CS 428/528

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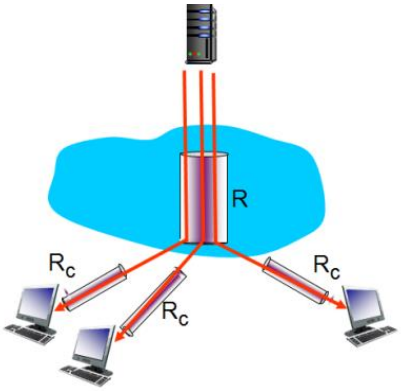
Quiz 1

1. Name the five layers of the protocol stack. (**2 points)**

Answer)
1. Application layer
2. Transport layer
3. Network layer
4. Link layer
5. Physical layer

2. In this figure, 3 clients are simultaneously downloading a file from a server. The capacity of the bottleneck link is R. What is the throughput received by each client (assume R_c > R)? (**2 points)**



Answer) The throughput for each client is the min(R/3, Rc) = R/3.

3. Application and Transport layers of the Internet protocol stack are implemented in the end systems but not in the routers in the network core. True or False? **(1 point)**

Answer) True

4. Two hosts A and B are connected by a 100 Mbps link. A is sending a packet of size 1000 KBytes to B. What is transmission delay for the packet? (**2 points)**

Answer)

Packet Size = 1000Kbytes = 8000Kbits = 8Mbits

Transmission Rate = 100Mbps

Transmission Delay = Packet Size/ Transmission rate

8Mbits/100Mbps
➔ 0.08s

5. Write one important difference between circuit-switched and packet-switched networks. (**1 point)**

Answer)

Packet switching is not optimal at max capacity, whereas circuit switching is. However, in the average case packet switching works best.

6. Two hosts A and B are connected by an optical fiber 3000 Km long. The speed of light is $3*10_8$ m/sec. What is the propagation delay? (**2 points)**

Answer)

Propagation Speed = 3*10^8

Distance = 3000km = 3*10^6

Propagation Delay = Distance/Propagation Speed

(3*10^6)/(3*10^8) = 1/10^2
➔ 0.01s