High Precision Communication

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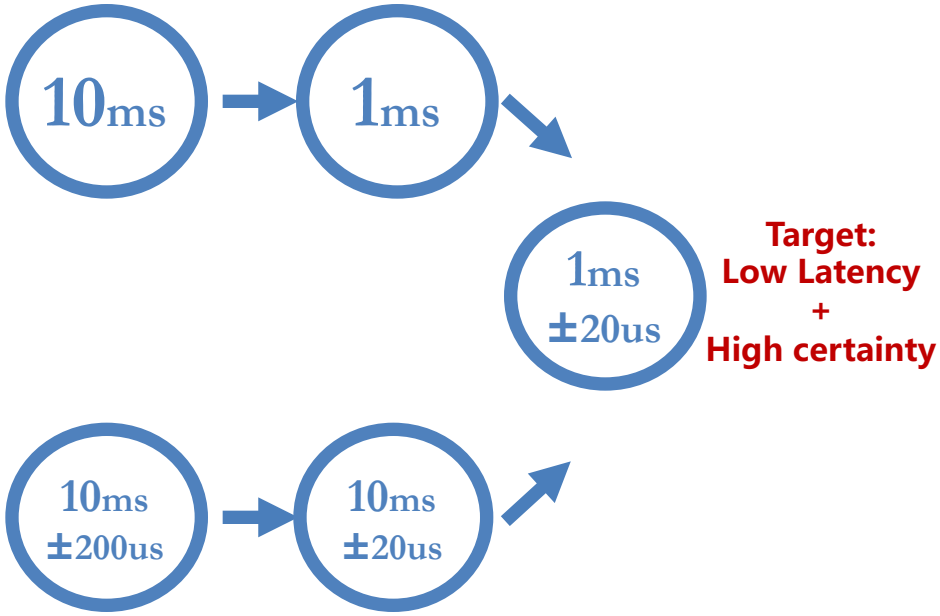
Requirement 1 - Latency

Best Effort to ***Low Latency*** to ***Precise Latency and Jitter***

Low latency is the optimization of the absolute value of time delay



Target:
Low Latency
+
High certainty

Precise latency with both upper and bottom boundries

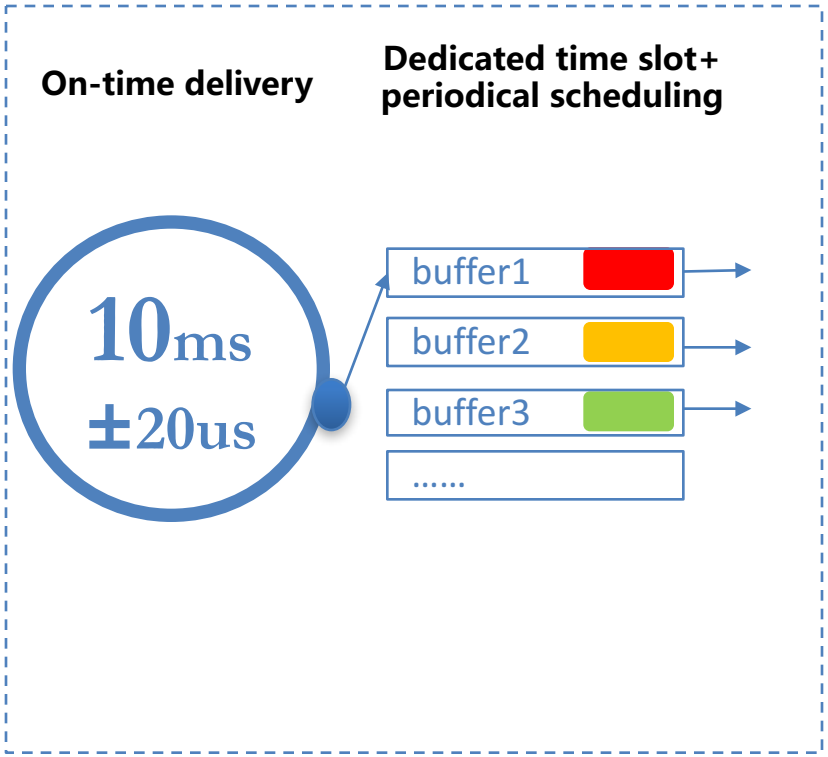
Industrial control **Remote surgery** **Robot**

- Industrial control, telemedicine, robot and other scenarios need end-to-end precise signaling transmission
- Packets are forwarded in a manner of **"on-time delivery"** .

Current Efforts – Latency

- Latency optimization efforts in different domains
  - Cellular core network - NFV and Slicing
  - RAN – Light weight encapsulation + dedicated spectrum
  - Optical transport – FlexE and TDM-like resource dedication
  - LAN – Time Sensitive Network (TSN)
  - IP network – Detnet (TSN+Layer2.5/3 encapsulation)
- IP network is best effort and used in large scale (connectivity robustness)
  - How do we deliver precise latency in IP network while keeping the scalability in long haul?

Requirement 2 – more than latency



Precise throughput

Precise packet loss

Precise path

Precise power consumption

And more…

High-precision communication should achieve certainty in multiple dimensions, and fulfill SLA guarantees with explicit boundaries

Problem Scope for Further Research

- Specify dimensions for High-Precision
  - Path (Privacy sensitive use case, i.e. industry internet)
  - Bandwidth on exact period of time(AR/VR, cloud Gaming)
  - Packet loss (V2X, Remote surgery)
  - Others?
- New measurement model and tool
  - real-time, not statistical
- Co-existence of BE network
  - High-precision comes with a price
- On-demand manner

Discussions

- Any Questions