

# Chapter 7

## Wireless and Mobile Networks

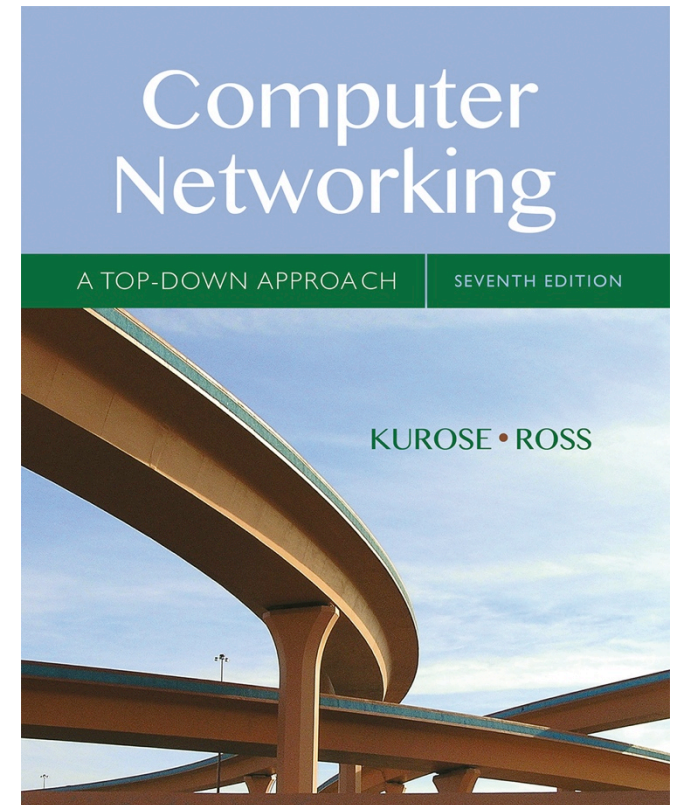
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Thanks and enjoy! JFK/KWR

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## Computer Networking: A Top Down Approach

7<sup>th</sup> edition

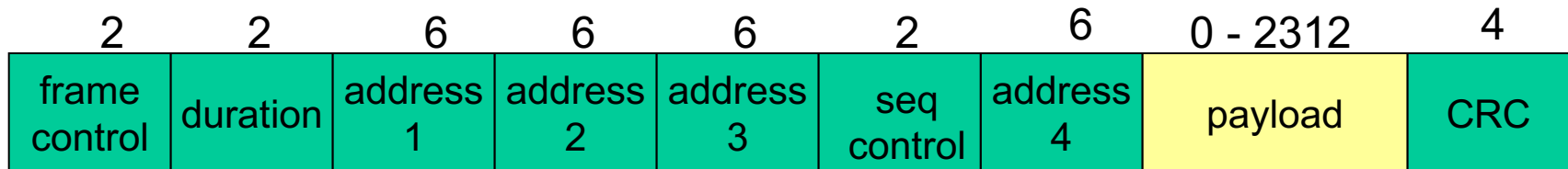
Jim Kurose, Keith Ross

Pearson/Addison Wesley

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Minor modifications made to original slides by Nathan Bowman

# 802.11 frame: addressing



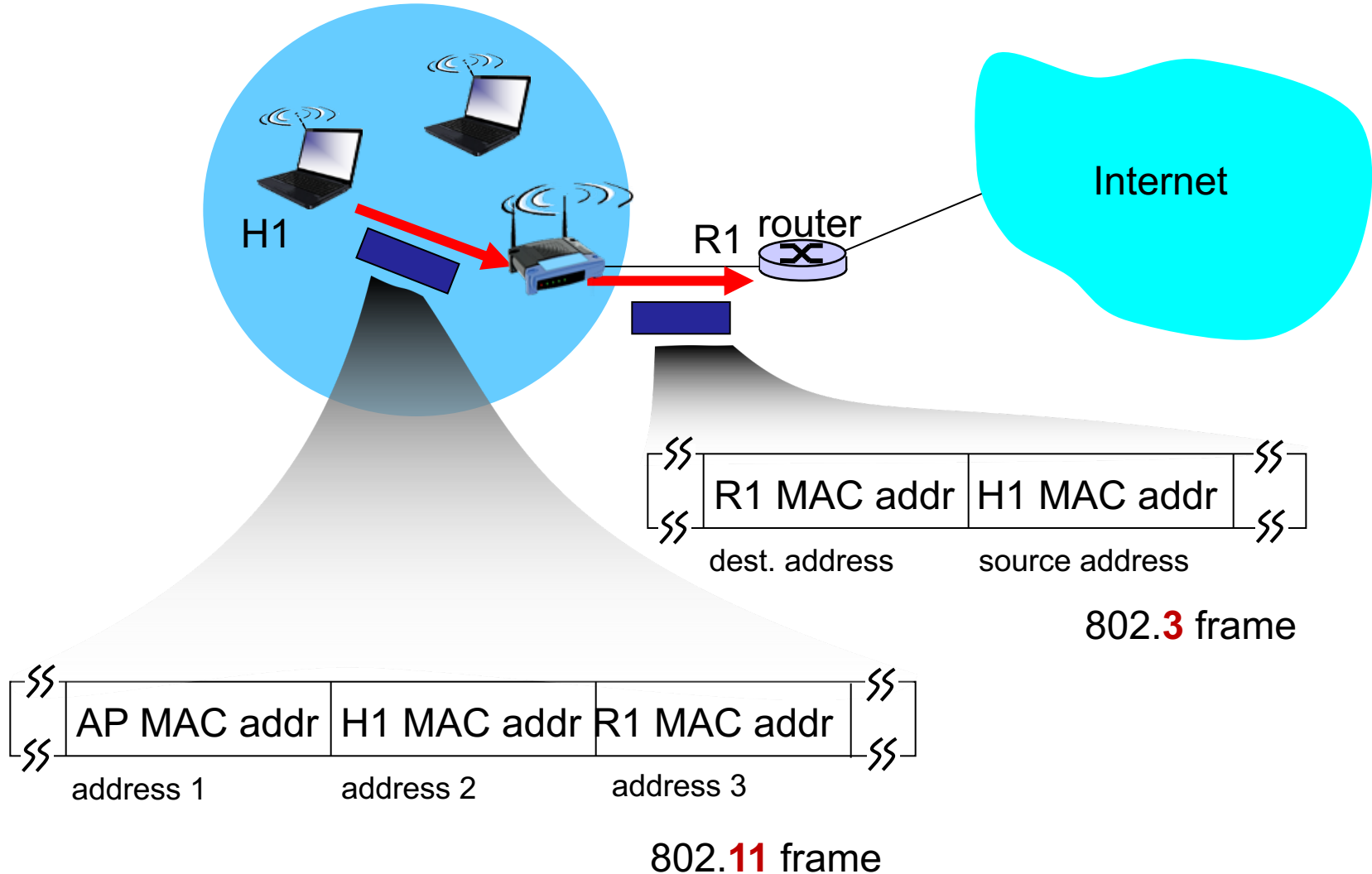
**Address 1:** MAC address of wireless host or AP to receive this frame

**Address 2:** MAC address of wireless host or AP transmitting this frame

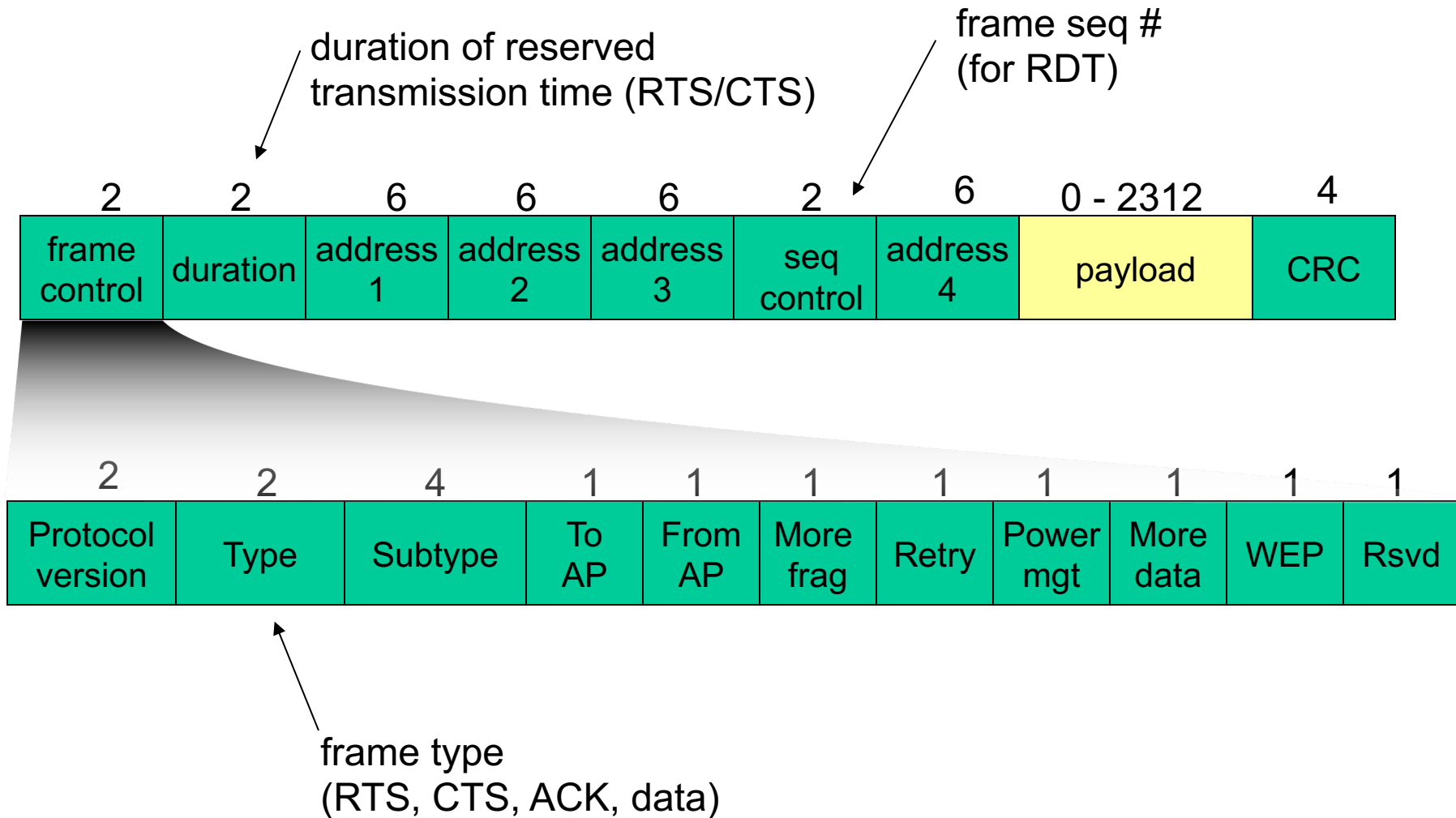
**Address 3:** MAC address of router interface to which AP is attached

**Address 4:** used only in ad hoc mode

# 802.11 frame: addressing

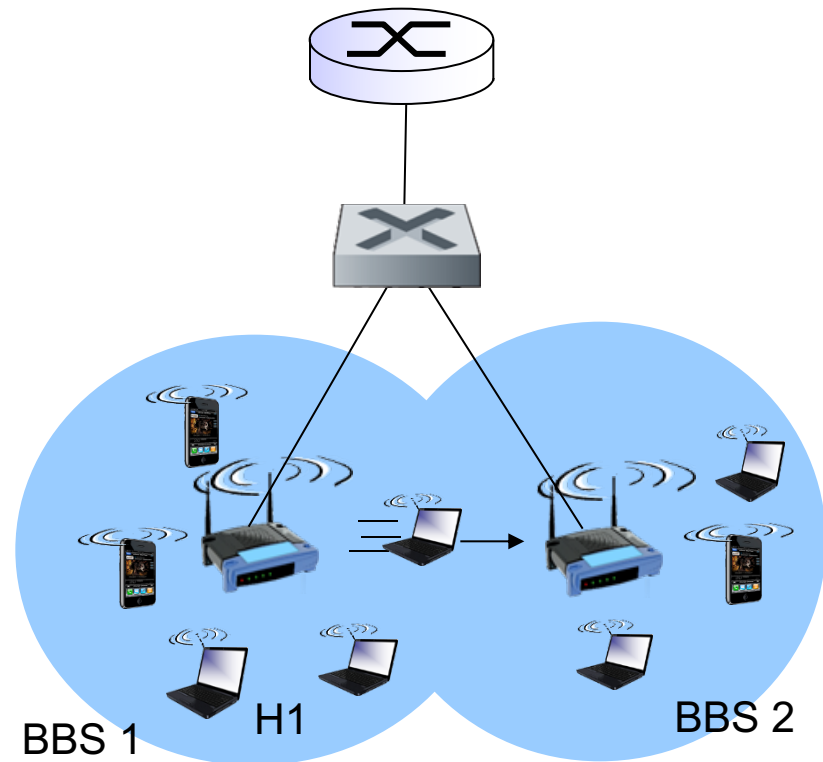


# 802.11 frame: more



# 802.11: mobility within same subnet

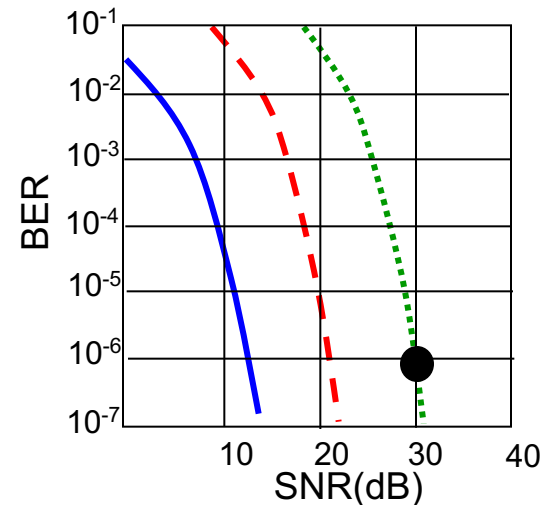
- HI remains in same IP subnet: IP address can remain same
- switch: which AP is associated with HI?
  - self-learning (Ch. 5): switch will see frame from HI and “remember” which switch port can be used to reach HI



# 802.11: advanced capabilities

## *Rate adaptation*

- base station, mobile dynamically change transmission rate (physical layer modulation technique) as mobile moves, SNR varies



- ..... QAM256 (8 Mbps)
- - - QAM16 (4 Mbps)
- BPSK (1 Mbps)
- operating point

1. SNR decreases, BER increase as node moves away from base station
2. When BER becomes too high, switch to lower transmission rate but with lower BER

# 802.11: advanced capabilities

## *power management*

- node-to-AP: “I am going to sleep until next beacon frame”
  - AP knows not to transmit frames to this node
  - node wakes up before next beacon frame
- beacon frame: contains list of mobiles with AP-to-mobile frames waiting to be sent
  - node will stay awake if AP-to-mobile frames to be sent; otherwise sleep again until next beacon frame