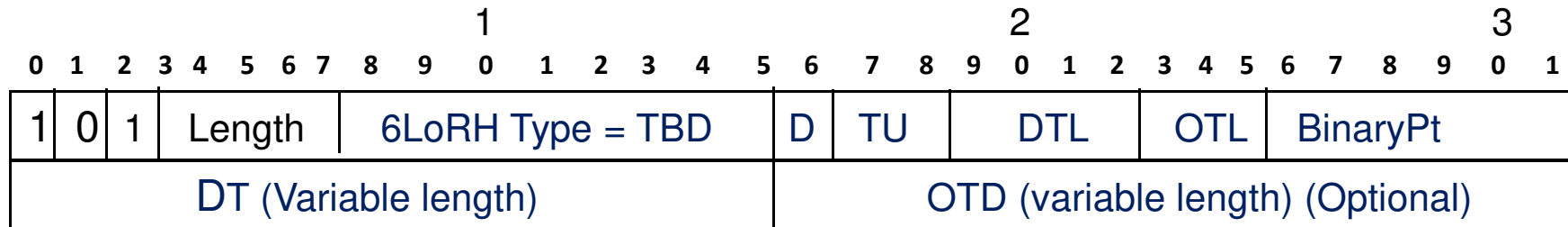
Previous format



Current format



Deadline New 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		
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)"	DT (Variable length)	Deadline Time value (8..64-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)"	OTD (Variable length)	Origination Time as a negative offset from the DT value (Optional) (8..64-bit)

Comments and Questions

Thanks !!!