

**IEEE P802.11
Wireless LANs**

Comment on Back-off in MAC

Date: March 11, 1997

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802.11 does not specify the status of the medium while a frame is being transmitted. The status is used to decrement the backoff.

rev. 802.11/clause 9.2.1, 9.2.4, 9.2.5,)

Scenario:

- Backoff > 0 and decrementing (waiting to transmit MPDU_x).
- Medium sensed busy -> Backoff suspended -> receiving MPDU_y.
- Medium is free again, thus backoff is resumed. However received MPDU_y needs Ack_y, which is transmitted after a SIFS period. During the transmission of the Ack_y the Backoff expires and the MAC is ready to transmit MPDU_x. In worst case MPDU_x will be transmitted following a SIFS period after the Ack_y -> DCF fails.

My suggestion is to add to the medium status the status of the MAC. Medium busy if:

- physical carrier sensed,
- NAV > 0 (virtual carrier sensed),
- MAC/PHY is transmitting.