2015

Q1.

1. IMAP can deal with multiple machines as it keeps the emails on the server.

Also allows the multiple numbers of mailbox.

ISP backs up the mailbox.

1. Packet Switching is connectionless, no cost is needed to setup the connection. But for each transmission, it has significant overhead to transmit the packet.

Circuit Switching is connection-oriented, it needs to setup the connection before communicate which will cost. But once the connection is setup, it does not have any overhead to transmit the data so it’s suitable for dealing with images, videos etc.

1. i) Authoritative answer is the actual address of the host(the absolute answer we want). We obtain this by using ‘A’ DNS query type(name, value and type). Then A maps the hostname to the address.

nslookup -type=NS www.ststephens.edu

ii) Canonical name is the primary name of the host(The actual address, value of the host).

iii) Cache possibly.

1. i) 10 Mbit/s, because even though the wireless network has the peak rate of 40 Mbit/s, the files have to go through its internet service provider which has the rate of 10 Mbit/s.

ii) TCP controls the congestion, so it will have better performance in terms of throughput(eg. congestion avoidance).

Alternative answer:

UDP would result in lower performance as it has no retransmission mechanism for lost datagrams. UDP is better suited for transmissions of smaller fragments.

TCP is much better suited to this example use as any dropped packets will be retransmitted to ensure the entire film is downloaded at the desired quality.

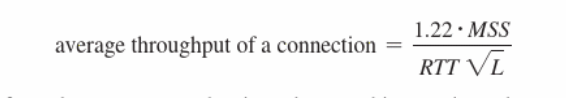
iii) R = 1.0\*10^7, MSS = 5\*10^3, d\_prop = 70ms (i.e. RTT = 140ms).

Use, R = W / RTT. Then W is obtained. The re-transmission time is W/MSS \* RTT.

This question is asking how long we need to retransmit a segment i.e. how often we

drop a packet

From Kurose: (where L is loss rate)



Applying this formula gives one loss every 52,674 segments??

Q2.

1. Longest Prefix Matching is a method to find the port to send the packets. It works by matching the prefix of given address with the prefix of addresses in the forwarding table (chooses address with longest common prefix).
2. i) Port 4: longest prefix matching gives address on line 5.

ii) Port 1: matches with prefix of address on line 3.

iii) Port 2: Doesn’t match with any prefix but address on line 4 has prefix of length 0 so it matches.

1. The sixth entry belongs to a private network, while others don’t.
2. In part b, we see that the entry 1 and 7 differ by 1 bit only. So, if we combine them to one entry and make the prefix length to 25 will do the same thing.

Also, the entry 6 could be removed as no other entry has a prefix that would match with IP otherwise matching with the prefix. Then they would match with entry 4 (no prefix) and still go be forwarded to port 2.