

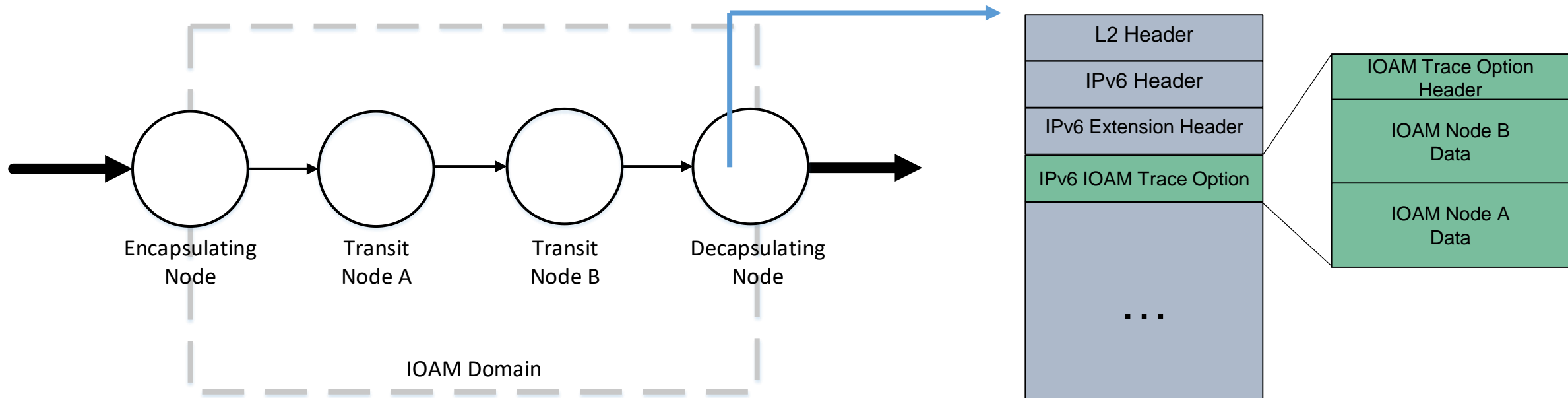
Internet Control Message Protocol (ICMPv6) Loopback

[draft-mcb-intarea-icmpv6-loopback](#)

Tal Mizrahi, Tianran Zhou, Shahar Belkar, Reuven Cohen, Justin Iurman

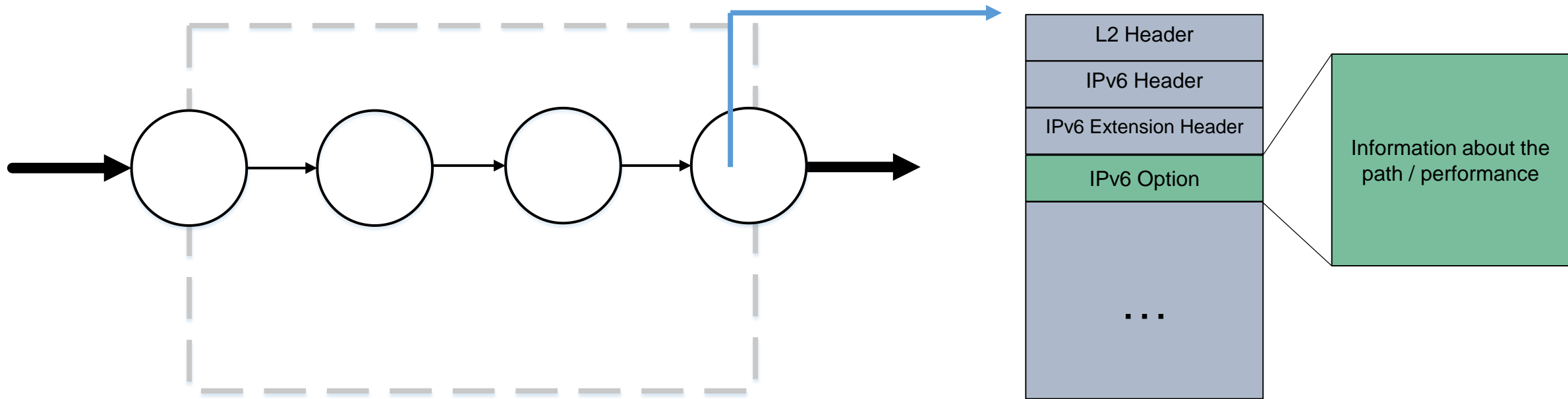
IETF 117
July 2023

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.

Other Use Cases

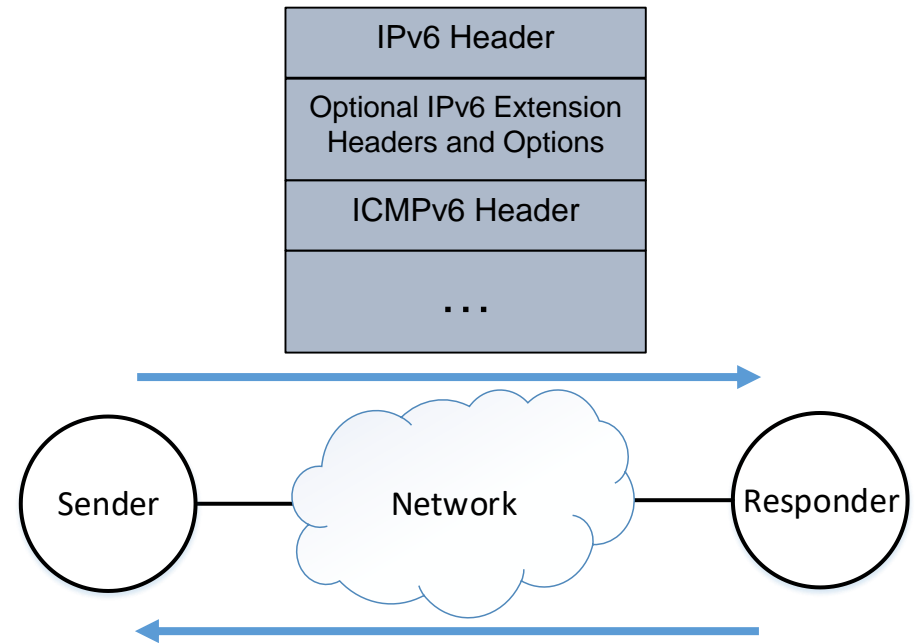


- Use case: we want the sender to invoke a Ping-like request and receive the **IPv6 options of the forward path** in the reply.
- Many in-progress and future protocols may benefit from this approach:
 - draft-filsfils-spring-path-tracing
 - draft-ali-spring-ioam-srv6
 - draft-kumar-ippm-ifa
 - ...

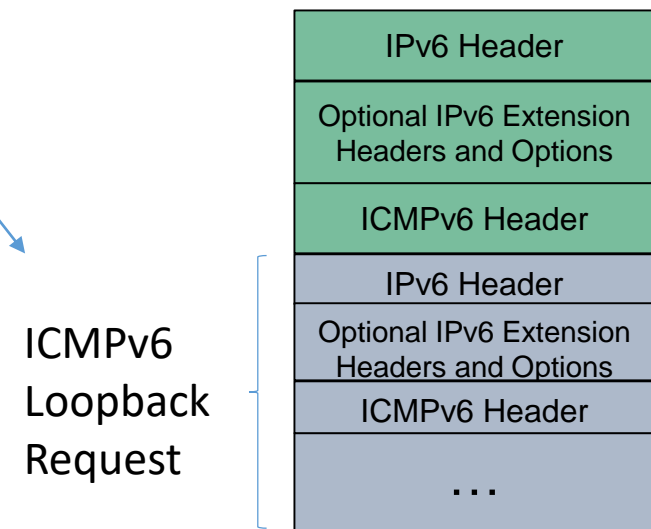
ICMPv6 Loopback

- 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).

ICMPv6 Loopback Request



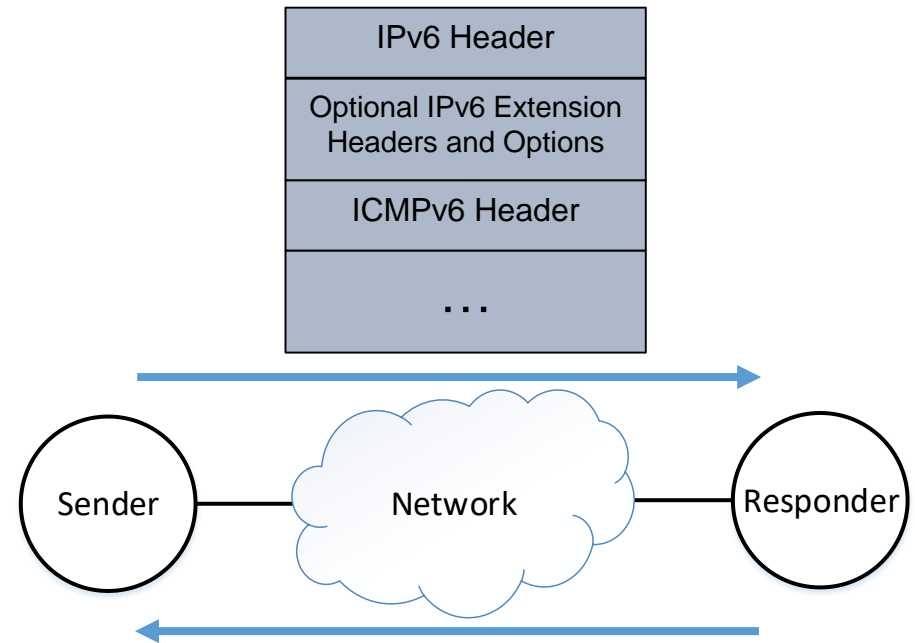
ICMPv6 Loopback Reply



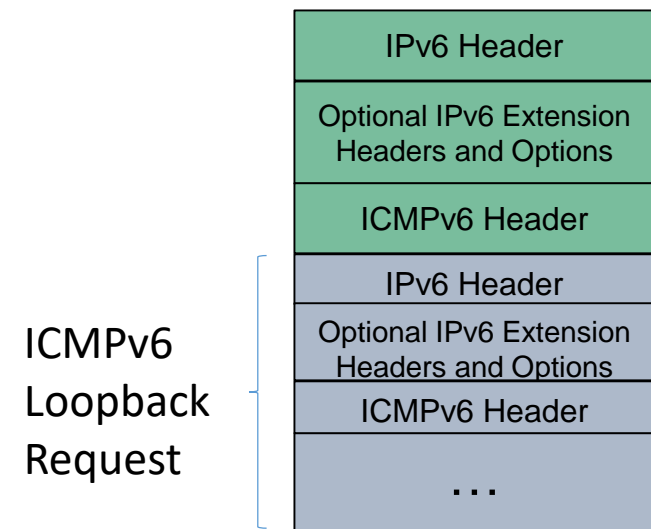
Summary of Discussions on the Mailing List

- 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.

ICMPv6 Loopback Request



ICMPv6 Loopback Reply



Next Steps

- The authors are ready for a WG adoption call.
- Open issues (prev. slide) can be resolved after adoption.

