Short Announcement

- Assignment 2:
  You may change your design compared to #1 slightly.
  But if you do, explain why and how.

Protocol Design

Assignment 3: Protocol Analysis

How robust is your protocol design…? (1)

Analyze your design with respect to:

- Robustness to extended error conditions along the path
  - How many packets lost in a row can you deal with? Error rate?
    - What are the implications of increased loss rate?
  - How much (variation in) latency is acceptable?
- Try to come up with situations in which your protocol will be less than perfect
  - Have you considered all boundary cases (zero-length files etc.)?
  - Can you handle all error cases (losses, duplications, …)?
  - What kinds of failures do you get:
    - Crash
    - Lack of progress
    - Incorrect result
    - Livelock, Jabbering

How robust is your protocol design…? (2)

- Robustness of the sender to a cheating receiver?
  - Concerning congestion control
    - E.g.: Can the receiver make the sender create and sustain congestion on the path?
- Robustness against DoS attacks from men at the side?
  - Can overhear and inject traffic in both directions, but cannot suppress
  - Three attacks:
    - Pretend successful reception
    - Mess up received files
    - Tamper with congestion control to cause link overload
  - Sketch remedies for your protocol design (no complete spec needed)

For fun: how robust is your implementation?

- What happens…
  - In case of inopportune packet losses
  - In case of borderline parameters
  - After injection of damaging packets
  - After injection of random packets
- Google keyword: Fuzzer…