

Midterm Q1

- Stateless protocol
 - HTTP/1.1
 - DNS
 - TCP
 - UDP
- Using retransmission timer?
 - HTTP client
 - HTTP server
 - DNS caching resolver
 - DNS authoritative server
 - TCP data sender
 - TCP data receiver
- One HTTP segment can carry two requests?
 - HTTP/1.0
 - HTTP/1.1
- Suppose cs.ucla.edu got 131.179/16
 - Any host within cs.ucla.edu sits in 131.179/16
 - Any address in 131.179/16 has a name in cs.ucla.edu
 - NOTE: DNS and IP are two different systems. No requirement to bind them together.
- TCP sender and receiver
 - Sometimes agree on the state information, sometimes disagree

Midterm Q2

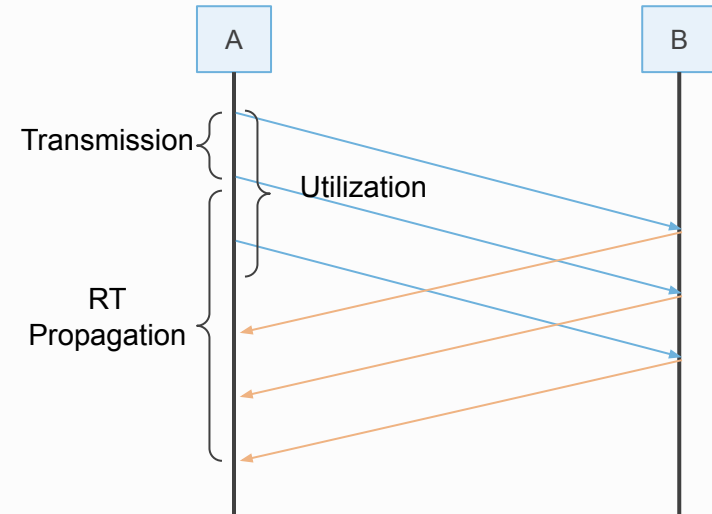
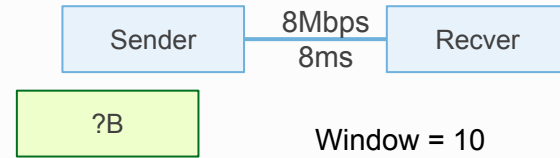
- Laptop <-> CR: 1-way 10ms
- CR <-> Authoritative: RTT 100ms
- Empty at T=0
- Where does CR first query for www.cs.ucla.edu?
 - The root server
- Assume CR has non-empty cache without the final answer. Where can it first query?
 - The root, .edu, ucla.edu, cs.ucla.edu
 - Note: non-empty could be .com server
- If T=0 CR sends to .edu server, when does the laptop get the answer?
 - $10+100+100+100+10=320$
- If ns1.dns.ucla.edu fails, will the CR try the same one?
 - No.
 - “the resolver transmit queries to name servers in a way that maximizes the probability ...”
 - “The next action will usually be a transmission to **some other** server”

Midterm Q3

- MSS=1000B, ssthresh=4000B (4 pkt)
 - After connection setup, A sends 16 TCP segments and received all ACKs without loss.
 - How many RTTs to get the 6th ACK?
 - 3 RTT
 - The size of congestion control window after 16th ACK?
 - $6 + 4/6$ MSS
 - Or 6667B
- Round 1: 1 pkt
 - Round 2: 2 pkt
 - Round 3: 4 pkt (enters AIMD)
 - Round 4: 5 pkt
 - Round 5: 6 pkt

Midterm Q4.1

- Suppose it is X kB
- Transmission delay (1 pkt): $X / 1 \text{ ms}$
- RT propagation delay: 16 ms
- Utilization time: $10X / 1 \text{ ms}$
- $50\% * (X/1 + 16) = 10X / 1$
- $X = 16/19 \text{ kB}$



Midterm Q4.2~4

- MSS = 1250B
- The retransmitted SEQ if first SYN from A is lost?
 - Still 1234. Retransmitted packets have the same sequence number as previous one
 - ^ all protocols except QUIC do this
- What if the first packet from B is lost?
 - A retransmits SYN.
 - A cannot send data until connection established.

