CMSC498: Wireless Networks

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Contents

1 Lecture 1: Introduction

Office hours will be after class on Tuesdays [Subject to change].
There will be a project, based on a 'ns3', a network simulator.

OSI

1. Application
2. TCP
3. IP
4. Link Layer

   Other

   (a) MAC

5. Physical

Class Outline

- Basics of Wireless (PHY)
- LANs ϵ MACs
- Mobile IP
- Adhoc Networks
- Mobile TCP
- Cellular Networks
- Advanced Topics
  - Quality of Service
  - Shared Spectrum Technologies
  - Dynamic Spectrum Access

2 Lecture 2

Explanation of worksheet from first class

Definition 2.1 (CSMA/CA) *Carrier Sense Multiple Access / Collision Avoidance. "Listen before talk "*

Used by Wifi.

Definition 2.2 (CSMA/CD) *Carrier Sense Multiple Access / Collision Detection. Looks for corrupted data and resends*

Used by Ethernet (MAC). Combined with back-off

When designing a protocol, ensure the probability of collision asymptotically decays w.r.t. 'rounds ' . For example, IP does this with exponential back-off

Types of delays

1. Medium Access Delay

   (spin waiting for clear channel)

2. Transmission Delay

   Putting bits on the wire (bit rate)

3. Queuing Delay

   Waiting in routers' buffers (congestion)

4. Propagation Delay

   PHY signal speed

3 Lecture 3