Performance Improvement of Multipath TCP for Mobile Devices

The Best Student Paper in IEEE CCNC 2013

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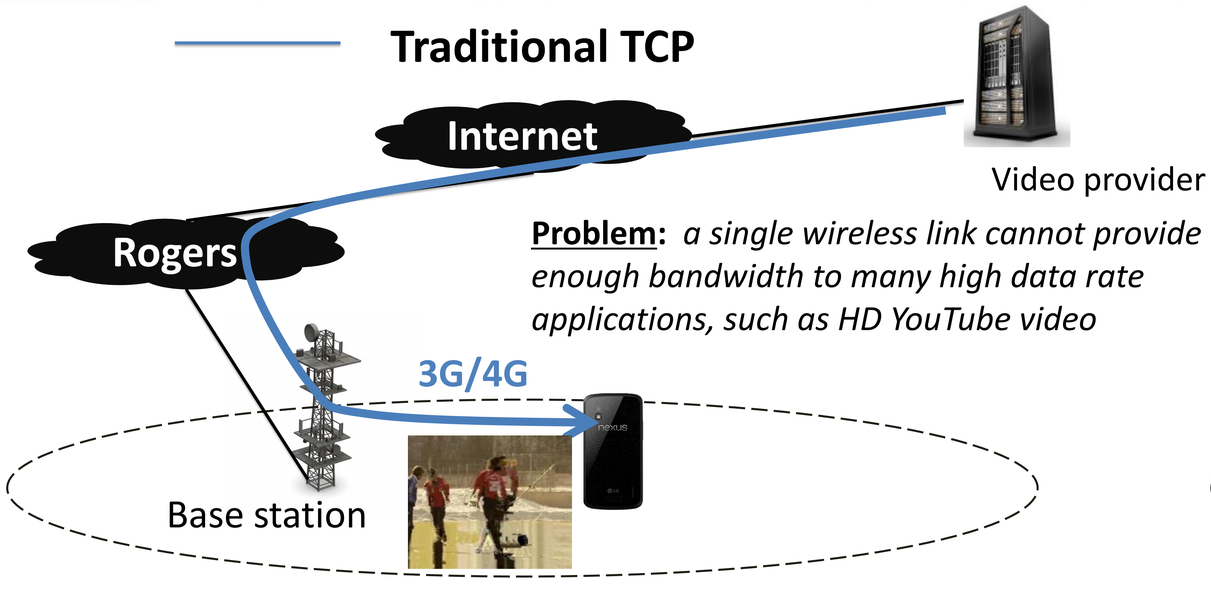
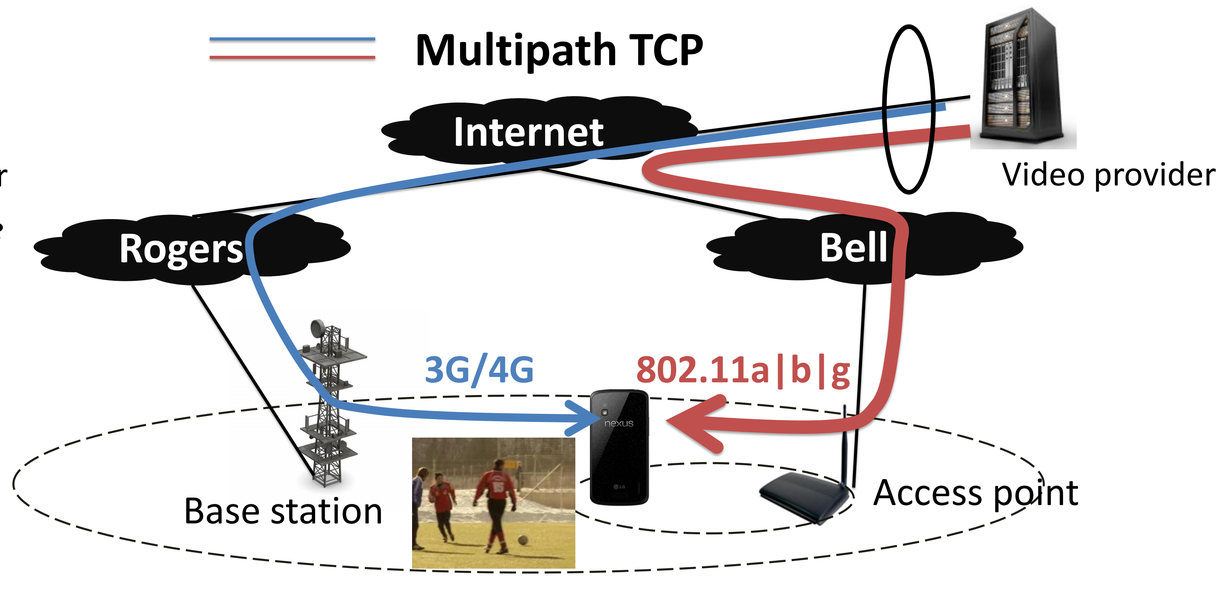
Why do we need Multipath TCP protocol

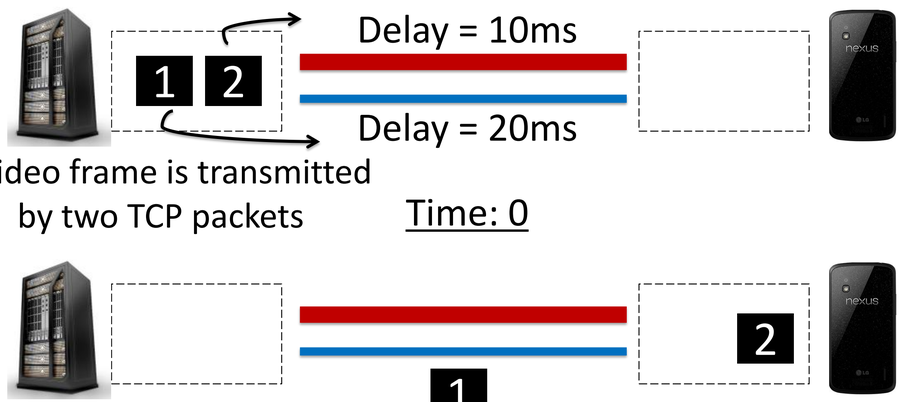
Advantage: *Multipath TCP can aggregate bandwidth among multiple interfaces of mobile devices, such as 3G/4G, WiFi and Bluetooth.*





What and How do we improve Multipath TCP protocol

Out of order problem in Multipath TCP



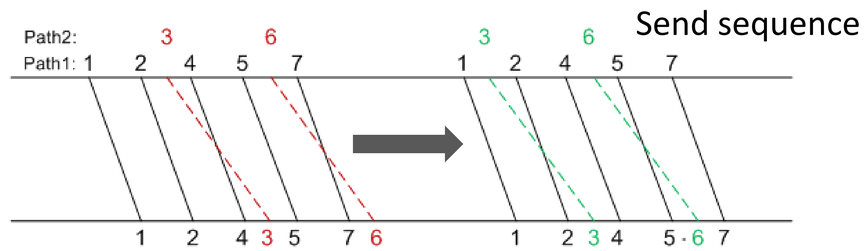
Application cannot retrieve this frame until receiving packet "1" in slow path. This will **decrease the total throughput and increase the receive buffer size**

Solutions: CWA-Multipath TCP

Part 1:congestion control

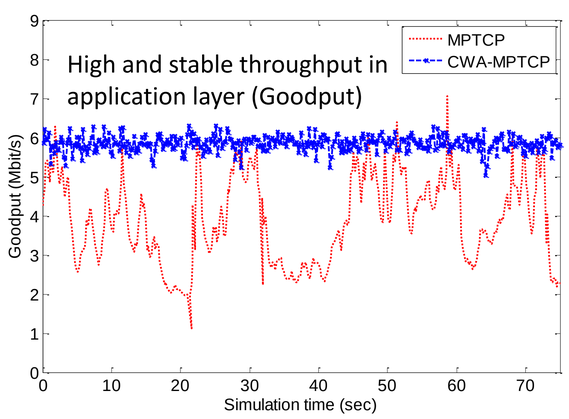
Key idea: proportionally adjust the sending rate of different paths so as to minimize the delay differences on each path

Part 2: packet scheduler

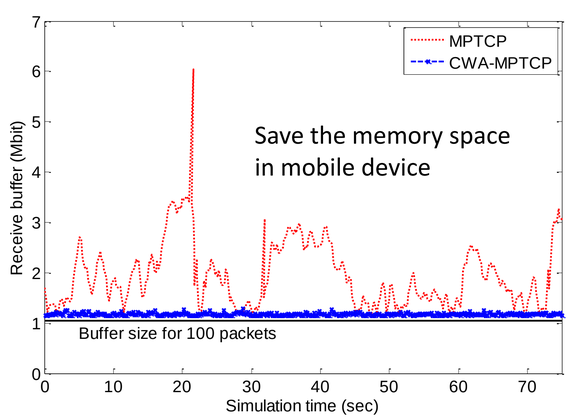


Key idea: re-arrange the sending sequence in the sender to achieve the in-order receiving sequence in receiver

Simulation Results



Increase the total throughput



Decrease the receive buffer size

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