CS-324 Computer Networks   Assignment 1   23-01-2023

Q1 How Software-defined WAN (SD-WAN) is making WAN architectures agile?

Q2 Which waves are used in wireless LAN communication? What are the frequencies used for WLANs and standards used?

Q3 What is TCP IP Model? Give examples of protocols for each layer.

Q4 What is the IETF standard documents for? Read about the Transport Layer Security (TLS) Protocol Version 1.3 and give your comments.

Q5 What is the difference between transmission and propagation delay?

Q6 What is the difference between network applications and application layer protocols?

Q7 Give five examples of application layer protocols and their port numbers.

Q8 A message M of $7.5*10^6$ bits long is to be sent from host A to B through two switches. Each link is 1.5 Mbps. Each switch uses store-and-forward packet switching.

   a. How long does it take to move the message without segmentation from the source host to the first packet switch? What is the total time to move the message from source to the destination host?

   b. Message M is segmented into 5000 packets, with each packet being 1500 bits long. How long does it take to move the first packet from source to the first switch? When the first packet is being sent from the first switch to the second switch, the second packet is being sent from the source host to the first switch. At what time will the second packet be fully received at the first switch?

   c. How long does it take to move the file from source host to destination host when message segmentation is used? What is the advantage and disadvantage of message segmentation?

Q9 Consider two hosts, A and B, connected by a single link of rate **R** bps. Suppose that the two hosts are separated by **m** meters, and suppose the propagation speed along the link is **s** meters/sec. Host A is to send a packet of size **L** bits to Host B.

   a. Ignoring processing and queuing delay, obtain an expression for the end-to-end delay.

   b. Suppose $s=2.5*10^8$ meters/sec, L=120 bits, and R=56 kbps. Find the distance m so that the propagation delay equals transmission delay.

Q10   There are 200 computers in a lab which are attached to an Ethernet 10 Mbps with a coaxial cable of 1500 m. The packets are 800 bits long. The propagation speed is $2*10^8$ m/sec. On average how many packets can each computer send per second?