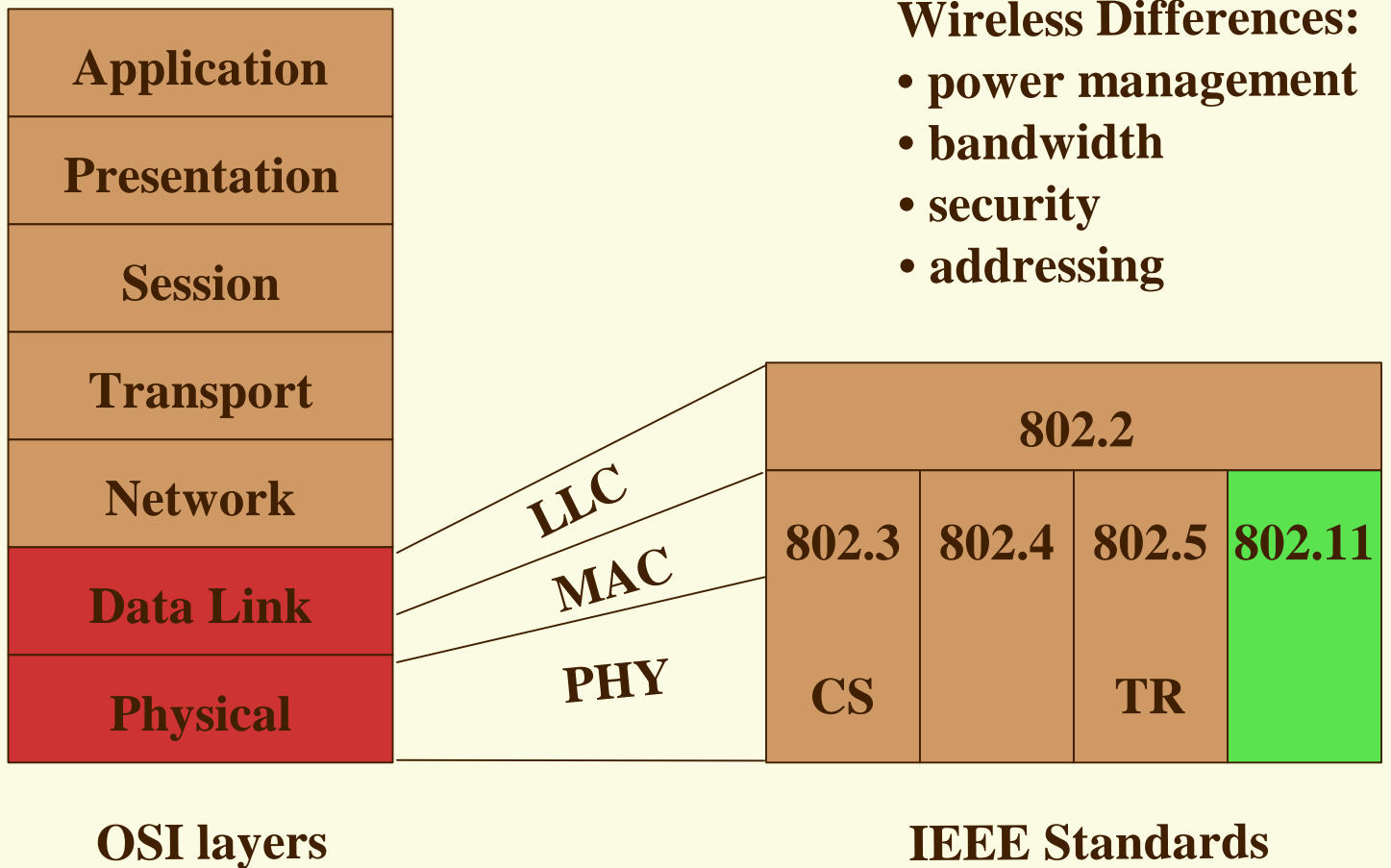


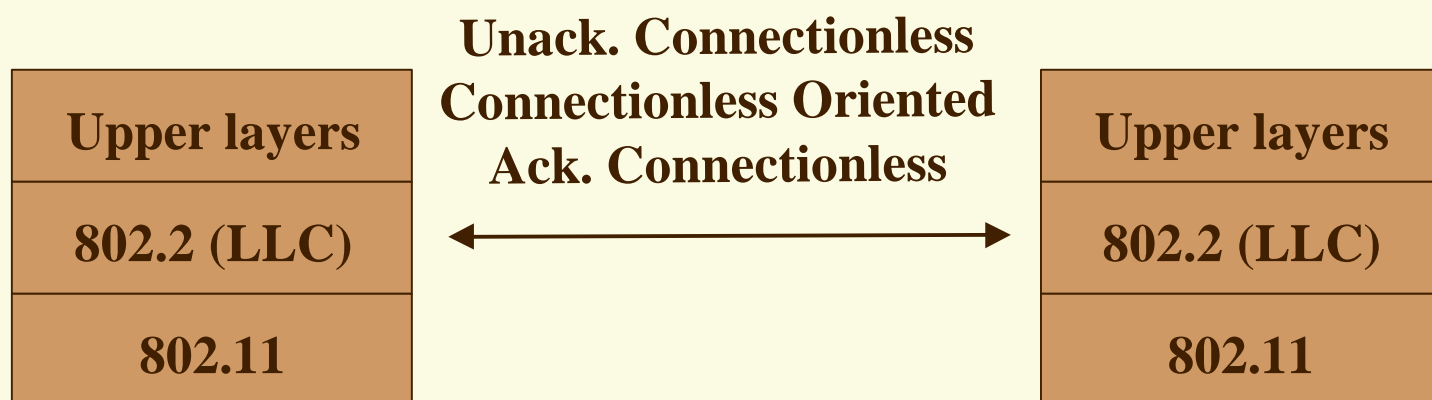
802.11 Overview

Julio L. da Silva Jr.

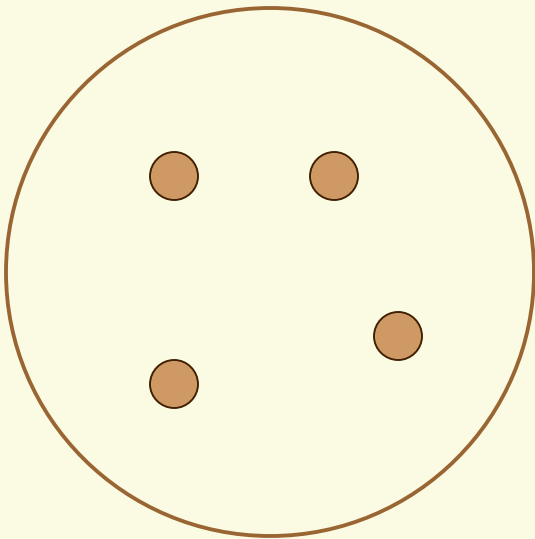
Context



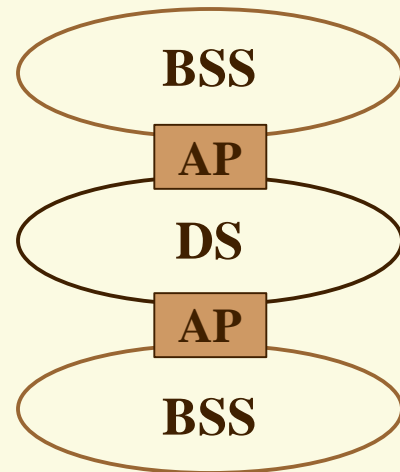
Logical Link Control Services



Topology



Basic Service Set (BSS)



Extend Service Set (ESS)

Topology characteristics

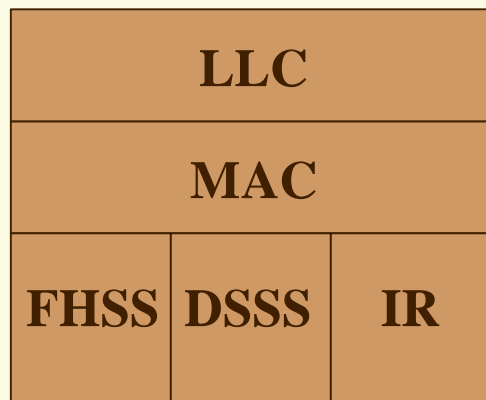
✓ Mobility

- No transition
- BSS transition
- ESS transition (not guaranteed)

✓ Within ESS

- BSSs that partially overlap
- BSSs that are physically disjoint
- BSSs that are physically collocated

Logical Architecture



→ CSMA/CA

→ 2.4 GHz
1W (US) *
1000 feet

Service Primitive

- request
- confirm
- indication
- response

* 10mW/MHz (Europe, Japan)

802.11 Services

- ✓ Station services
authentication, deauthentication, privacy (WEP), MSDU delivery
- ✓ Distributed system services
association, deassociation, distribution, integration, reassociation

How does a station join an BSS?

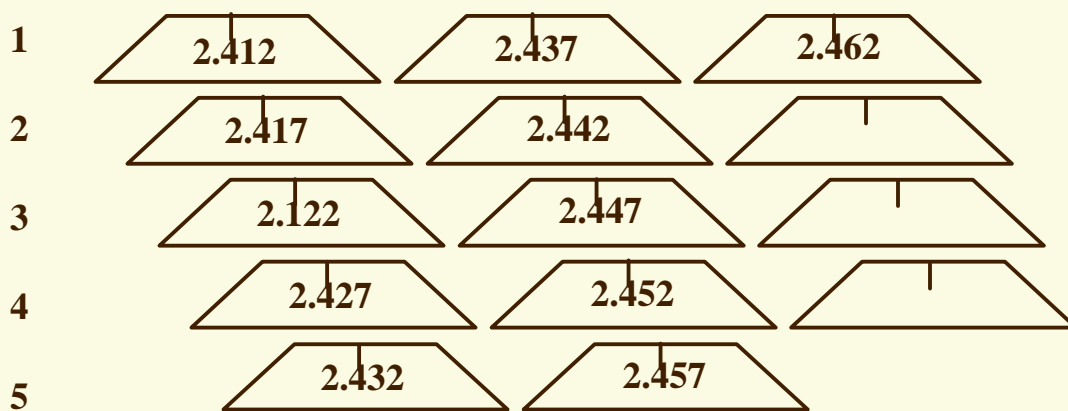
- ✓ Scanning
 - passive or active
- ✓ Authentication
- ✓ Association

MAC details

- ✓ CSMA/CA (time slot = 20us)
Distributed Coordination Function (DCF)
virtual carrier sense (RTS/CTS)
exponential random backoff algorithm
- ✓ Priority based
Point Coordination Function (PCF)
- ✓ Segmentation and reassembly

Physical - DSSS details

- ✓ 2Mbps w/ DQPSK or 1Mbps w/DBPSK
- ✓ 14 channels (11 channels for US)
- ✓ 5 plans - max. 3 non overlapping channel



Physical - FHSS details

- ✓ 1Mbs w/ 2 level GFSK
- ✓ 79 1MHz channels (2.402 - 2.480 GHz)
- ✓ 78 sequences (3 sets of 26) **
- ✓ Minimum hop rate = 2.5 hops/s
- ✓ Minimum hop distance = 6MHz ***

* different for part of Europe and 23 for Japan

** 12 for Japan

*** 5MHz for Japan

802.11 Future

✓ 801.11a

high data rates 2.4GHz band: 5GHz band: 20Mbps

✓ 802.11b

high data rates 2.4GHz band:
FH - 4.5Mbps, DS - 25.5Mbps

✓ WPAN

Wearable devices

(30 feet range, 1Mbps, 0,5 in³, low power, low cost)