Universisdad Industrial de Santander
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Redes de Computadoras
Media Access Control
802.11

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Media Access Control 802.11

- Most popular type of Wireless Networks (802.11, WiFi) use the Spread Spectrum tecnique

- Spread Spectrum are methods by which a signal is deliberately spread in the frequency domain in order to get a wider bandwidth

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- Spread the signal in the frequency domain allow
  - Increase the resistance to natural interference and noise
  - To prevent detection
  - To limit power flux density

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- There are several forms of spread spectrum:
  - Frequency Hopping Spread Spectrum (FHSS)
  - Direct Sequence Spread Spectrum (DSSS)
  - Time Hopping Spread Spectrum (THSS)
  - Chirp spread spectrum (CSS)

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- Frequency Hopping Spread Spectrum (FHSS)

It consist in the transmission of the information in a specific frequency during a period of time, usually less than 400ms, then the frequency is changed.

Thus, every chunk of information is transmitted in a different frequency.

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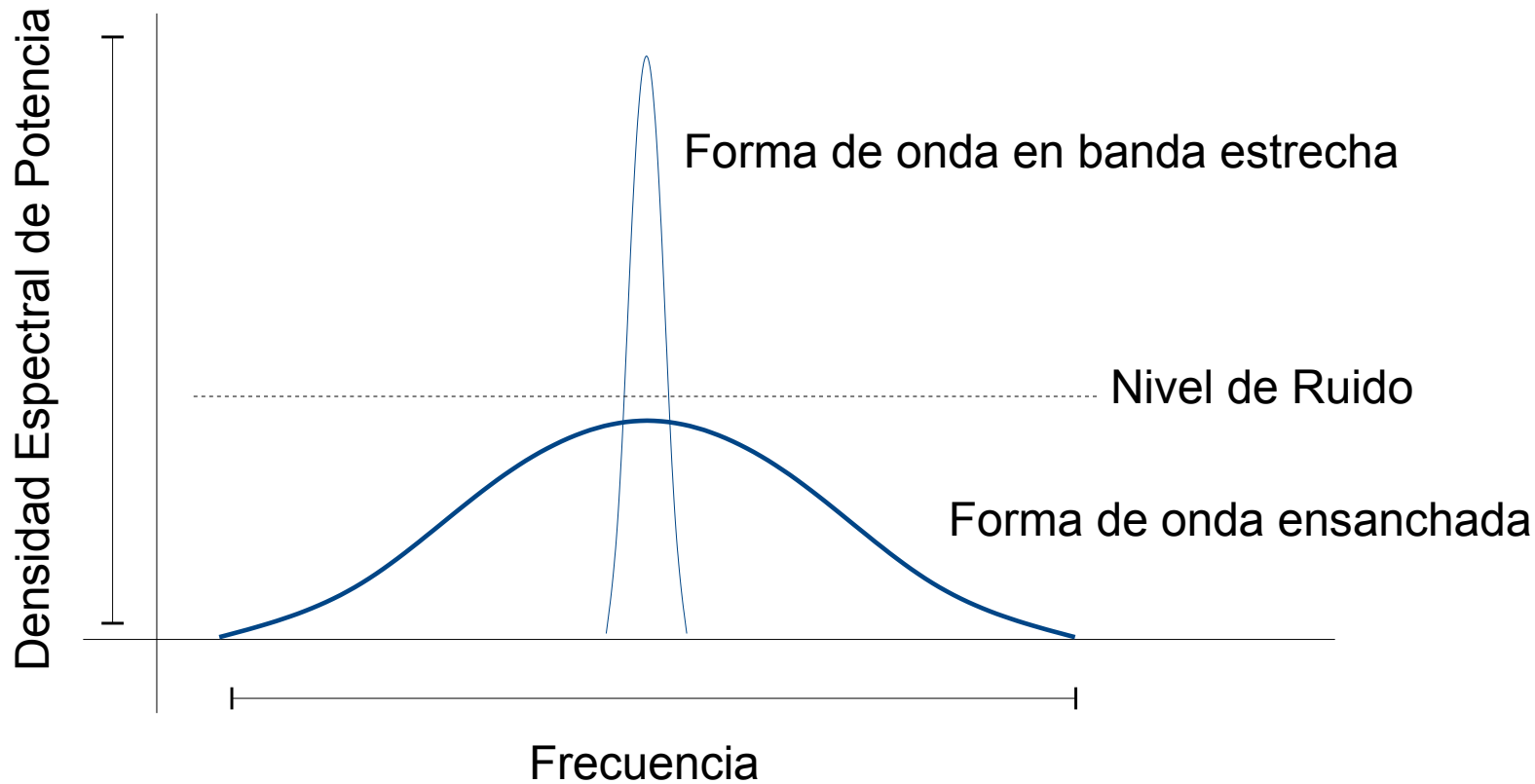
- Frequency Hopping Spread Spectrum (FHSS)

The order of the frequency hops is determined by a pseudo random sequence which is stored in a table in the transmitter and the receiver.

Direct Sequence Spread Spectrum



Standard IEEE 802.11

- The family 802.11 define the physical layer specifications for Wireless Networks.

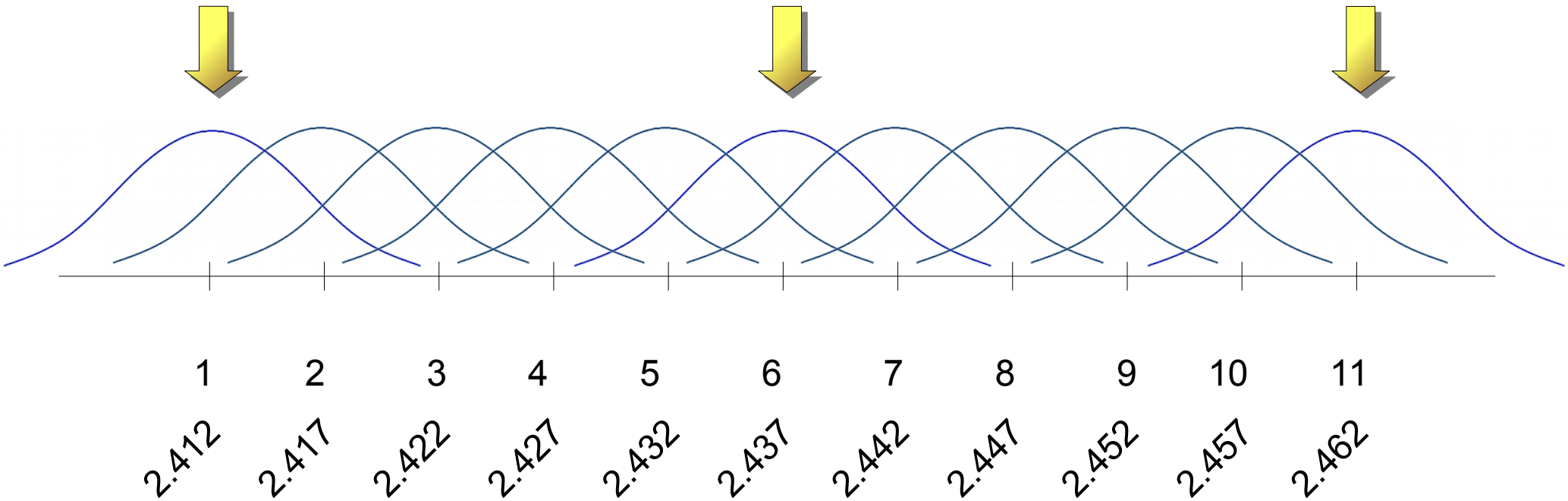
- It consists of a set of half duplex modulation techniques to transmit information through the air.

Standard IEEE 802.11

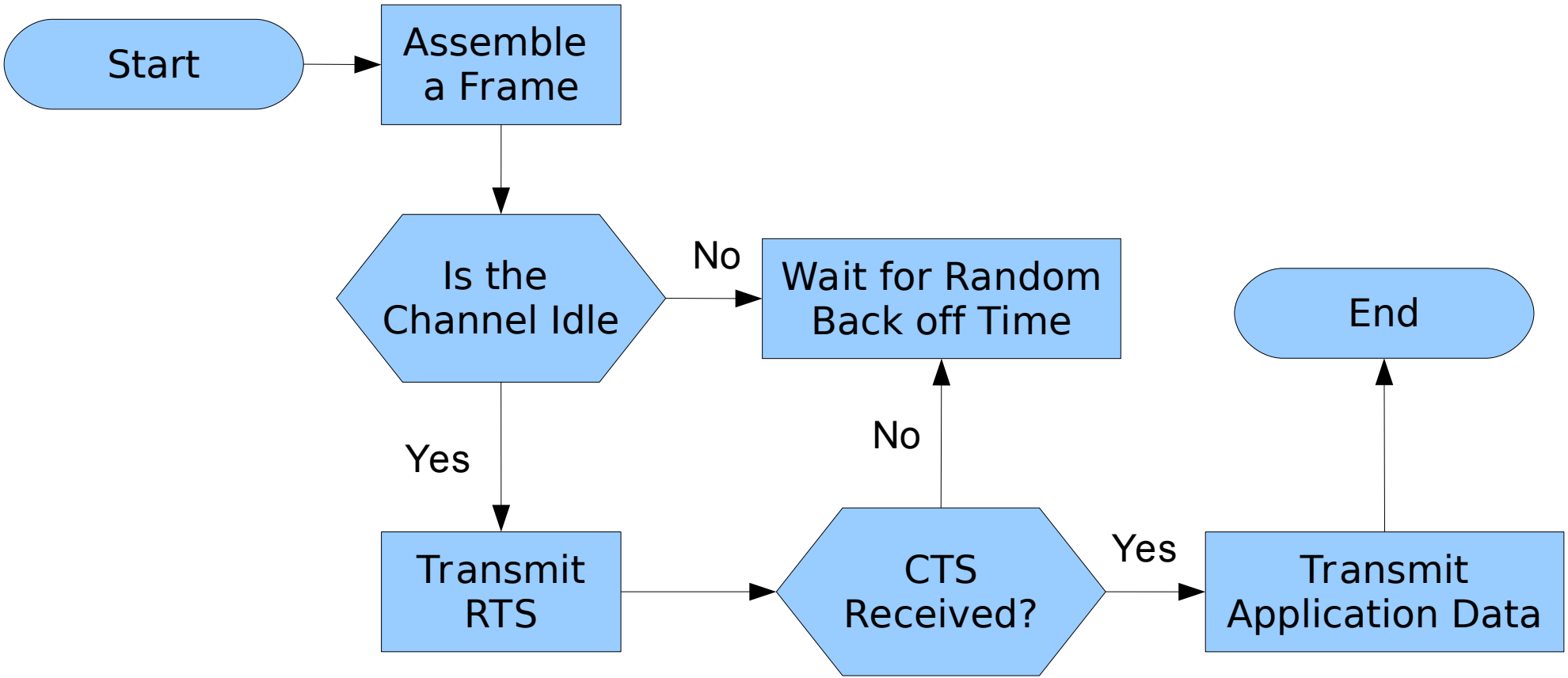
- Most popular 802.11 flavors are:

Version	Bandwidth (Mbps)	Frequency (GHz)
b	11	2.4
g	54	2.4
n	600	2.4, 5
ax	?	2.4, 5

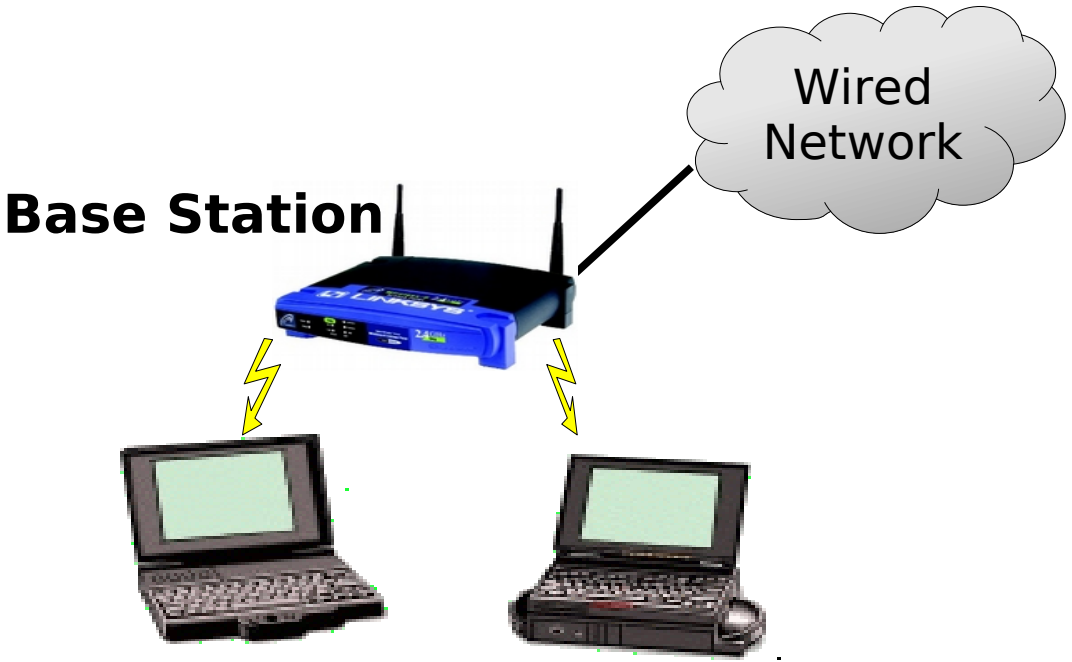
Standard IEEE 802.11b Channels and Frequencies

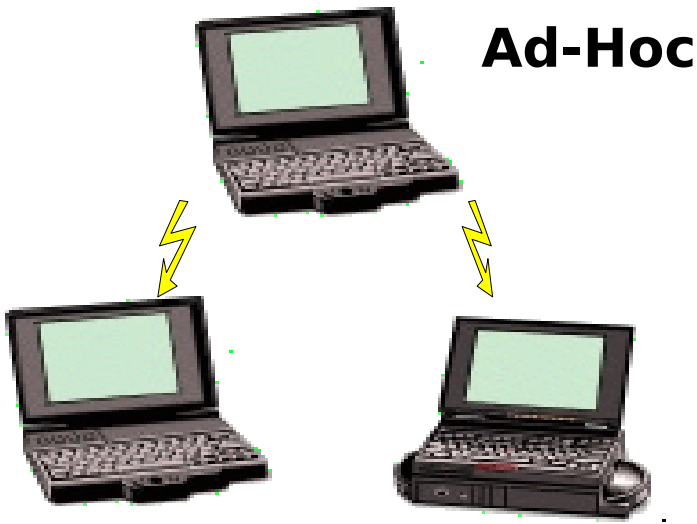


Simplified algorithm of CSMA/CA



Wireless Networks Modes





Parameters to Consider

- Channel (frequency)
- Wireless Network Name (visible or not)
- Security (Cipher Algorimth)
- Wireless Subnet
- WAN Subnet
- DHCP