# Computer Networks

## Assignment-4

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**Scenario:** A satellite uses QUIC protocol for fast communication

**Parameters:-** RTT = 500ms, loss rate = 1% handshake optimization

**Questions :-**

1. If QUIC handshake takes 0-RTT, what is effective connection setup time?

With 0-RTT handshake optimization, the effective connection setup time for QUIC in a satellite communication scenario with a 500ms RTT and 1% loss rate is effectively 0 RTT for subsequent connections to the same server. However, the initial connections will still require the standard QUIC handshake which will take at least 1 RTT to complete, plus any additional latency introduced by packet loss.

Questions :- How many packets are lost out of 1000 sent?

Out of 1000 packets, approximately 10 packets will be lost given a 1% loss rate. This is calculated by multiplying the total number of packets (1000) by the loss rate (0.01)

1000 packets × 0.01 = 10 packets

(or)

$1000 \times \frac{1}{100} = 10$ packets

∴ 10 packets are lost out of 1000 packets which are sent.

# Questions :-

If retransmission timeout is 1s, how much delay for 5 lost packets?

with a retransmission timeout of 1 second and 5 lost packet, the total delay due to retransmission would be 5 seconds. This is because each lost packet trigger a ~~retrans~~ retransmission after the timeout period

Initial RTT = 500ms (0.5 sec) in initial estimated round-trip time

Retransmission time out (RTO) → 1 Sec

Lost packets = 5

Delay per lost packet = 1 sec

Total delay = 5 packets × 1 Second/packet

= 5 seconds delay