
Lokální síť (9)

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MAC in wireless LANS

Problems specific to wireless MAC

- hidden terminal problem
- exposed terminal problem

MAC in wireless LANs

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Contention based protocols

- MACA/MACA-W - collision avoidance
- BTMA - busy tone method
- IEEE 802.11 MAC

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Reservation protocols

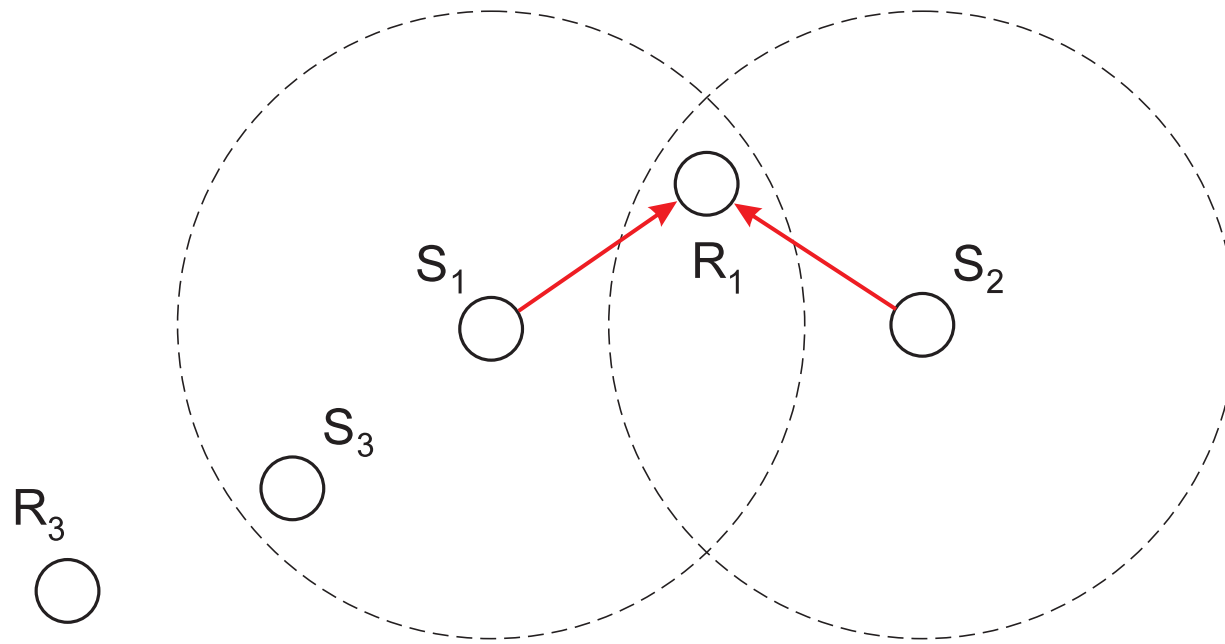
- HiPerLAN/1 - HiPerLAN/2
- Bluetooth

MAC in wireless LANS

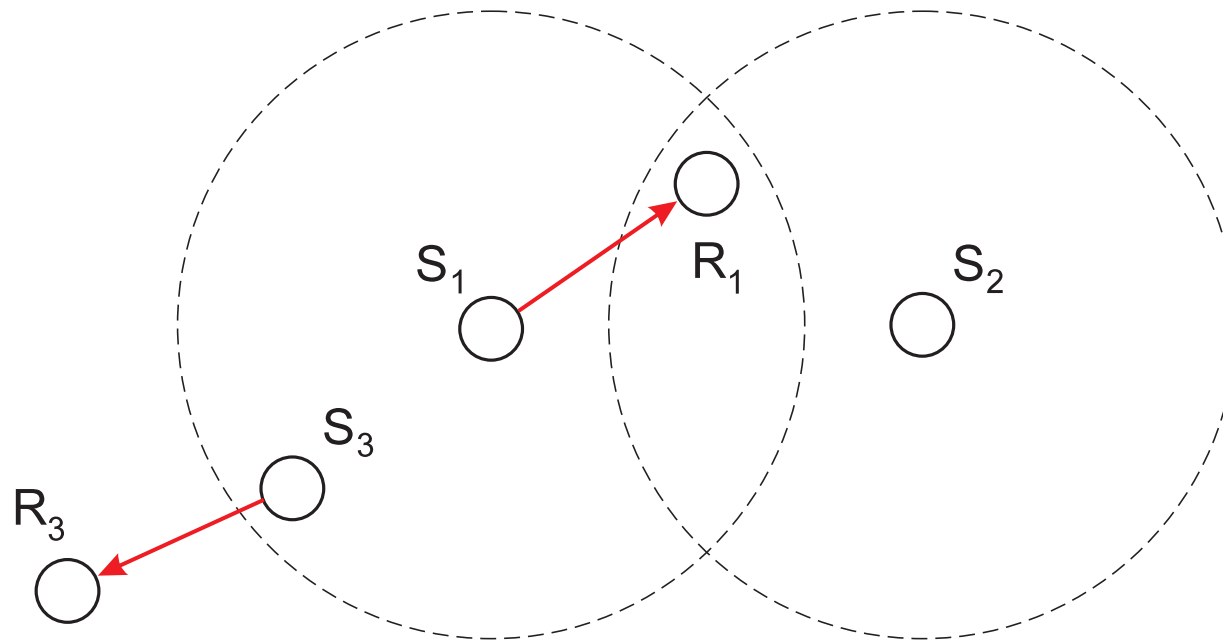
Problems specific to wireless MAC

- nonstable signal reachability range
fluctuating attenuation, noise
- mobile stations
- → dynamic topology
- error-prone medium
typically 10^{-4} (optical fibres have 10^{-9})

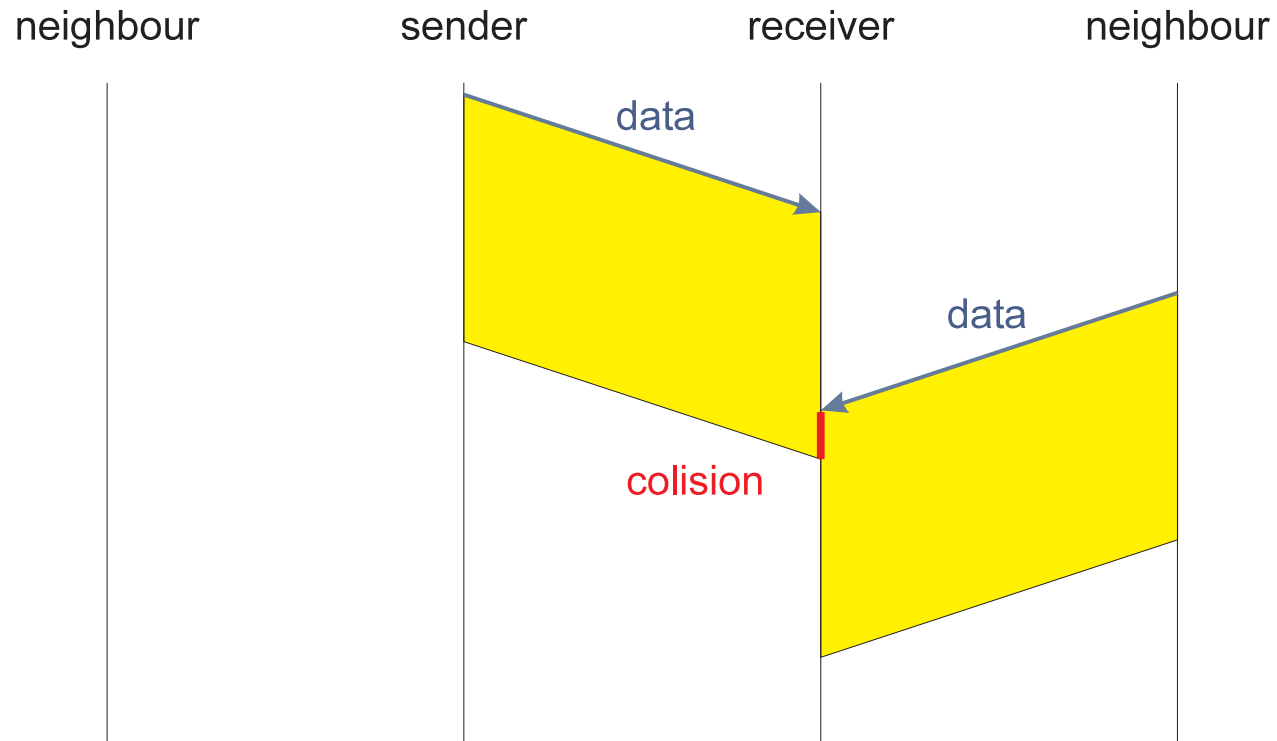
Hidden terminal problem



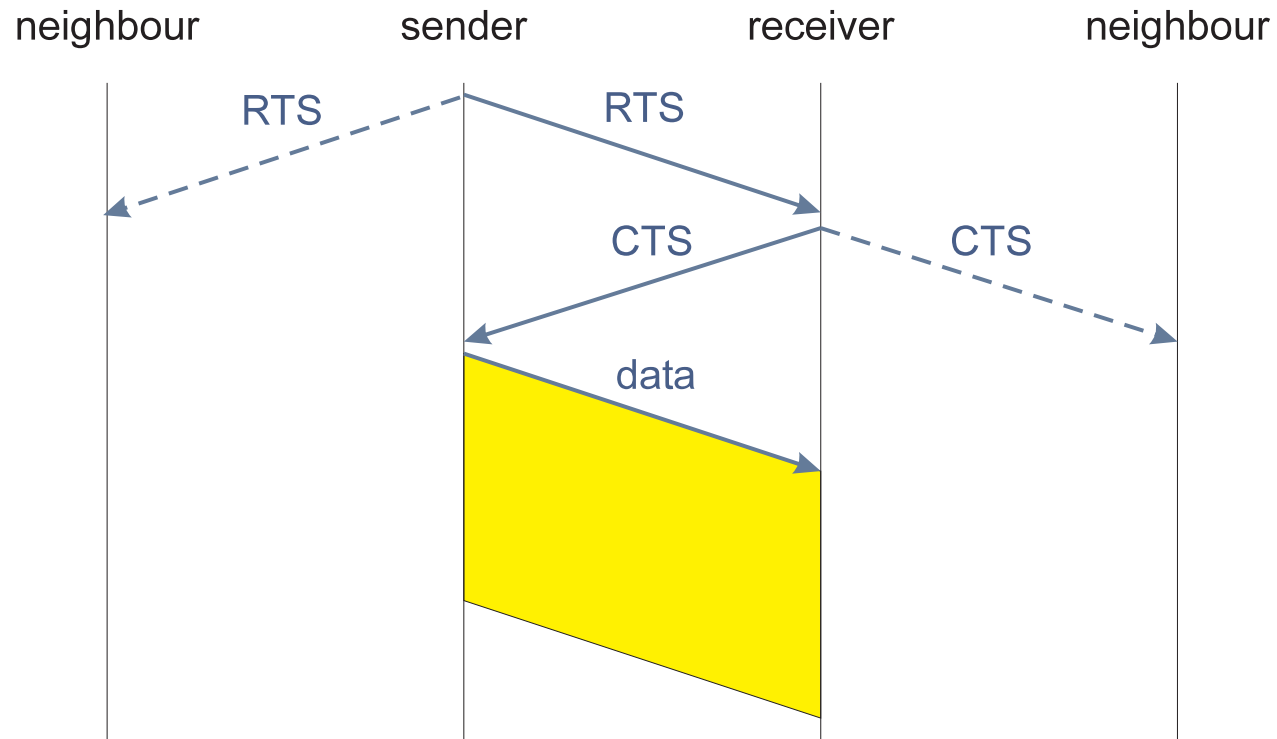
Exposed terminal problem



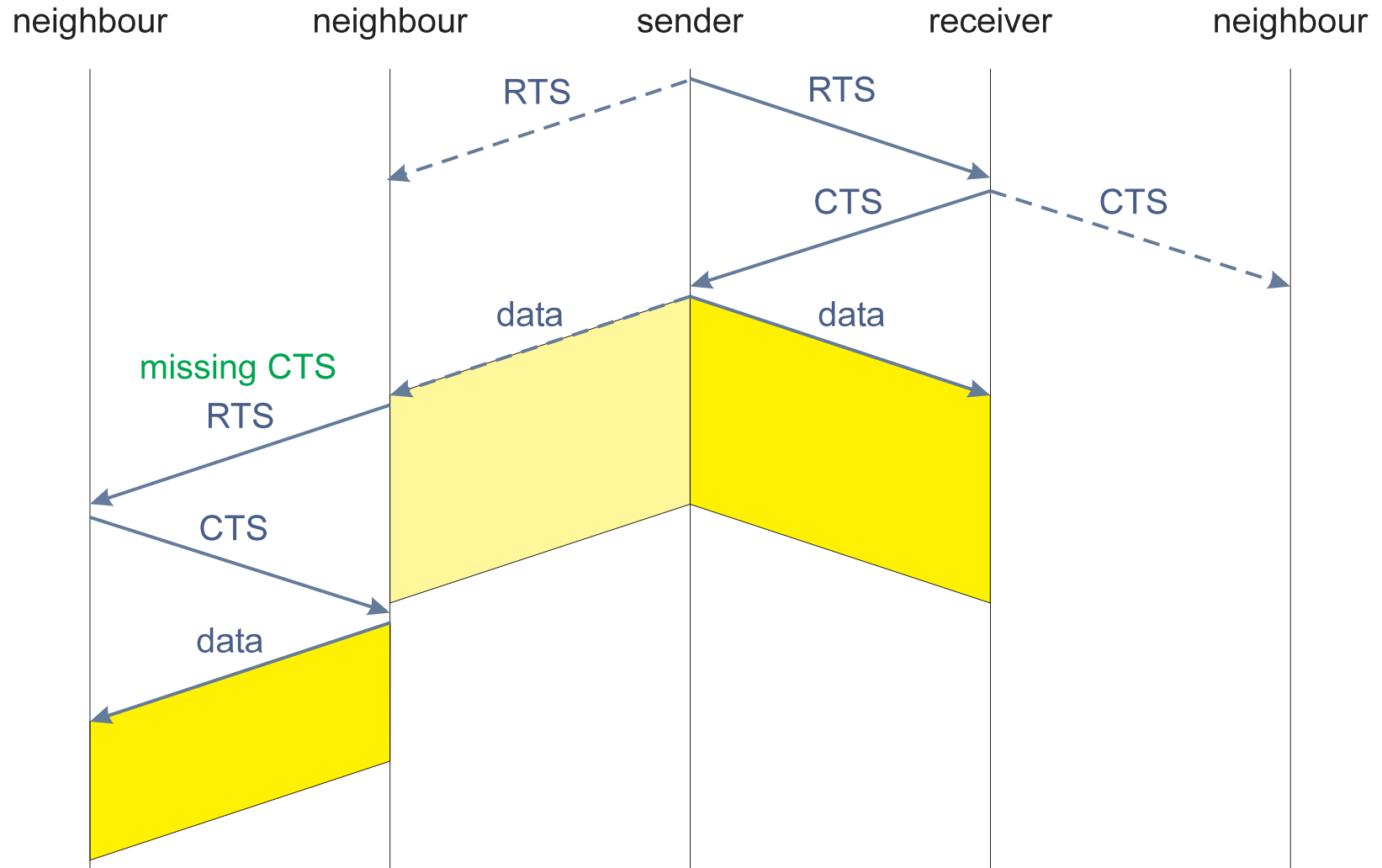
MACA - hidden terminal



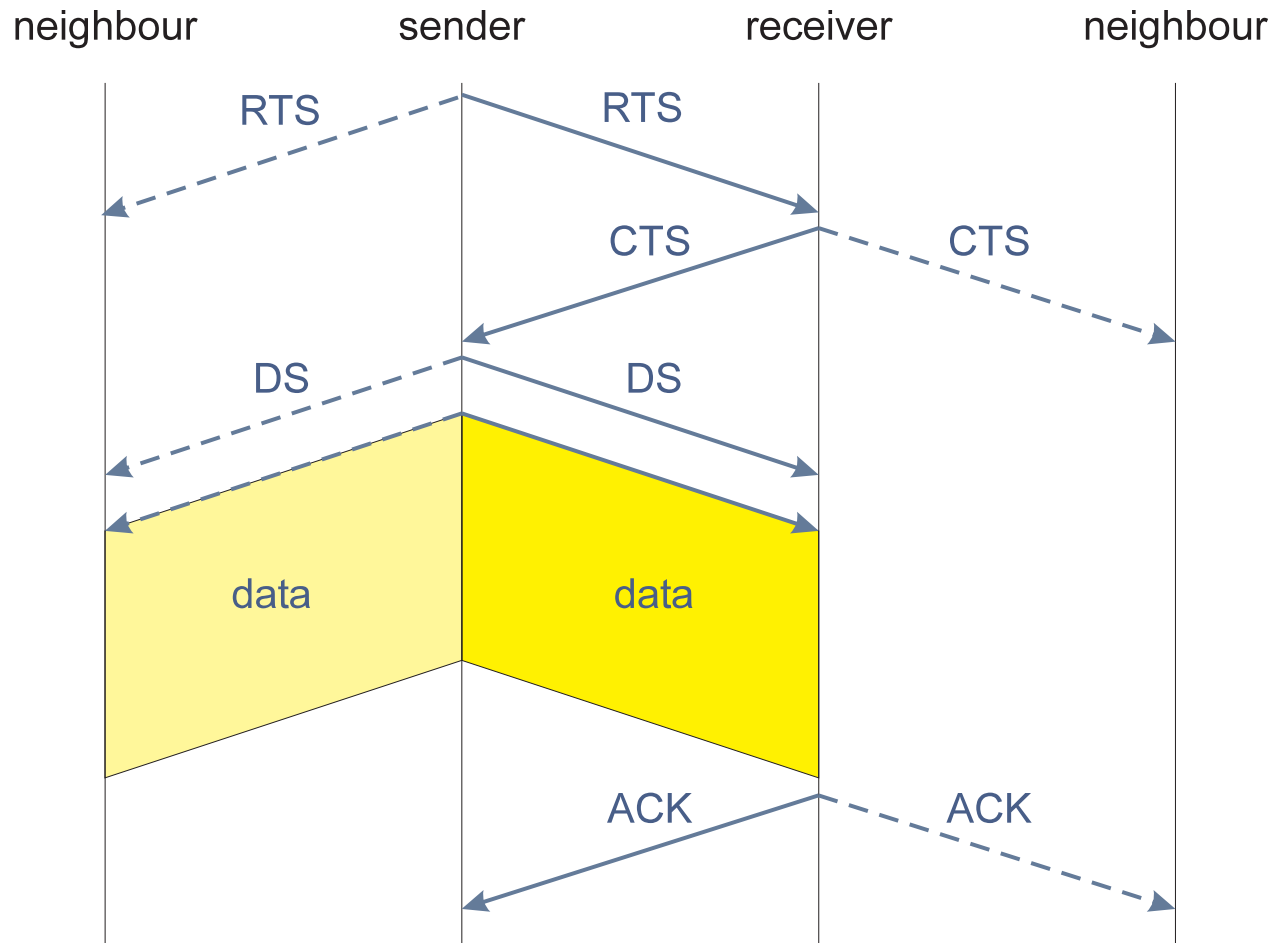
MACA - hidden terminal



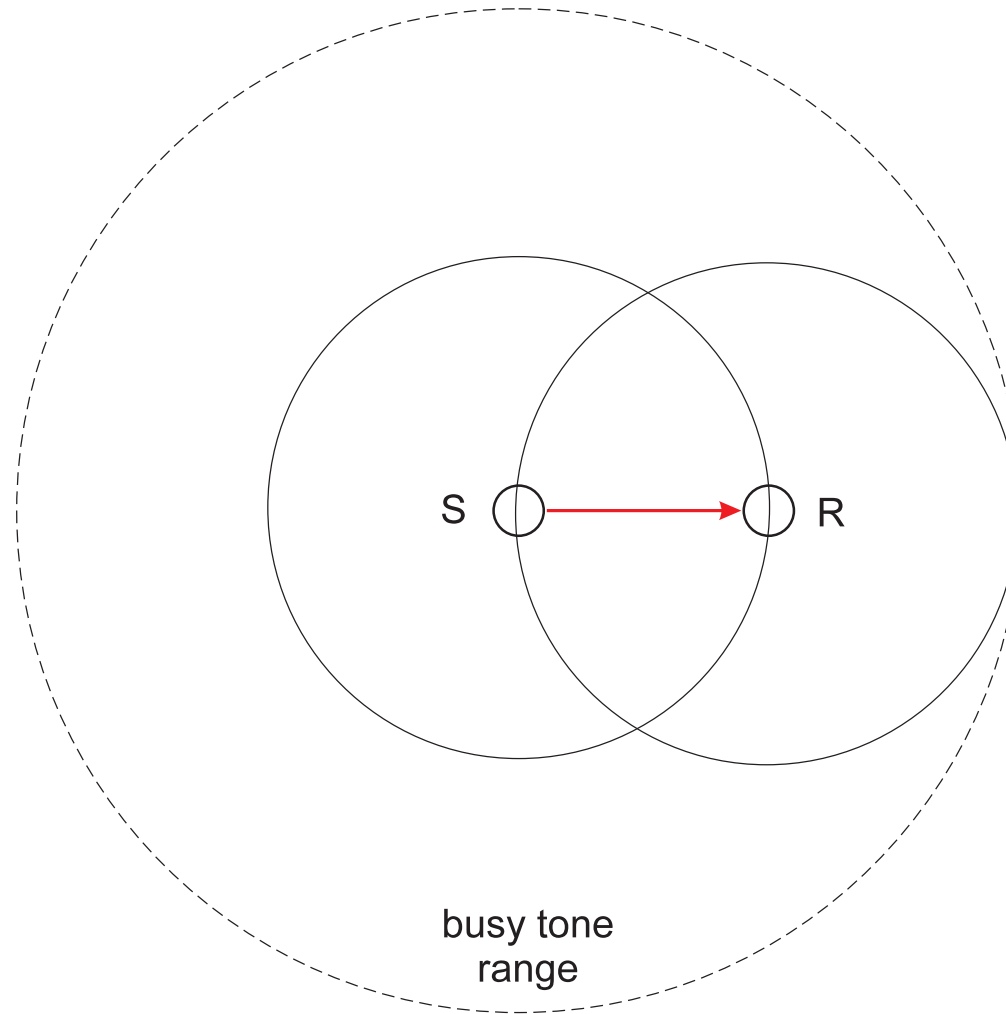
MACA - exposed terminal



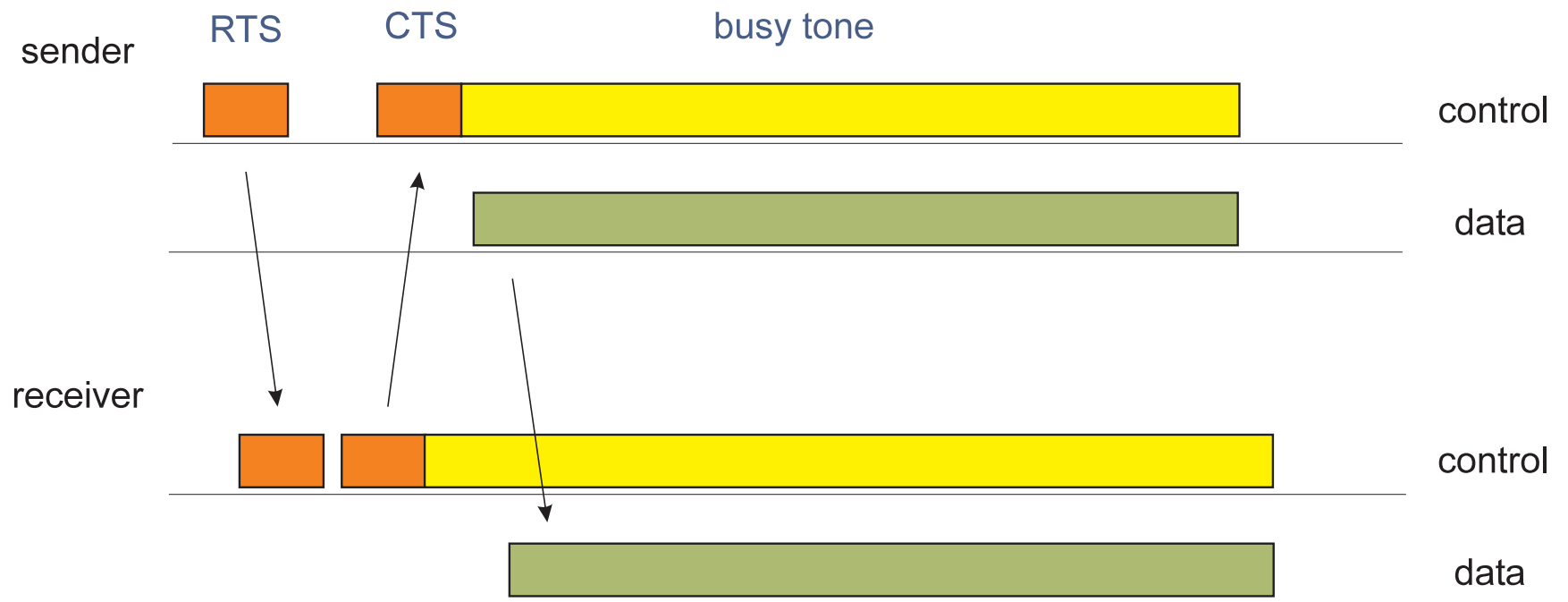
MACAW



BTMA - busy tone MA



DBTMA - double busy tone MA



IEEE 802.11

802.11

- 1 - 2 Mbps
- radio - spread spectrum
 - FHSS - Fast Hopping Spread Spectrum
 - DSSS - Direct Sequence Spread Spectrum (CDMA)

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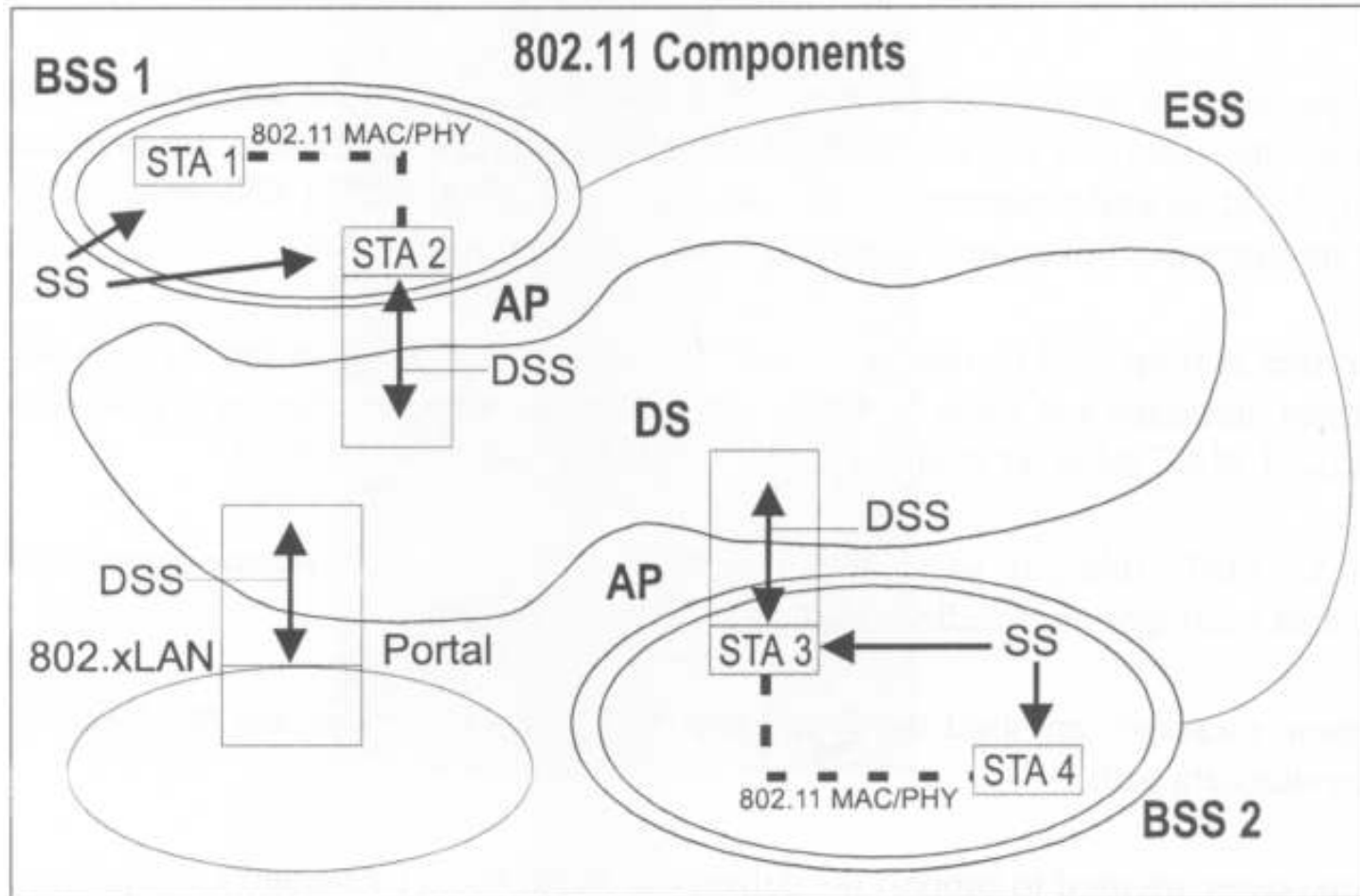
802.11b - WiFi

- 5.5, 11, 22 Mbps
- DSSS - Direct Sequence Spread Spectrum (CDMA)

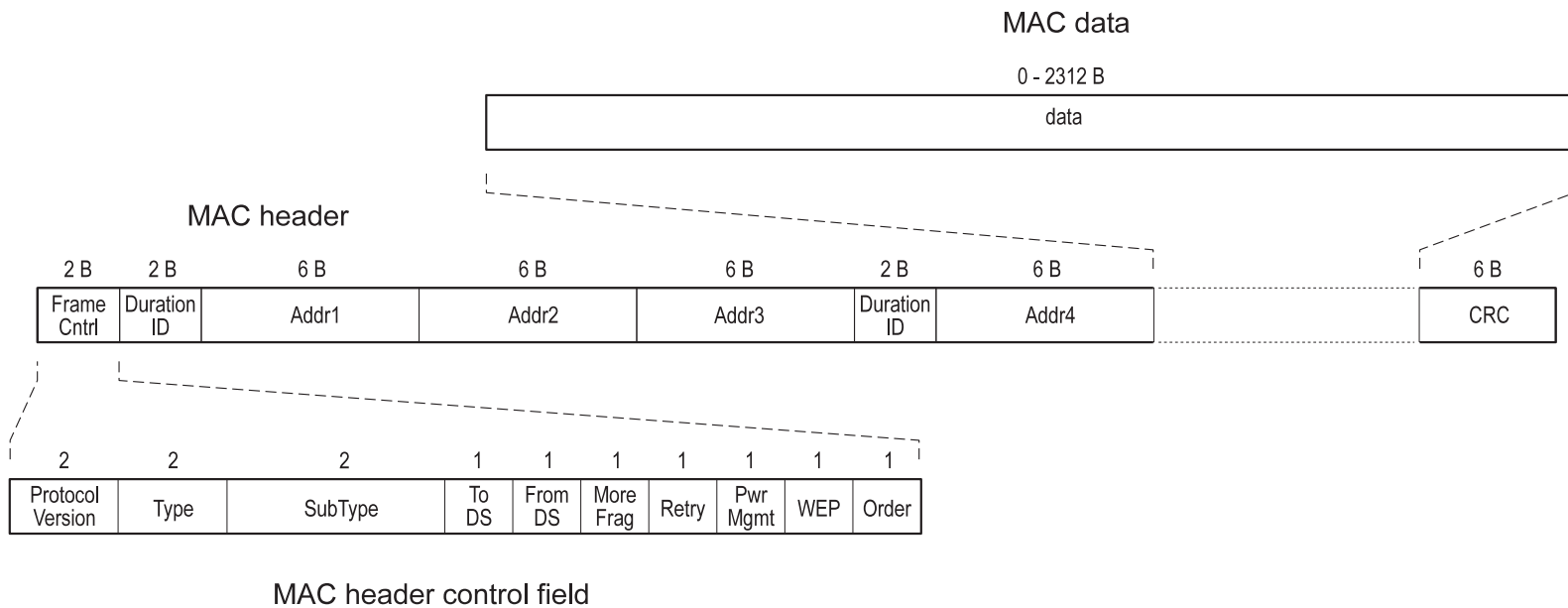
802.11a/g

- 54 Mbps
- OFDM - Orthogonal Frequency Division Multiplex

IEEE 802.11

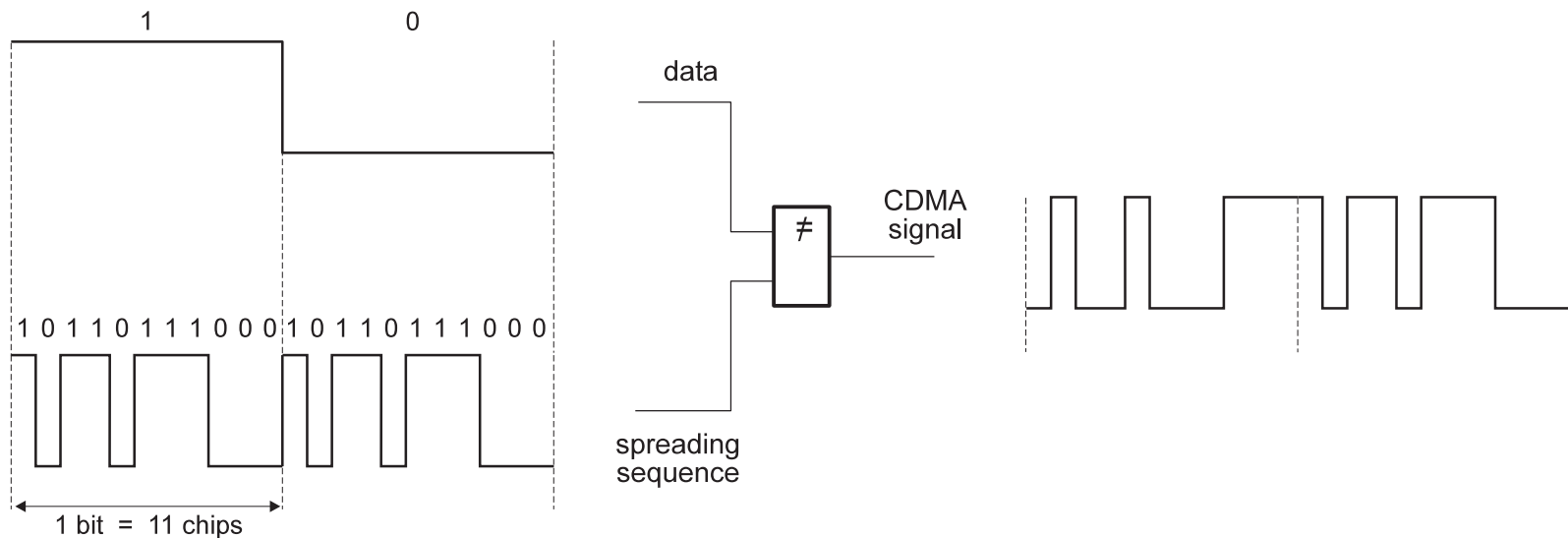


IEEE 802.11 - MAC



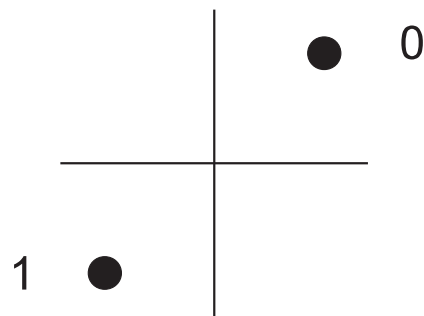
IEEE 802.11 CDMA/DSSS

Code Division Multiple Access

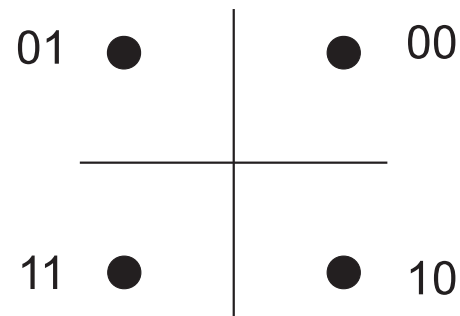


IEEE 802.11 Modulation

Binary/Quadratic Phase Shift Keying

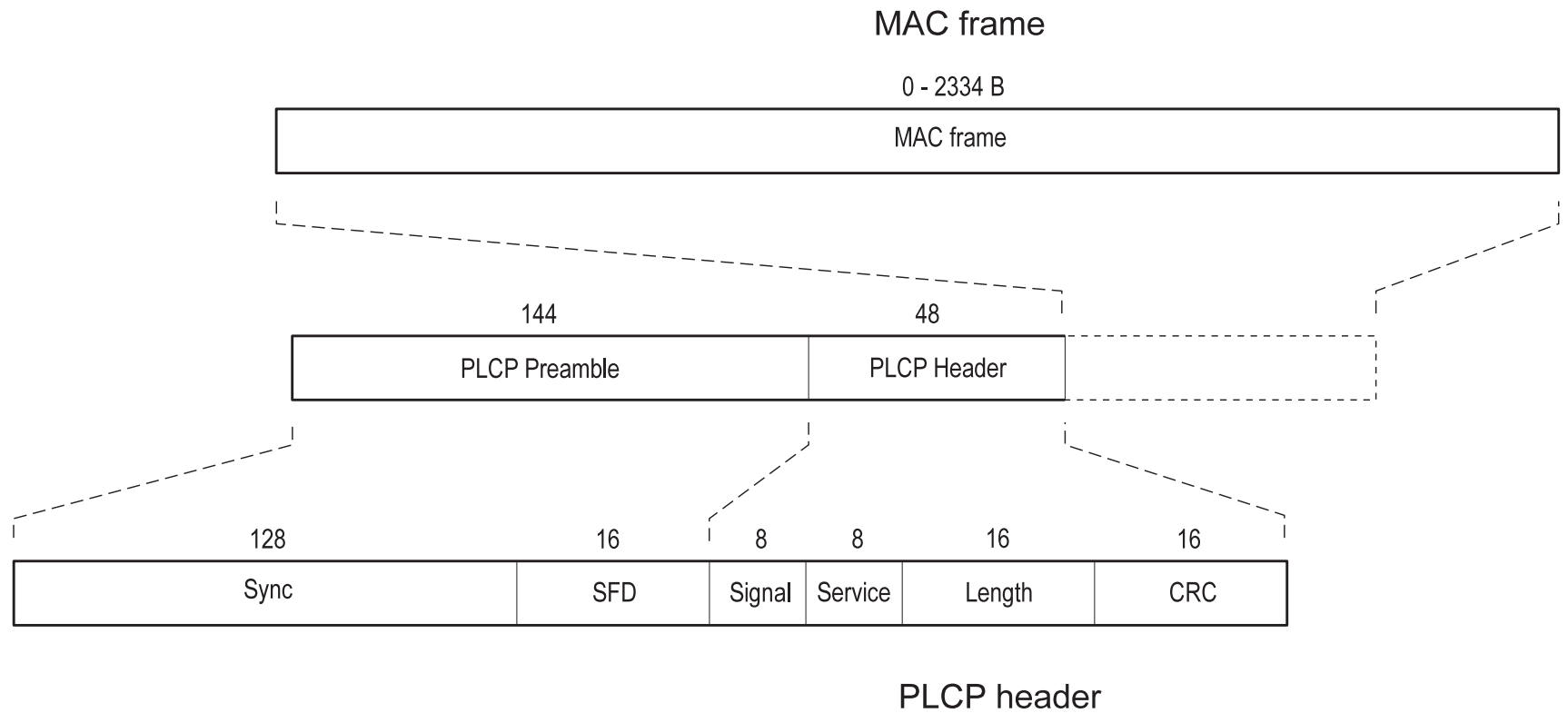


BPSK



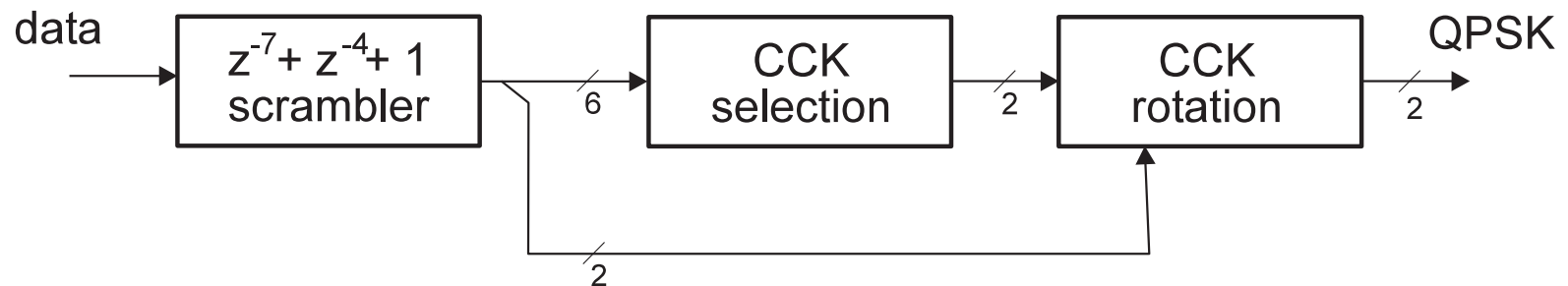
QPSK

IEEE 802.11 - PLLC

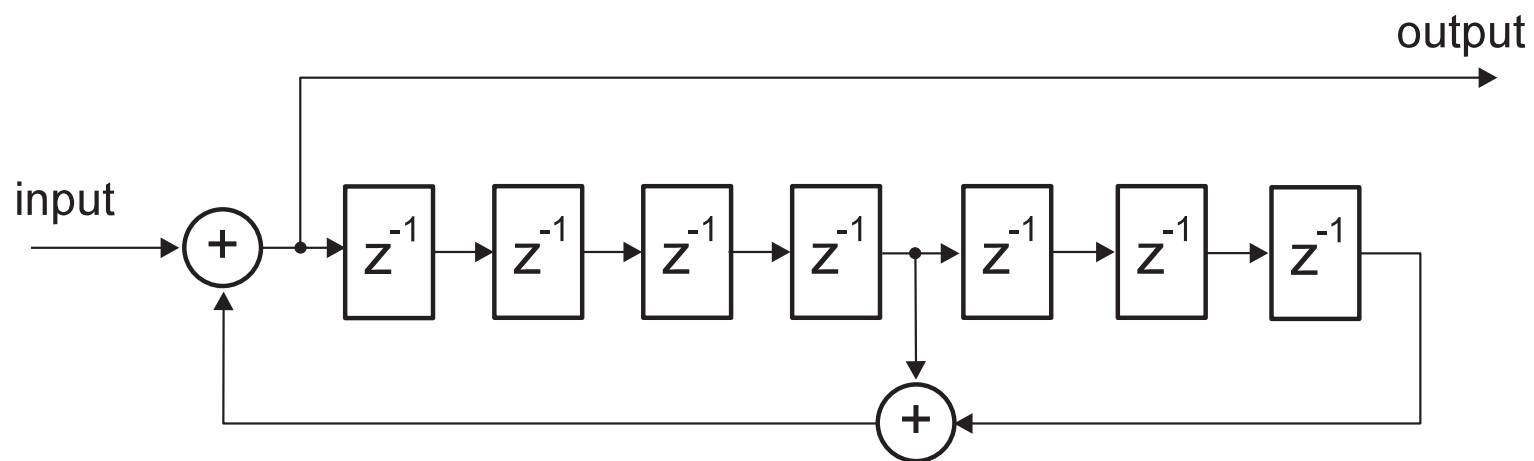


IEEE 802.11b - CCK

Complementary Code Keying

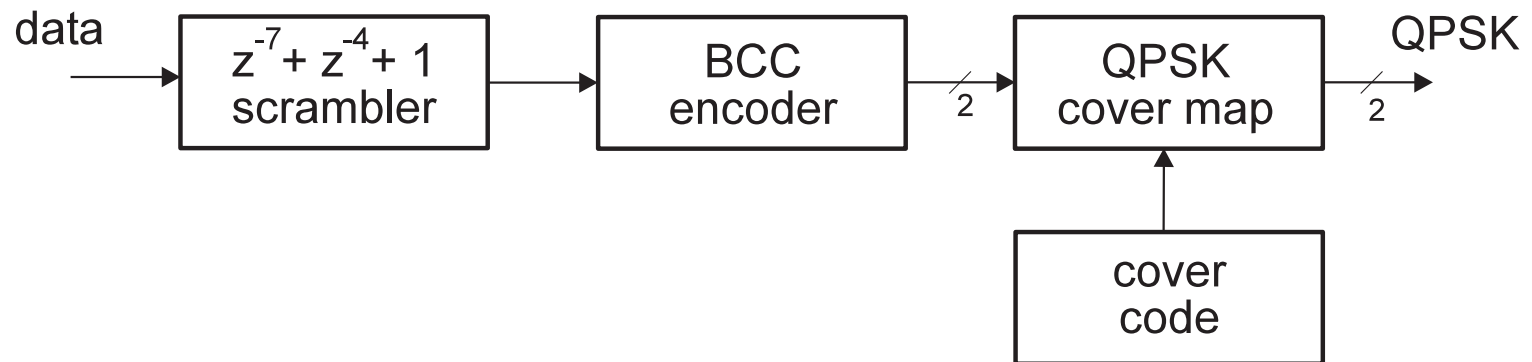


IEEE 802.11b - scrambler



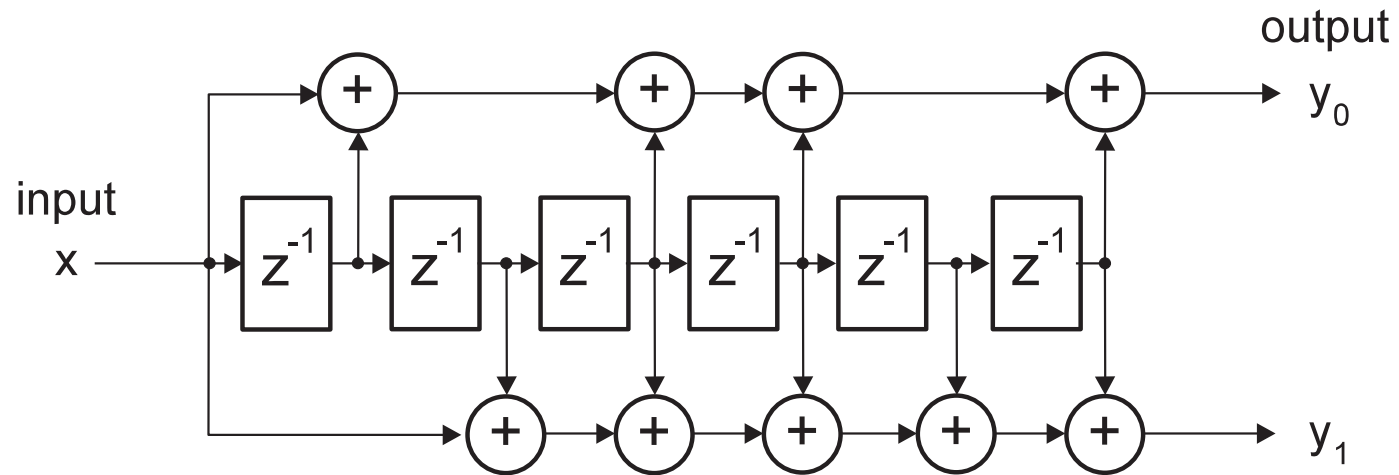
IEEE 802.11b - PBCC

Packet Binary Convolutional Code

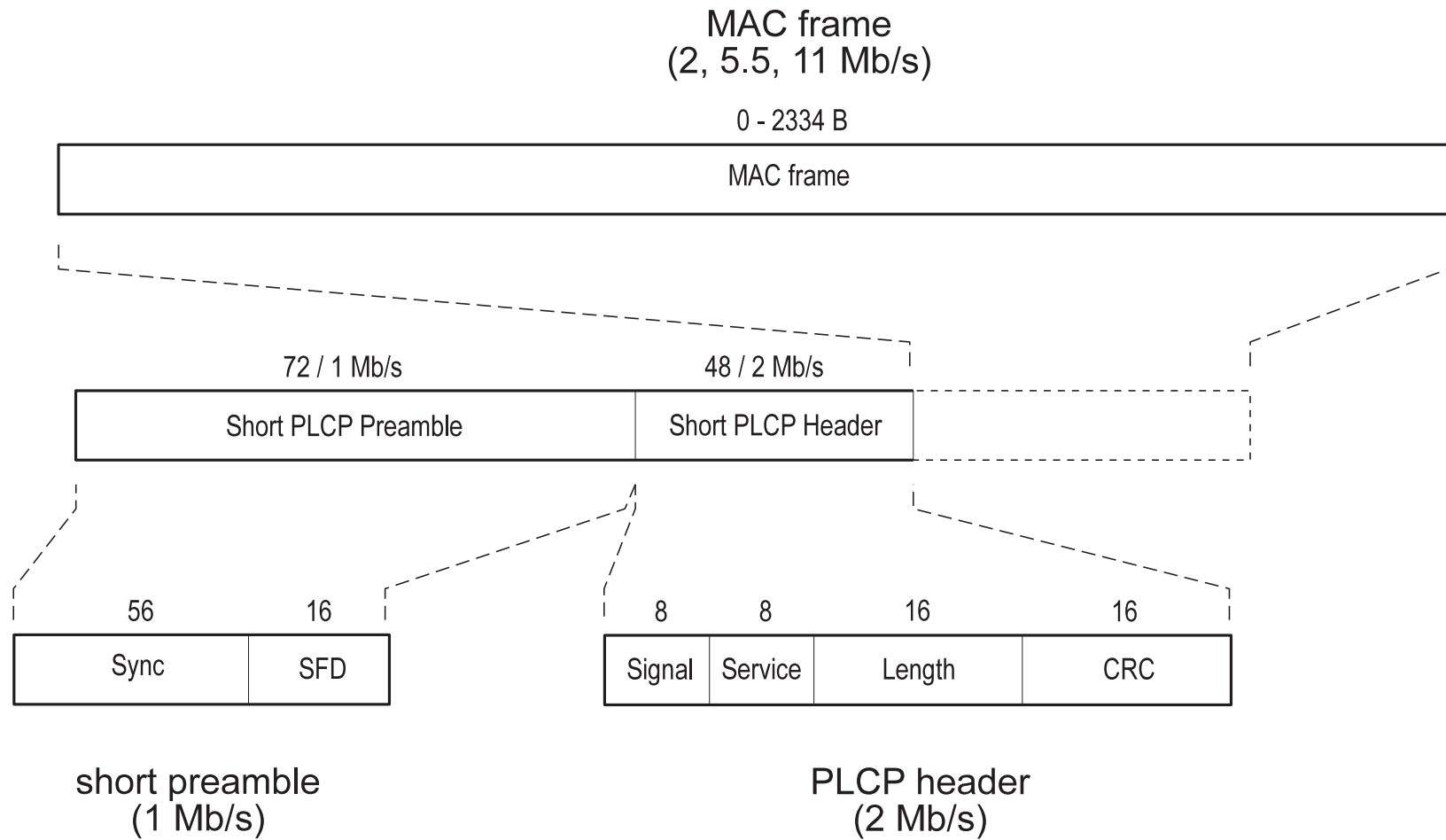


IEEE 802.11b - PBCC

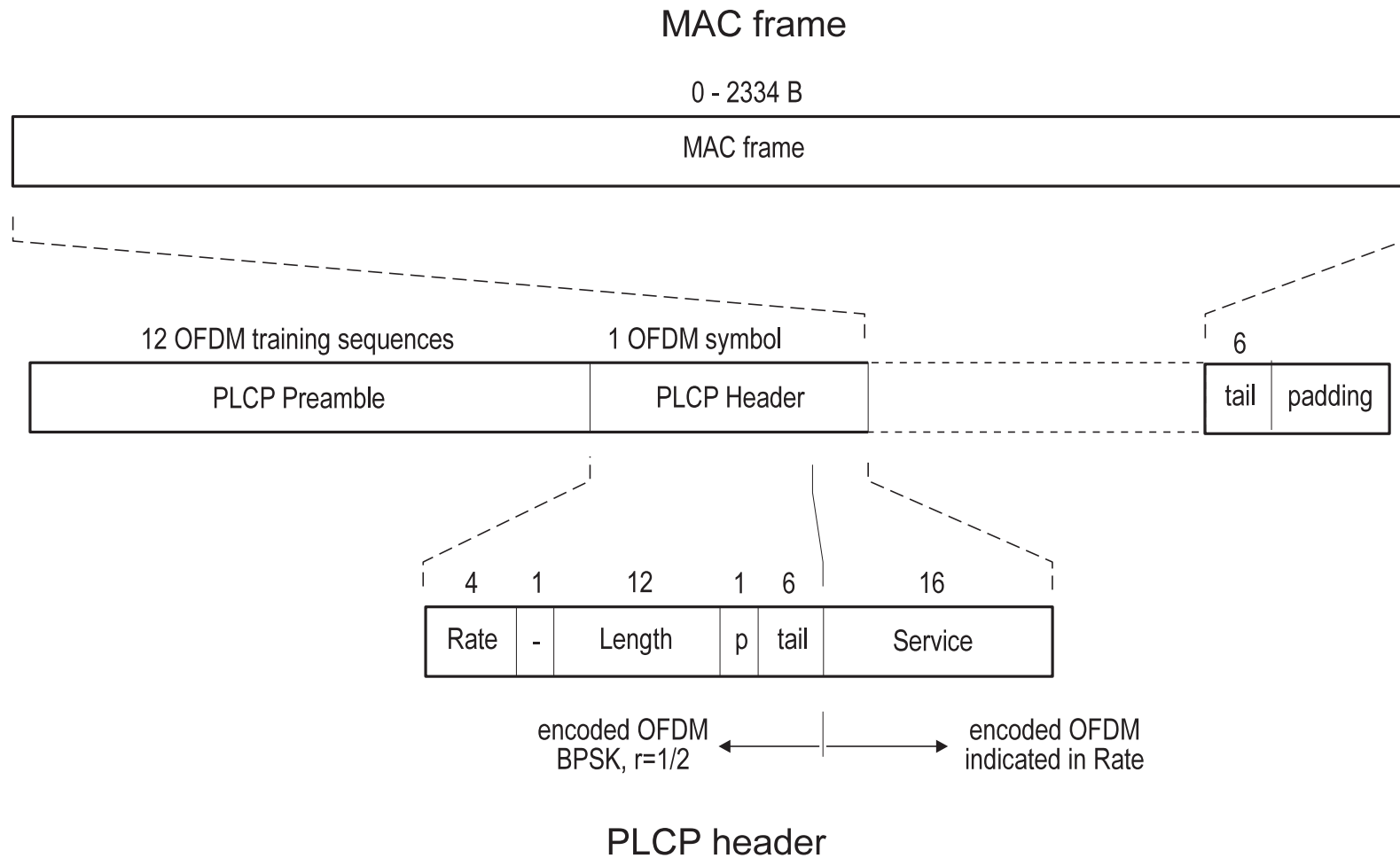
Packet Binary Convolutional Code



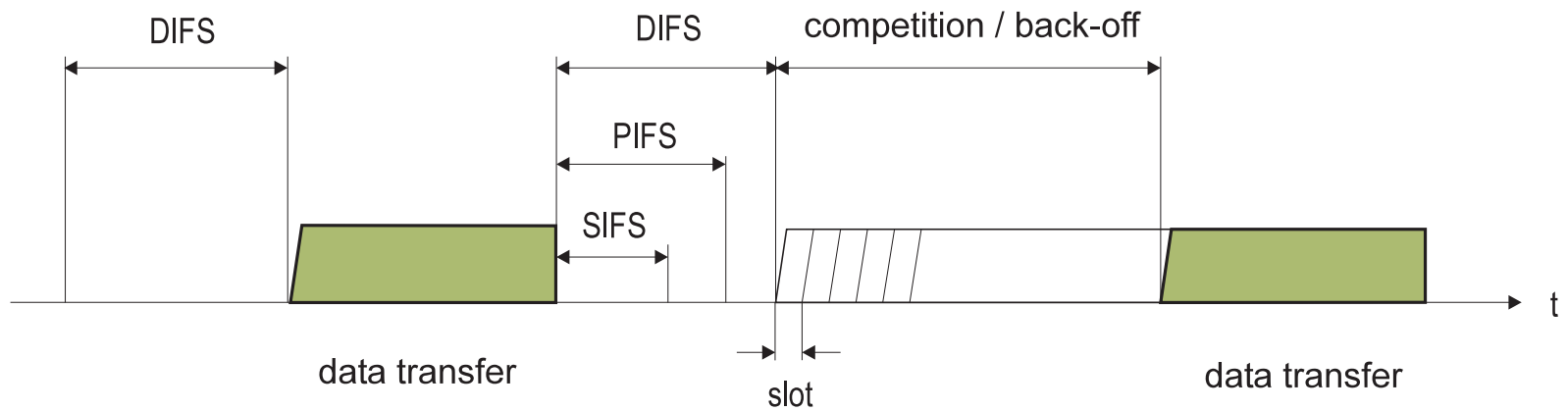
IEEE 802.11b - PLCC



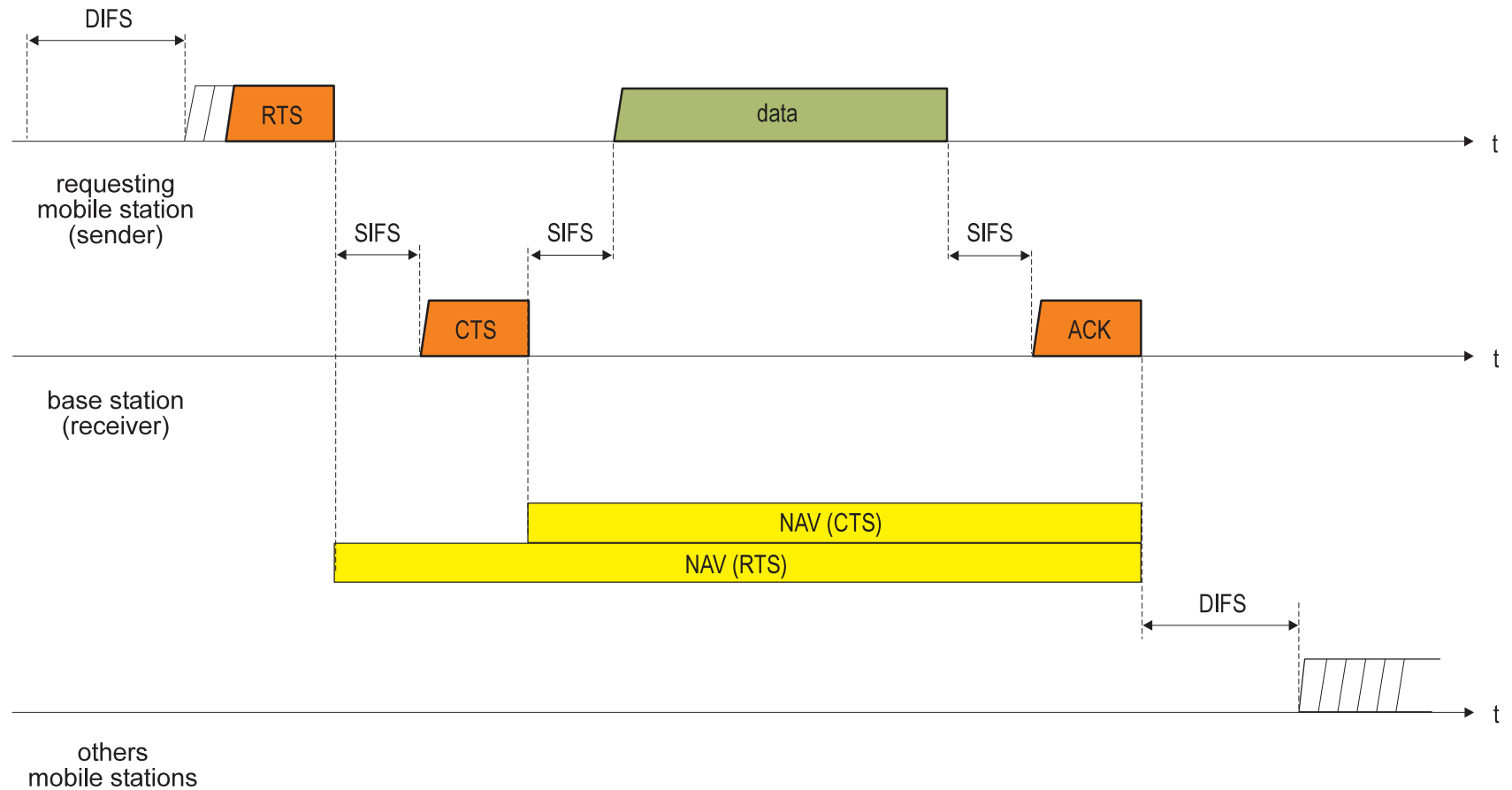
IEEE 802.11a/g - PLCC



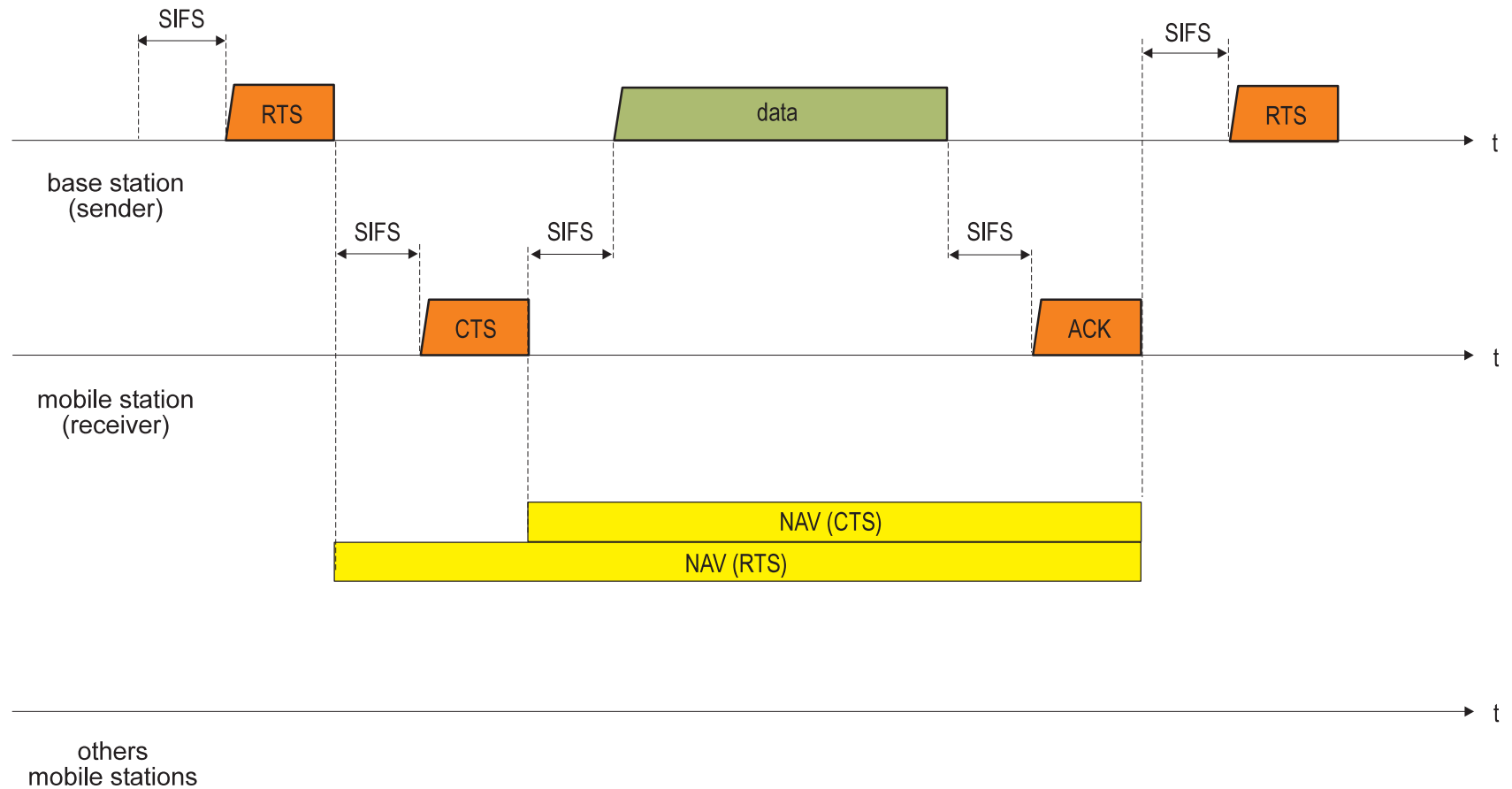
IEEE 802.11 DCF



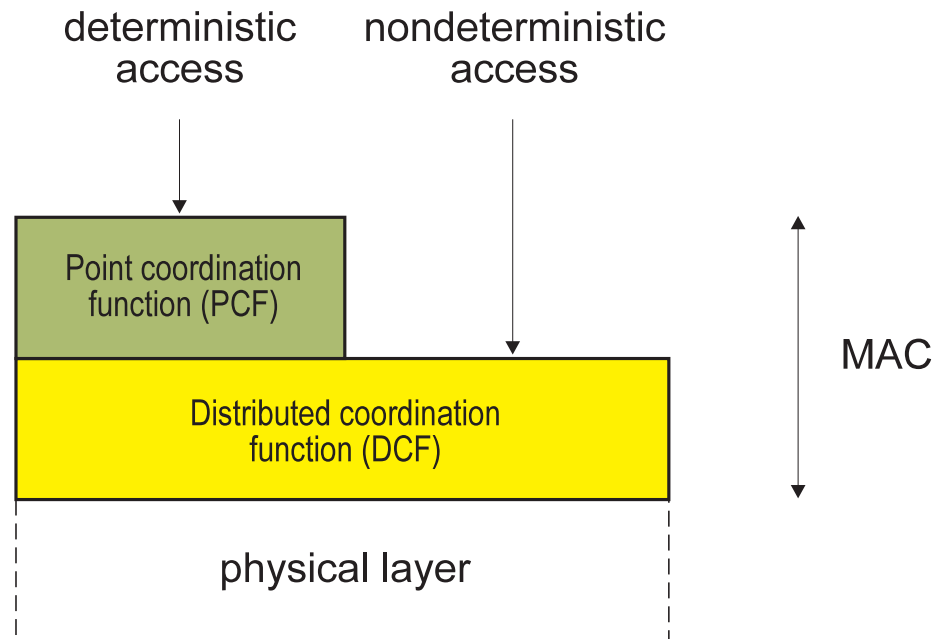
IEEE 802.11 RTS/CTS



IEEE 802.11 PCF



IEEE 802.11 PCF/DCF



IEEE 802.11 PCF/DCF

