Internet Control Message Protocol (ICMPv6) Loopback

draft-mcb-intarea-icmpv6-loopback

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The IOAM Use Case

- IOAM [RFC 9197] can be used to measure and monitor an IOAM domain.
- The IPv6 IOAM Trace Option includes per-hop information, e.g., node ID, timestamp, queue depth.
- **Use case**: we want the encapsulating node to invoke a Ping-like request and receive the IOAM information back from the decapsulating node.

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Other Use Cases

- Use case: we want the sender to invoke a Ping-like request and receive the **IPv6 options of the forward path** in the reply.

- Many in-progress and future protocols may benefit from this approach:
  - draft-filsfils-spring-path-tracing
  - draft-ali-spring-ioam-srv6
  - draft-kumar-ippm-ifa
  - ...
ICMPv6 Loopback

- Two new ICMPv6 types: Loopback Request, Loopback Reply.
- Similar to ICMPv6 Echo, except that The Loopback Reply includes the Loopback Request in its payload.
- The sender receives the IPv6 options of the original request.
- This is how ICMPv6 error messages work today.
- This is how Traceroute works today. (ICMPv6 Time Exceeded).
Summary of Discussions on the Mailing List

- Defining two new ICMPv6 types vs. Defining two new codes for ICMPv6 Echo.
  - If new codes are used: inconsistent behavior in existing implementations (Thanks to Erik Kline, Justin Iurman, Luigi Iannone who looked at the code / tested this). Some implementations just ignore the code value and send an Echo Reply with the received code.
  - If new types are used: may be blocked by some firewalls.

- Reply is longer than Request vs. symmetric Request/Reply
  - If Reply is longer: this is an amplification. Same as Traceroute / ICMPv6 error messages.
  - If symmetric: the responder may need to truncate the Request.
Next Steps

• The authors are ready for a WG adoption call.

• Open issues (prev. slide) can be resolved after adoption.