ICN LoWPAN

draft-irtf-icnrg-icnlowpan-04
IETF 105, Montreal

Cenk Gündoğan[1]   Thomas Schmidt[1]   Matthias Wählisch[2]

Christopher Scherb[3]   Claudio Marxer[3]   Christian Tschudin[3]
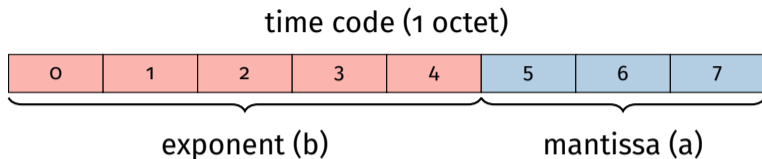
[1]HAW Hamburg

[2]Freie Universität Berlin

[3]University of Basel

July 23, 2019

Draft Update (o2 ⇒ o3)

- ▶ Extend *Terminology* section

- ▶ Add *ICNLoWPAN Constants and Variables* section

- ▶ Reduce TimeTLV from 2 octets to 1 octet

- ▶ Simplify NDN stateless compression scheme

Time TLV (RFC5497)

time code (1 octet)

0	1	2	3	4	5	6	7

exponent (b)   mantissa (a)

time value = $(1 + \frac{a}{8}) \cdot 2^b \cdot C$, with $C = \frac{1}{1024}$

min: $(1 + \frac{0}{8}) \cdot 2^0 \cdot \frac{1}{1024} = \frac{1}{1024} \approx$ 0.9 *ms*

max: $(1 + \frac{7}{8}) \cdot 2^{31} \cdot \frac{1}{1024} = 15 \cdot 2^{28} \cdot \frac{1}{1024} \approx$ 45 *days*

$\approx$ 0.9 *ms* $\approx$ 45 *days*

Simplification of NDN Stateless Compression

Interest

- ▶ Require HopLimit TLV to be always present—include 255 if missing

- ▶ Require Nonce TLV to be always present

- ▶ Deduce presence of InterestLifetime from remaining length

- ▶ InterestLifetime is a 1-octet time-code (TimeTLV), round-up if necessary

Data

- ▶ Deduce presence of FreshnessPeriod from remaining length

- ▶ FreshnessPeriod is a 1-octet time-code (TimeTLV), if convertible

- ▶ Send Data uncompressed, if FreshnessPeriod is not convertible

Draft Update (03 ⇒ 04)

Address Junxiao Shi's comments:

- ▶ *Remove `ImplicitSha256DigestComponent` from Data compression*
  - ⇒ Done

- ▶ *Compress names in Forwarding Hints & KeyLocator TLV*
  - ⇒ Added note to compress names in specific section

- ▶ *Parameter is now ApplicationParameter and requires digest in name*
  - ⇒ Renamed Parameter to ApplicationParameter
  - ⇒ Expect ParametersSha256DigestComponent as last name component

- ▶ *Figures for NDN Interest and Data compression are not in sync with text*
  - ⇒ Updated figures

- ▶ *Consider NDN guidelines for TLV evolvability*
  - ⇒ Added note on sending message uncompressed in case of unknown TLVs

Discussion: Name Compression for NDN and CCNx

Current State

| Type | Len | IETF | Type | Len | 105 |

⟶

| Len | IETF | 105 | Stop |

Limitations

- ▶ All NameComponents must be of type *GenericNameComponent*

- ▶ Length of NameComponents is limited to $1 \leq x \leq 15$

Question: Should we include Types in the compressed representation?

Ready for RG last call?