

MoQ Performance and Feedback Requirements

MoQ Meeting at IETF 126, Vienna

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Agenda

Part 1

- ❖ MoQ for Live Agent Streaming: Scenarios, Architecture, and Metrics

Part 2

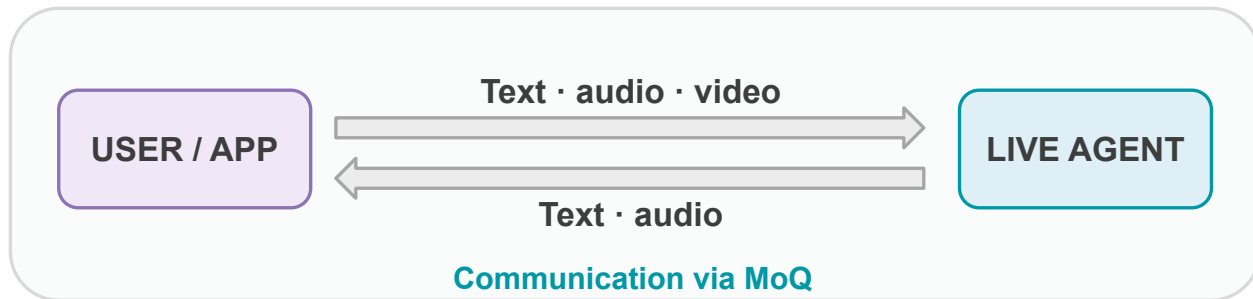
- ❖ Back to Feedback: The Problem It Solves
- ❖ Feedback in Cascaded Relay Architectures and End-to-End Paths
- ❖ Feedback Improves QoE on Poor Networks
- ❖ Next Steps

Scenario: Live Multimodal Recognition



Recognition → understanding → action

By interacting with an omni model, users can identify real-world objects, understand their purpose, receive recommendations or shopping assistance, and complete related tasks.



Session Setup Improvements: MoQ vs. WebRTC

MoQ vs. WebRTC · relative changes only

P90 transport setup time

−58.8%



P90 user-perceived session setup time

−36.6%



Abnormal interruption rate

−0.88 pt

KEY POINTS

- 01** Fast session setup with QUIC 0-RTT
- 02** Multi-stream priority and QoS

Anonymized internal comparison; absolute values withheld.

Back to Feedback: The Problem It Solves

Transport signals are necessary—but insufficient—for source-rate adaptation.

RECEIVER-SIDE SIGNALS AT EACH LAYER

Application Layer / PLAYER QoE

Player buffer · rebuffering · stalls

MOQT Layer / Object QoE

Object completion time · deadline misses ·
receive rate

QUIC TRANSPORT Layer

ACK · ACK timestamps · ECN · RTT

Cross-layer feedback → **bitrate controller**

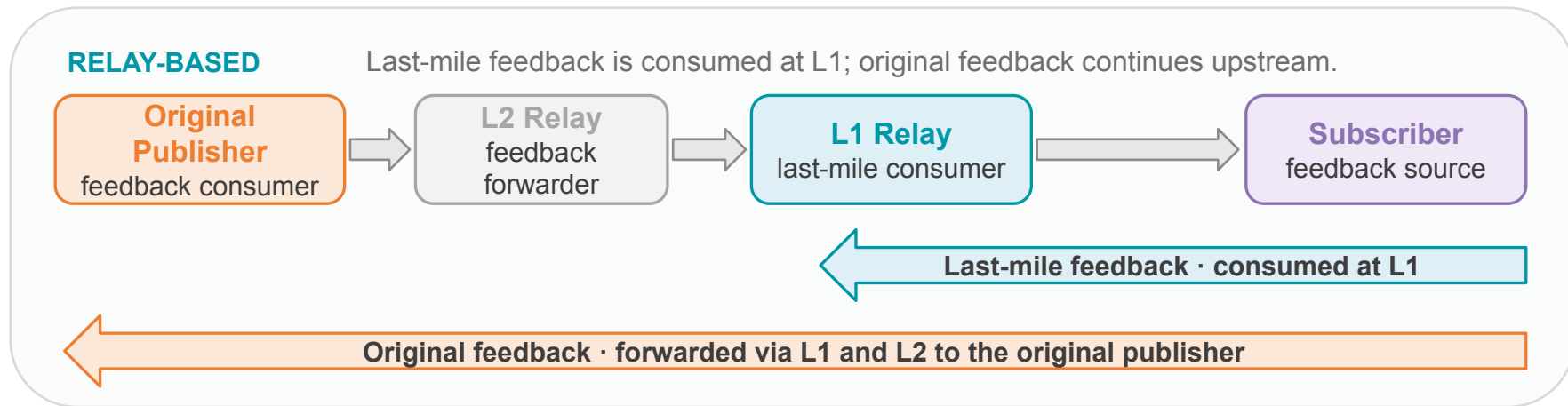
Without object completion time, deadline misses, player-buffer level/underflow, decode/render timing,

the congestion controller and original publisher cannot determine whether content will be playable on time or service-quality targets are being met.

Feedback standardizes the signal path—not the control algorithm.

<https://datatracker.ietf.org/doc/draft-jiang-moq-multimodal-feedback/>

Feedback in a Cascaded Relay Architecture



USE-CASE DIFFERENCES

LIVE STREAMING

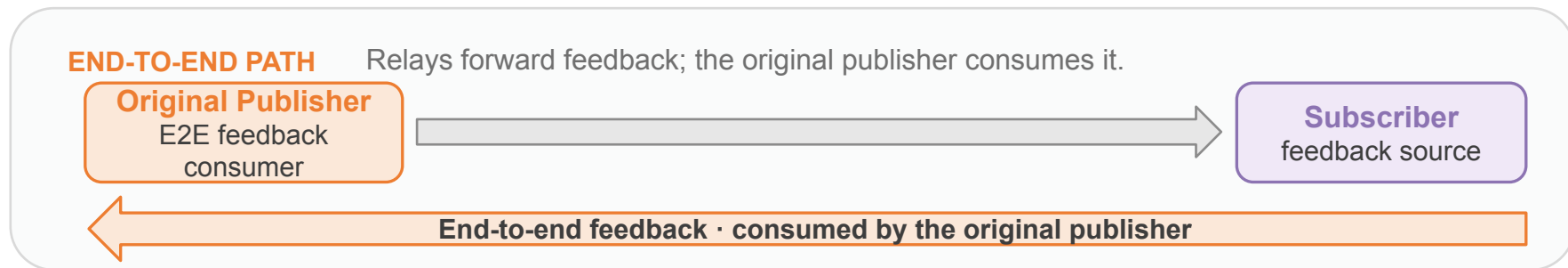
Original publishers typically transcode content into an ABR ladder; feedback is consumed mainly at the last mile.

AUDIO / VIDEO CONFERENCING

The original publisher may need feedback from every participant session. To avoid a 1:N feedback implosion, L1 aggregates reports over a short interval before forwarding them upstream.

End-to-End Feedback Paths

Receiver feedback drives transport control and source-side video adaptation.

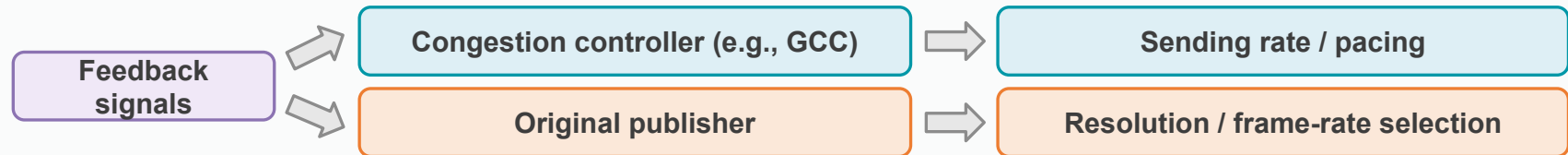


TARGET SCENARIOS

LIVE AGENTS · USER → AGENT

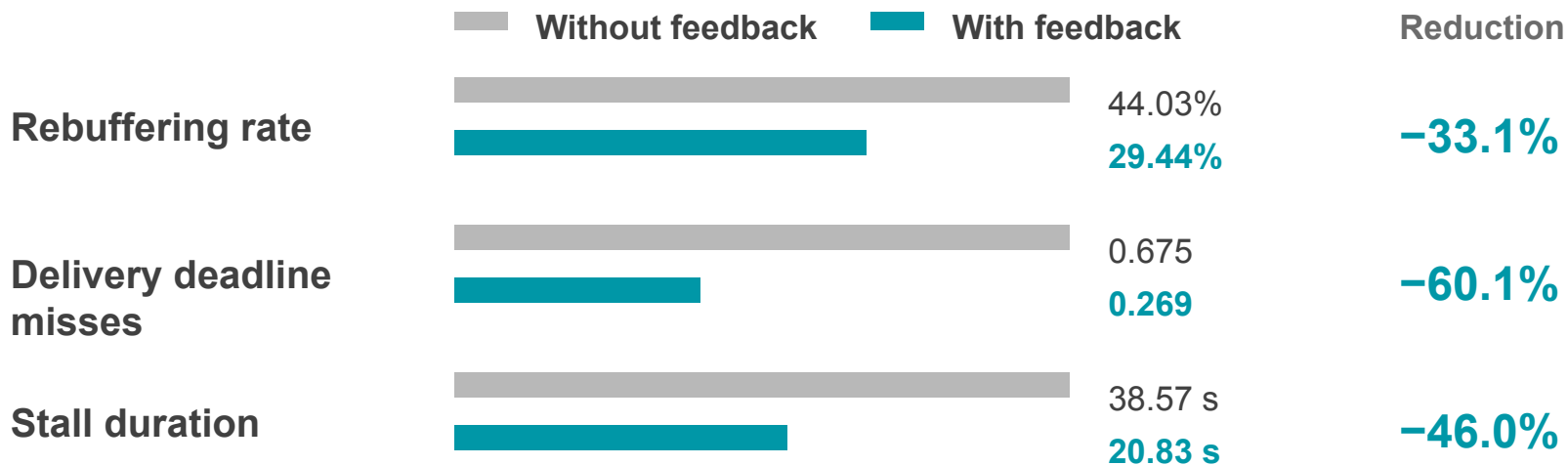
Cloud Rendering / Cloud Gaming

QoE ASSURANCE



Feedback Improves QoE on Poor Networks

Poor-network experiment · no feedback = fixed-high · feedback = MMF-only · lower is better



Largest gains: 60.1% fewer deadline misses, 46.0% shorter stalls, and 28.4% fewer bytes.

Next Steps

- Update the feedback draft to -01, including the proposed relay-support mechanism.
- Collect more experimental data for real time communication and other scenarios.
- Determine how to use feedback with WebTransport.
- Engage more reviewers and gather input from additional use cases.