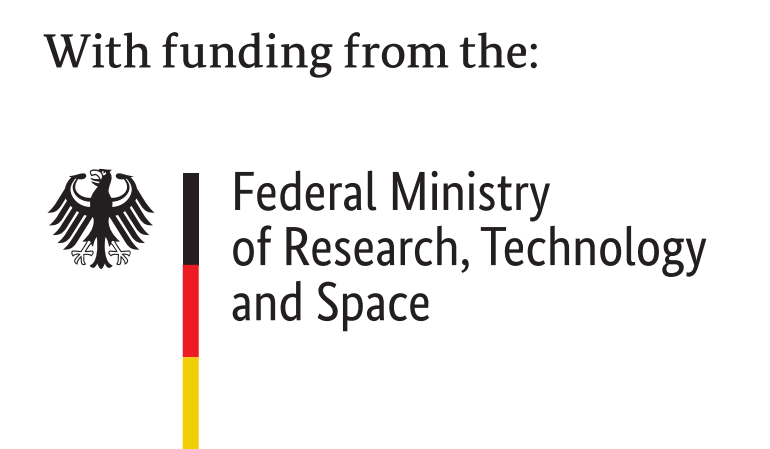


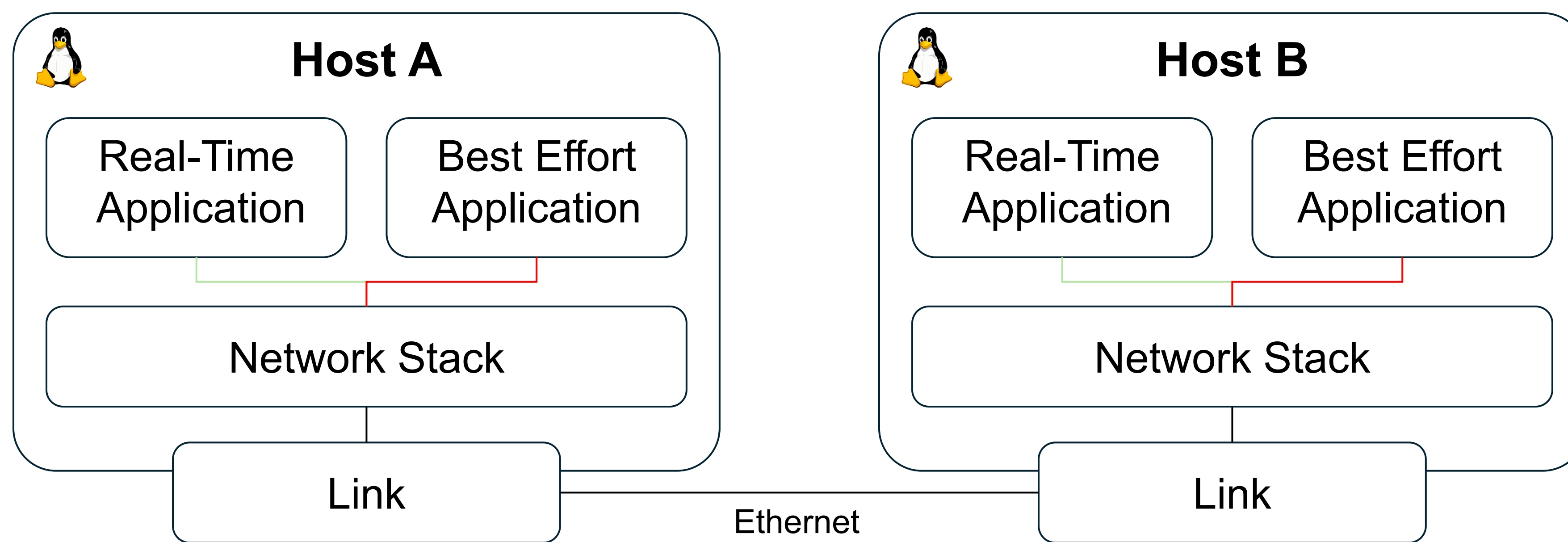
managedDDS

A Fast and Safe DDS Implementation for Mixed-Criticality Communication

Purpose: managedDDS ensures predictable data exchange for mixed-criticality applications on Linux-based automotive



Challenge: Concurrent use of the Linux network stack introduces interference, causing latency and jitter.

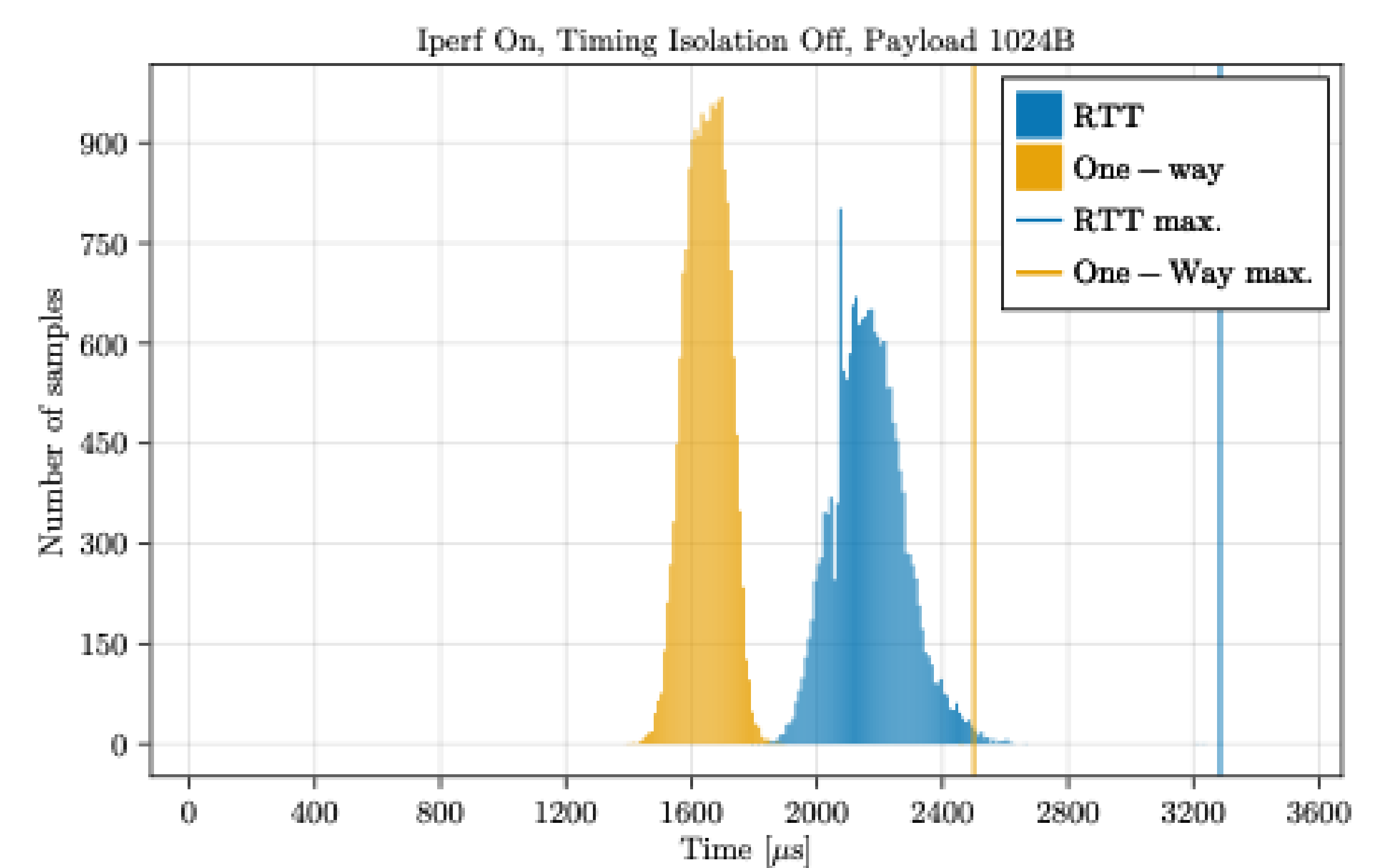
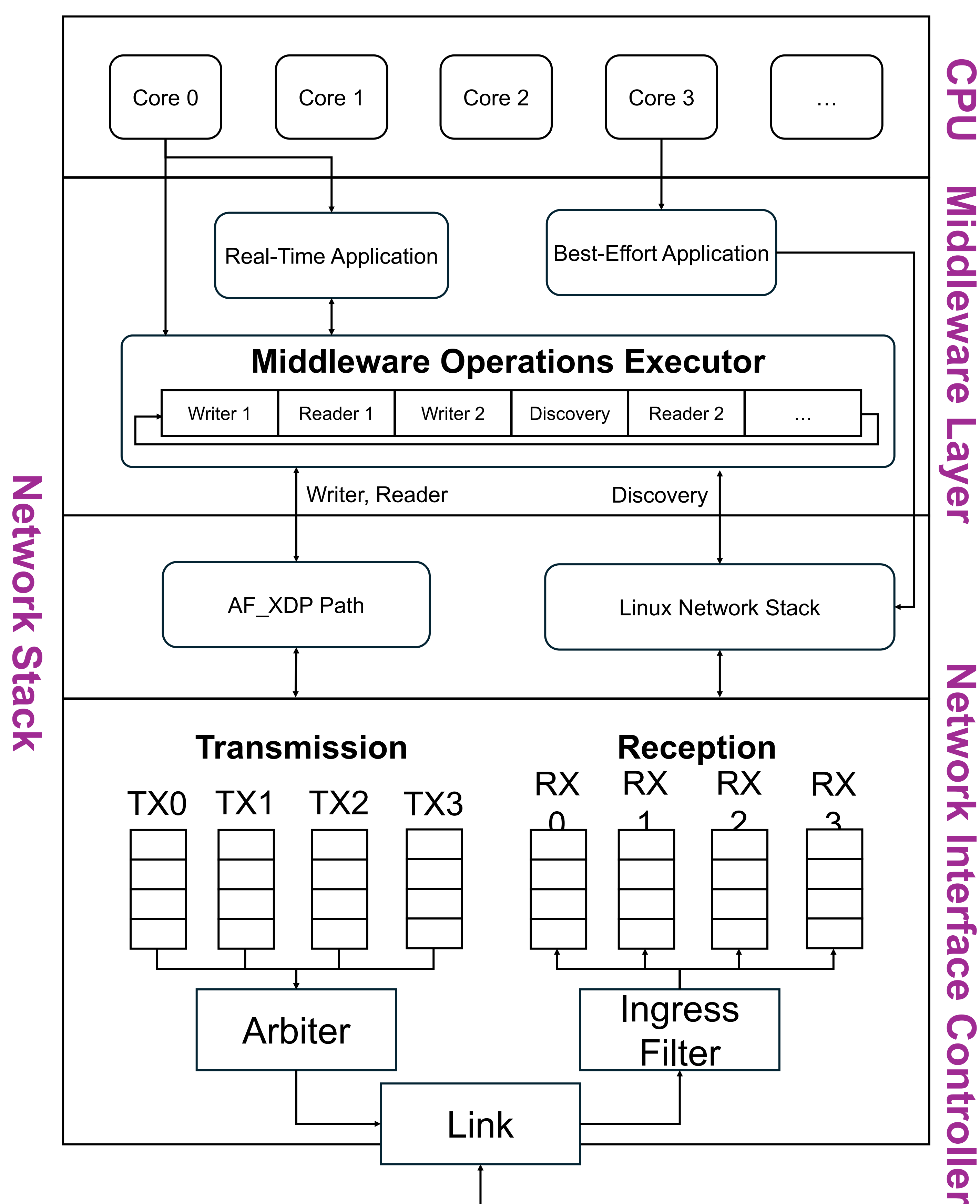


Solution: managedDDS enforces timing isolation across the middleware, network stack, and hardware layers.

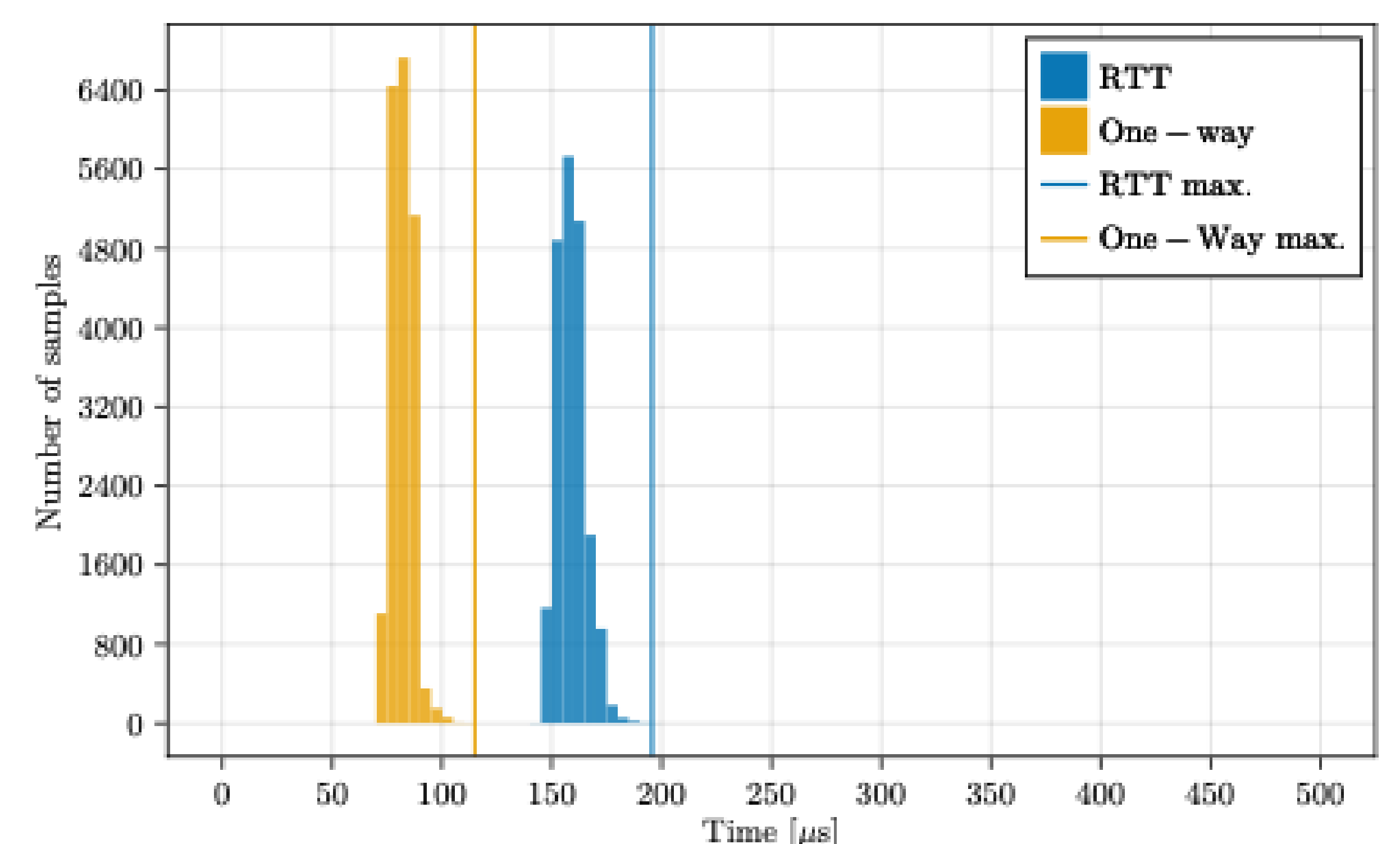
Middleware layer: Fixed-priority, non-preemptive scheduler manages publishers of varying criticality.

Network layer: Integration with the Linux express data path (XDP) routes high-priority data directly from the NIC driver to application memory, bypassing the standard stack.

Hardware layer: Dedicated NIC queues are reserved for real-time traffic.



Vanilla: Real-Time Traffic impacted by Best-Effort Traffic



Our Approach: Latencies not affected by interference traffic

In progress



Open Source



Outcome: minimizes interference and achieves consistent, predictable latencies suitable for safety-critical automotive workloads.