



NPTEL ONLINE CERTIFICATION COURSES

COMMUNICATIONS NETWORK

Dr. Goutam Das

G. S. Sanyal School of Telecommunications, IIT KHARAGPUR

Module 10: Media Access Control

Lecture 45: CSMA/CD

References

Book:
Queuing Systems Vol. 1 – L. Kleinrock

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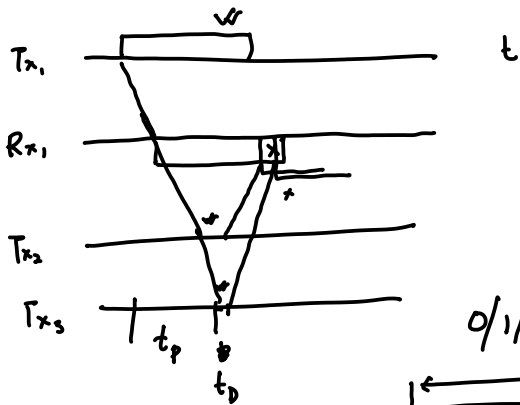
Module 10: Media Access Control

Lecture 46: CSMA/CA Contd.

References

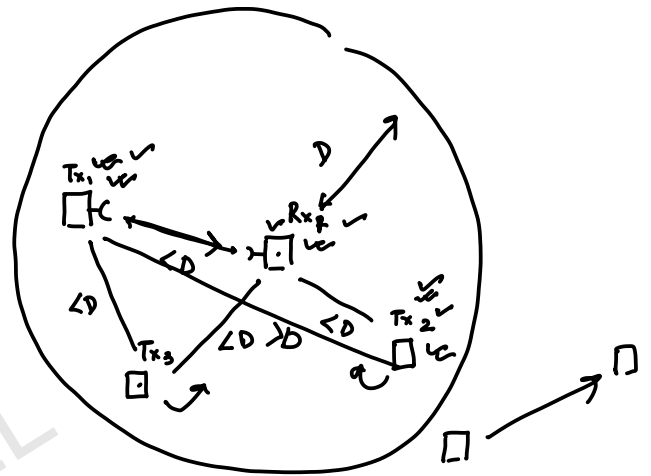
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CSMA
some restriction

o/e



$Tx_1 \rightarrow Rx_1$

$$\delta(Tx_1 - Rx_1) < D$$

$$\delta(Tx_1 - Tx_2) > D$$

$Tx_2 \rightarrow$

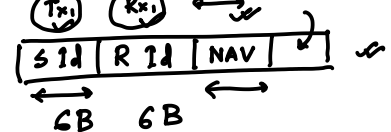
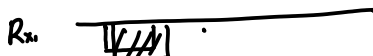
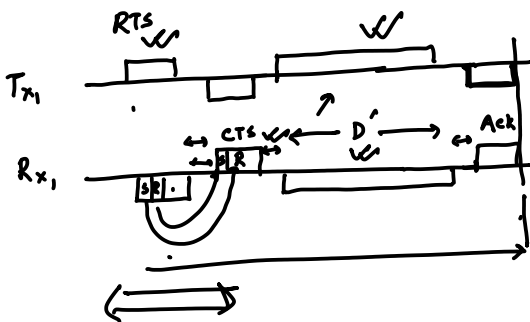
$$\delta(Tx_2 - Rx_1) < D$$

NAV $\Rightarrow$ Net. Activation Vector

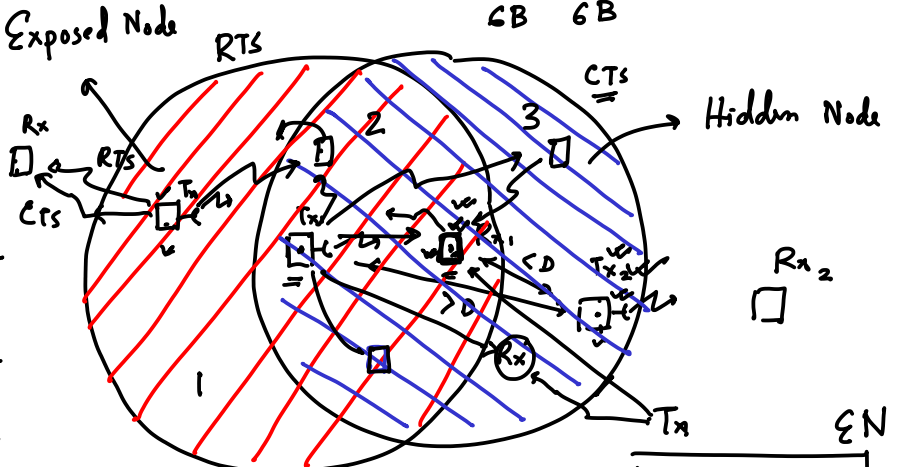
probe the ch. before tx.

RTS $\Rightarrow$ Req. to send

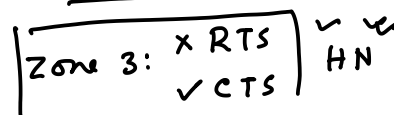
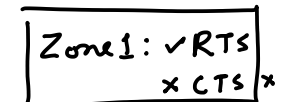
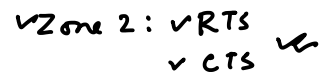
CTS $\Rightarrow$ Clear to send



Exposed Node



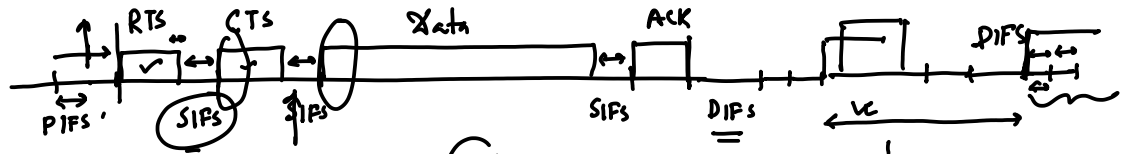
NAV $\Rightarrow$ Virtual Ch. Sensing.



DCF

PCF
or Point CF

PIFS
SIFS - Short
DIFS - DCF Inter frame Separation
Slot size. $(\sigma) > t_D$
 $DIFS > SIFS > \sigma$
 $DIFS > PIFS > SIFS$
 $\sigma > t_D$



$$DIFS - PIFS > t_D = 2^{-i}$$

$$PIFS - SIFS > t_D$$

$$DIFS - SIFS > t_D$$

{0}

2¹

i=2
4

{0, 1, 2, 3}

i=3

8

{0, 1}

{0, 1, 2, ..., 7}

G. Bianchi

Performance Analysis of IEEE 802.11 DCF

IEEE JSAC, Vol. 18, No. 3, March 2000.

DLL

MAC

Ethernet LAN.

CSMA LAN

Switched Ethernet

Layer 2 → [Bridges / Switches.]

