
The University of Queensland
School of Information technology and Electrical Engineering
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COMS3200 – Tutorial 6

Questions

1. Consider the delay of pure ALOHA versus slotted ALOHA at low load. Which one is less? Explain your answer.
2. An IEEE 802.3 has only two ready stations. What is the probability that they will collide at most three times before one succeeds?
3. Consider a baseband bus with a number of equally spaced stations. Assume
 - a mean distance between stations of 0.375km
 - a propagation speed of 200m per microsecond
 - an access method based on IEEE 802.3 standard
 - (a) What is the average time to send a packet of 1000 bits to another station, measured from the beginning of the transmission to the end of reception?
 - (b) If two stations begin to transmit at exactly the same time, how long will it take on average before they notice a collision, in seconds? in bit times?
 - (c) If one station starts transmitting, what is the time after which the station knows that it seized the channel (i.e. there will not be any collision during this transmission)?

Note: The IEEE802.3 standard assumes binary exponential backoff to decide when to transmit after collisions.

4. The presented MAC protocol for Wireless LANs uses MACA (Multiple Access with Collision Avoidance). Under what conditions, if any, would it be possible to use CSMA/CD?
5. Six stations, A through F, communicate using the MACA protocol. Is it possible that two transmissions take place simultaneously? Explain your answer.