

UNIVERSITY OF CALIFORNIA, LOS ANGELES
CS M117

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DIS: **1B**

Pre-laboratory HW #3. (Due 07/12)

(HW must be typed)

Bluetooth Communications
(Lecture 3 + Reading 3)

Section A:

1. (4) Wireless nets:

- (a) What is the main similarity between a Wireless LAN and an Ad Hoc network
- (b) What is the main difference?

(a) WLAN and Ad Hoc are the same in that they both allow for nodes to wirelessly connect to one another, and thus communicate.

(b) Ad Hoc allows for two or more nodes to connect to each other without an intermediate device like a switch or router. WLAN requires for this intermediate device to exist.

2. (2) Why is multihopping used in Ad-Hoc nets?

Due to the fact that Ad Hoc does not rely on a device like a router or switch to facilitate communication between devices, communication must occur through the use of multihopping. A packet must “hop” from one device to another instead of being routed through a switch.

3. (1) What is the principal difference between connectionless communication and connection-oriented communication? (See Reading 1).

Connectionless communication does not require connection between the source and destination, while connection-oriented does require this. Connection-oriented is more reliable due to this. Another difference is that connection-oriented communication can resend packets if there is an error, but connectionless cannot.

Section B:
Bluetooth Communications
(T. Ch. 4. 310-317)

1). (4) From Figure 1 shown bellow; we see that a Bluetooth device can be in two piconets at the same time.

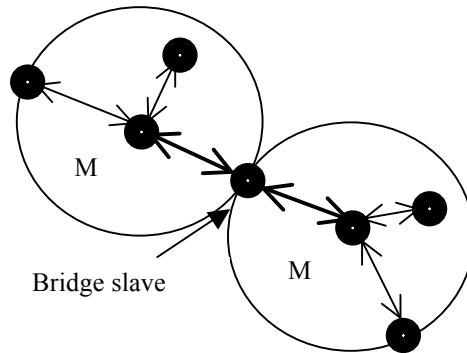


Figure 1

Is there any reason why one device cannot be the master in both of them at the same time?

Yes, the protocol states that only one master can exist for every piconet. Every slave node must have a master node, but a slave node is allowed to be a master node of another piconet. Because of this, one device cannot be the master of both piconets at the same time.

2). (a) (4) Figure 2 shows several physical layer protocols. Which of these is closest to the Bluetooth physical layer protocol?

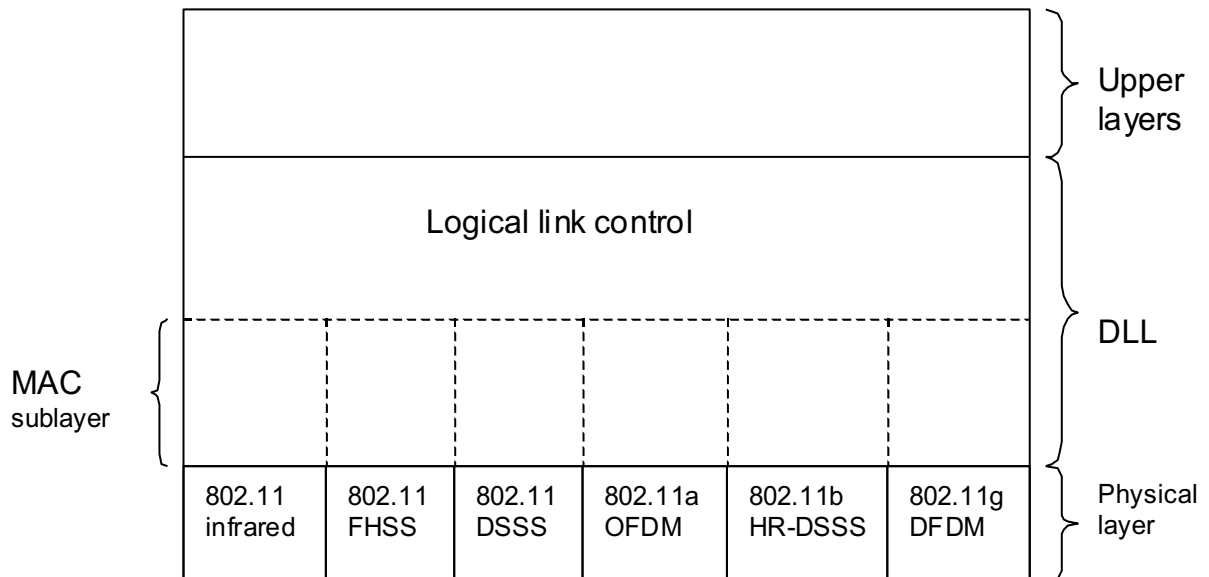


Figure 2

(b) (1). What is the biggest difference between the two?

802.11 FHSS is the closest to the Bluetooth physical layer protocol. The biggest difference is that Bluetooth is able to hop devices at a faster rate than 802.11.

3). (4) Beacon frame in the frequency hopping spread spectrum variant of 802.11 contain the dwell time, Do you think the analogous beacon frame in Bluetooth also contain the dwell time? Discuss your answer.

Yes, both Bluetooth and FHSS both contain dwell time because both are frequency hopping.