

A Concise Binary Object Representation (CBOR) of DNS Messages

draft-lenders-dns-cbor, Status Update

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Outline

Motivation

Objectives and Definition

Progress

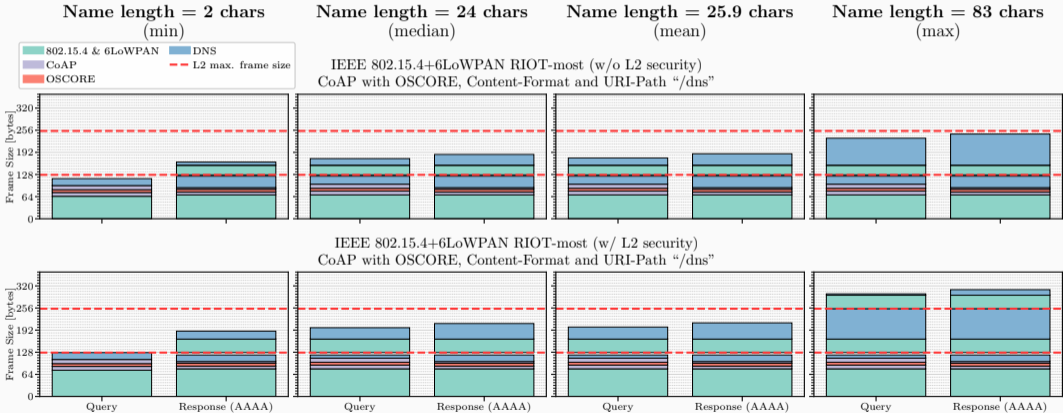
Implementation @ Hackathon

Next Steps

Motivation: DNS in Constrained Networks

Packet size exceeds 802.15.4 PDU depending on queried name length

⇒ Fragmentation



DNS over CoAP (draft-ietf-core-dns-over-coap) messages for different name lengths

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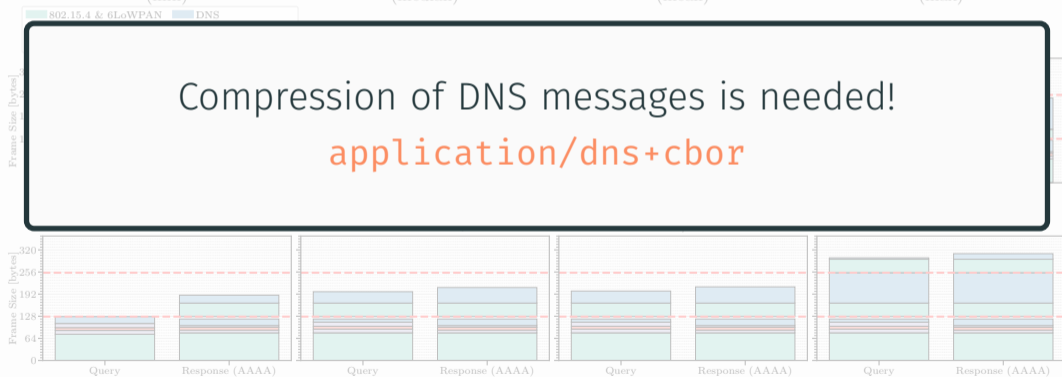
⇒ Fragmentation

Name length = 2 chars
(min)

Name length = 24 chars
(median)

Name length = 25.9 chars
(mean)

Name length = 83 chars
(max)



DNS over CoAP (draft-ietf-core-dns-over-coap) messages for different name lengths

Objectives of draft-lenders-dns-cbor (application/dns+cbor)

Reduce packet sizes of DNS queries and replies with conciseness and compression:

1. Encoding of DNS messages in CBOR (conciseness)
2. Omit (redundant) DNS fields in DNS queries and responses (conciseness)
3. Address and name compression using packed CBOR (compression, optional)

- + Clarify that compression algorithm for Packed CBOR is up to the implementation
- + Discuss format decisions for Packed CBOR
 - Structural cleanups
 - Fixing syntax bugs in examples

IETF 117 Hackathon project: <https://github.com/netd-tud/cbor4dns>

Done:

- Encoder (needs larger test vector)
- Finding a lib name (thanks Marco!)
- Going public: <https://github.com/netd-tud/cbor4dns>

Almost done:

- Decoder, packed CBOR support missing

Lessons learned with regard to draft:

- Section elision may need rethinking
- Dedicated specs for pseudo-RRs (e.g. OPT) may be needed

- + Provide and compare examples for compression algorithms
- + Address Vadim Concharov's feedback: Provide comparison DNS **wire-format** vs. **CBOR** vs. **Packed CBOR**
 - Address lessons learned from Hackathon

- Implementation and in-depth evaluation of DNS+CBOR
- Explore potential for global compression contexts or implied table entries