

Write about CSMA/ CA vs. CSMA/ CD

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How CSMA/CA Works to Avoid Collisions

Collision Avoidance (CSMA/CA) avoids collisions by listening for a transmission signal before sending data. If a signal is detected, the sender starts a counter with a random value and then waits. Once this counter runs down, the sender will try again. This process repeats until the sender can send the data. The part where the transmission waits to send is Collision Avoidance in action

CSMA/CD:

CSMA/CD stands for **Carrier Sense Multiple Access / Collision Detection** is a network protocol for carrier transmission. It is operated in the medium access control layer. It senses if the shared channel is busy for broadcasting and interrupts the broadcast until the channel is free. In CSMA/CD collision is detected by broadcast sensing from the other stations. Upon collision detection in CSMA/CD, the transmission is stopped and a jam signal is sent by the stations and then the station waits for a random time context before retransmission.

CSMA/CA:

CSMA/CA stands for **Carrier Sense Multiple Access / Collision Avoidance** is a network protocol for carrier transmission. Like CSMA/CD it is also operated in the medium access control layer. Unlike CSMA/CD(that is effective after a collision) CSMA / CA is effective before a collision.

Let's see the difference between CSMA/CA and CSMA/CD:-

S.NO	CSMA/CD	CSMA/CA
1.	CSMA / CD is effective after a collision.	Whereas CSMA / CA is effective before a collision.
2.	CSMA / CD is used in wired networks.	Whereas CSMA / CA is commonly used in wireless networks.
3.	It only reduces the recovery time.	Whereas CSMA/ CA minimizes the possibility of collision.
4.	CSMA / CD resends the data frame whenever a conflict occurs.	Whereas CSMA / CA will first transmit the intent to send for data transmission.
5.	CSMA / CD is used in 802.3 standard.	While CSMA / CA is used in 802.11 standard.
6.	It is more efficient than simple CSMA(Carrier Sense Multiple Access).	While it is similar to simple CSMA(Carrier Sense Multiple Access).

