Réseaux Mobiles
TD 1

Questions générales sur le Wifi

1. Quel est le support physique des réseaux sans fil ?

2. Sachant que la relation entre longueur d'onde λ et fréquence f est la suivante : λ = c/f , avec c (vitesse de la lumière) = 3.10^8 m/s, que vaut la fréquence d'une onde radio dont la longueur d'onde est inférieure à 0,1 mm ?

3. La couche physique (notée PHY) est complexe, pour les réseaux sans fil. De quoi est-elle composée ? Que font ses composants ?

Aide (*cf.* http://media.techtarget.com/searchMobileComputing/downloads/CWAP_ch8.pdf) :

PLCP Sublayer

The MAC layer communicates with the Physical Layer Convergence Protocol (PLCP) sublayer via primitives (a set of "instructive commands" or "fundamental instructions") through a service access point (SAP). When the MAC layer instructs it to do so, the PLCP prepares MAC protocol data units (MPDUs) for transmission. The PLCP minimizes the dependence of the MAC layer on the PMD sublayer by mapping MPDUs into a frame format suitable for transmission by the PMD. The PLCP also delivers incoming frames from the wireless medium to the MAC layer.

The PLCP appends a PHY-specific preamble and header fields to the MPDU that contain information needed by the Physical layer transmitters and receivers. The 802.11 standard refers to this composite frame (the MPDU with an additional PLCP preamble and header) as a PLCP protocol data unit (PPDU). The MPDU is also called the PLCP Service Data Unit (PSDU), and is typically referred to as such when referencing physical layer operations. The frame structure of a PPDU provides for asynchronous transfer of PSDUs between stations. As a result, the receiving station's Physical layer must synchronize its circuitry to each individual incoming frame.

PMD Sublayer

Under the direction of the PLCP, the Physical Medium Dependent (PMD) sublayer provides transmission and reception of Physical layer data units between two stations via the wireless medium. To provide this service, the PMD interfaces directly with the wireless medium (that is, RF in the air) and provides modulation and demodulation of the frame transmissions. The PLCP and PMD sublayers communicate via primitives, through a SAP, to govern the transmission and reception functions.

4. Quelles différences y a-t-il entre un IBSS, un BSS infrastructure, un réseau ad hoc ? Faites un schéma rapide avec 5 stations.