

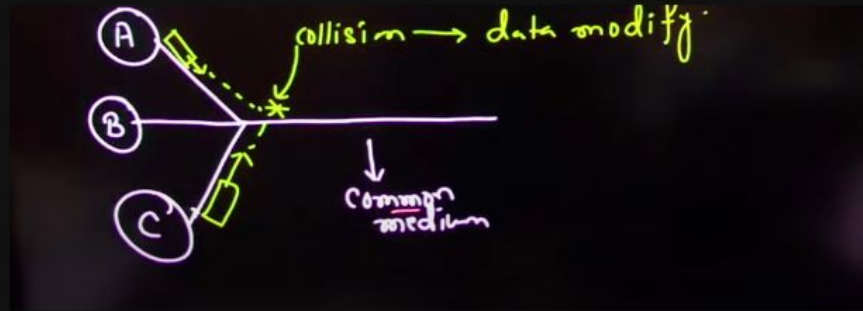
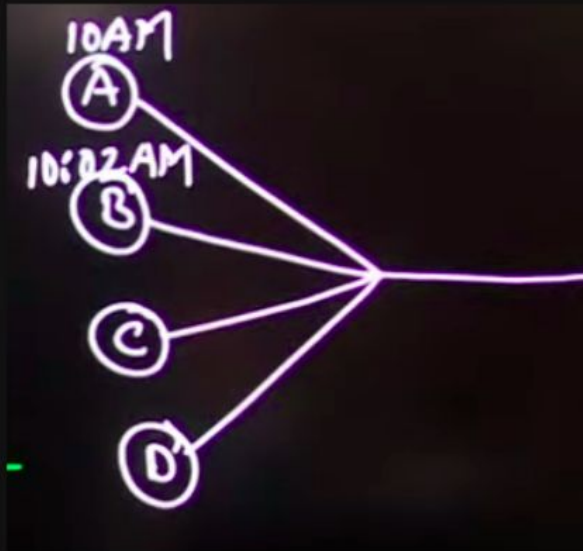
Pure & Slotted Aloha

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MCA - 3rd Yr

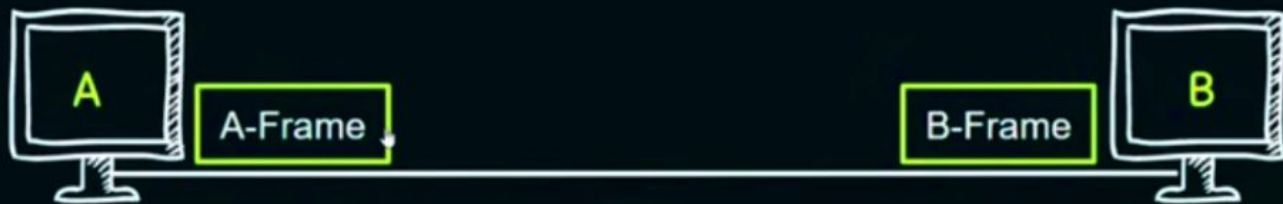
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Multiple-Media Access Protocol



Multiple Stations can transmit data at the same time.

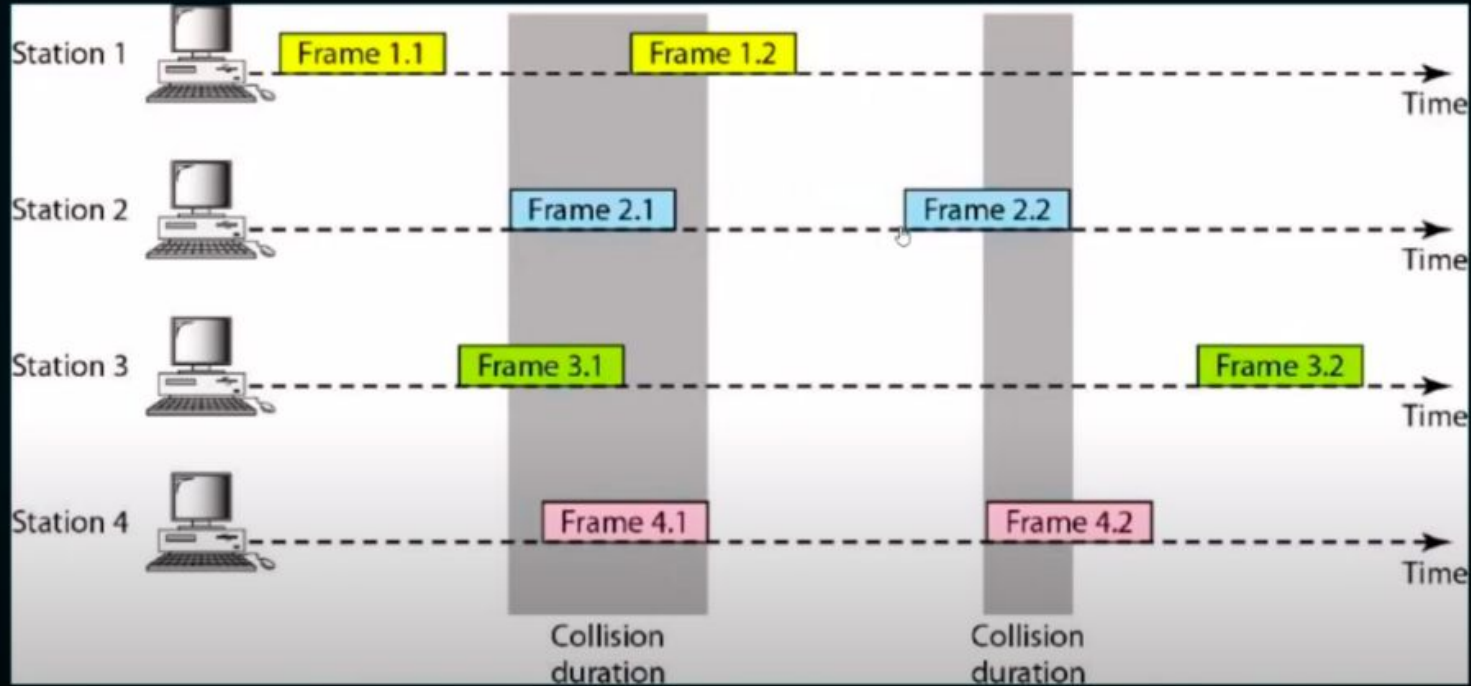
Collision

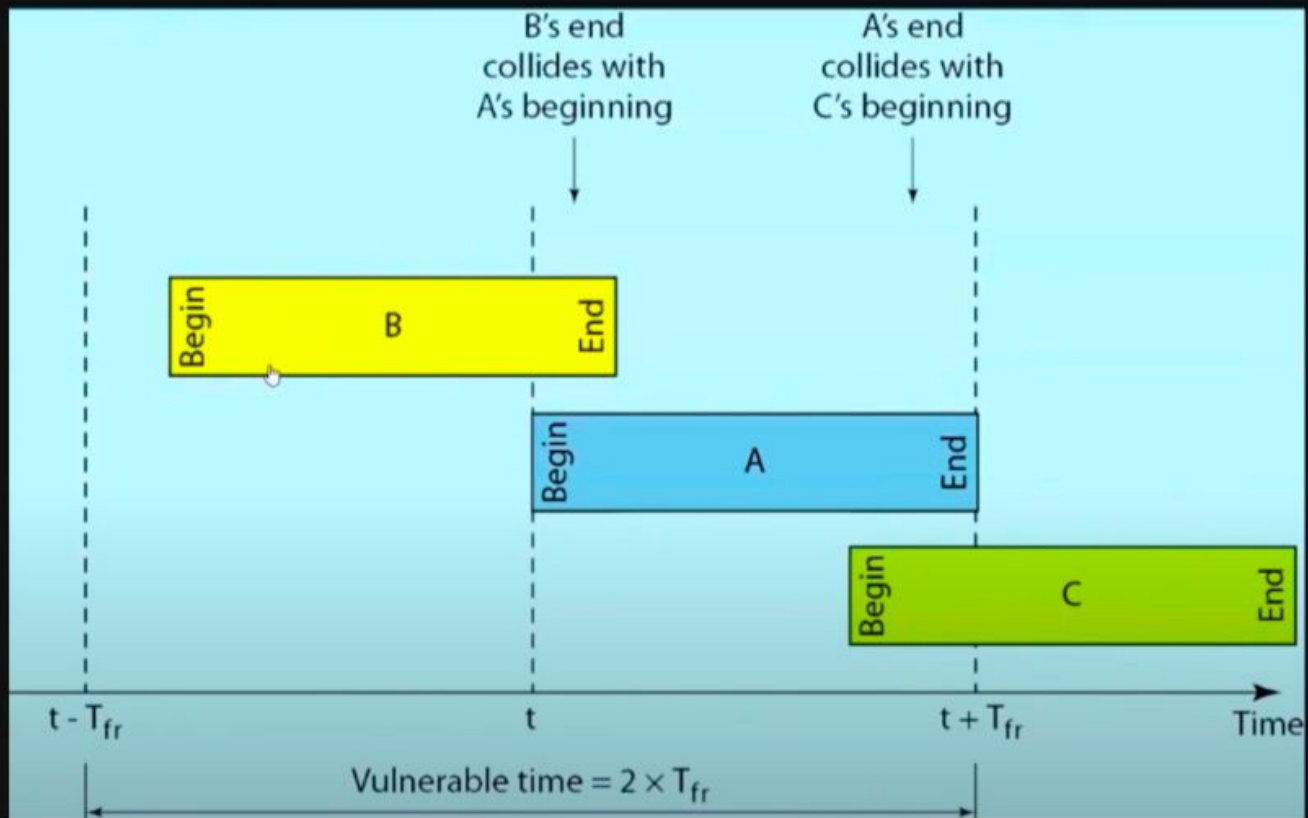




The solution to Avoid Collision, such that any node can access the common media at any time?

PURE ALOHA



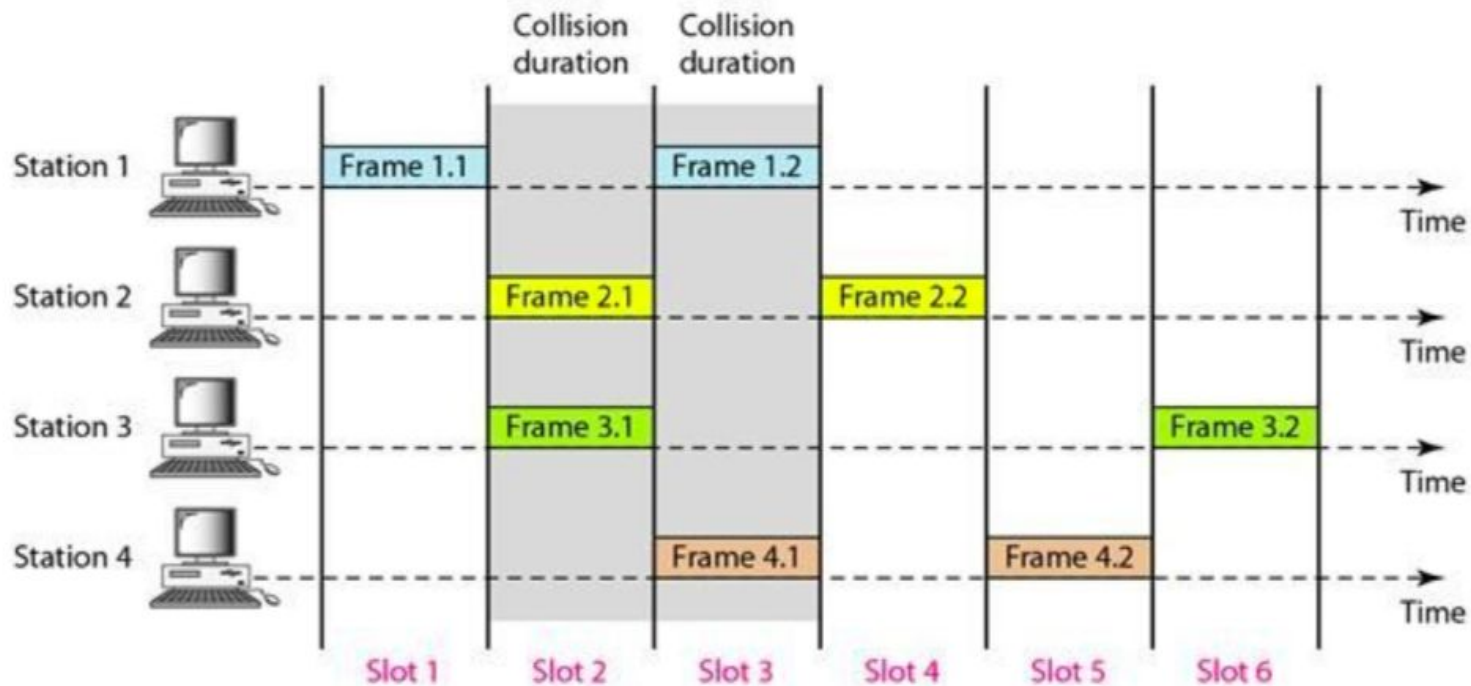


Vulnerable Time = $2 * T_{fr}$

Throughput = $G \times e^{-2G}$; Where G is the number of stations wish to transmit in the same time.

Maximum throughput = 0.184 for $G=0.5$ ($1/2$)

SLOTTED ALOHA



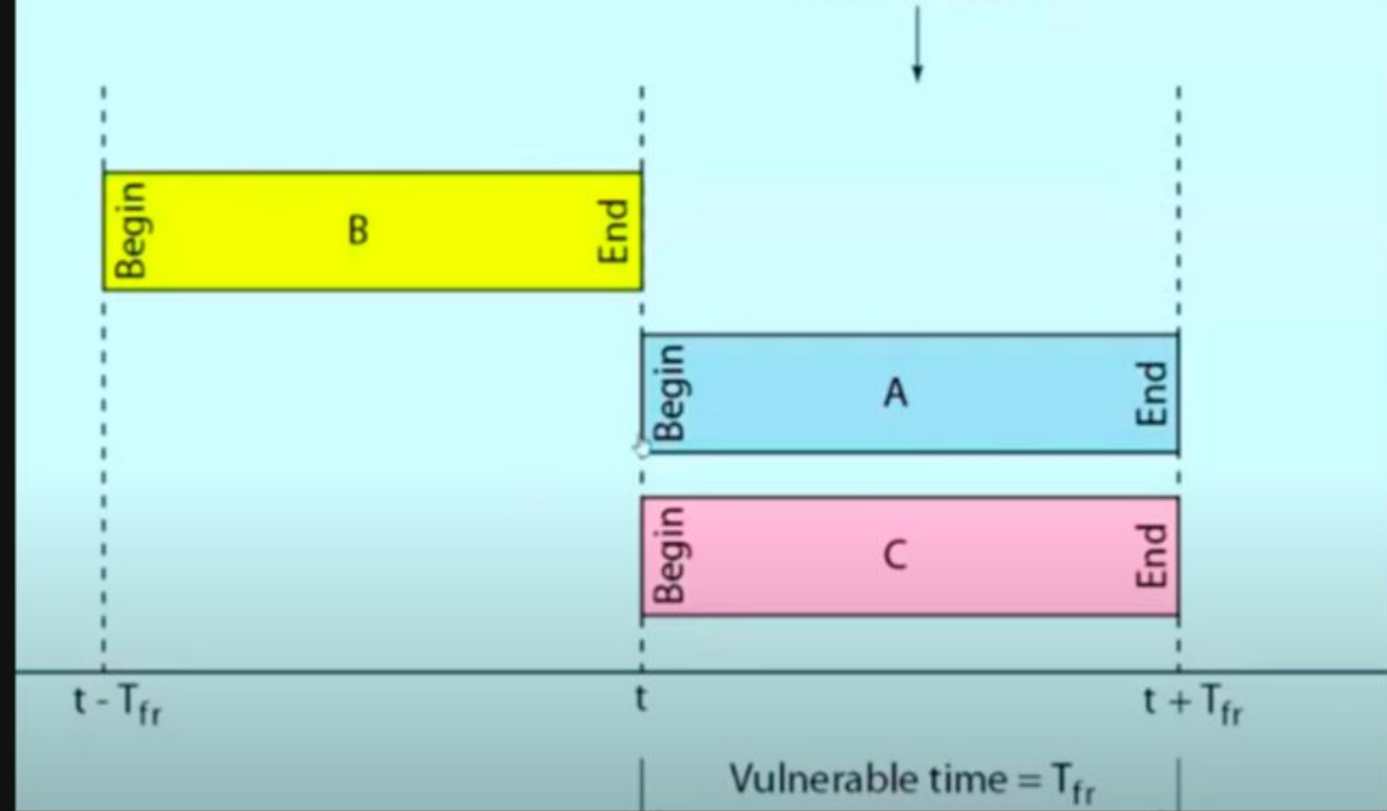
SLOTTED ALOHA

Vulnerable Time = Frame Transmission Time.

Throughput = $G \times e^{-G}$; Where G is the number of stations wish to transmit
in the same time.

Maximum throughput = 0.368 for $G=1$.

A collides with C



PURE ALOHA VS SLOTTED ALOHA

Pure Aloha	Slotted Aloha
Any station can transmit the data at any time.	Any station can transmit the data at the beginning of any time slot.
The time is continuous and not globally synchronized.	The time is discrete and globally synchronized.
Vulnerable time in which collision may occur $= 2 \times T_{Fr}$	Vulnerable time in which collision may occur $= T_{Fr}$
Probability of successful transmission of data packet = $G \times e^{-2G}$	Probability of successful transmission of data packet = $G \times e^{-G}$
Maximum efficiency = 18.4% (Occurs at $G = 1/2$)	Maximum efficiency = 36.8% (Occurs at $G = 1$)
Main advantage: Simplicity in implementation.	Main advantage: It reduces the number of collisions to half and doubles the efficiency of pure aloha.

Thank you

Link to slides online: <https://slides.com/shauryasinghal/aloha>