Multicast On-path Telemetry using IOAM

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Problem Statement and Method Recap

• On-path telemetry is useful for multicast traffic monitoring
• IOAM trace option introduces considerable data redundancy
• Two Solutions
  • Based on IOAM Trace option
  • Based on IOAM DEX
IOAM Trace Option-based Solution (1)

• IOAM Trace: telemetry data are accumulated in user packet as a trace
• In multicast, the previous data are copied to each branch, introducing redundancy
• Solution: combine IOAM trace and the postcard-based telemetry
• Configure each branching node to export the data trace collected so far and clear the trace in user packets
• No update to RFC9197, only need control plane configuration
For multicast tree reconstruction
  • Node ID data is mandatory
  • Each section’s trace needs to include the branching node
IOAM DEX-based solution (1)

- IOAM-DEX: telemetry data sent as independent postcards based on an instruction header at each hop
- In multicast, branch identifier is needed to reconstruct the multicast tree
- Solution: instruction contains a global unique branch identifier up to 64K local branches
IOAM DEX-based solution (2)

Update to IOAM DEX Header

Application Example
Revisions Summary

• Reference documents updated
  • IOAM Data has been published as RFC9197
  • IOAM DEX has been published as RFC9326

• Multicast branch ID is extended to two 32-bit words for scalability

• IOAM DEX Extension Flags uses two flags (N and I) to indicate the multicast branch ID
  • According to RFC9326, each flag indicates a 32-bit option data
Current Status and Next Steps

- WGLC issued on March 9, 2023 by MBONED chairs
  - Closed on March 31
  - Lack of responses from people other than authors

- Another round of WGLC expected