TCP over Wireless: The Split Connection Approach

CS294-7

TCP Basics

- Sliding window protocol. Window is number of outstanding packets in network.
- Cumulative acknowledgement scheme.
- Segment loss assumed to be as result of congestion.
- In response to loss, invoke congestion contol mechanisms: decrease window size by half for every window with loss.

The Problem

- In wireless medium, segement loss is probably not due to congestion.
- Thus, effective throughput and utilization significantly decreased [Caceres94]

Solution

Want to hide wireless link behavior from portion of network!

Split Connection: I-TCP

- Split TCP connection into two separate connection:
  - FH to MSR
  - MSR to MH
    - Second TCP Connection (MTCP) [Bakre/Badrinath]
    - Specialized protocol (SRP) [Yavatkar/Bhagawat]

Pros and Cons

- Pros:
  - FH is shielded from wireless link behavior
  - Handoff is transparent to FH
  - Relatively easy to implement
  - Requires no modification to FH

Pros and Cons

- Cons:
  - Loss of end-to-end semantics
  - Efficiency: unnecessary data processing (copying) at MSR
  - Large handoff latencies due to non trivial amount of state transfer between MSRs.