Approaches for Supporting IOAM in IPv6

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Key Issue

- IOAM Trace needs per-hop processing → IPv6 HbH EH
- IPV6 HbH EH must be the first EH
- Two issues of IOAM Trace in HbH EH:
  - Header can be large
  - Header changes its size at every hop
- Make accessing subsequent EHs (e.g., RH) difficult or even impossible
  - E.g., SRv6 in RH

Nonideal Workarounds

- When the IOAM overhead or size changing is of concerns, avoid using it.
- Only apply IOAM on SRv6 nodes → make IOAM option header/data an SRH option

- But we need IOAM to cover all the IPv6 nodes, so…

Possible Solutions

- IOAM Data Separate and Postpose
  - IOAM Instruction Header part in HbH EH, but IOAM data in an EH after RH
  - HbH is small and its size is fixed
  - Problem is: where to put the data. New EH? TLV on existing EH?
- Segment IOAM Export
  - Fix the IOAM overhead in HbH EH
  - Two sub-approaches
    - Independent of SRv6 → [I-D.song-ippm-segment-ioam]
    - Data export at each SRv6 node
- IOAM Direct Export

Approach	Pros	Cons
IOAM Trace in HbH	Comply w/ IOAM Data Spec	Variable and long HbH header impeding access of later extension headers
IOAM Trace Data Separate and Postpose (Sec. 2)	Fix-size and short HbH header, good for later extension header access	Need extra extension header to hold trace data
Segment IOAM Data Export (Sec. 3.1)	Fix-size and controllable HbH header size	Need to enhance IOAM trace type data field spec.
Trace Export at SRv6 nodes (Sec. 3.2)	Can be done through configuration	Specific to SRv6; No better than PB & IOAM DEX in the worst case
IOAM Direct Export in HbH (Sec. 4)	Comply w/ IOAM DEX Spec; Fix-size and short HbH	Need export data correlation

Next Steps

- Reach consensus on proposal recommendation
- Develop the complete solution if any change/update is needed
- WG adoption