

CS & IT ENGINEERING

Computer Network

Medium Access Control

DPP-01 (Discussion Notes)



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TOPICS TO BE COVERED



01 Question

02 Discussion

Q.1

In ethernet, the source address field in the MAC frame is the address.



[MCQ]

A.

Original sender's Physical

B.

Previous station's Physical

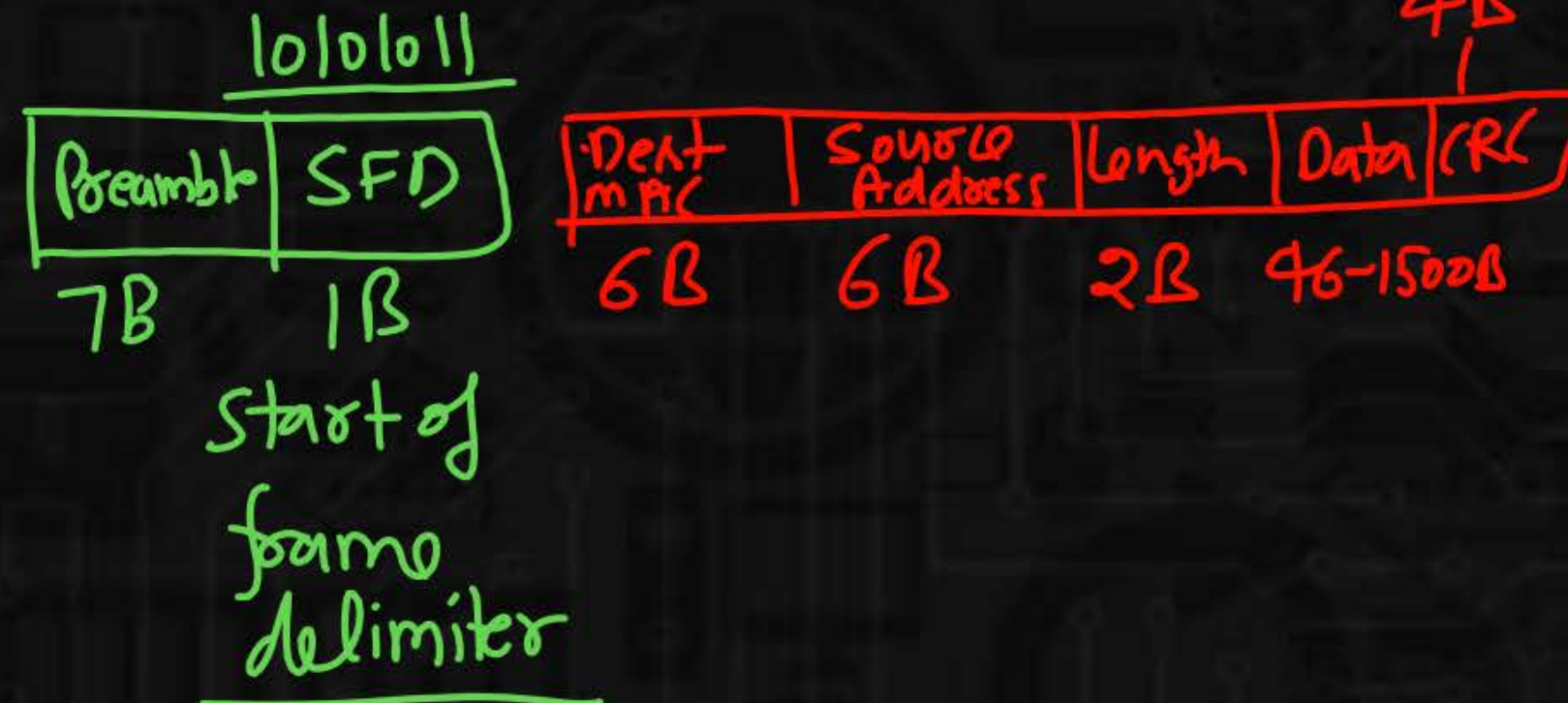
C.

Next destination Physical

D.

Original sender's Service

Ethernet Net frame
MAC frame



Q.2

After the k^{th} consecutive collision, each colliding station waits for a random time chosen for the interval_____.



[MCQ]

- A. $(0 \text{ to } 2^k) \times \text{RTT}$
- B. $(0 \text{ to } 2^k - 1) \times \text{RTT}$
- C. $(0 \text{ to } 2^k - 1) \times \text{maximum propagation Delay}$
- D. $(0 \text{ to } 2^{k-1}) \times \text{maximum propagation Delay}$

0,1
00
01
10
11

Ans [B]

Q.3

A group of N stations share ¹⁰⁰50 Kbps slotted ALOHA channel. Each station outputs is 500 bits frame on an average of once 5000ms, even if previous one has not been sent. What is the maximum value of N? Range 368 to 368

[NAT]

$$5000 \times 10^{-3} \text{ — 500 bits}$$

$$1 \text{ sec — } \frac{500 \text{ bits}}{5000 \times 10^{-3}}$$

$$1 \text{ sec — } 100 \text{ bits/sec}$$

$$\text{Pure Aloha} \Rightarrow 18.4\%$$

$$= 0.184$$

$$\text{Slotted Aloha} = 36.8\%$$

$$\approx 0.368$$

$$N \times 100 \text{ bits/sec} = 0.368$$

$$N = 368$$

$$\frac{0.368 \times 50 \times 10^3}{100} \text{ bits/sec}$$

$$\text{Eff of Slotted Aloha} = 0.368 \times \frac{100}{50} \times 10^3 \text{ bits/sec}$$

$$N \times \text{throughput of single station} = \frac{0.368 \times 10^3}{0.368 \times 100 \times 10^3}$$

Q.4



Suppose that 'N' ethernet stations, all trying to sent at the same time, requires $\frac{N}{2}$ slot times to sort out who transmits next. Assuming the average packet size is 5 slot times, express the utilization of ethernet as a function of N.

[MCQ]

A.

$$\frac{10}{N}$$

Utilization = $\frac{\text{Utilization time}}{\text{total time}}$

B.

$$\frac{10}{5+N}$$

C.

$$\frac{5}{N+10}$$

D.

$$\frac{10}{10+N}$$

$$= \frac{5}{5 + \frac{N}{2}}$$

$$= \frac{10}{10+N}$$

Q.5

Which of the following is NOT true about slotted ALOHA?



[MSQ]

A.

Divide time into discrete intervals.

B.

Require global time synchronization

C.

Does not divided time into discrete intervals

D.

None of the above

Ans [B, C]

