

Q

Consider a 10 Mbps token ring LAN with ring latency of 400 μ sec. A host that needs to transmit seizes the token. Then it sends a frame of 100 bytes after the frame is circulated all around the ring he finally release token. This process is repeated for every frame. Assume that single host wishes to transmit then effective data rate is

delay
token
strategy

①

$$\frac{100 \times 8}{10 \times 10^6} = 80 \mu \text{sec}$$

②

No of active stations = 1

Delay at each station not given so assume it as zero

$$\begin{aligned} \therefore \text{Ring Latency} &= \text{propagation delay} + 1 \times 0 \\ &= \text{propagation delay.} \end{aligned}$$

Ring Latency in question is given as 400 μ sec $\therefore$ propagation delay is also 400 μ sec.

③

$$\text{Token Transmission} = \frac{\text{Token size}}{\text{Bandwidth}} = \frac{24 \text{ bits}}{10 \times 10^6} = 2.4 \mu \text{sec}$$

(4)

एक ही station है वो दोबारा address करेगा

$$\therefore \text{Propagation delay b/w 2 stations} = \text{Propagation delay in ring} \\ = 400 \mu s$$

$$\text{Cycle Time} = \textcircled{1} + \textcircled{2} + \textcircled{3} + \textcircled{4} \\ = 80 + 400 + 2.4 + 400 \\ = 882.4 \mu s$$

$$882.4 \mu s \longrightarrow 100 \text{ bytes}$$

$$1 \mu s \longrightarrow \frac{100 \times 8}{882.4}$$

$$1 \text{ sec} \longrightarrow \frac{100 \times 8}{882.4 \times 10^{-6}}$$

$$= 1 \text{ Mbps}$$

Throughput

or

Effective Throughput

or

Maximum Throughput

overhead नहीं दिया है तो
सभी एक ही चीज है

Q Suppose a group of 32 stations is serviced by a token ring LAN. For 1000 bit packet, 10 Mbps speed, 2.5 bit latency and 50 meters distance is there b/w stations. Calculate time taken to make token available for next stations

Sol

② After completion of transmission
 means Early Token Strategy

①

$$\frac{1000}{10 \times 10^6}$$

③

$$\frac{24}{10 \times 10^6}$$

④

$$\frac{50}{2 \times 10^8} \text{ m/sec}$$

Standard velocity of propagation
 (if velocity is not given)

⑥ After return of packet

means

Delayed Token Strategy

①

$$\frac{1000}{10 \times 10^6}$$

②

given number of stations = 32

$$\therefore \text{Length of Token ring} = N \times D \\ = 32 \times 50$$

$$\text{So Ring Latency} = \frac{32 \times 50}{2 \times 10^8} + \frac{32 \times 2.5}{10 \times 10^6}$$

③

$$\frac{24}{10 \times 10^6}$$

④

$$\frac{50}{2 \times 10^8}$$