

Lecture 3 – Links Quiz

1. What are the three main properties of a link?

- A) Bandwidth, latency, and jitter
- B) Bandwidth, propagation delay, and bandwidth-delay product
- C) Throughput, loss rate, and buffer size
- D) Frequency, modulation, and signal strength

ANS:

2. What does bandwidth measure in a communication link?

- A) The time it takes for data to travel from source to destination
- B) The number of bits sent or received per unit time
- C) The maximum distance a signal can travel
- D) The number of devices connected to the link

ANS:

3. What is propagation delay?

- A) The time it takes to process a packet at a router
- B) The time it takes for a bit to travel along the link
- C) The delay caused by buffering packets in a queue
- D) The time between sending two consecutive packets

ANS:

4. What is the bandwidth-delay product?

- A) The total number of bits transmitted in one second
- B) The capacity of the link (how many bits fit in the link at a given instant)
- C) The maximum packet size that can be transmitted
- D) The ratio of transmission time to propagation time

ANS:

5. For an 800-bit packet on a link with bandwidth = 1 Mbps and propagation delay = 1 ms, what is the total packet delay?

- A) 0.0008 ms
- B) 0.8 ms
- C) 1.8 ms
- D) 1.0008 ms

ANS:

6. What is transmission delay?

- A) The time it takes for a bit to travel across the link
- B) The time it takes to put all bits of a packet into the link

- C) The time a packet waits in a router queue
- D) The total time for a packet to reach its destination

ANS:

7. When choosing between two links, which factor dominates for a small packet?

- A) Bandwidth
- B) Propagation delay
- C) Packet size
- D) Buffer capacity

ANS:

8. When choosing between two links, which factor dominates for a large packet?

- A) Propagation delay
- B) Bandwidth (which determines transmission delay)
- C) Physical distance
- D) Router processing time

ANS:

9. What is transient overload at a router?

- A) The router is permanently unable to handle incoming traffic
- B) Multiple packets arrive simultaneously, requiring some to be queued for later processing
- C) A link fails and packets must be rerouted
- D) The router's CPU usage exceeds 90%

ANS:

10. What is the difference between transient overload and persistent overload?

- A) Transient overload involves packet loss; persistent overload involves queuing
- B) Transient overload is temporary; persistent overload means there's insufficient capacity
- C) Persistent overload can be resolved by adding more routers
- D) Transient overload only occurs at the edge of the network

ANS:

11. What are the three components of total packet delay?

- A) Bandwidth, propagation delay, and link distance
- B) Transmission delay, propagation delay, and queuing delay
- C) Processing delay, forwarding delay, and routing delay
- D) Physical layer delay, link layer delay, and network layer delay

ANS:

12. What happens to a new arriving packet when the router's queue fills up?

- A) The packet is automatically re-sent
- B) The packet is moved to another router's queue

- C) The packet is dropped
- D) The packet is compressed to make room

ANS:

13. True or false. On a fast cross-continental link (~100Gbps), propagation delay usually dominates end-to-end packet delay (Most messages are smaller than 100MB).

ANS:

14. True or false. On the same cross-continental link (~100Gbps), when transferring a 100GB file, propagation delay still dominates end-to-end file delivery.

ANS:

15. True or false. Circuit-switching is adopted by the Internet.

ANS:

16. True or false. The aggregate (i.e., sum) of peaks is usually much larger than peak of aggregates in terms of bandwidth usage.

ANS:

17. True or false. Bursty traffic (i.e., when packet arrivals are not evenly spaced in time) always leads to queuing delays.

ANS: