

Computer

Networks

Code :- 0735

Assignment - 3

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BE-CSE

Scenario :- A game platform needs low-latency routing for players across 5 countries

Parameters:-

- IPV6 vs IPV4 delay
- Fragmentation impact
- Hop-wise delay

Questions:- If 4 hops add 12ms each, what's total delay?

If each of the 4 hops adds 12 milliseconds of delay, the total delay is

Given 4 hops

Each hop adds 12ms

$$\text{Total delay} = 4 \times 12$$

$$= 48 \text{ ms}$$

So the total delay would be calculated by multiplying hops with the seconds of delay.

Question 2: what is the size of the smallest MTU supported by IPv6 to avoid fragmentation?

The smallest MTU (Maximum Transmission unit) supported by IPv6 to avoid fragmentation is 1280 bytes. All IPv6 nodes are required to support this minimum MTU size to ensure packets can be sent without fragmentation within the network. While 1280 bytes is the minimum, IPv6 also mandates that nodes be capable of reassembling fragmented packets up to 1500 bytes in size. Path MTU Discovery (PMTUD) is used to determine the actual MTU along a network path, which can be larger than the minimum.

Question 3:- If 1% jitter per hop, what's the max jitter over 6 hops?

If there is a 1% jitter per hop, the maximum jitter over 6 hops would be 6%. This is because jitter is additive, meaning it accumulates with each hop. Jitter is the variation in latency (delay) of network packets. It's measured in (ms). When a packet travels across a network, it can experience different delays at each hop (single point where the packet is processed, like a router). If each hop introduces a 1% jitter, and you have 6 hops, the total jitter would be $6 * 1\% = 6\%$. This assumes the jitter from each hop is independent and can either increase or decrease the overall delay.