

Initial-Path Selection for Connection Establishment in Multipath TCP

draft-kang-mptcp-initial-path-selection-for-connection-establishment-00

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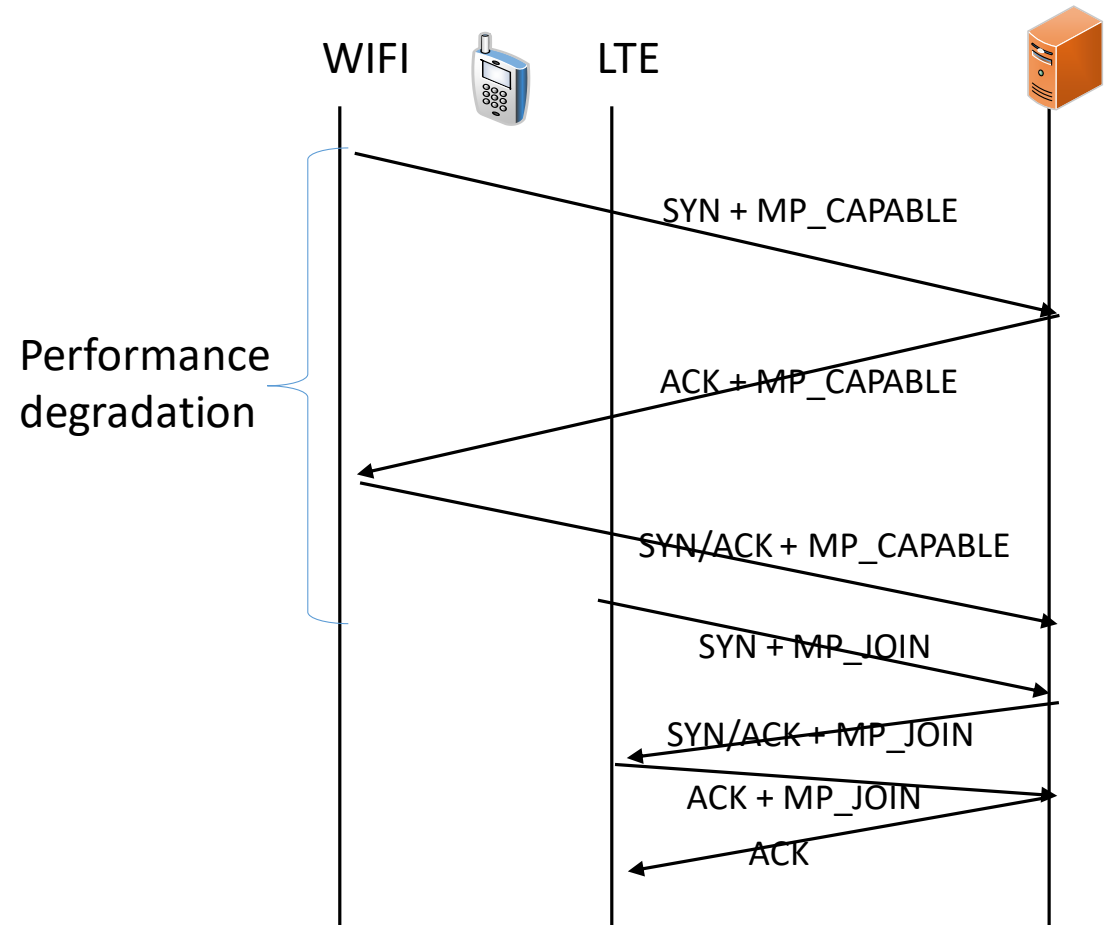
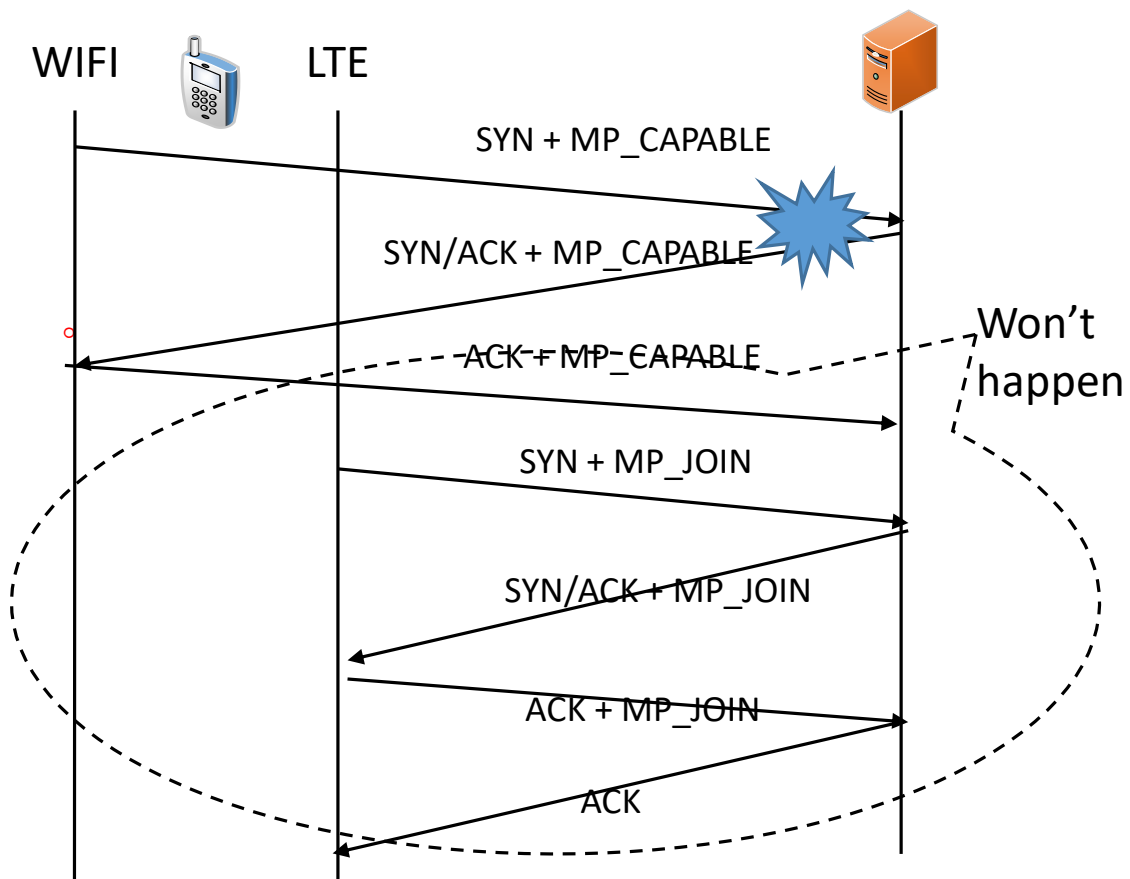
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Current MPTCP Initialization

Initial subflow (i.e master subflow) is initiated on the path (i.e initial path) which is decided by default, and other slave subflows will be setup after success of initial flow (RFC 6824). For the mobile phone:

1) If the initial subflow cannot be established on the WiFi path, there is no connectivity. Even if LTE path is available.

2) if the initial WiFi path is worse than LTE, obvious suboptimal performance;



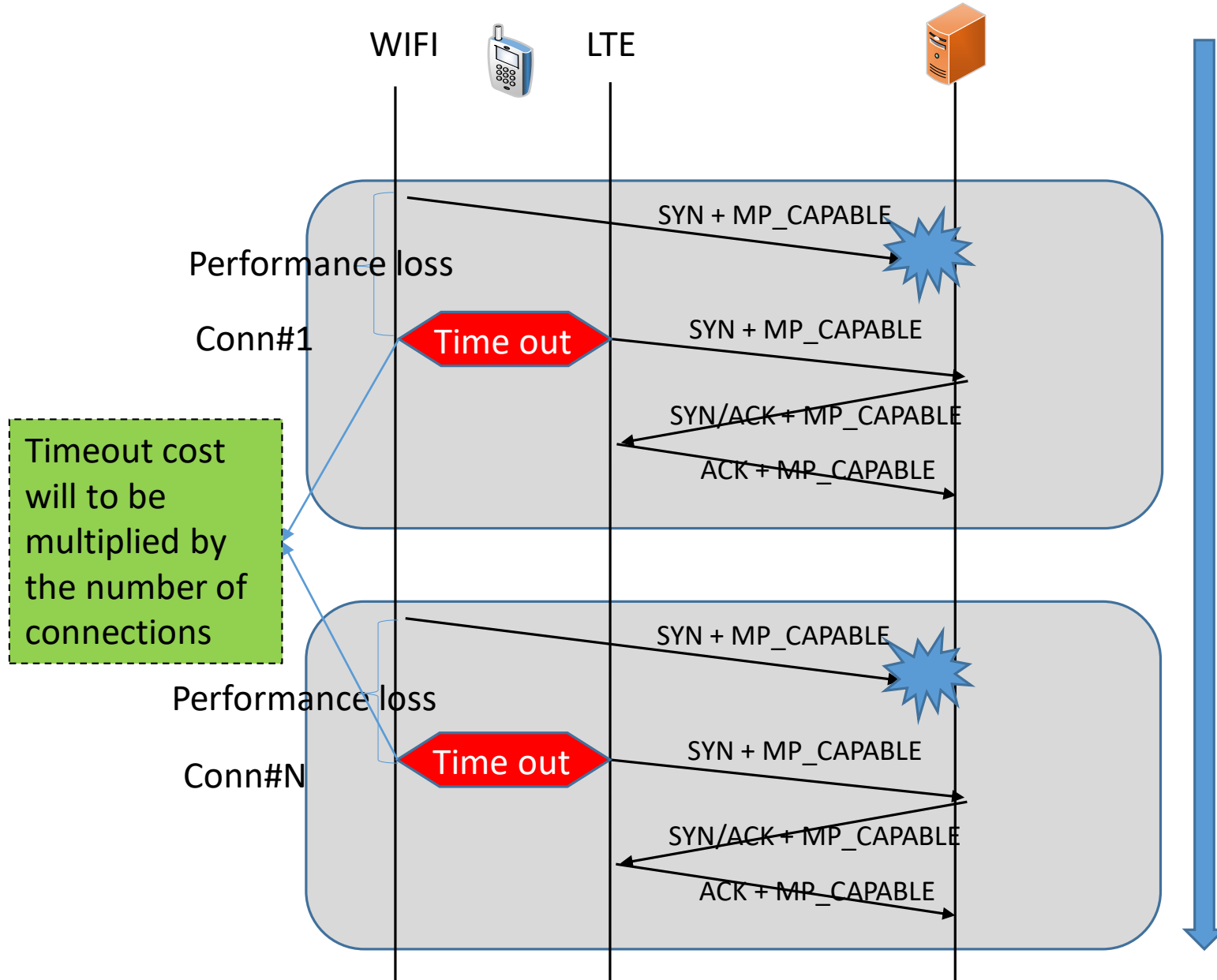
Why this still need to be addressed

ROBE:

1, "Downgrade" and "Break before Make" solution put a too high burden on the server side;

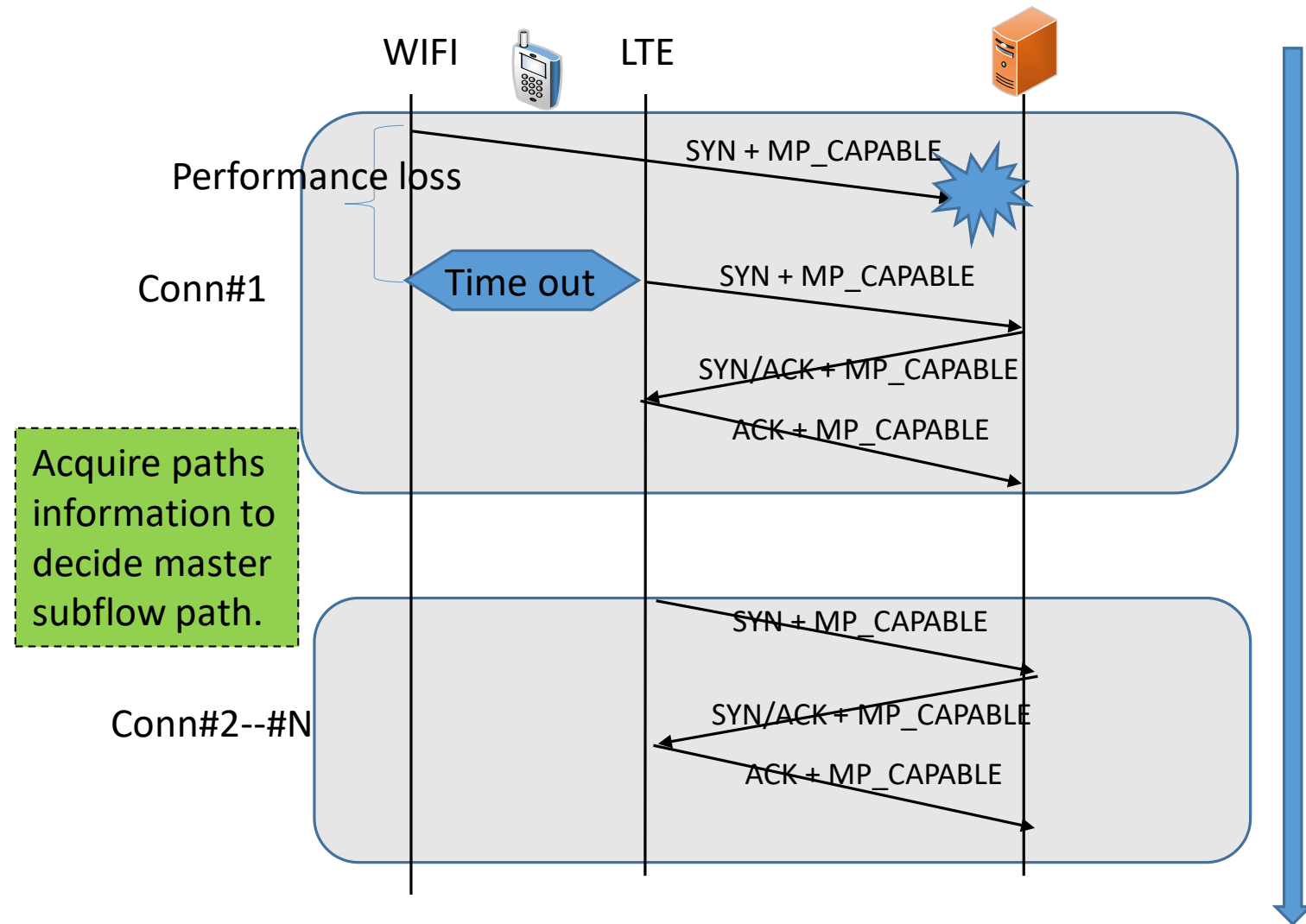
2, "Timer based" solution is less costly, however, the more connection created by one application, more timeout cost will be paid by the user application.

e.g., the content downloading consists of multiple segments that set up connections sequentially



Coupling ROBE with Initial Path Selection

- Use ROBE at the very beginning when the sender is ignorant about path info;
- Use optimal initial path selection for consecutive connections;
- With the new proposal:
 - Only first connection with timeout performance loss;
 - Paths information acquired from conn#1 decide LTE is better than the path of master subflow. Then all the later connection initiate subflow on LTE without timeout performance loss;



Path information

- RSSI
 - Global for all connections
- RTT
 - Local to each application, as diff applications have diff destination IP addresses ;
- Loss rate
 - Local to each application;
- RTO triggered frequency
 - Local to each application;
- Economy attribute
 - Defined by user preference via an extended API interface;

Next steps

- We believe the ‘initial path selection’ is an issue that need to be addressed by IETF mptcp wg , even if all the decisions can be made based on local information;
- Suggestion:
 - An information document around the best practice, with an extended API interface to specify path information