Performance Evaluation of Slotted ALOHA FH-SSMA Systems with Generalized Retransmission Backoff

Yu-Sun Liu
Department of Electrical Engineering
Chung Yuan Christian University

In distributed spread-spectrum packet radio networks where the number of active users and the packet arrival rate may vary with time, an adaptive channel access protocol is necessary to avoid system saturation. In this paper, we present an analytical investigation of generalized retransmission backoff policies for slotted ALOHA FH-SSMA systems. In the backoff techniques, each user adapts the retransmission probability as a function of the number of unsuccessful transmissions experienced by the current message. Thus, each user may have different retransmission probabilities. An analytical model for these systems is developed, and is used to evaluate the performance of four different backoff policies. Finally, a computer simulation is performed and the result is in agreement with the conclusion obtained from the analytical model.

Keywords: FH/SSMA, ALOHA