

Wireless network management

[Business](#), [Management](#)



The 802.11 protocol is defined for a wireless LAN (Local Area Network) and is based on a cellular architecture in which the network is divided into cells where each cell (called a Basic Service Cell (BSS)) is controlled by a base station called an Access Point (AP).

The basic access mechanism implemented in the protocol is a Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA). The CSMA protocol works as follows: if a station wishes to transmit information through its network, it senses the medium. In case the medium is busy (another station in the network is currently transmitting information) then the station will delay its transmission requests to a later time. Otherwise, the medium is free and the station is allowed to transmit the desired information.

The problem with the CSMA protocol is the case where a collision occurs. A collision may occur if two different stations sense the medium as free and begin to transmit information. For this purpose, we use a collision avoidance mechanism: a station willing to transmit senses the medium. If the medium is busy, it defers its request.

Otherwise, it sends an RTS (Request To Transmit) which includes the source, destination and the duration of the transaction. If the medium is free then the destination station will respond with a packet called CTS (Clear To Send) which will include the same duration information and once the source station receives this packet, it starts to transmit. The destination station checks the CRC (Cyclic Redundancy Check) and sends an acknowledgment package (ACK).

Receiving the ACK informs the source station that no collision had occurred. If the source station does not receive the ACK it will keep resending the data or will throw it away after a given number of retransmissions.

When a station wishes to join an existing BSS, it needs to receive synchronization information from the BSS's AP. First, the station needs to go through the AP's authentication process. During this process, the station and the AP exchange information proving to each other that each side is familiar with a specific password.