Assignment 2

MACAW protocol

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MACAW protocol: -

The MACAW (Multiple Access with Collision Avoidance for Wireless) protocol is a media access control (MAC) protocol designed for the wireless networks. MACAW operates by using a contention-based protocol for access to the wireless medium. MACAW also uses an acknowledgment (ACK) mechanism to confirm successful transmissions.

The MACAW protocol uses RTS/CTS frames to deal with the hidden terminal and exposed station problems. RTS/CTS frames are used to reserve channel for the duration of the transmission to avoid collisions. However, scenarios where MACAW the protocol may be incapable of resolving one or both hidden terminals.

For example, let's consider a scenario where there are three stations X, Y, and Z, and X and Y are hidden from each other, while both X and Z can hear each other. In this scenario, assume that X sends an RTS frame to Y, and Y responds with a CTS frame, reserving the channel for a specified duration. However, at the same time, C also wants to send data to Y and can hear the CTS frame sent by Y, assuming that the channel is idle. Z begins transmitting, which causes a collision at Y, as it receives data from both X and Z.

In this scenario, the hidden terminal problem is not solved since Z does not hear the RTS frame sent by X, and the exposed station problem is not solved since Y, the station that sent the CTS frame, experiences a collision from Z. This example shows that there are scenarios where the protocol may be incapable of resolving one or both hidden terminals.