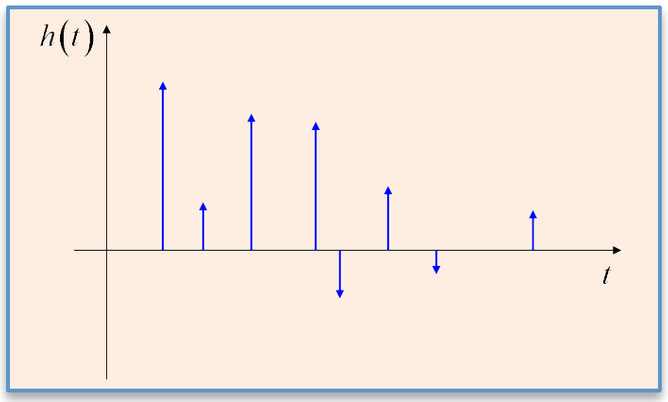
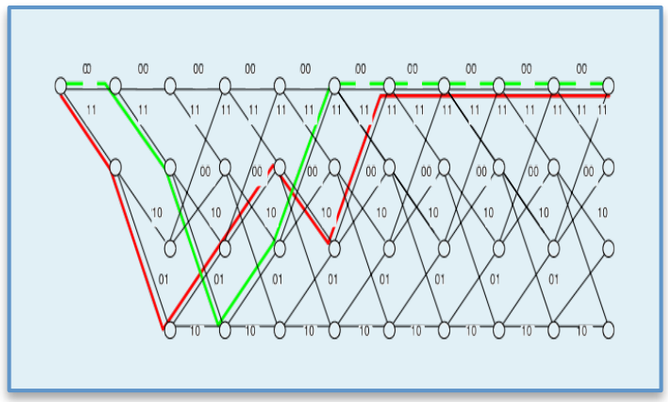
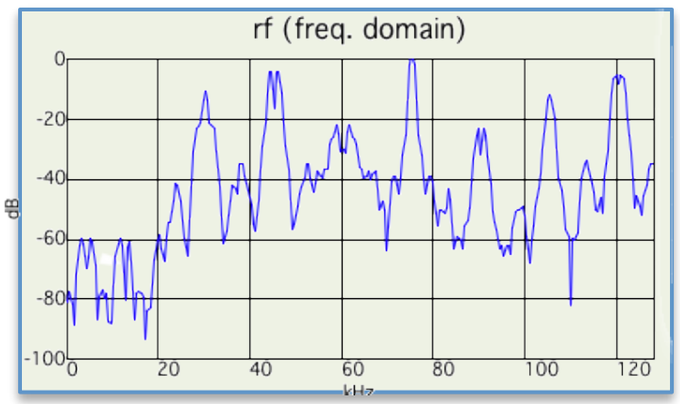
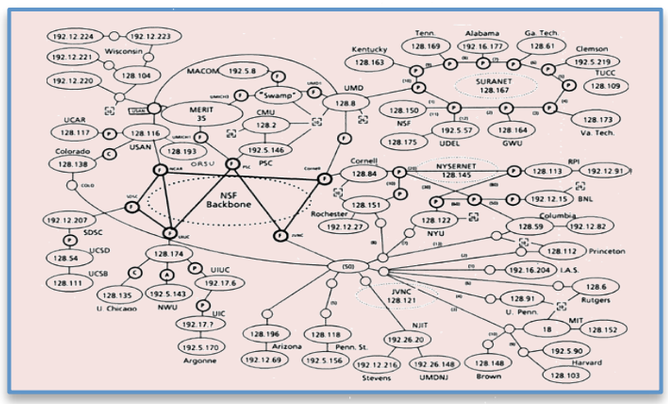








INTRODUCTION TO EECS II

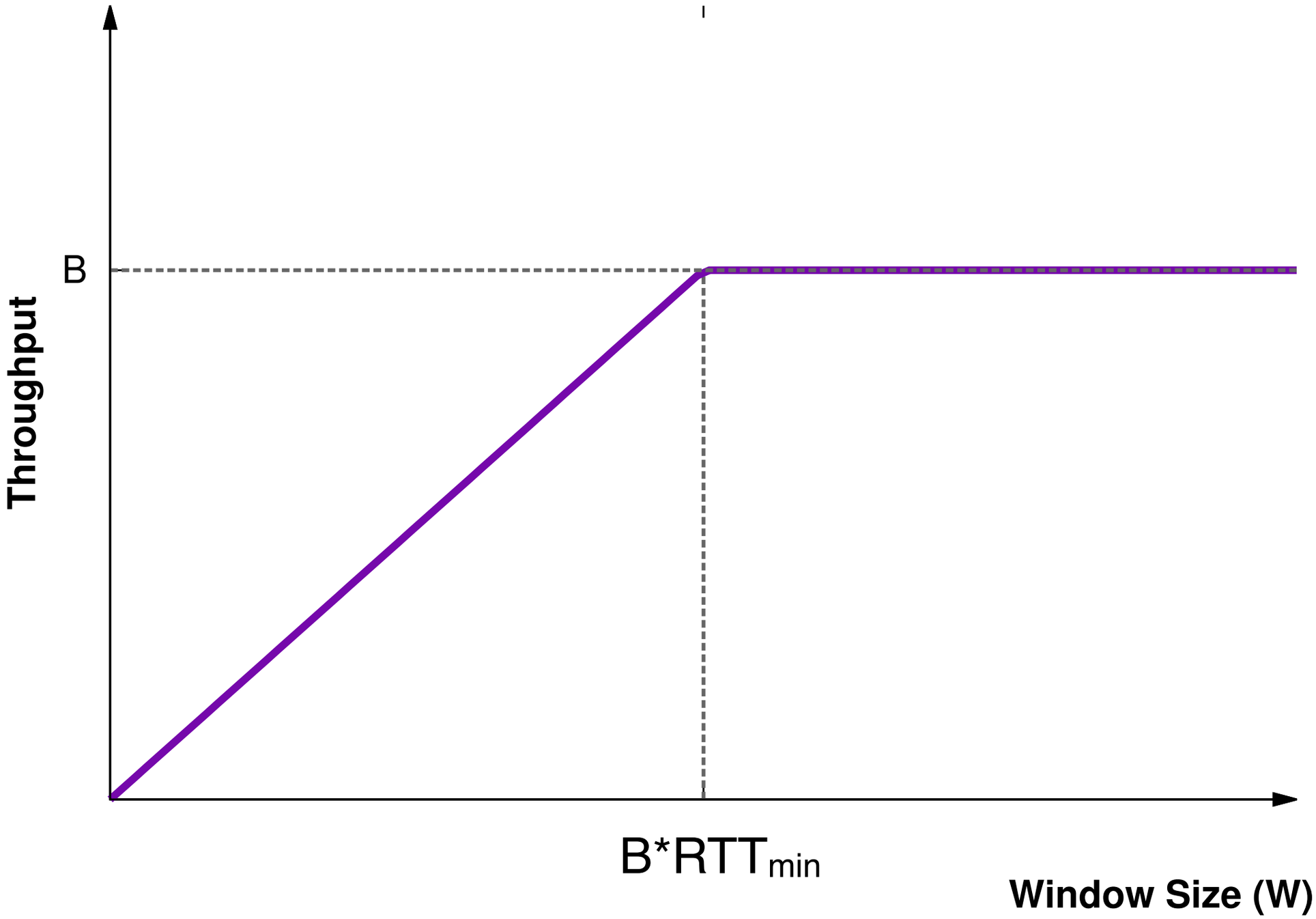
DIGITAL COMMUNICATION SYSTEMS

6.02 Fall 2014
Lecture #24

- (Window-based) Congestion control

problem: how can a single reliable sender, using a sliding-window protocol, set its window size to maximize utilization, given that there are many other end points using the network, all with different, changing demands?

Window Size vs. Throughput



Setting `W` for a single sender

- Start with `W = 1`
- Increment `W` until throughput levels off

AIMD

Every RTT
- If there is no loss, `W = W+1`
- If there is loss, `W=W/2`

- **Window-based Congestion control**

  Allows the endpoints in a network to send at the optimal — or close-to-optimal — rate without any changes to the infrastructure, nor any coordination with any other machine

Moral of the story: the Internet is extraordinarily complex. The addition of millions of users with different demands, and the fact that the infrastructure is difficult to change, means that designing protocols for the Internet is a *challenge* (to say the least). You should be very impressed that it works at all!