In-situ OAM (IOAM)
draft-ietf-ippm-ioam-data-01

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Updates between -00 and -01 version

- Transit Delay Overflow indication and max value
  - Clarify range and distinguish Overflow encoded value from Not Populated encoded value
    - "If the transit delay exceeds 2^31-1 nanoseconds then the top bit 'O' is set to indicate overflow and value set to 0x80000000"

- Follow IETF convention is that bit 0 is the most significant bit
  - Flags field – O-bit (Overflow bit)
  - Fixed examples in section 4.1.4. (Examples of IOAM node data)

Discussion topics

- Node data length does not include opaque state snapshot length

  - Proposed by Mickey Spiegel:
    https://github.com/inband-oam/ietf/pull/60/commits/77725d2ff5d7ab7d0fd384c3d5a89faa77309202

  - This is a bug and we'll reflect it in the next rev

Discussion topics

- Timestamp format
  - Proposed by John Lemon:
    https://mailarchive.ietf.org/arch/msg/ippm/kg1hQTrnz_VL7oRp4ffZmpgZbJo
  - Extend the timestamp to allow it to support both PTP and NTP
    - The seconds portion would remain largely as is, although the seconds would obviously use different epochs, depending upon which type of timestamp is used within the in-situ OAM domain
    - The datatype currently named nanoseconds would be renamed to sub-seconds and would either carry nanoseconds or fractional seconds, for PTP or NTP, respectively
  - Change current timestamp related code points for IOAM-Trace-Type and add two new ones:
    - CHANGE: Bit 2   When set indicates presence of PTP timestamp seconds in the node data
    - CHANGE: Bit 3   When set indicates presence of PTP timestamp nanoseconds in the node data
    - NEW: Bit 12   When set indicates presence of NTP timestamp seconds in the node data
    - NEW: Bit 13   When set indicates presence of NTP timestamp fractional seconds in the node data

Discussion topics

- New Edge-to-Edge data types
  - Proposed by John Lemon:
    https://mailarchive.ietf.org/arch/msg/ippm/kg1hQTrnz_VL7oRp4ffZmpgZbJo
  - Add a few Edge-To-Edge data types
    - In addition to the currently defined 64-bit sequence number, add a sequence number taking up only 32 bits
    - Add same timestamp types as used by Hop-By-Hop to measure delay (and delay variation) across the entire path, without having to use the Hop-By-Hop timestamps to measure at every node in the path

Discussion topics

- Undefined IOAM-Trace-Type bits forward compatibility
  - Proposed by Mickey Spiegel
    https://github.com/inband-oam/ietf/issues/63
  - We need to specify required behavior when receiving a packet with one or more of the undefined IOAM-Trace-Type bits set
    - If not specified any future use of these bits will break backwards compatibility, making it impossible to parse the IOAM Trace Option correctly.
  - Two possible approaches:
    - A node receiving a packet with one or more of the undefined IOAM-Trace-Type bits set must not add any data fields to that IOAM Trace Option.
    - The size of the data field associated with each undefined bit must be determined now. A node receiving a packet with one or more of the undefined IOAM-Trace-Tye bits set must add a data field of the corresponding size filled with "0xFF" in each octet.
  - Any node adding an IOAM Trace Option must set all IOAM-Trace-Type undefined bits to 0.