MPQUIC Use Cases

Yanmei Liu, Yunfei Ma

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New-retail e-commerce use cases

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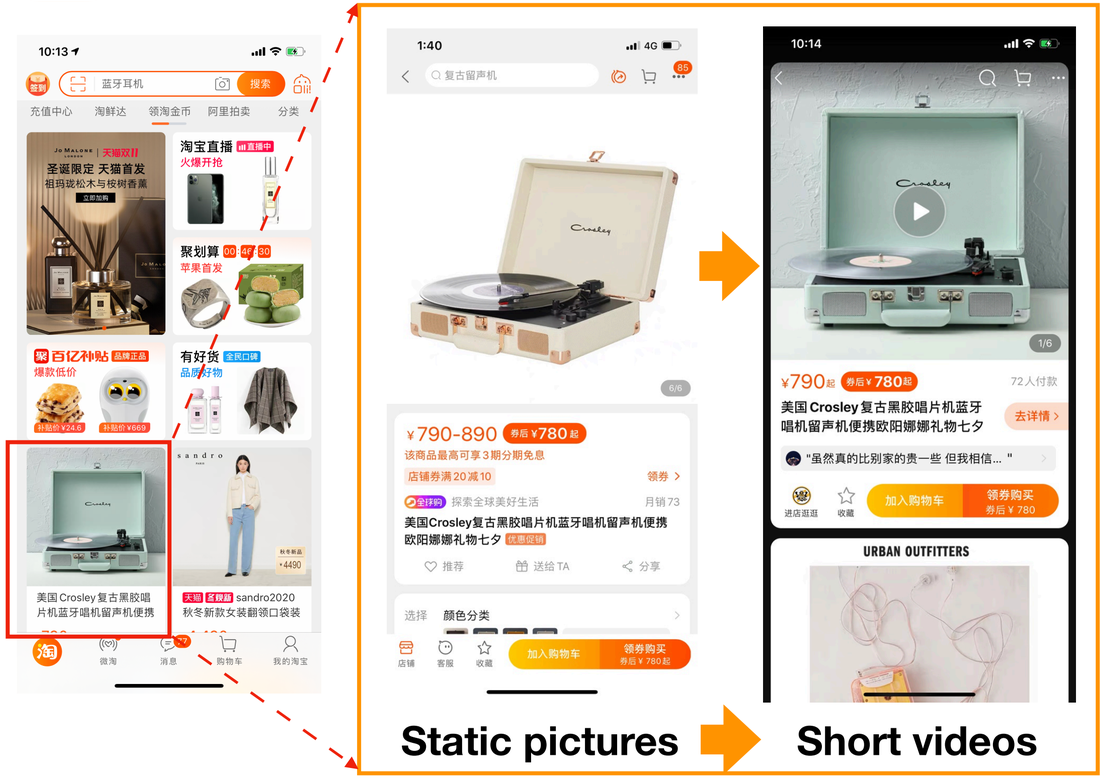
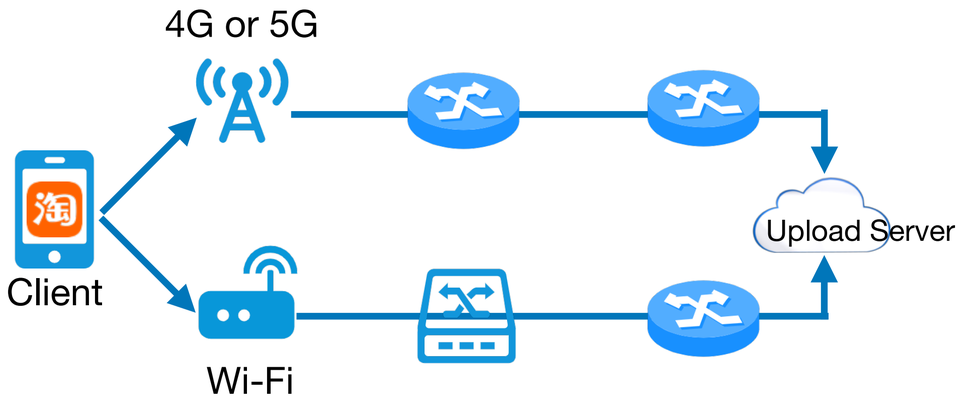
Taobao Mobile Application



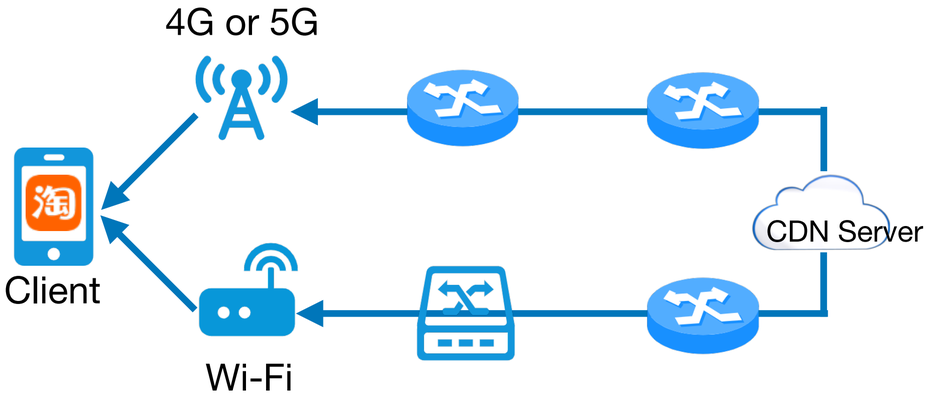
Short-form video has become the most popular way of product marketing

MPQUIC comes in handy with communications in both Wi-Fi & LTE.

- Accelerating video uploading & downloading;
- Reducing video stalling and re-buffering;
- Offering better QoE turns into users' more willingness to purchase.



Using MPQUIC in **Video / File uploading**



Using MPQUIC in short-form **Video player**

Taobao Live online shopping

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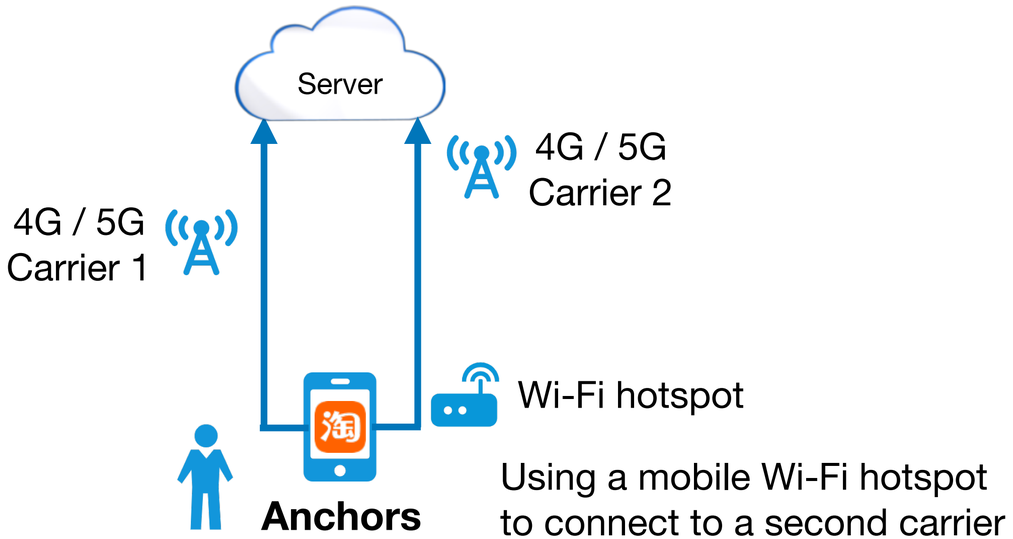
Taobao APP
Live video broadcasting

More and more anchors / internet celebrities stream outdoors

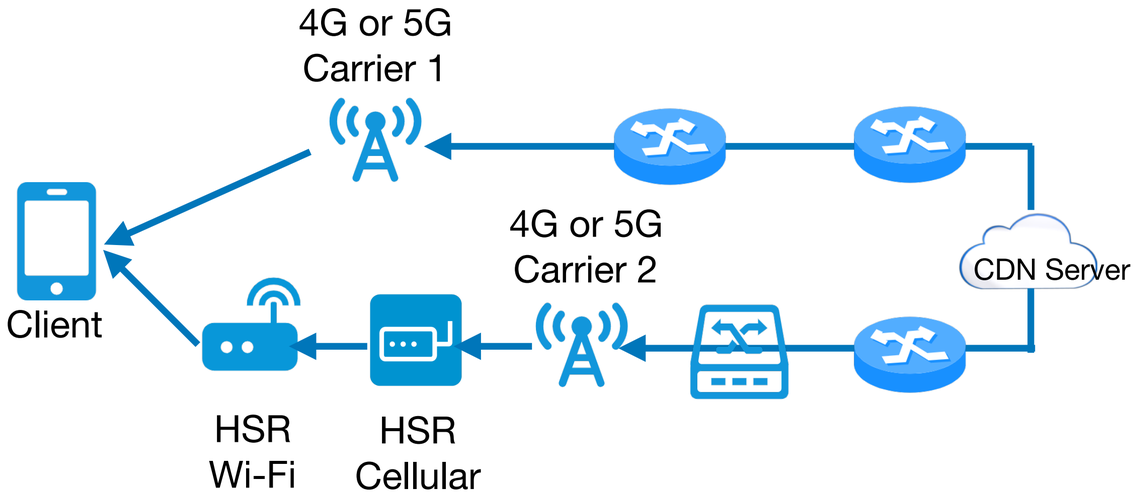
- **Need more wireless bandwidth**
- **Require uninterrupted wireless handover**

MPQUIC is useful by offering an additional connection to a second carrier through a mobile Wi-Fi hotspot



High-speed rail(HSR) video streaming

HSR in China



Over ***2 Billion*** passenger railway journeys (2019)

Speed **300-350km/h**

Handover every **13.6s**

Wifi available but **unsatisfactory**

Taobao
Shopping & Payment

DingTalk
Business
Communication

YOUKU
Entertainment

MPQUIC offers better QoE in extreme mobility

5G NSA coverage problem

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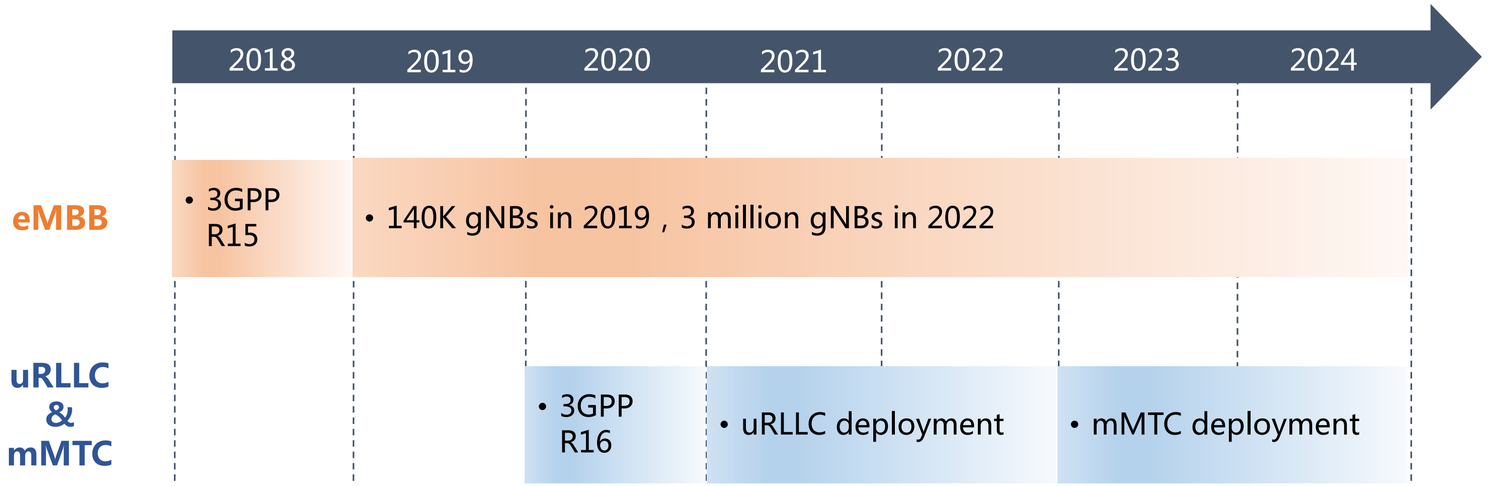
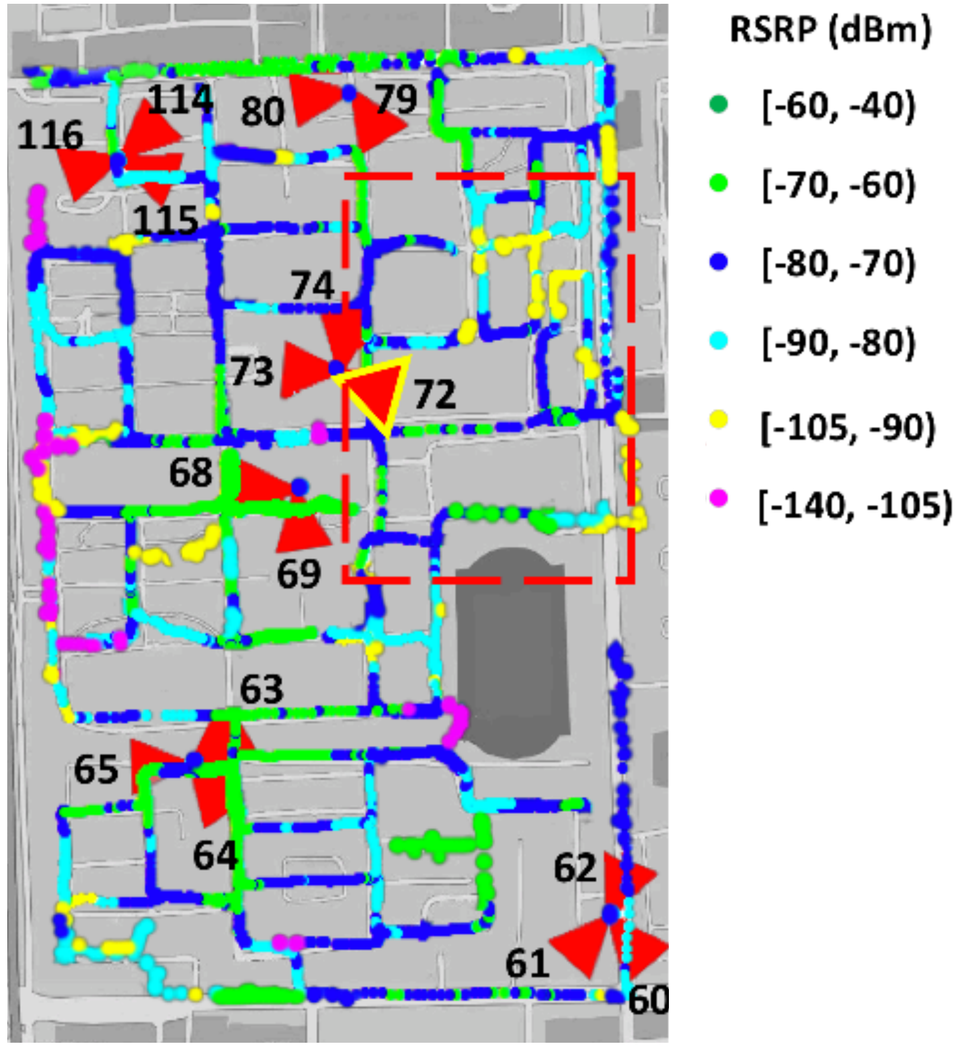
5G deployment schedule in China



A 5G NSA Sub-6GHz measurement in Campus



Higher frequency results in more coverage holes

Coverage holes: 8.07% (5G NSA) vs 1.77% (4G)

Multi-path capability with non-3GPP access is desired

Summary

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- Use cases & protocols
  - Short-form video download - HTTP/3
  - Video/file upload - upload application protocol with QUIC Streams
  - Live online shopping - need QUIC datagrams for unreliable transmission

- Goals
  - Short-form video play: Reduce video playback stalls and stall duration
  - Video/file upload: Bandwidth maximizing
  - Live online shopping: Reliability & Minimize latency
  - All scenes(maybe): Reduce network errors
  - Easy to implement

- Path management
  - Bi-directional stream -> Bi-directional sub-connections
- Scheduler
  - Dynamic scheduling strategy with feedback
  - Costs sensitive / Bandwidth maximizing in different scenarios

https://tools.ietf.org/html/draft-an-multipath-quic-00

Short-form video using MPQUIC in Taobao App (demo)

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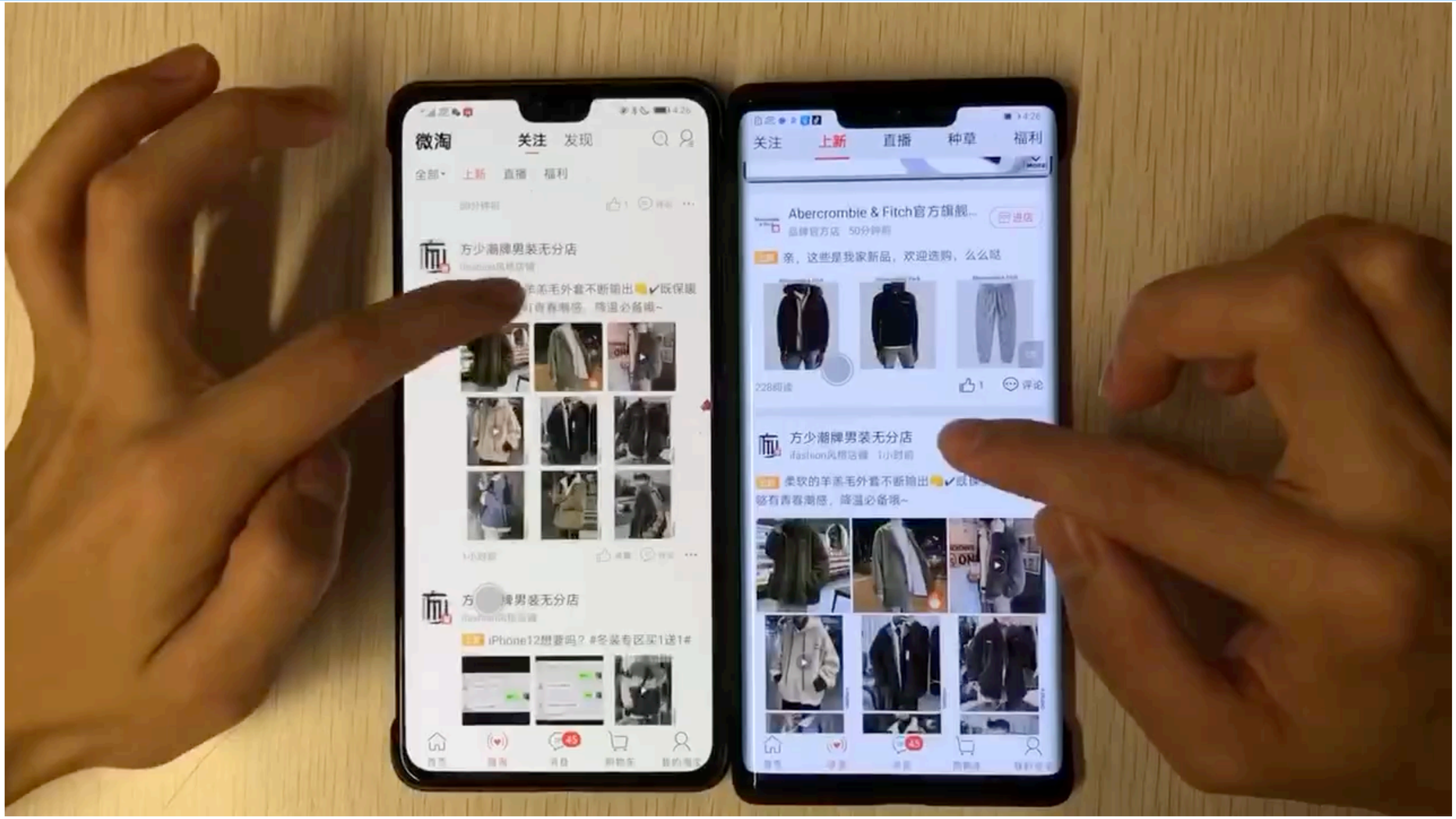

Left: Taobao APP with MPQUIC demo using both Wi-Fi & LTE
Right: Taobao APP with QUICv1 using Wi-Fi only
When Wi-Fi bandwidth fluctuation occurs, the short-form video stalls on the right, while the video plays smoothly on the left

https://tools.ietf.org/html/draft-an-multipath-quic-00