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course :- computer networks for
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unit :- IV

Assignment
Unit - IV

Introduction:-

QUIC (Quick UDP Internet connections) is a transport protocol developed by Google, designed to improve the performance of connection-oriented web applications.

- * It supports 0-RTT (zero Round Trip Time), allows clients to send data immediately without waiting for a full handshake.
- * This reduces latency and boosts performance, especially in applications like video streaming, gaming and real-time communication.

Scenarios:-

A QUIC client maintains connection state in 0-RTT mode.

Parameters:-

Number of clients: 100

state info sent per client: 1 KB

Round trip time saved per client: 100ms

Retransmission rate: 5%

Questions:-

1. what is the total state info sent in bytes?

Given

$$\text{No. of clients} = 100$$

each client sends $1\text{KB} = 1024 \text{ bytes}$

$$\begin{aligned}\text{Total state} &= \text{No. of clients} \times \text{each client sends} \\ &= 1000 \times 1024 \text{ bytes} \\ &= 102,400 \text{ bytes}\end{aligned}$$

Total state info sent is $102,400 \text{ bytes}$.

2. If RTT is saved per client (100ms),
what is the cumulative time saved?

Given

$$\text{No. of clients} = 100$$

$$\text{Time saved per client} = 100\text{ms}$$

$$\begin{aligned}\text{Cumulative time saved} &= \text{No. of clients} \times \text{Time} \\ &\quad \text{saved per client}\end{aligned}$$

$$= 100 \times 100\text{ms}$$

$$= 10,000\text{ ms}$$

$$= 10 \text{ seconds.}$$

cumulative time = 10 seconds.

If retransmission rate is 5%, how many clients retransmit?

Given

$$\text{Retransmission rate} = 5\%$$

$$\text{clients retransmit} = \text{retransmission rate} \times \text{no. of clients}$$

$$= 5\% \times 100$$

$$= 0.05 \times 100$$

$$= 5 \text{ clients}$$

