mptcp proxies

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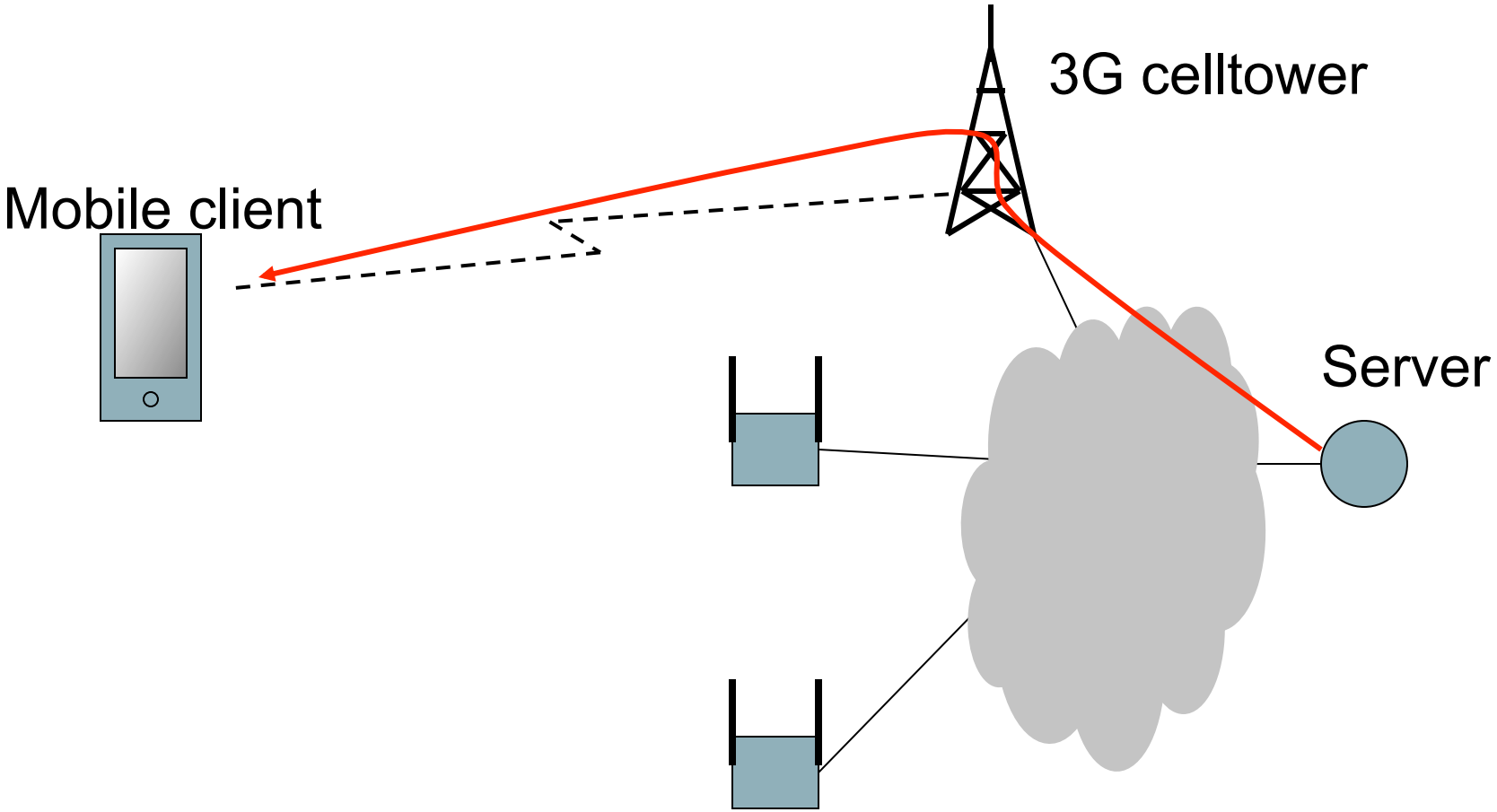
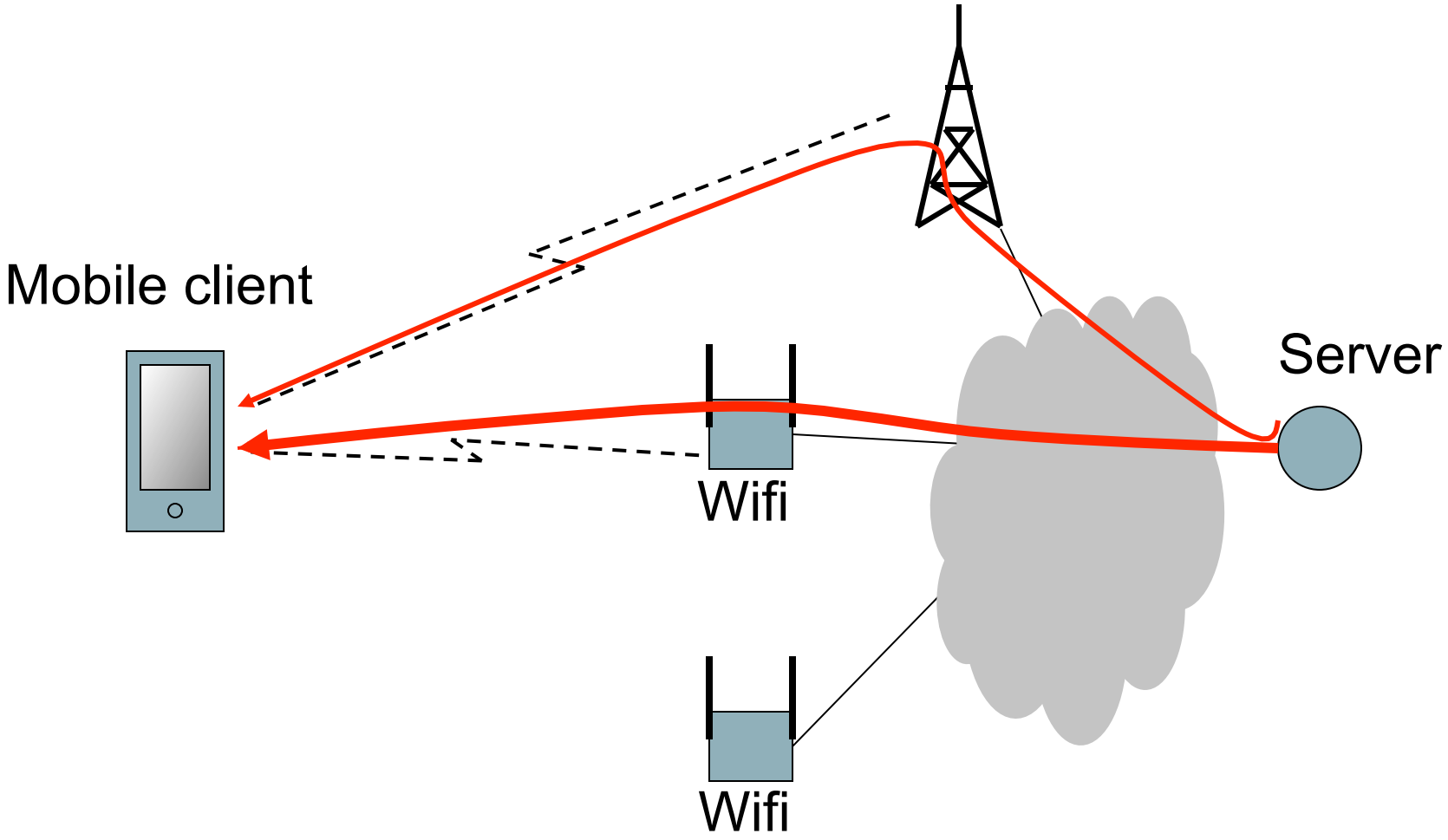
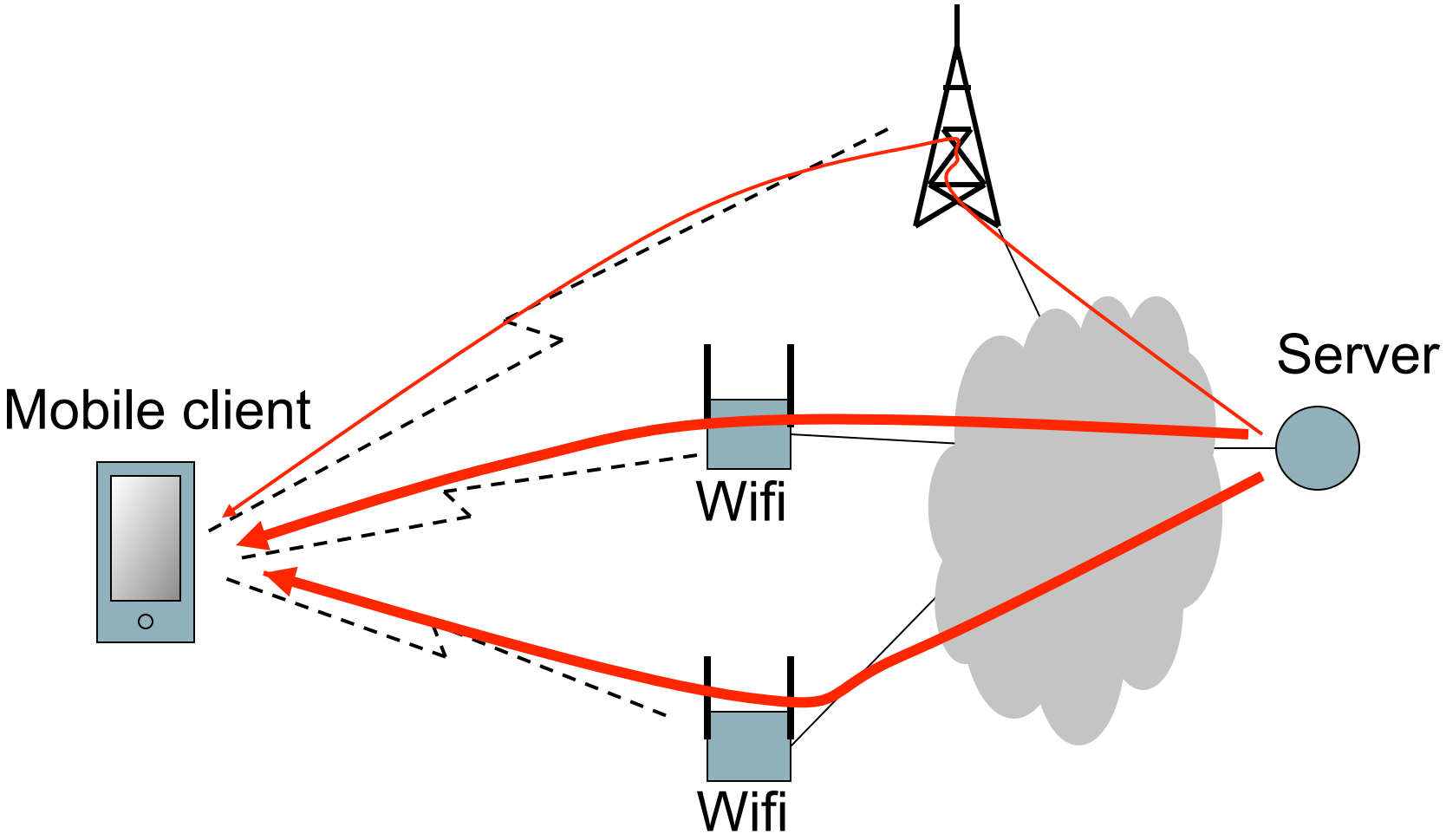
MPTCP Mobility



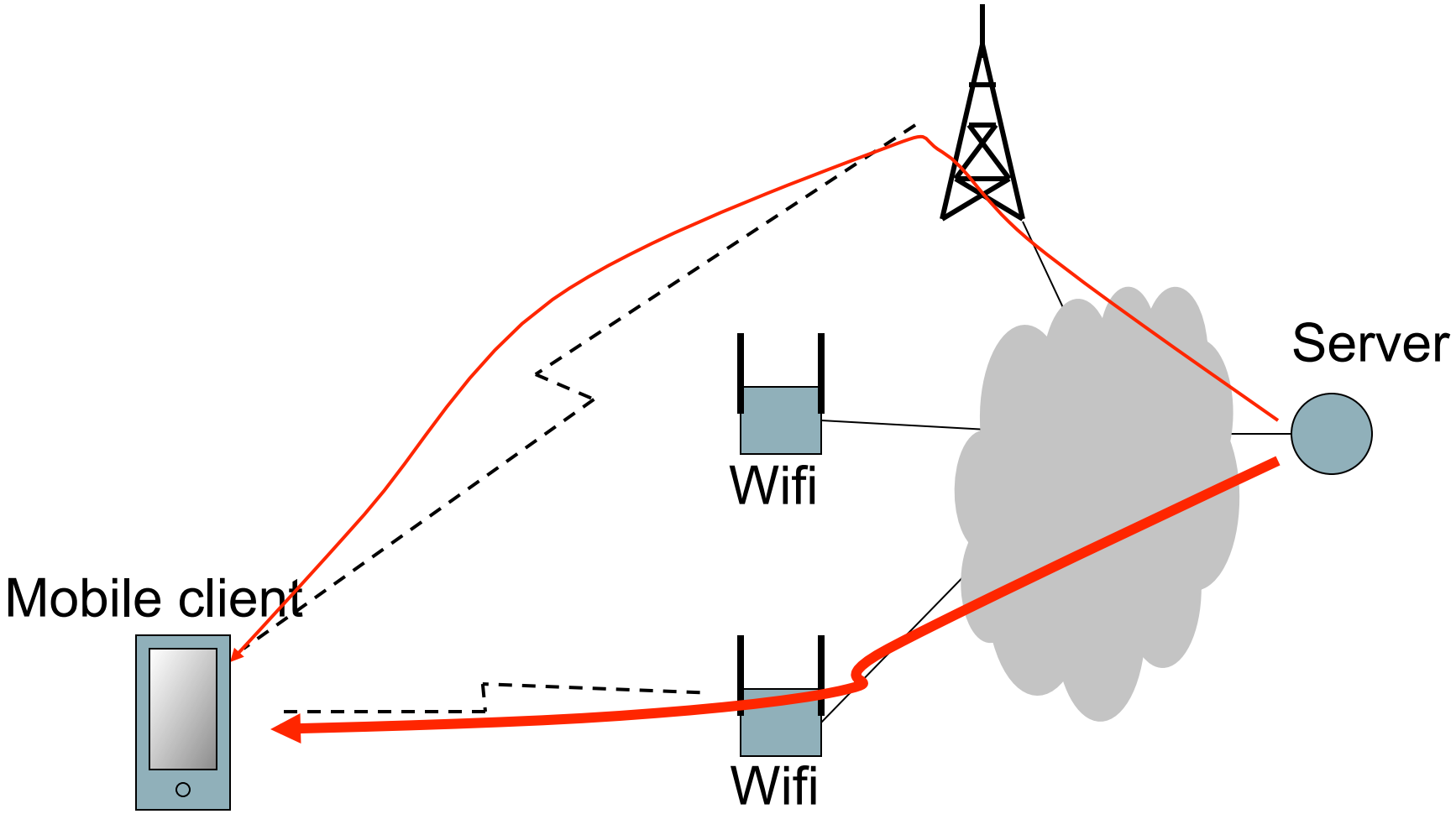
MPTCP Mobility



MPTCP Mobility



MPTCP Mobility



MPTCP as a mobility solution

Short paper: **http://nrg.cs.ucl.ac.uk/mptcp/mobility.pdf**

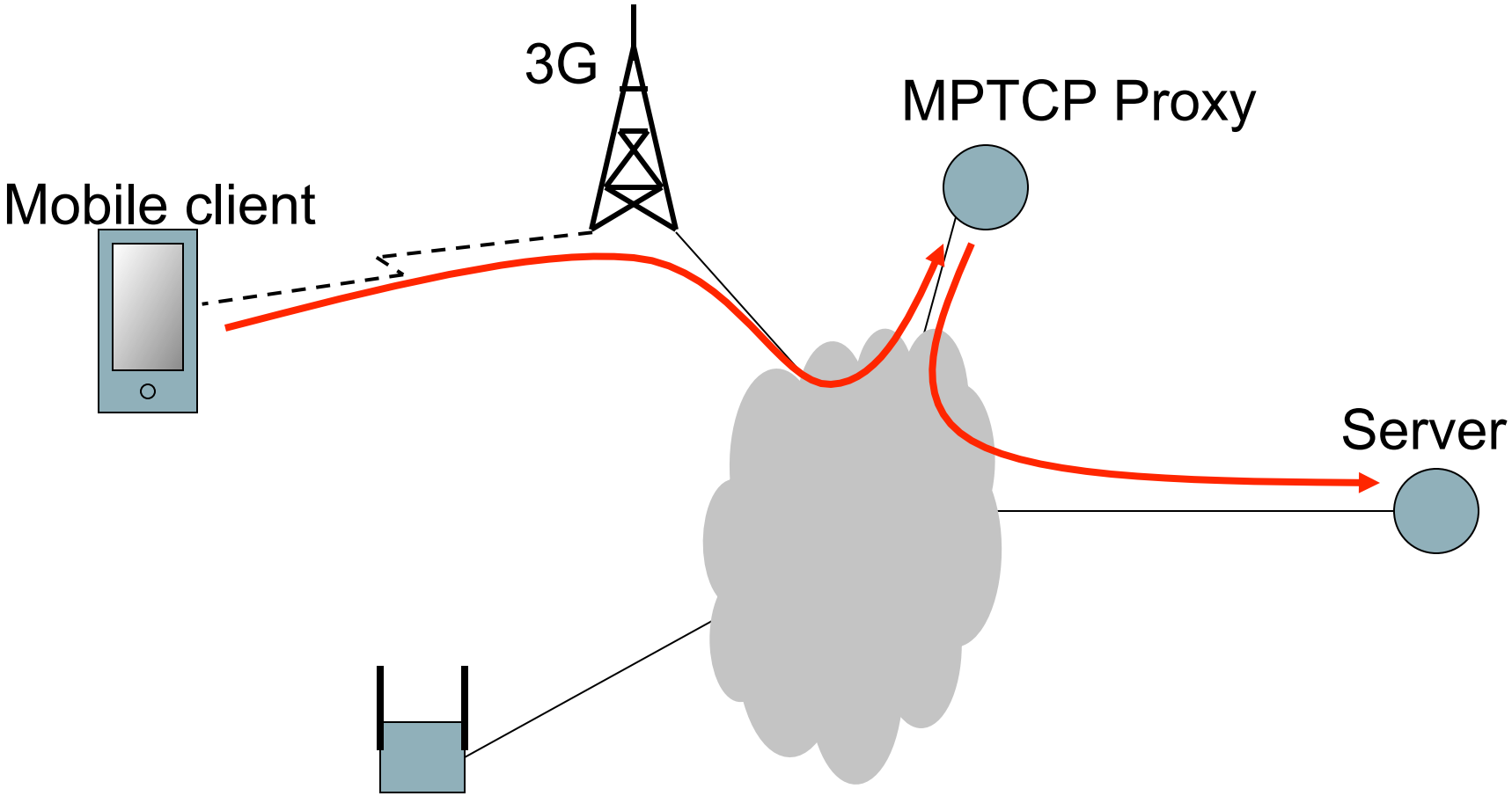
Scenario: want to use variable quality 3G and intermittently available WiFi hotspots.

- Preliminary results show we can achieve better throughput, more robustness, and save battery power.

Need to be able to depend on MPTCP availability

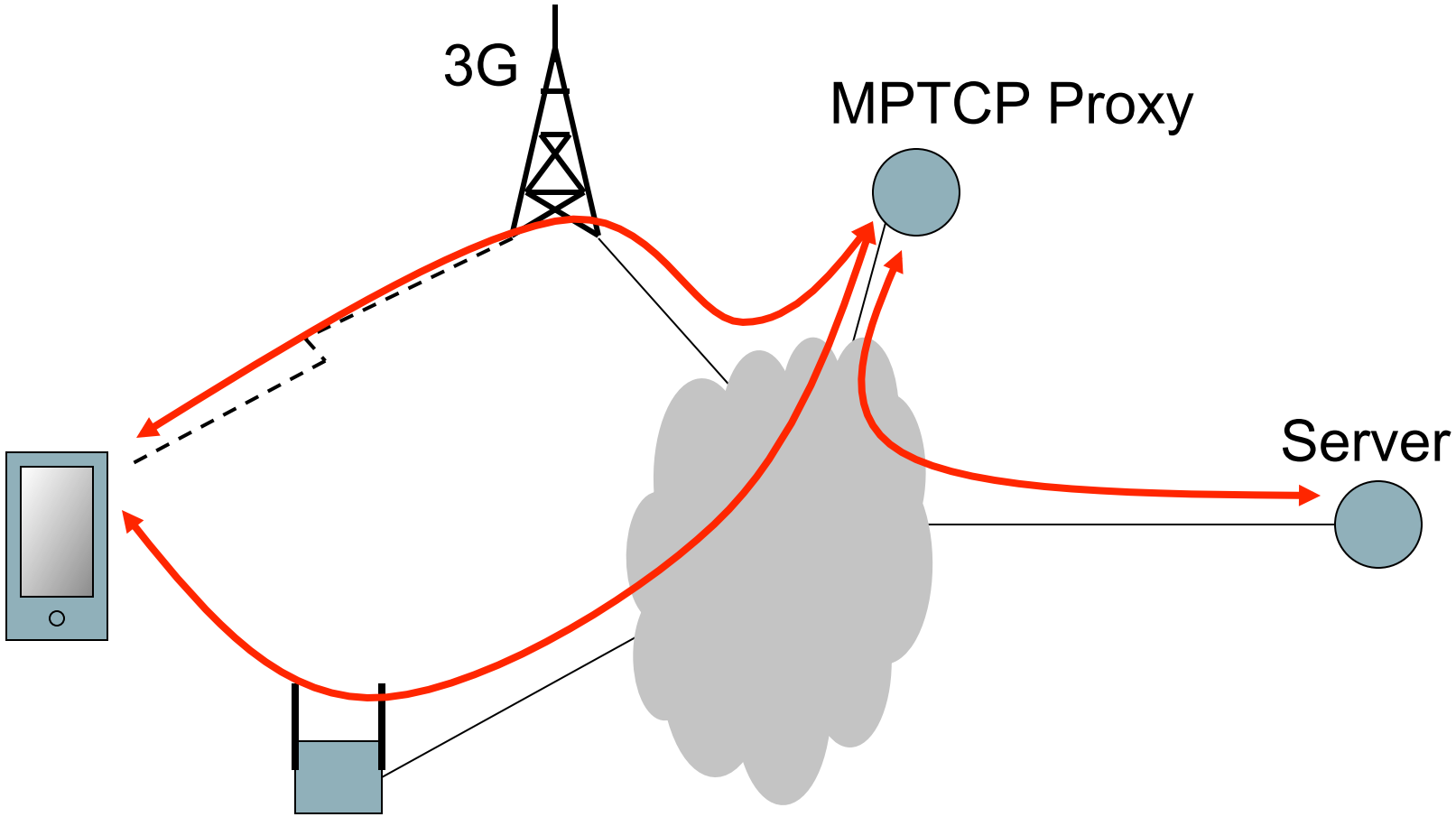
- Problem:
  - For the near future, most of the servers won't support MPTCP.
- Solution:
  - Perform MPTCP to a proxy.

MPTCP Mobility: Legacy Server



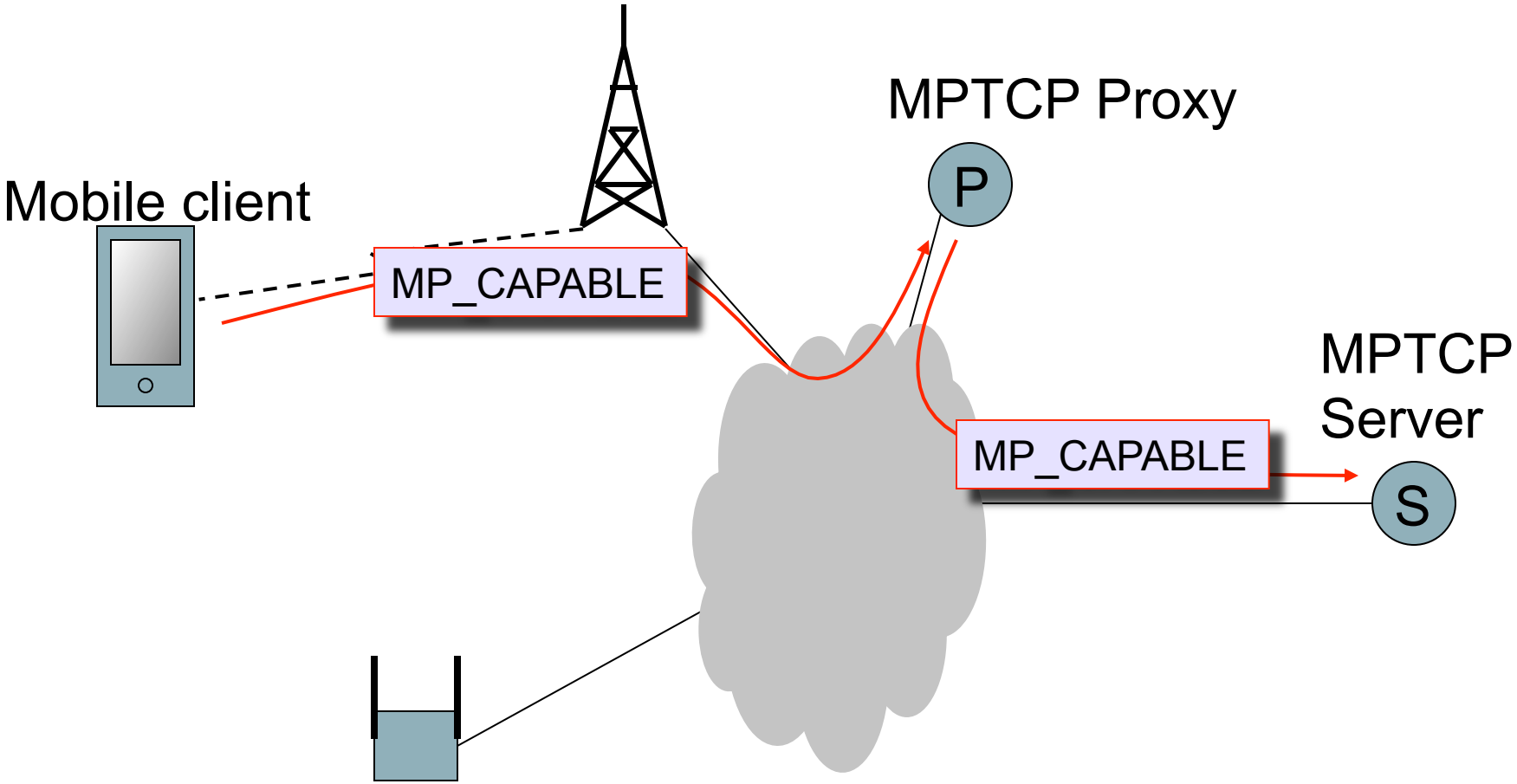
MPTCP client sends SYN to proxy, indicating address of final server. Proxy initiates connection to server.

MPTCP Mobility: Legacy Server

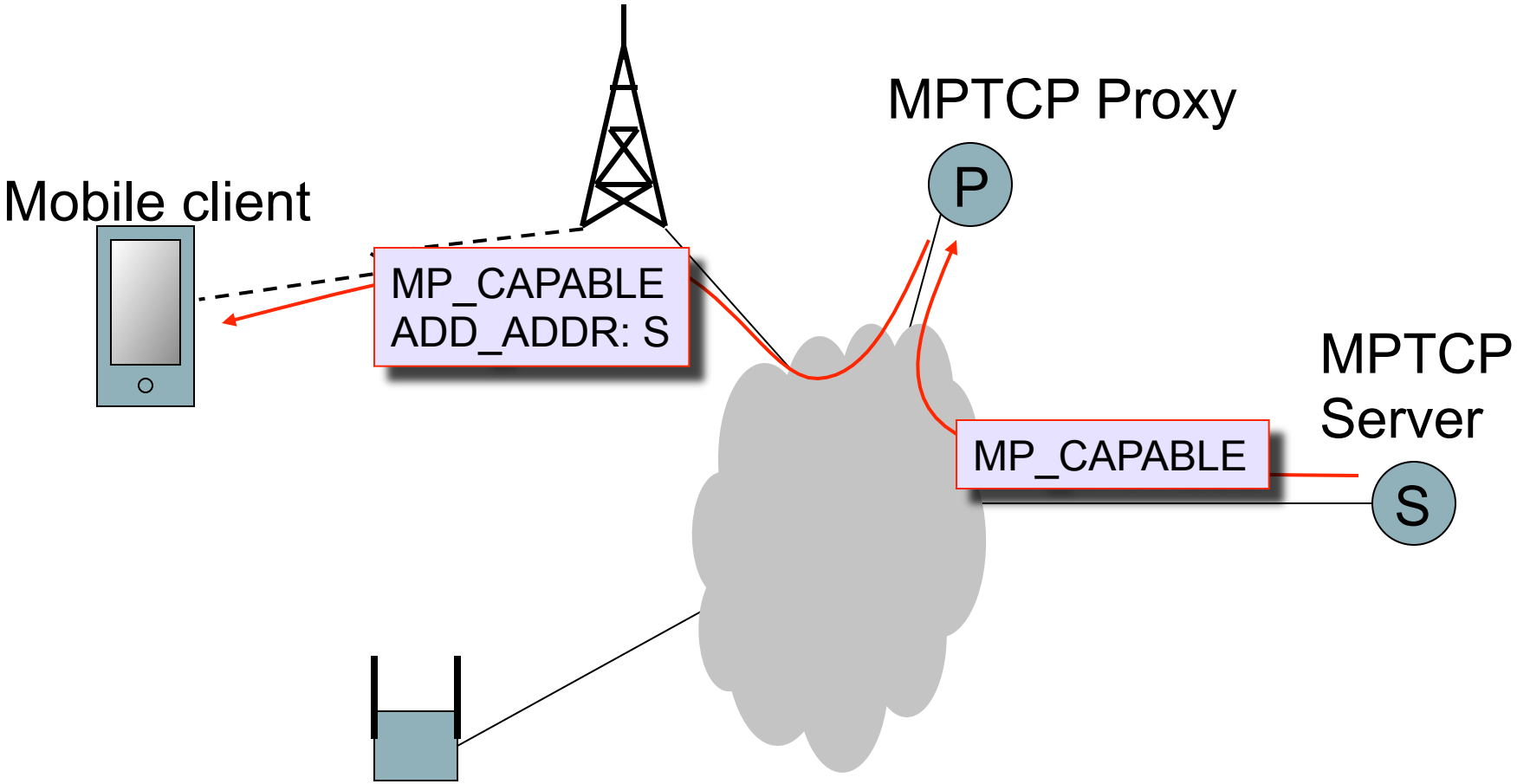


New subflows are set up to the proxy, which load-balances in the normal MPTCP manner.

MPTCP Mobility: MPTCP Server

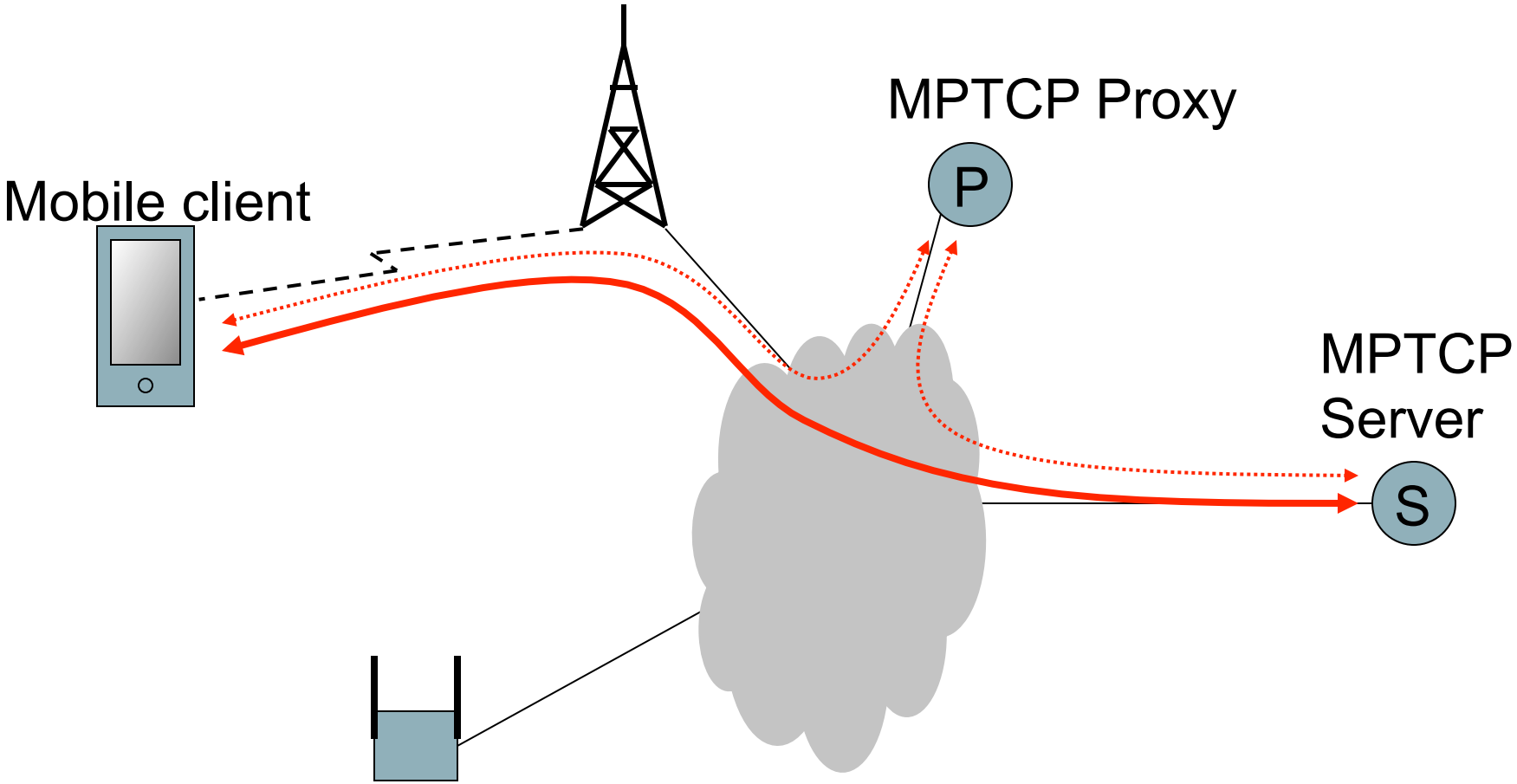


MPTCP Mobility: MPTCP Server



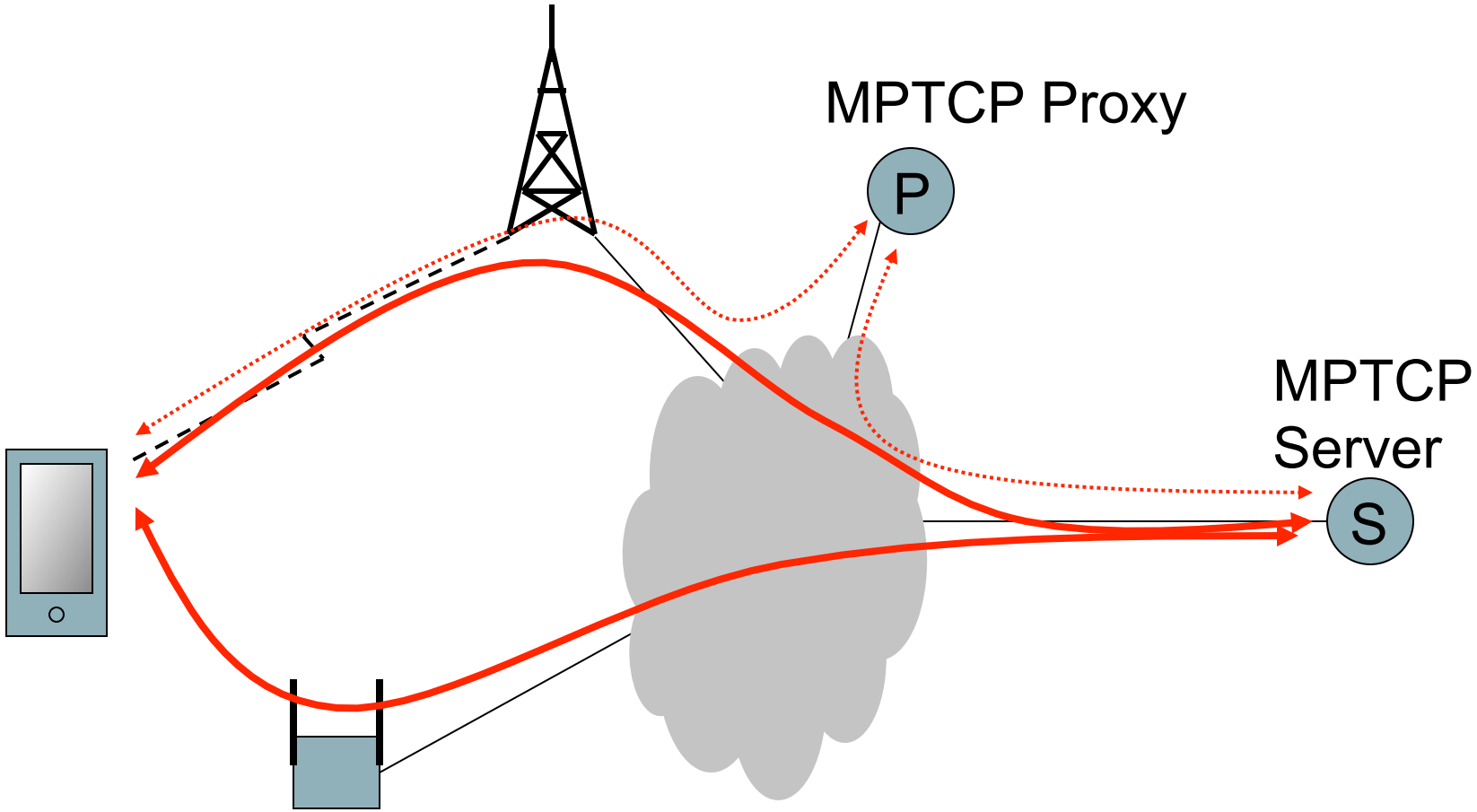
Proxy knows server is MP_CAPABLE. Sends ADD_ADDR to tell client.

MPTCP Mobility: MPTCP Server



Client sets up new subflow direct to server.
Proxied path becomes backup - not used for data traffic

MPTCP Mobility : MPTCP Server



New subflows go direct to server.

MPTCP Proxies

- Proxies are TCP-level relays - no application semantics.
- Protocol implication:
  - Need to indicate (preferably in SYN) the address of the server the proxy should connect to.
  - No other change needed.
- Issue: space in SYN.

mptcp congestion control

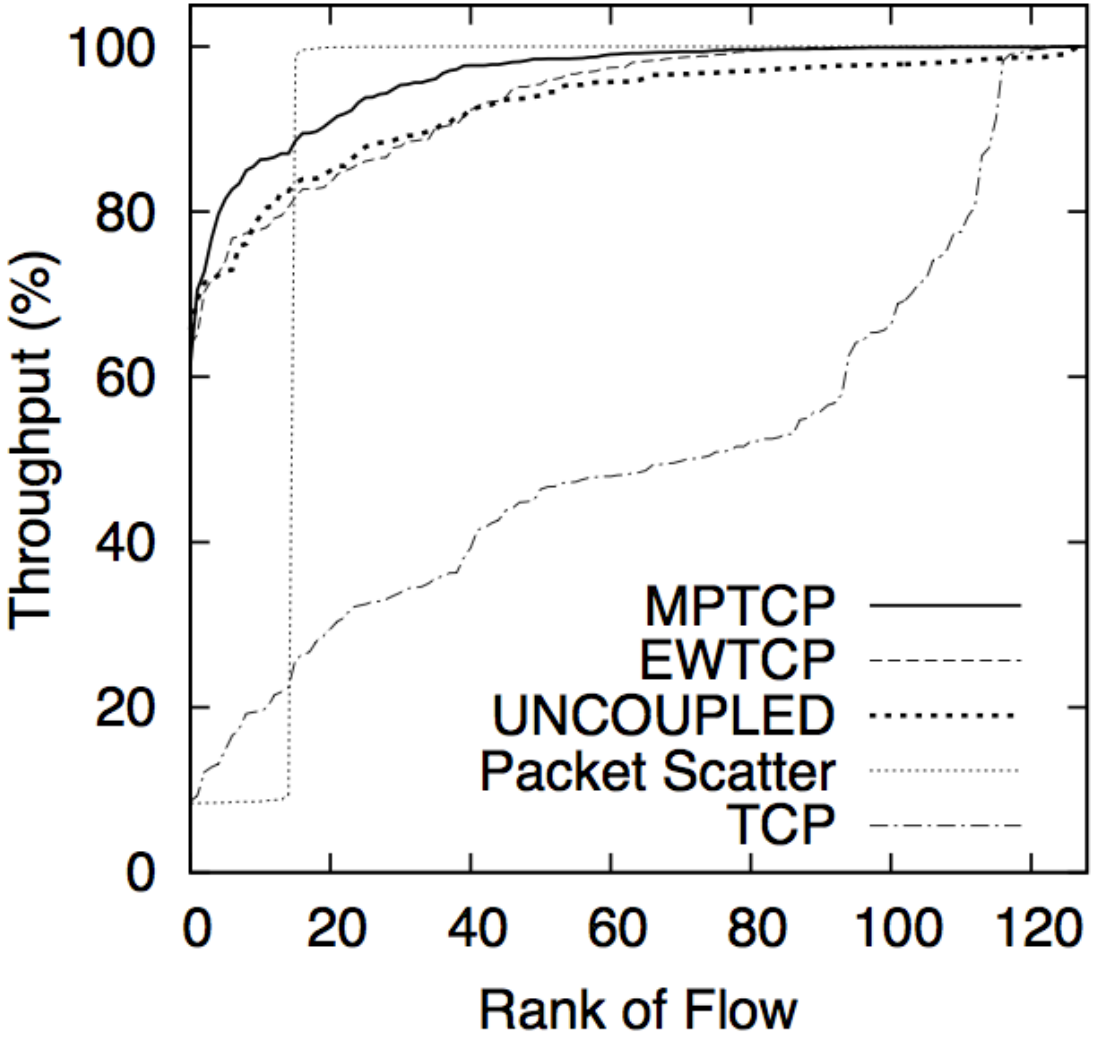
draft-ietf-mptcp-congestion-0?

- Full paper in NSDI 2011 (yesterday!) describes in detail the design and performance of the linked congestion control mechanism.

- Draft updated to the version of the algorithm from the paper (previous draft had a bug - didn't express what we actually implemented!).

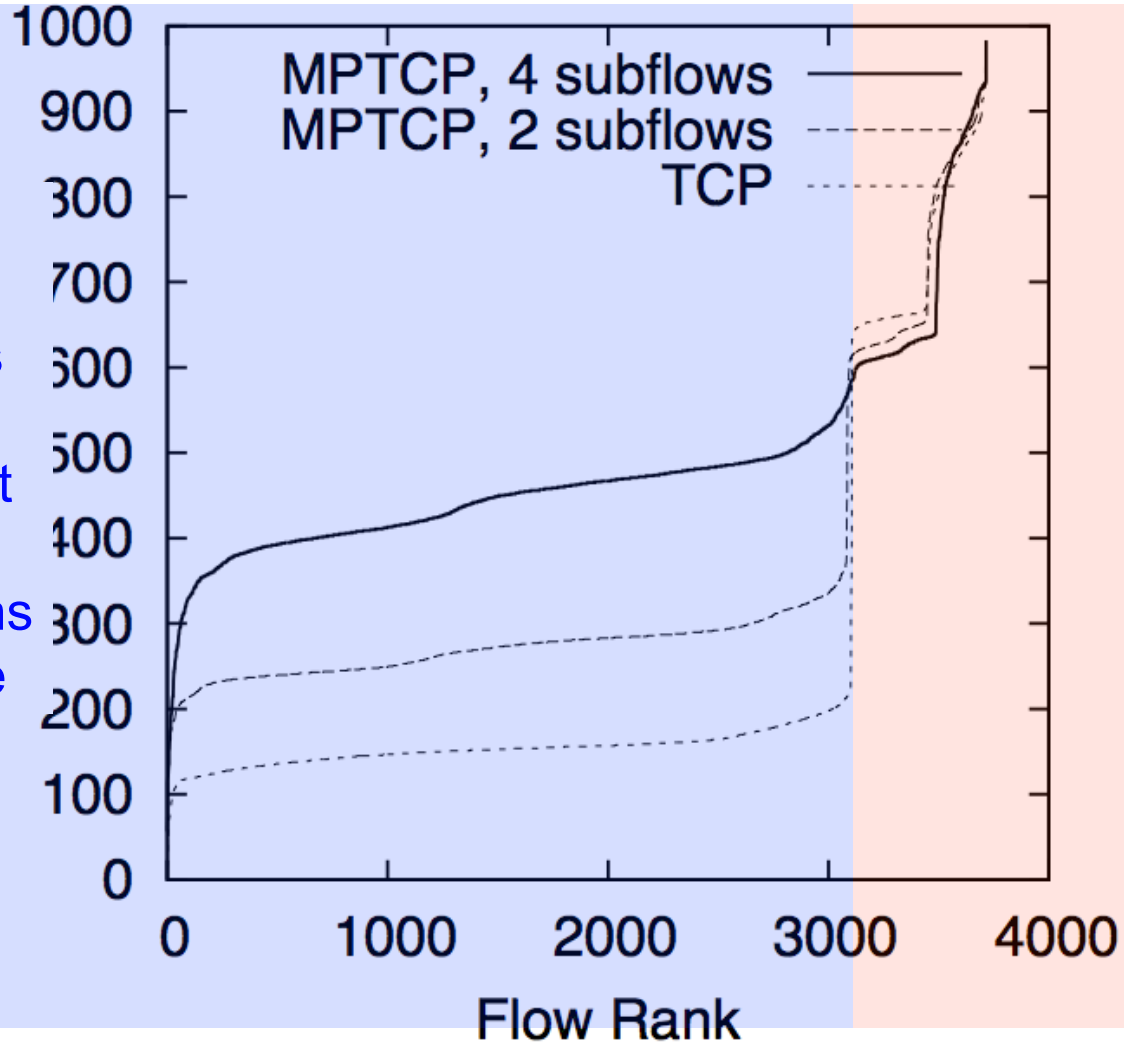
Congestion Control in the Data Center.

Effect of a hotspot on different algorithms.



Measured performance on Amazon's EC2 data center.
10 nodes, 3700 periodic pairwise transfers over 24 hours.

MPTCP congestion control gives 3x improvement where multiple paths are available



Nodes on same switch or same VM: only one path available