CBOR Serialization/Determinism
IETF 119 Hackathon

CBOR Serialization/Determinism Background

- The same data may be CBOR-serialized several ways to accommodate constrained use cases
  - Contrast to JSON, for which there is no variation
- For example, an array may be serialized in two ways
  - Length then array elements (definite length)
  - Open, array elements, break (indefinite length)
- Variation affects integers, floating-point, strings, maps and arrays
- Some use cases, not all, require determinism

Two new drafts improve determinism

- `draft-ietf-cbor-cde` “CBOR Deterministic Encoding”
  - More formal definition of deterministic format from RFC 8949
  - Rules such that the same data produces the same serialized CBOR bytes
- `draft-mcnally-deterministic-cbor` dCBOR
  - Layers on top of `draft-ietf-cbor-cde`
  - Unifies number serialization across integers and float
  - Disallows some CBOR constructs, particularly those not supported by JSON
  - Requires rejection of non-conforming in decoder

Hackathon project

- Implementation of two drafts in QCBOR (not mainlined yet; sort order check not complete yet) https://github.com/laurencelundblade/QCBOR/pull/216
- Test vectors for these two drafts, particularly dCBOR which requires conformance check
  - Currently in https://github.com/laurencelundblade/QCBOR/blob/dcbor-decode/test/qcbor_decode_tests.c
  - Expect to publish formally