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 control mechanisms: decrease window size by half for every window with loss.
The Problem

• In wireless medium, segment 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.