Connection Migration

QUIC @IETF 100, Singapore

Behavior specified in current draft

If packet received from new address:
    send subsequent packets to new address
    ("latch" on peer address change)
    limit data sent to new address until validation
    use PING-PONG frames to validate new address

Assumes only one address available at any time

Using multiple addresses

In practice, multiple addresses available:
    eg, cell and wifi
    may have preferred network (in this case, wifi)

Migration happens with multiple addresses:
    when mobile device connects to wifi
        want to migrate existing connections from cell to wifi
        but only if can reach peer via wifi

    wifi quality degrades ("parking lot problem")
        want to migrate existing connections from wifi to cell
        but migrate back if wifi becomes better

Using multiple addresses

Migration needs ability to *probe* alternate network
    alternate network is the one with no data
    peer should not latch on receiving probe

Principle 1: Probing and Latching are separable events.

Using multiple addresses

Endpoint should control use of its addresses by peer
      mobile client should control server sending to wifi or cell

However, peer may know about performance to addresses
      happens when peer is sender
      sender measures bandwidth
      (either end can measure RTT with PING frames)

**Principle 2: Interface use is a local policy decision.
When possible, support peer's ability to choose.**

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Strawman: Migrating with multiple addresses

When mobile client connects to wifi
 sends probe packet over wifi, continues data over cell
 server sends ack of probe to source address of probe
 when ack received, client sends all data over wifi
 server receives packet over wifi, latches to wifi

Wifi quality degrades ("parking lot problem")
 client moves all data to cell
 sends probe packet over wifi, continues data over cell
 server sends ack of probe to source address of probe
 when ack received, client sends all data over wifi
 server receives packet over wifi, latches to wifi

Strawman: Migrating with multiple addresses

Peers must continue accepting packets from/to old address
    but not cause latching back
    packet number of latching packet must be greater than
        last latching packet

Need to define a probe packet
    so peer can distinguish between probe and other packets
    probe consumes packet number...
    ... but a probe loss must not affect data transmission.

Strawman: Migrating with multiple addresses

What happens if no response to probe packet?

    resend probe after timeout (maintain separate timer)

    mark path as dead after $MAX_PROBES

Does this direction seem reasonable?

    Do the principles seem reasonable?

    Does the strawman proposal seem reasonable?