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Computer Networks
Homework #3

1. Frames sent to one host will also be sent to the other host. If secure information is sent over the network, this can be an issue because the information will be viewable by others, not just the host it is meant for.

2. Ethernet Problem:
    a. RT Propogation Delay = 46.4 μs. Minimum packet size = 512 bits.
        i. Packet size is 464 bits + 48 bits jam signal
        ii. This corresponds to 10 Mbps
        iii. 100 Mbps = 4640 bits for packet size + 48 bits = **4688 bits.**
    b. With packets with fewer than 4688 bits of data, you send unnecessary bits and are wasting bandwidth.
    c. The packet size could be reduced if the jam signal could be reduced in any way.

3. Because Manchester encoding uses clock cycle information XOR'd with the message. If a collision occurs, then the receiver will not be able to synchronize its clock, and it will detect a collision prior to the CRC.

4. If both nodes are transmitting to a third node within range of each of the nodes, then collisions could happen if one node is trying to transmit to the middle node while the other node is trying to. The nodes aren't aware of each other, so they don't know when to not transmit to the node in the middle.

5. With wireless networks, you cannot transmit and receive at the same time, like wired networks. This causes collision detection to be much harder.

6. With a natural disaster, if the base station goes down, communications will be completely wiped out. For a mesh topology, nodes can communicate with one another, even if one of them is destroyed by an earthquake or other natural disaster.