
Lokální síť (04)

Jan Janeček

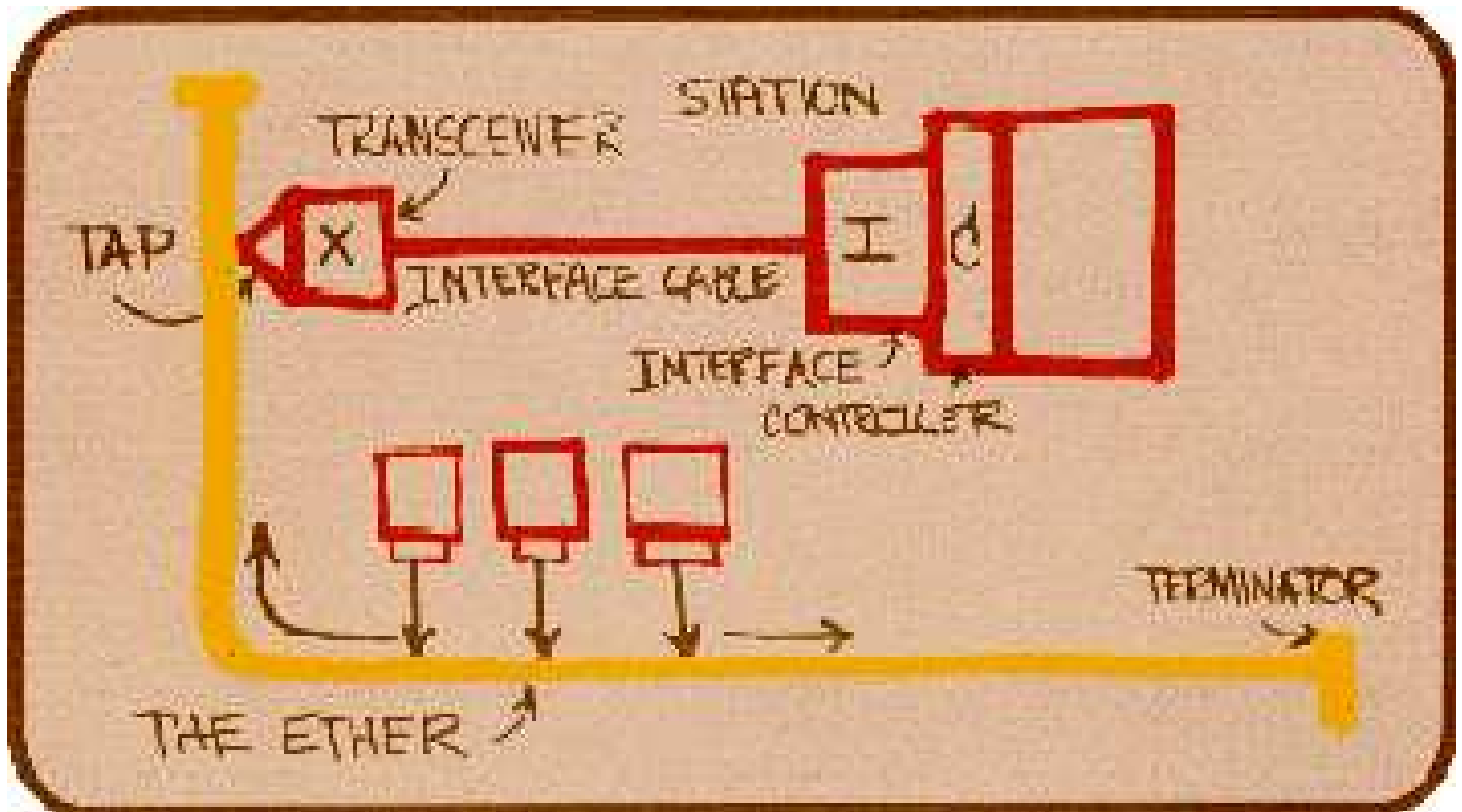
katedra počítačů

České vysoké učení technické v Praze

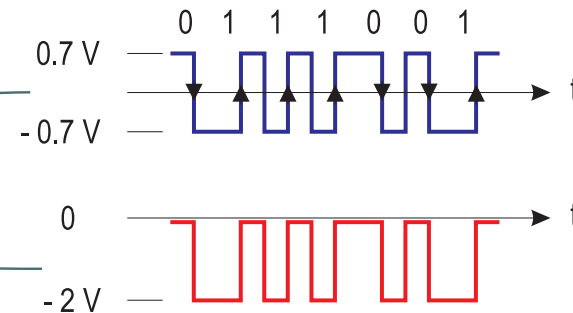
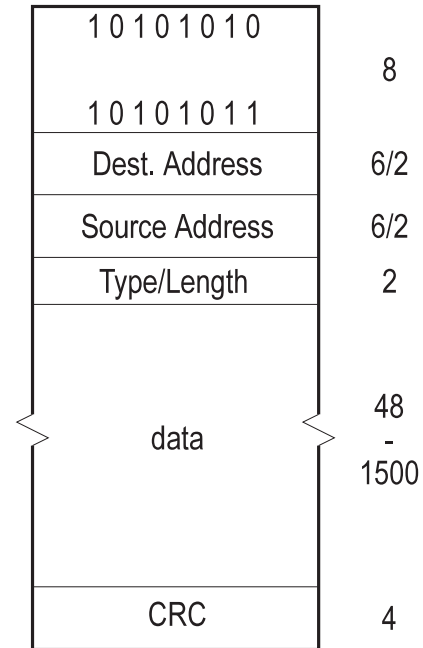
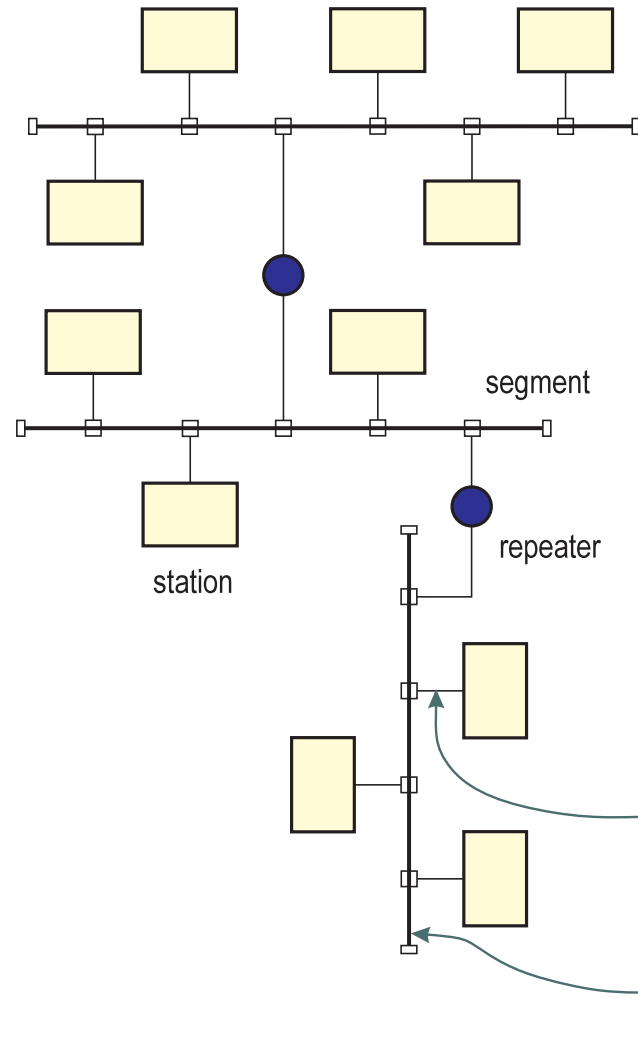
Ethernet technologies

- Standard (10BASE-x) technologies
 - 10BASE-5, 10BASE-2
 - 10BASE-T, 10BASE-FL, 10BASE-FB, 10BASE-FP
- Fast (100BASE-x) technologies
 - 100BASE-Tx/Fx
 - 100BASE-T4, 100BASE-T2
- Gigabit (1000BASE-x) technologies
 - 1000BASE-SX, 1000BASE-LX
 - 1000BASE-CX, 1000BASE-TX
- 10 Gigabit (10GBASE-x) technologies
 - 10GBASE-SR/EW, 10GBASE-LR/EW
 - 10GBASE-LX4, 10GBASE-ER/EW
 - 10GBASE-CX4

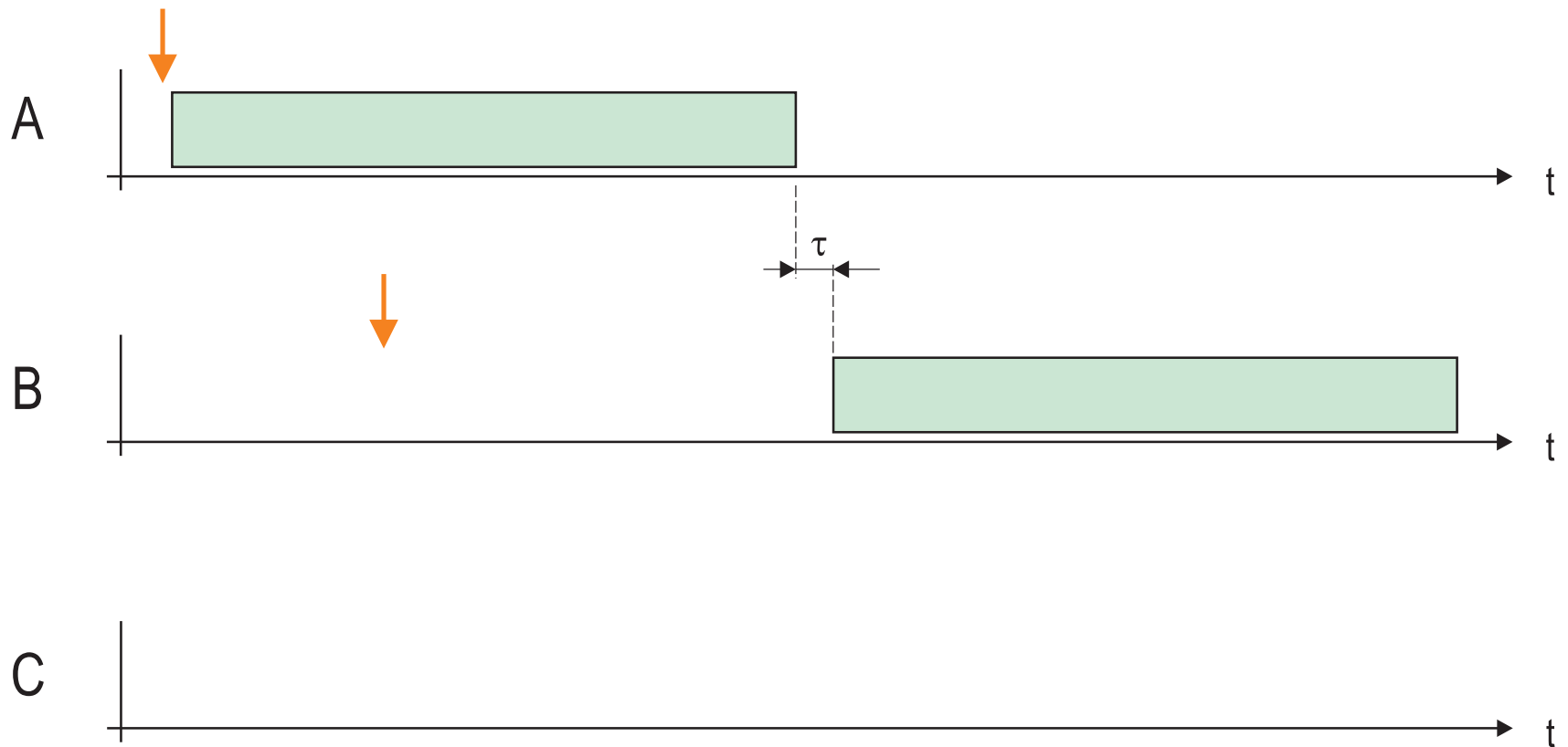
Ethernet I



Ethernet II

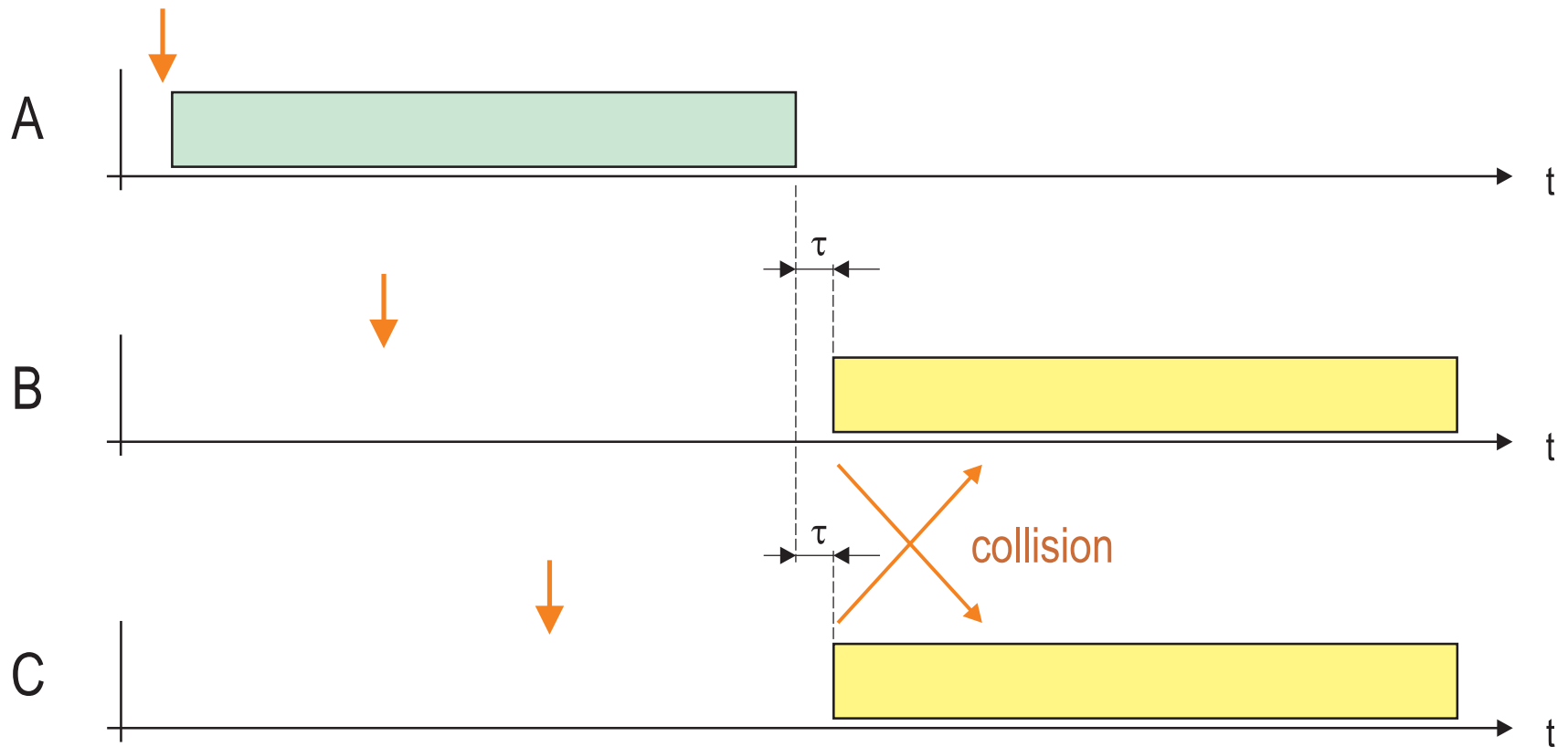


CSMA (1-persistent)



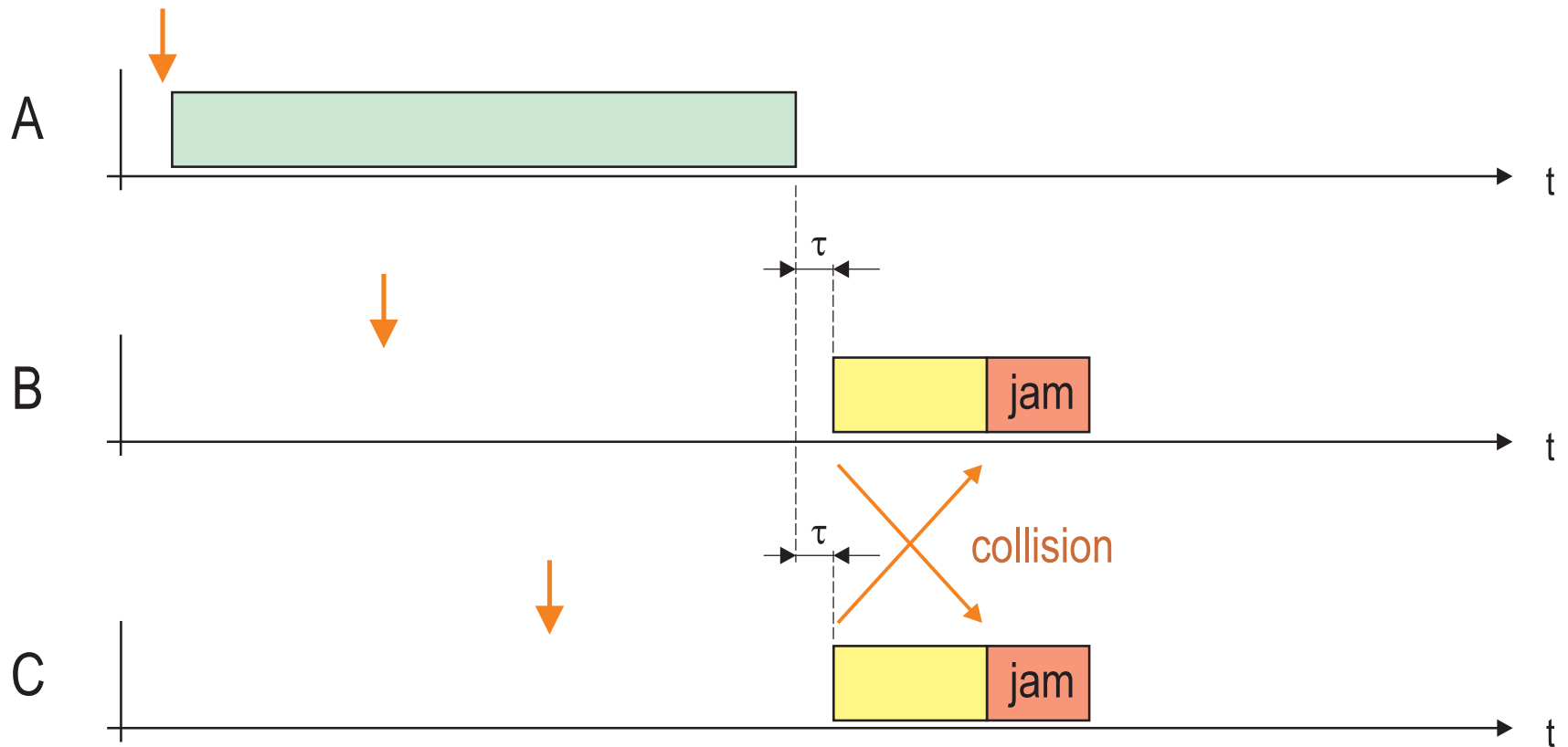
1-persistent CSMA

CSMA (1-persistent)



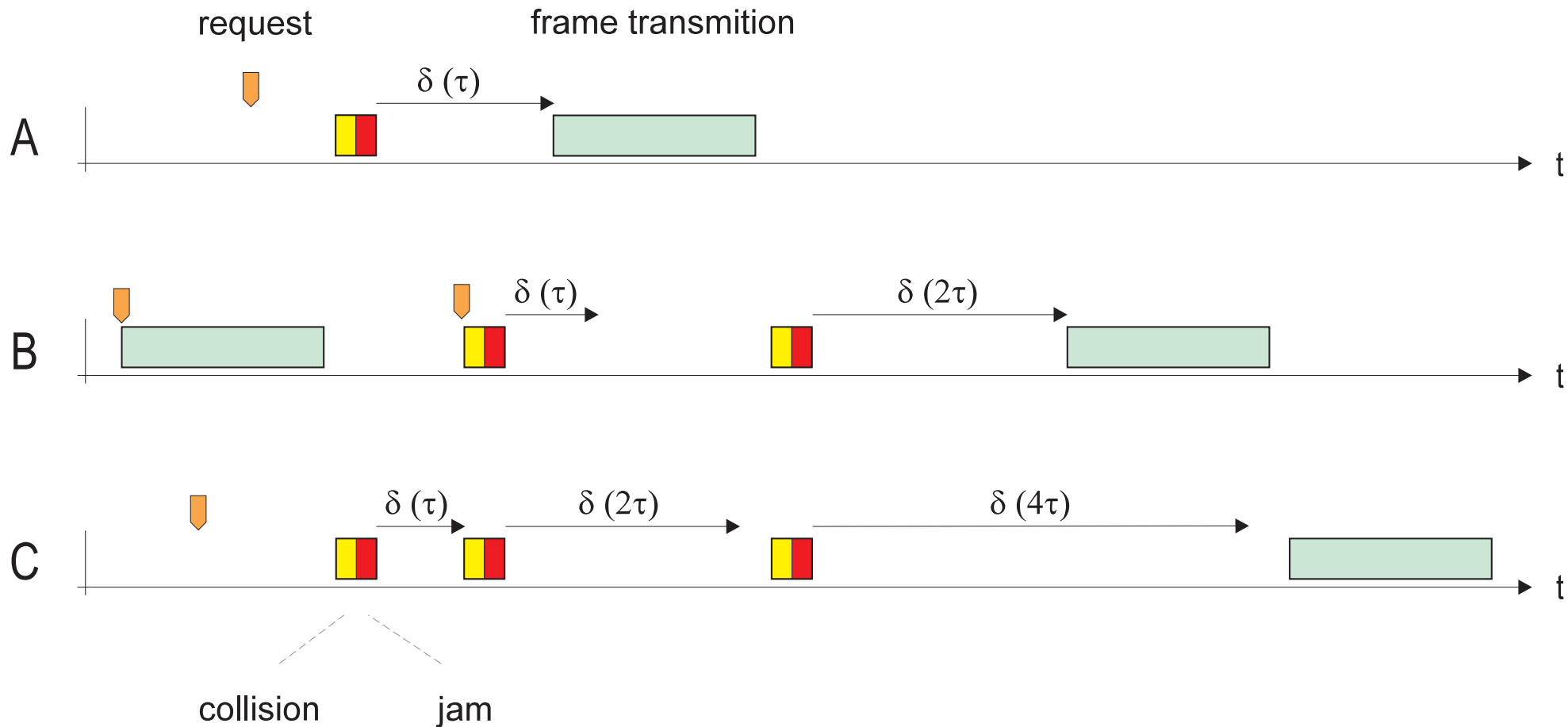
1-persistent CSMA

CSMA/CD - collision detection

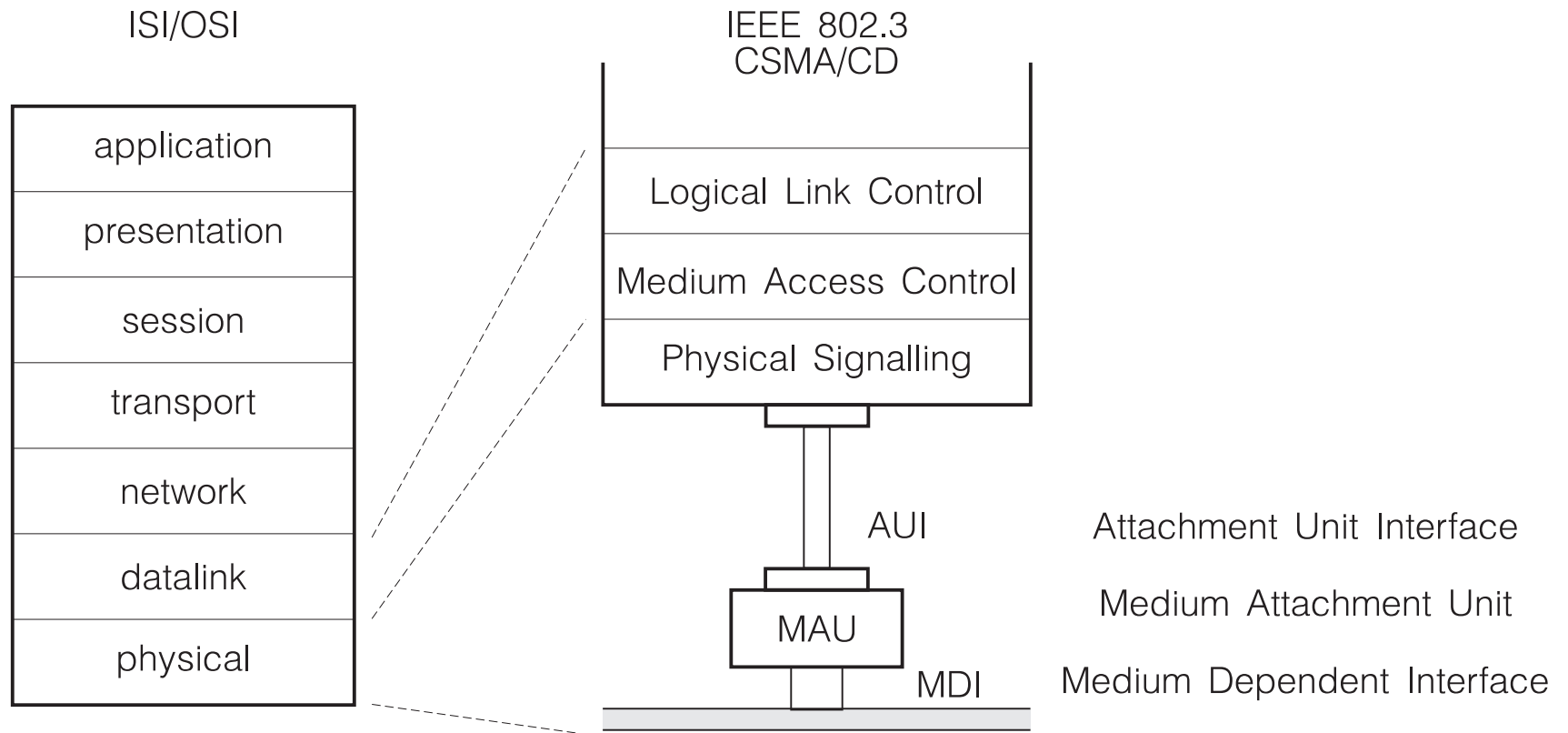


1-persistent CSMA/CD

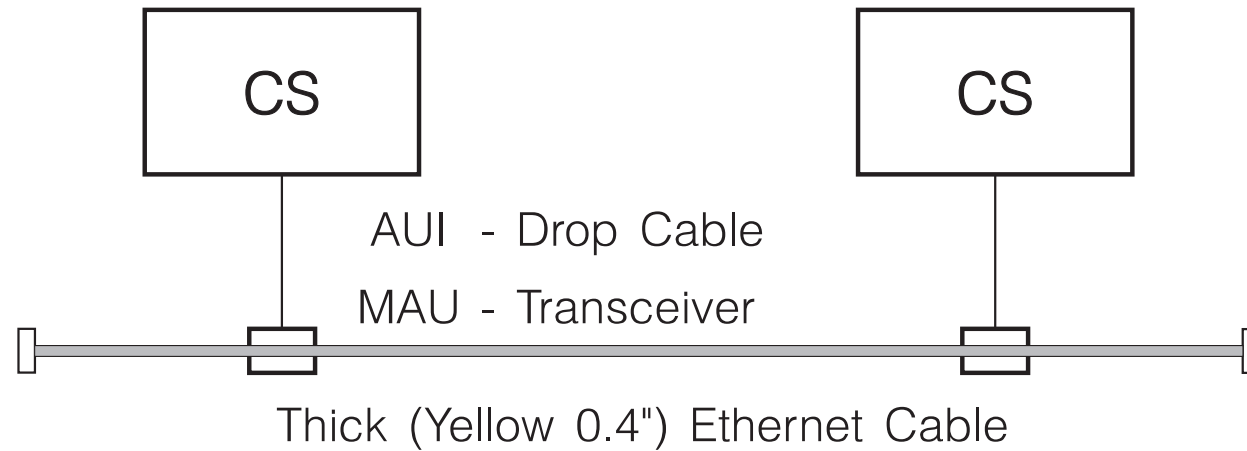
CSMA/CD - exponential back-off



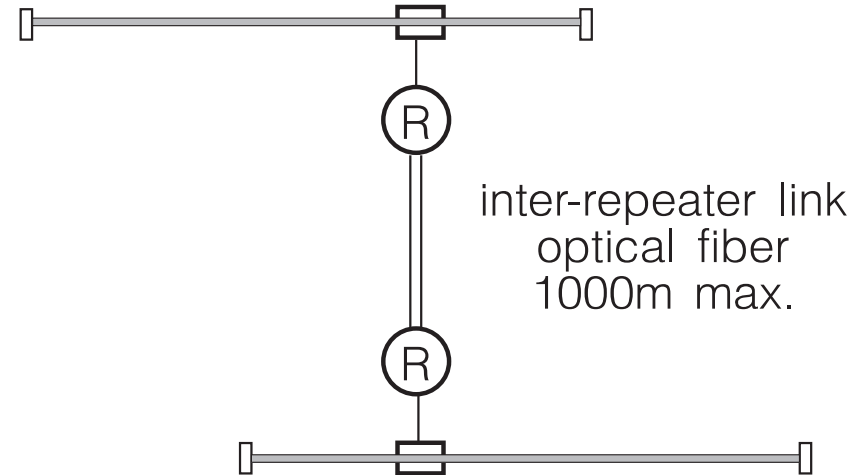
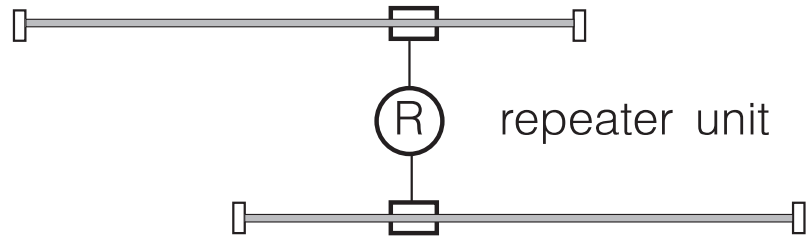
IEEE 802.3 Architecture



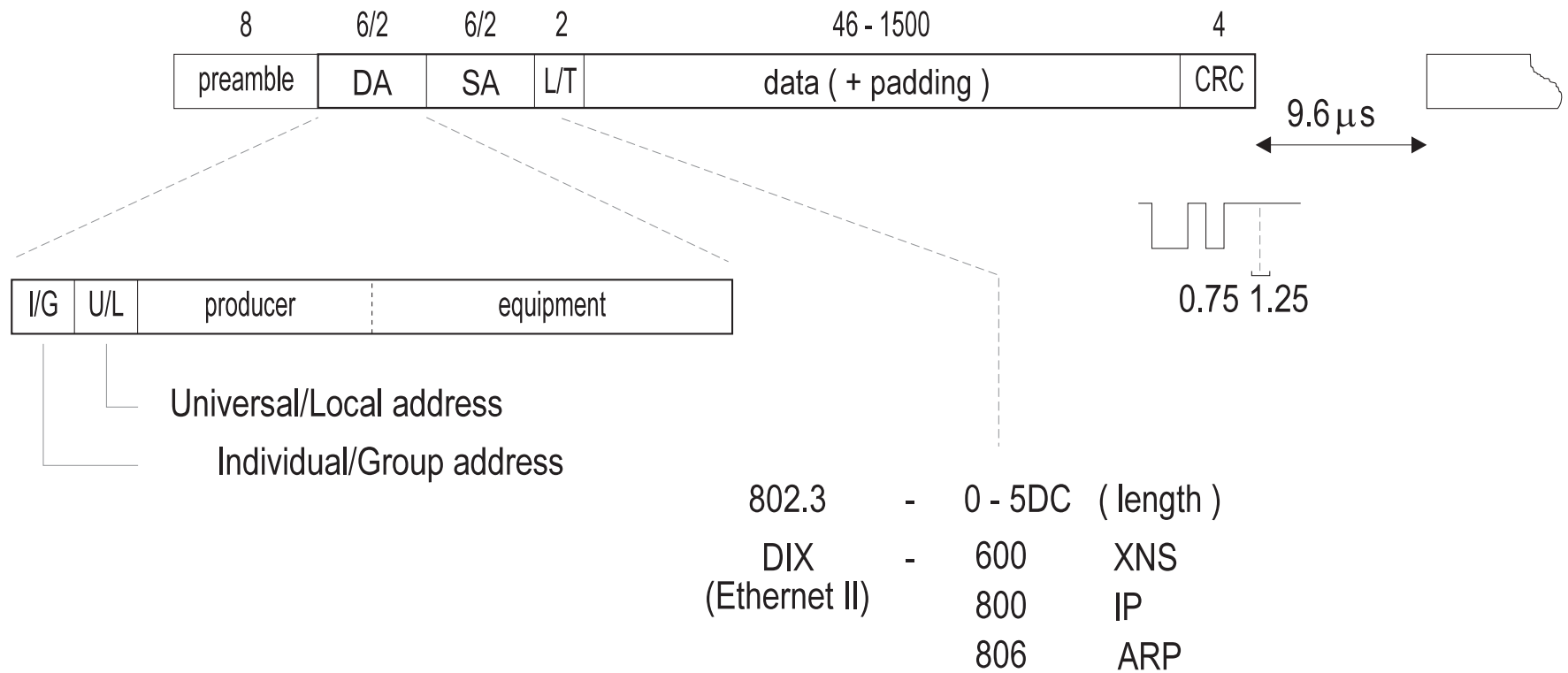
IEEE 802.3 10BASE-5



IEEE 802.3 10BASE-5 FOIRL



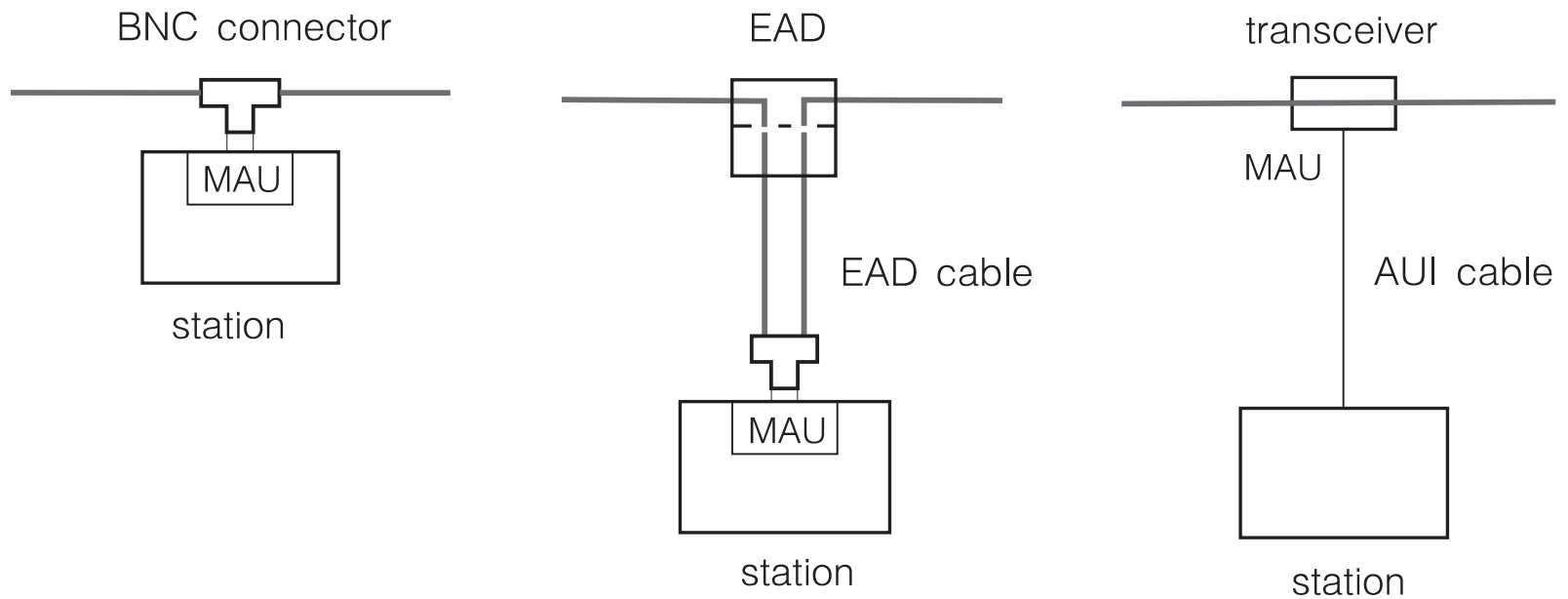
Ethernet formats



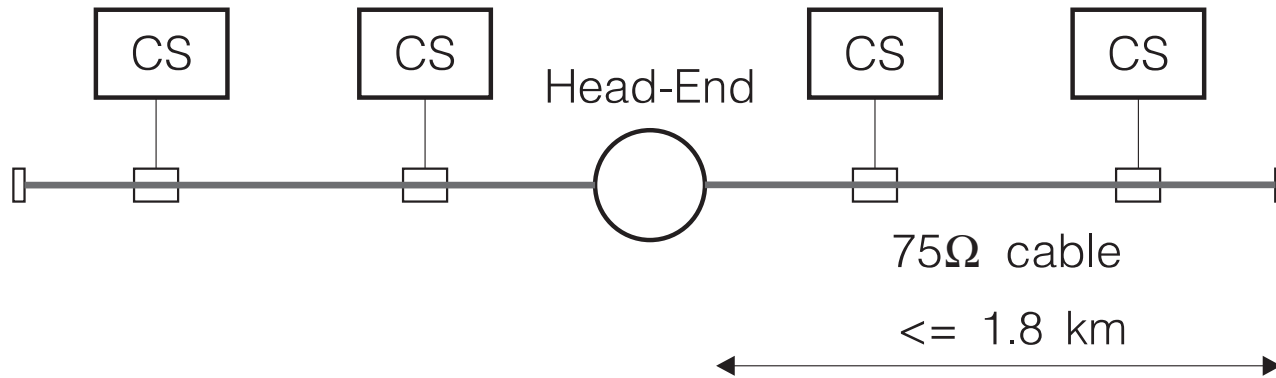
IEEE 802.3 10BASE-2



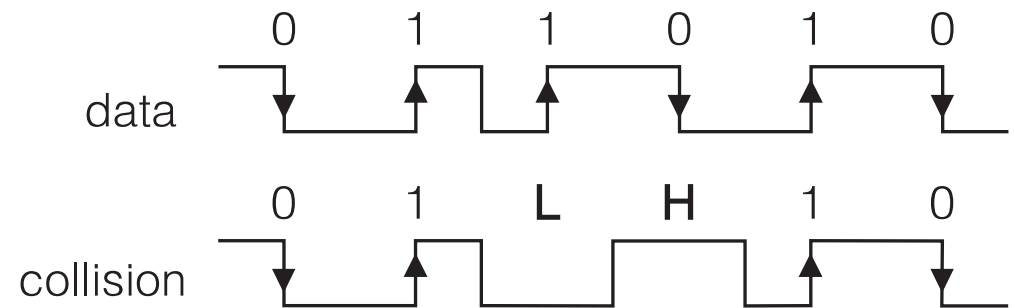
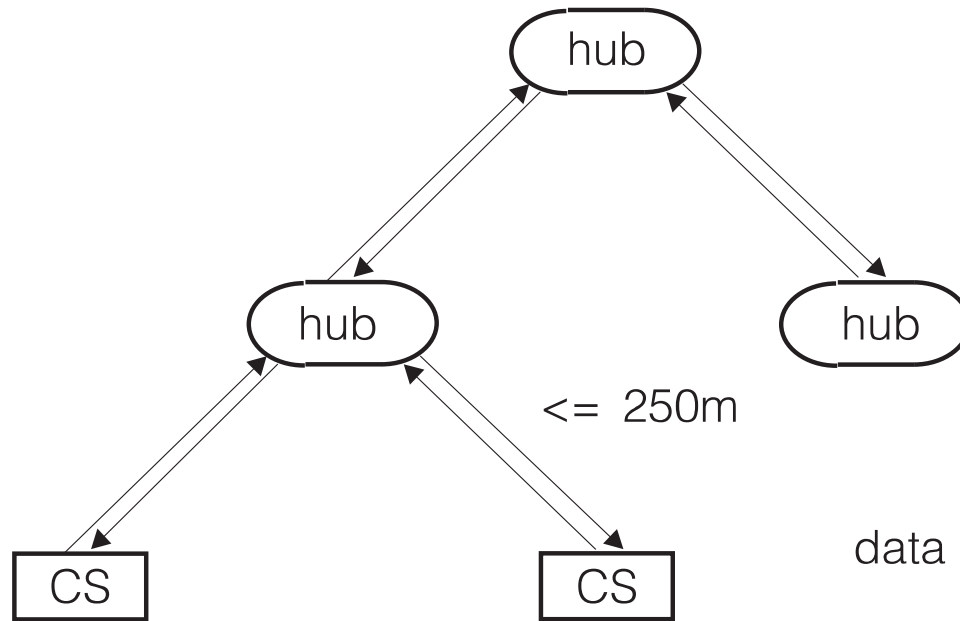
IEEE 802.3 10BASE-2 Cabling



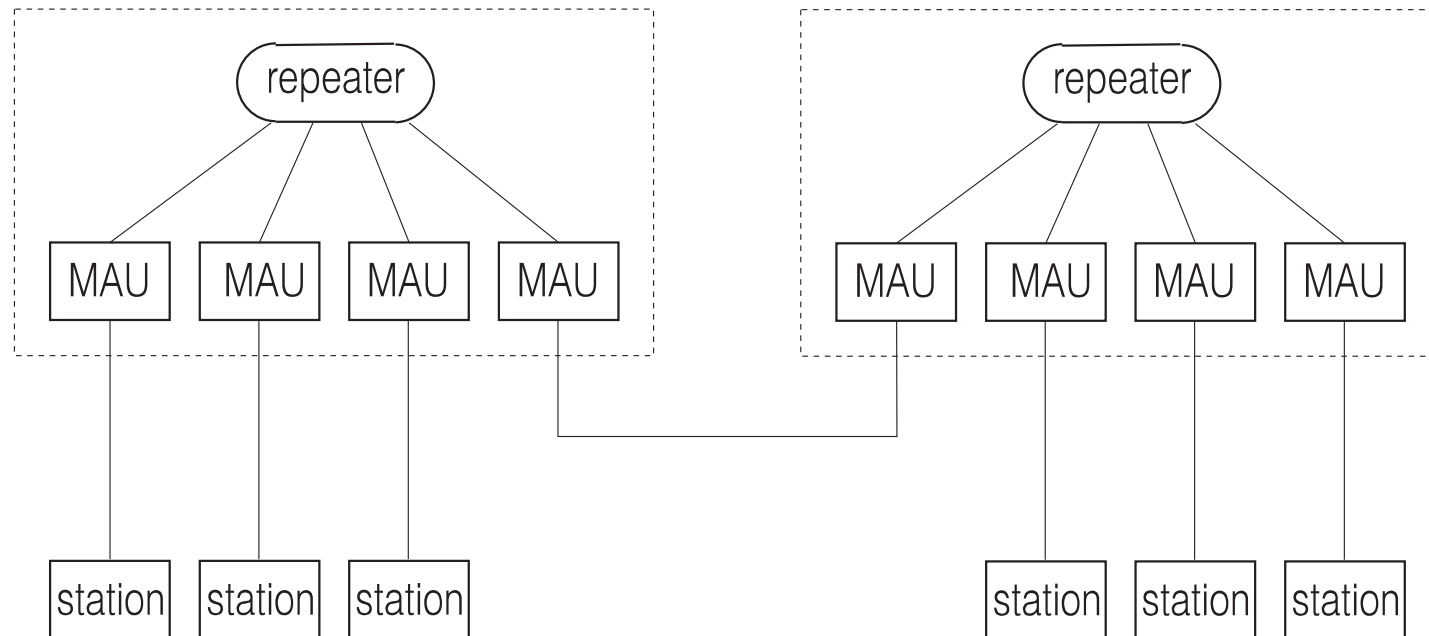
IEEE 802.3 10BROAD-36



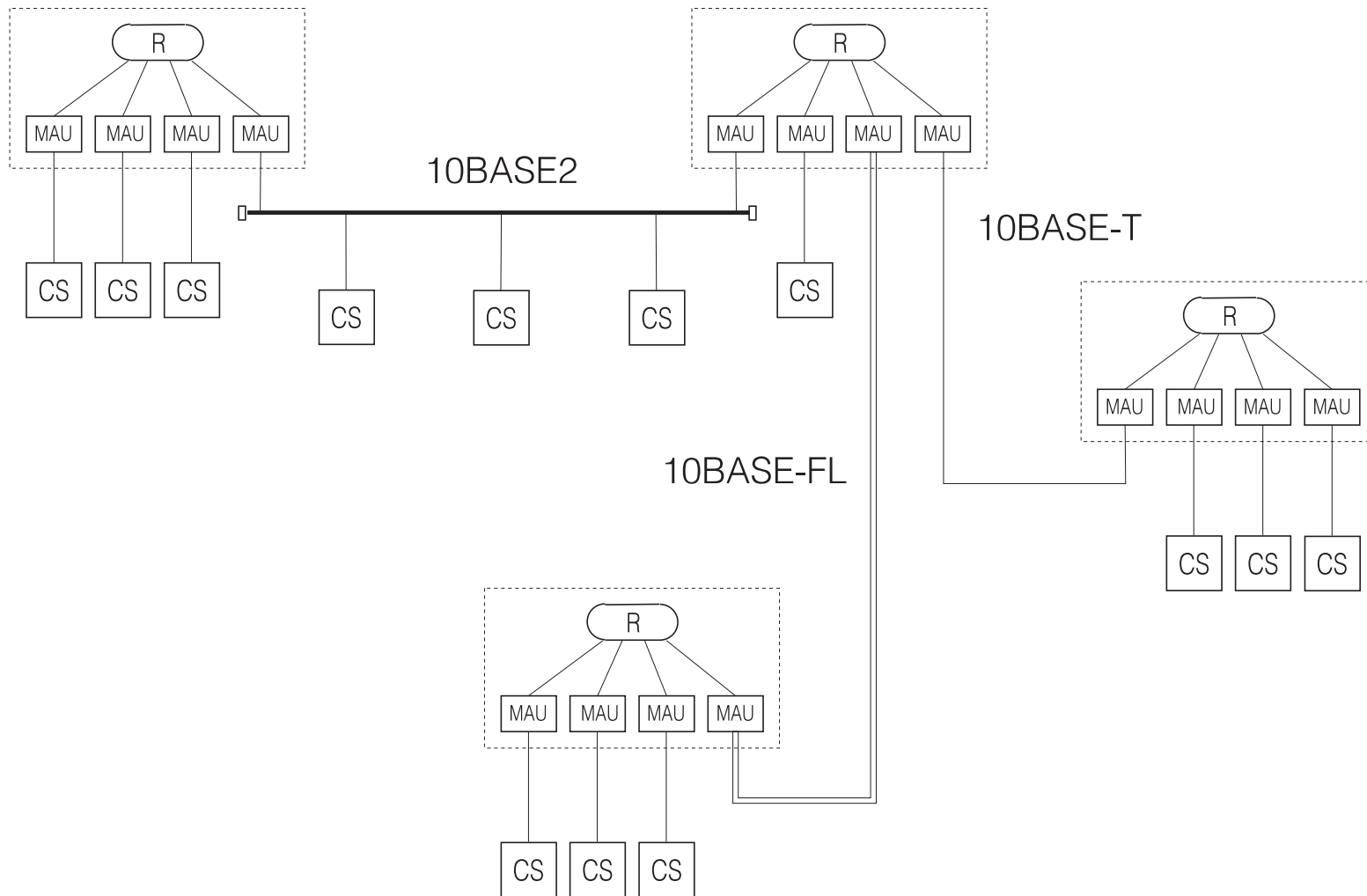
IEEE 802.3 1BASE-5



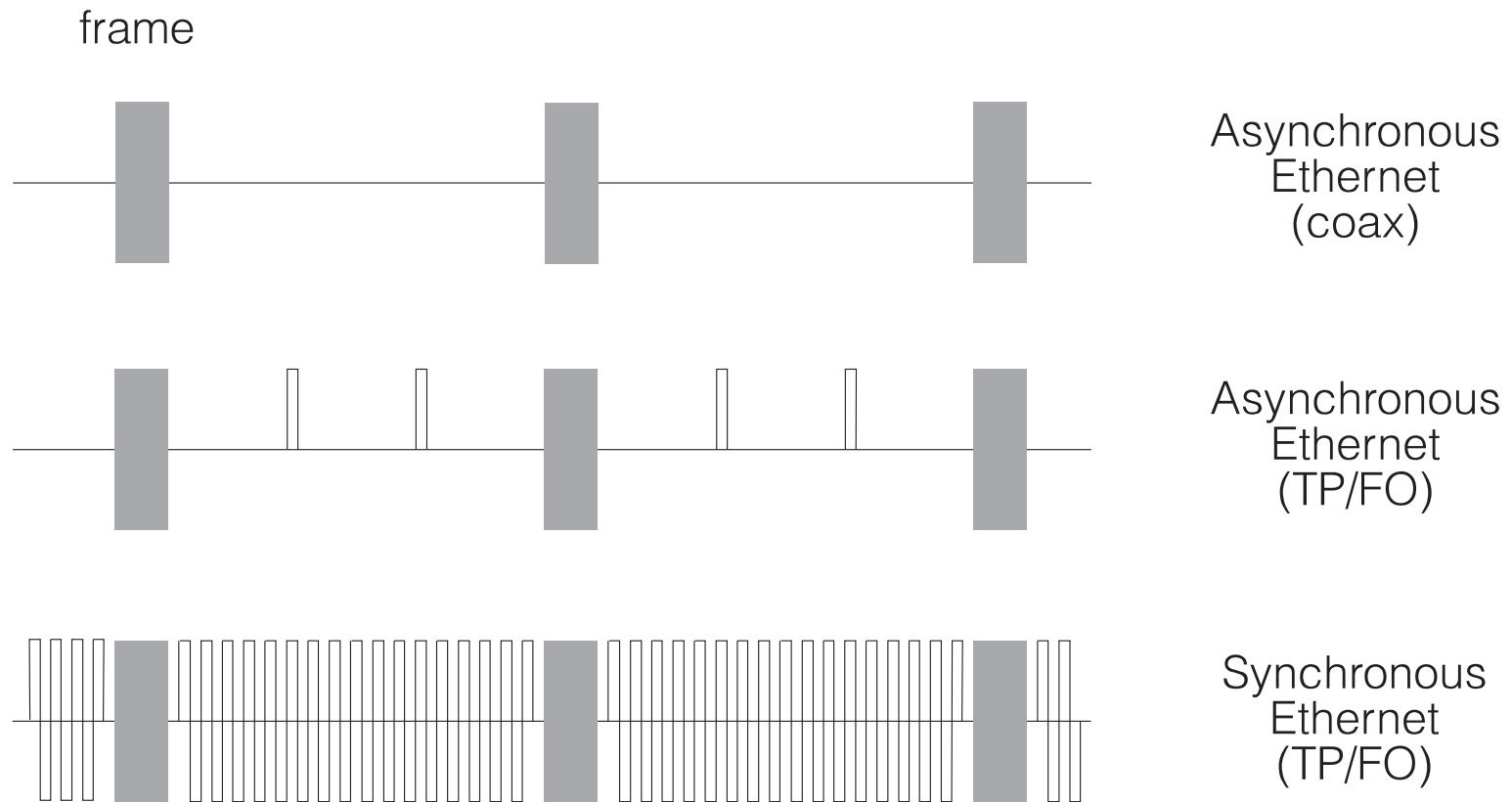
IEEE 802.3 10BASE-T



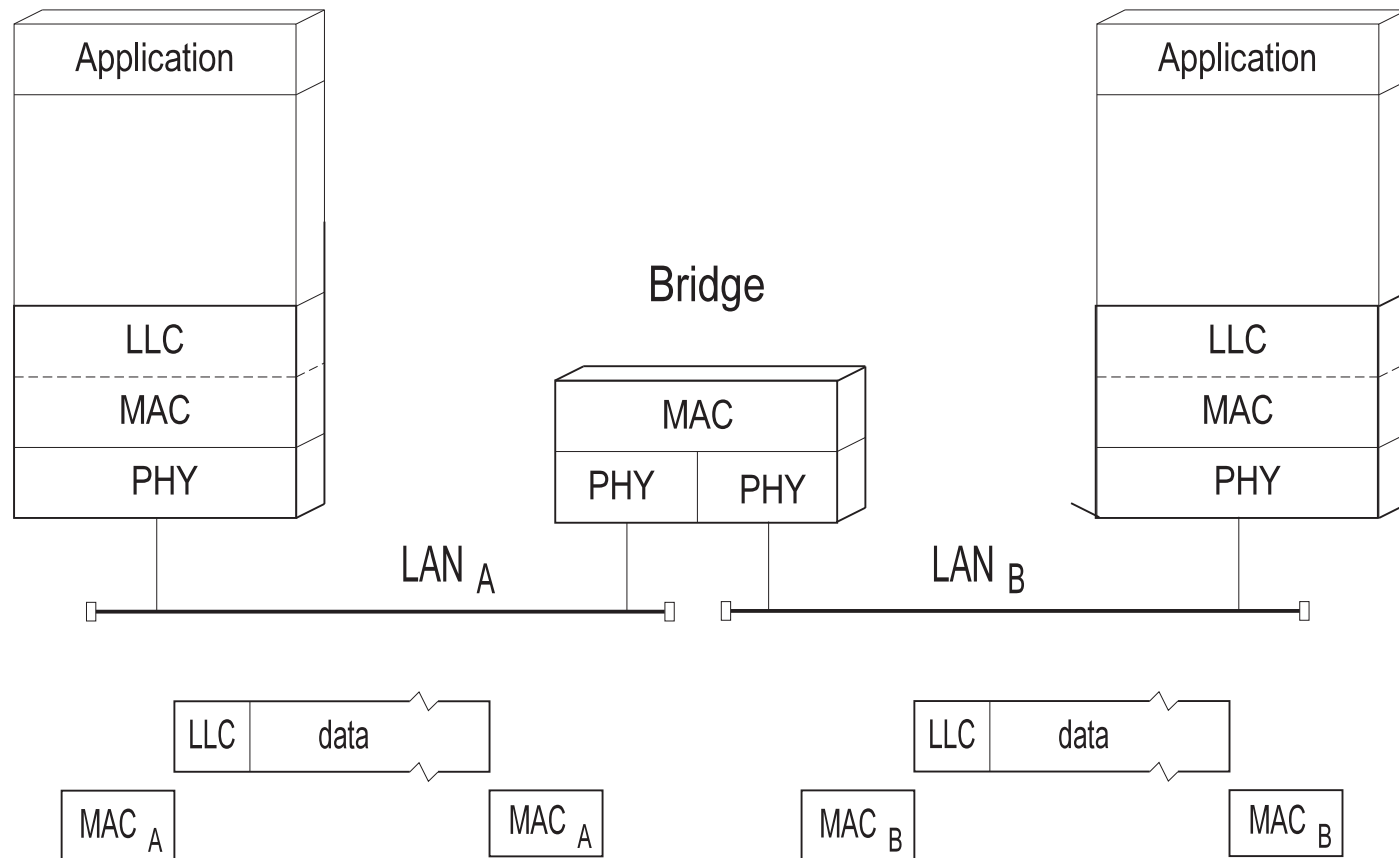
IEEE 802.3 Ethernet



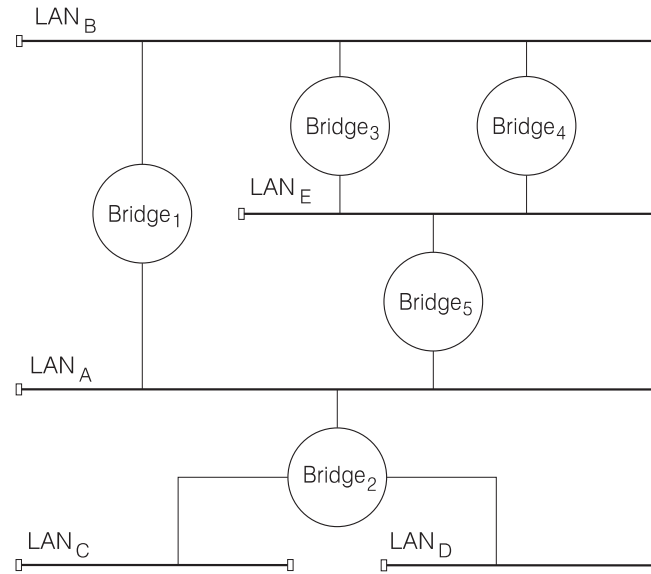
Synchronous Ethernet



Ethernet bridging



Ethernet bridging

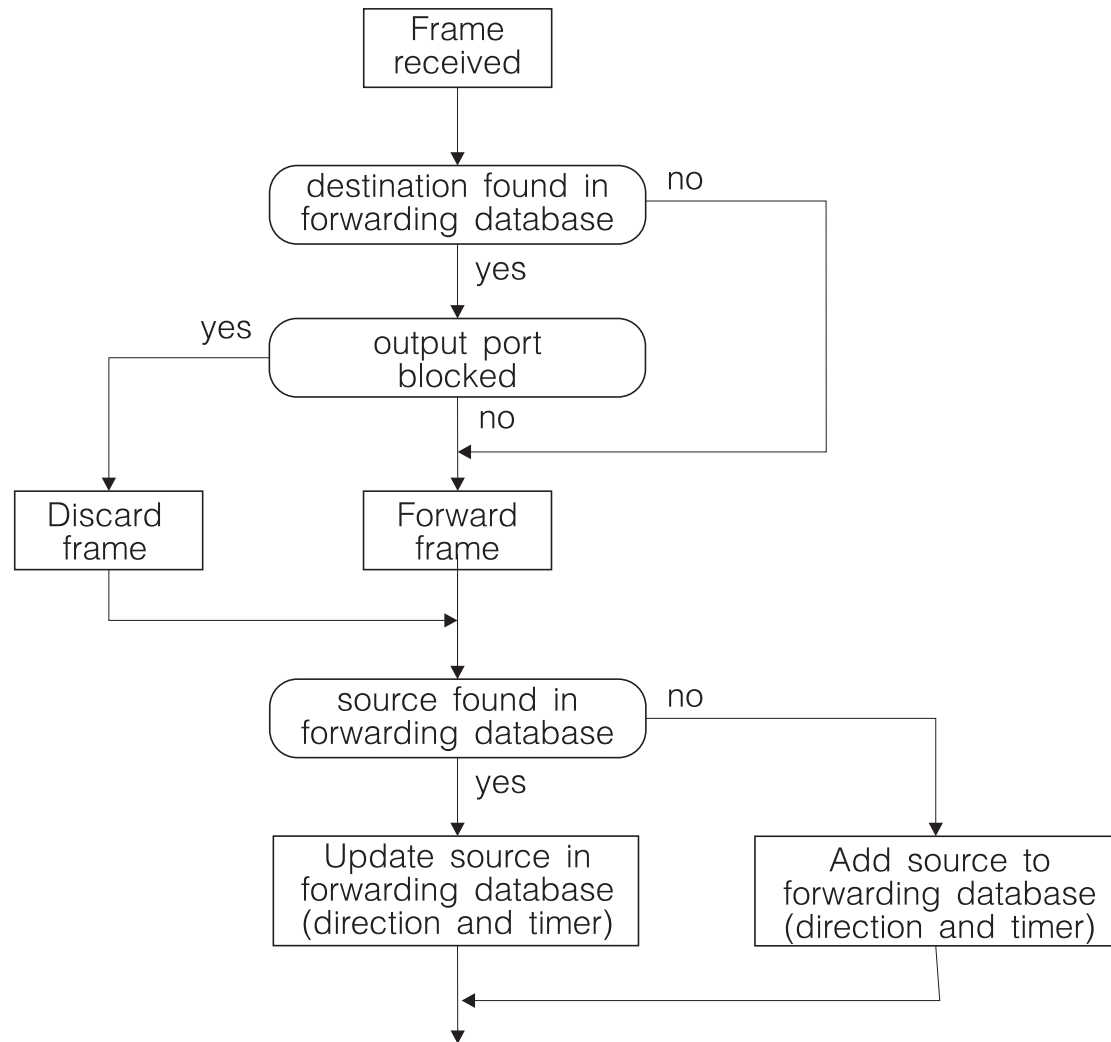


Bridge ₁		Bridge ₂			Bridge ₃		
	A	B	A	C	D	B	E
A	-	A	-	A	A	-	-
B	-	A	-	A	A	-	-
C	-	A	-	D	-	-	-
D	-	A	-	D	-	-	-
E	-	A	-	A	-	-	-

Bridge ₄		Bridge ₅		
	B	E	A	E
A	-	E	-	A
B	-	E	-	A
C	E	B	-	A
D	E	-	-	A
E	E	-	E	-

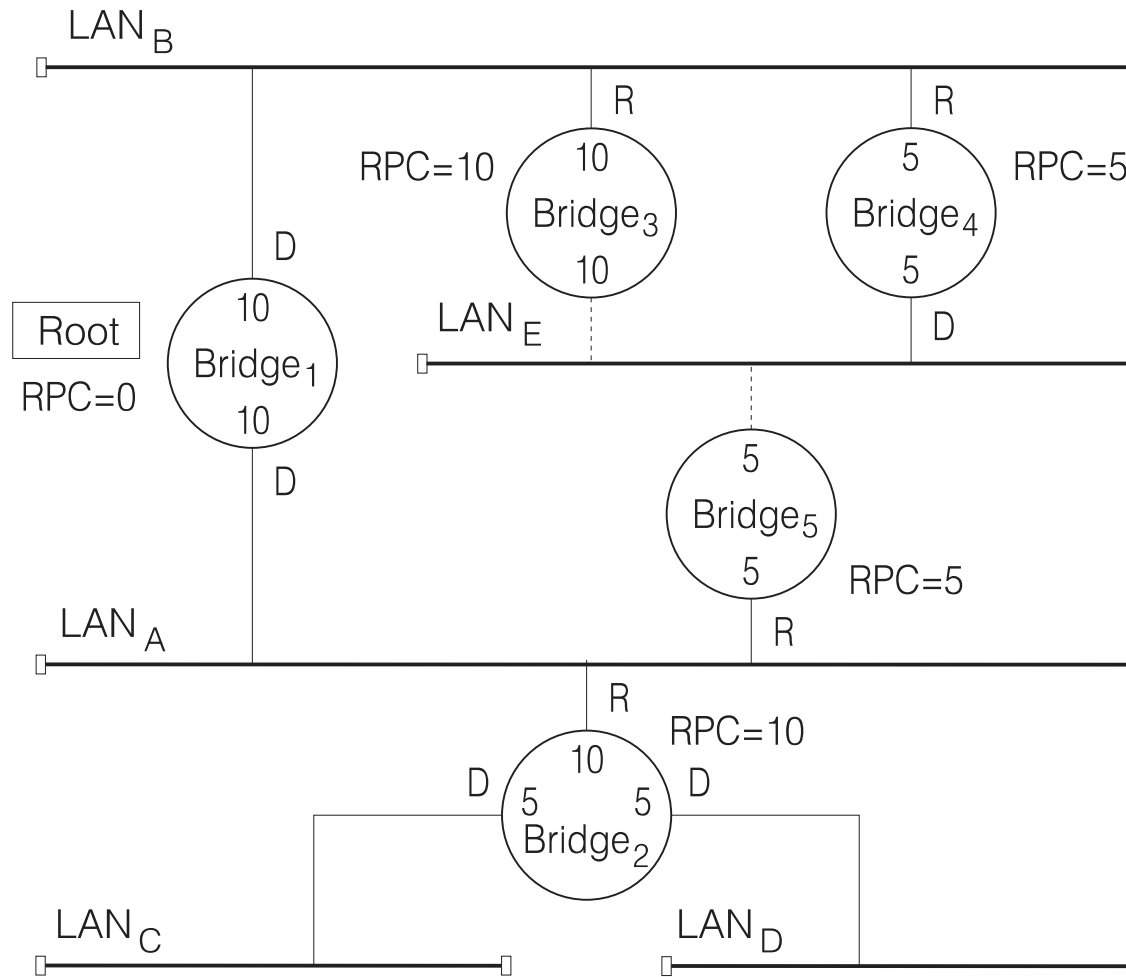
Learning and forwarding

Forwarding



Learning

IEEE 802.1d Spanning tree



IEEE 802.1d Spanning tree - BPDU

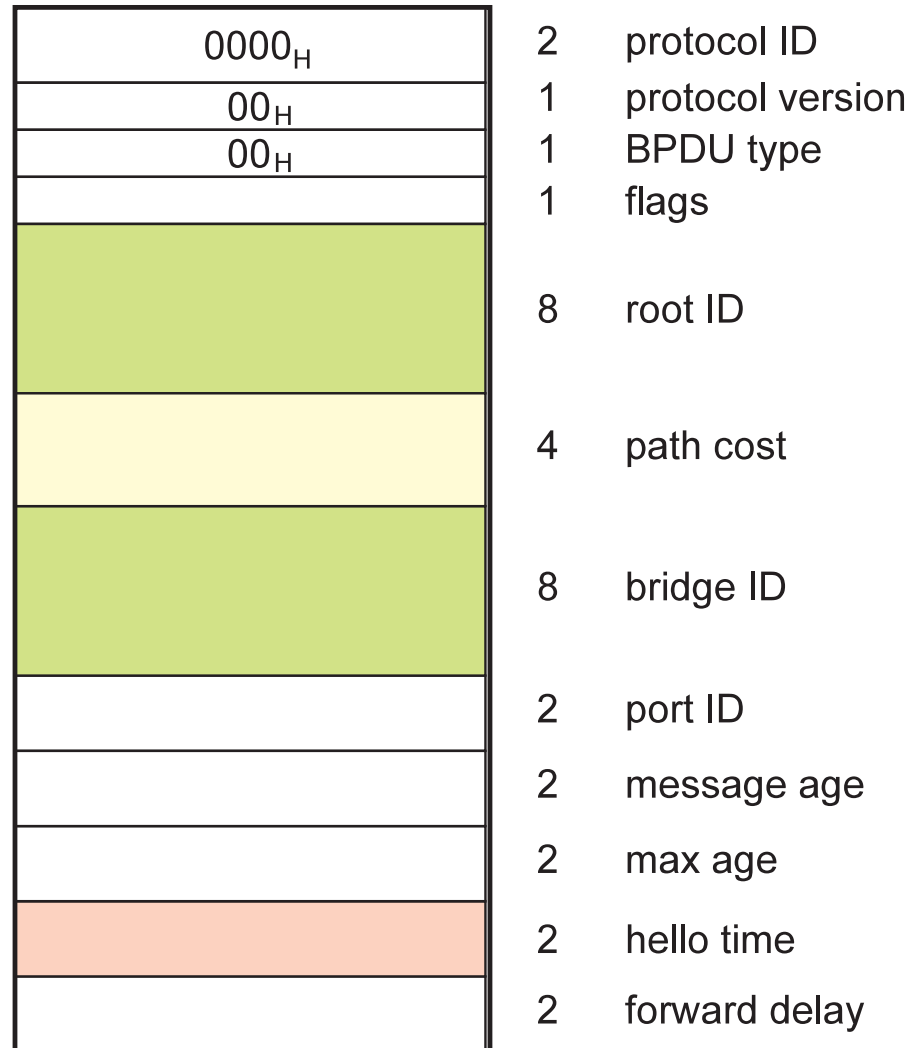
MAC

01:80:C2:00:00:00

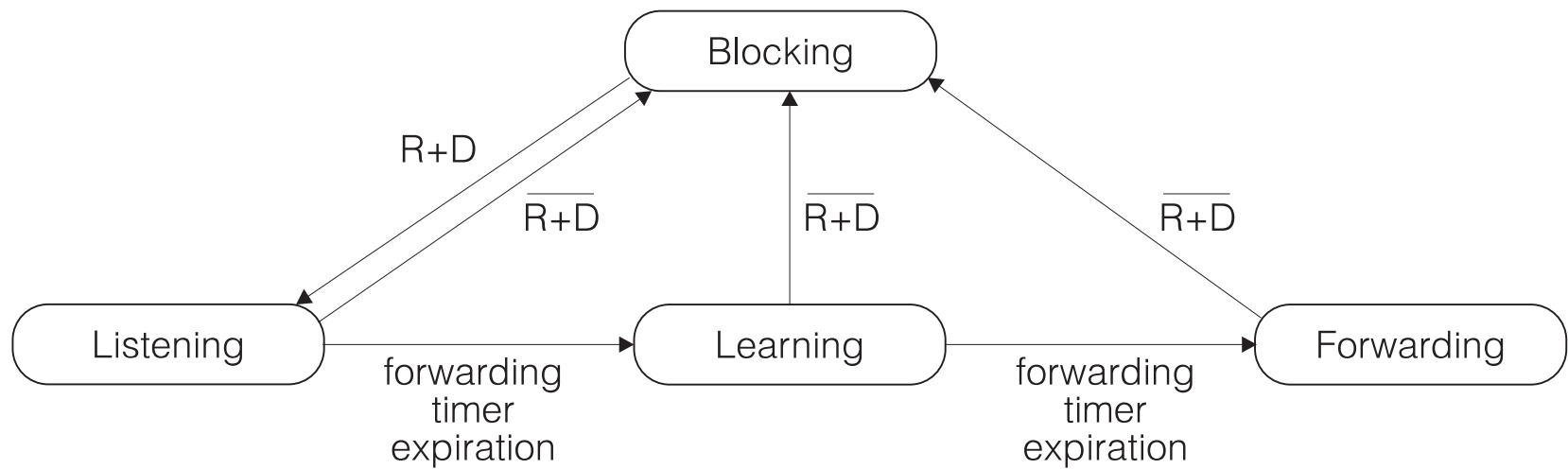
LLC 1

SSAP/DSAP

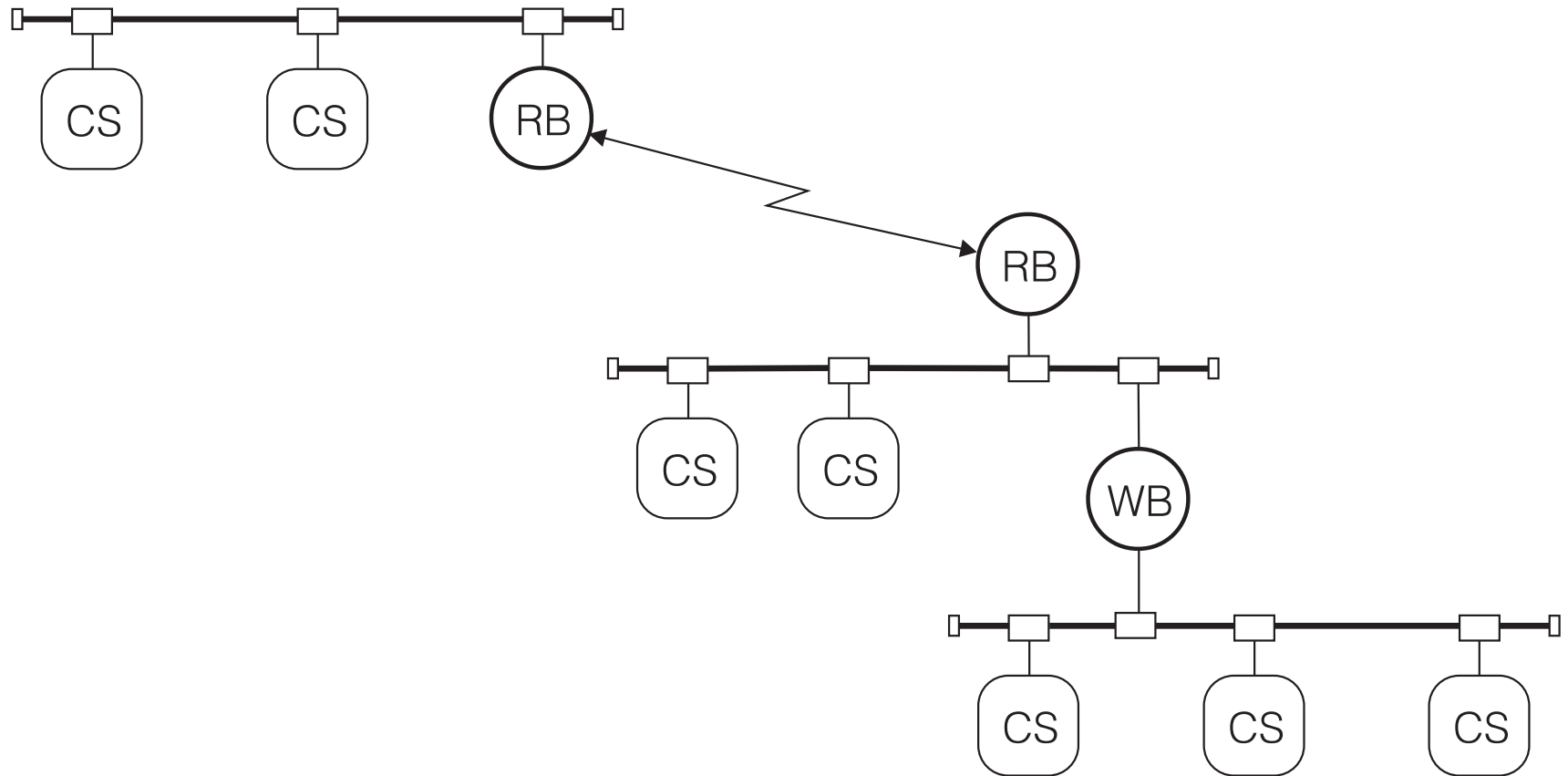
0x42



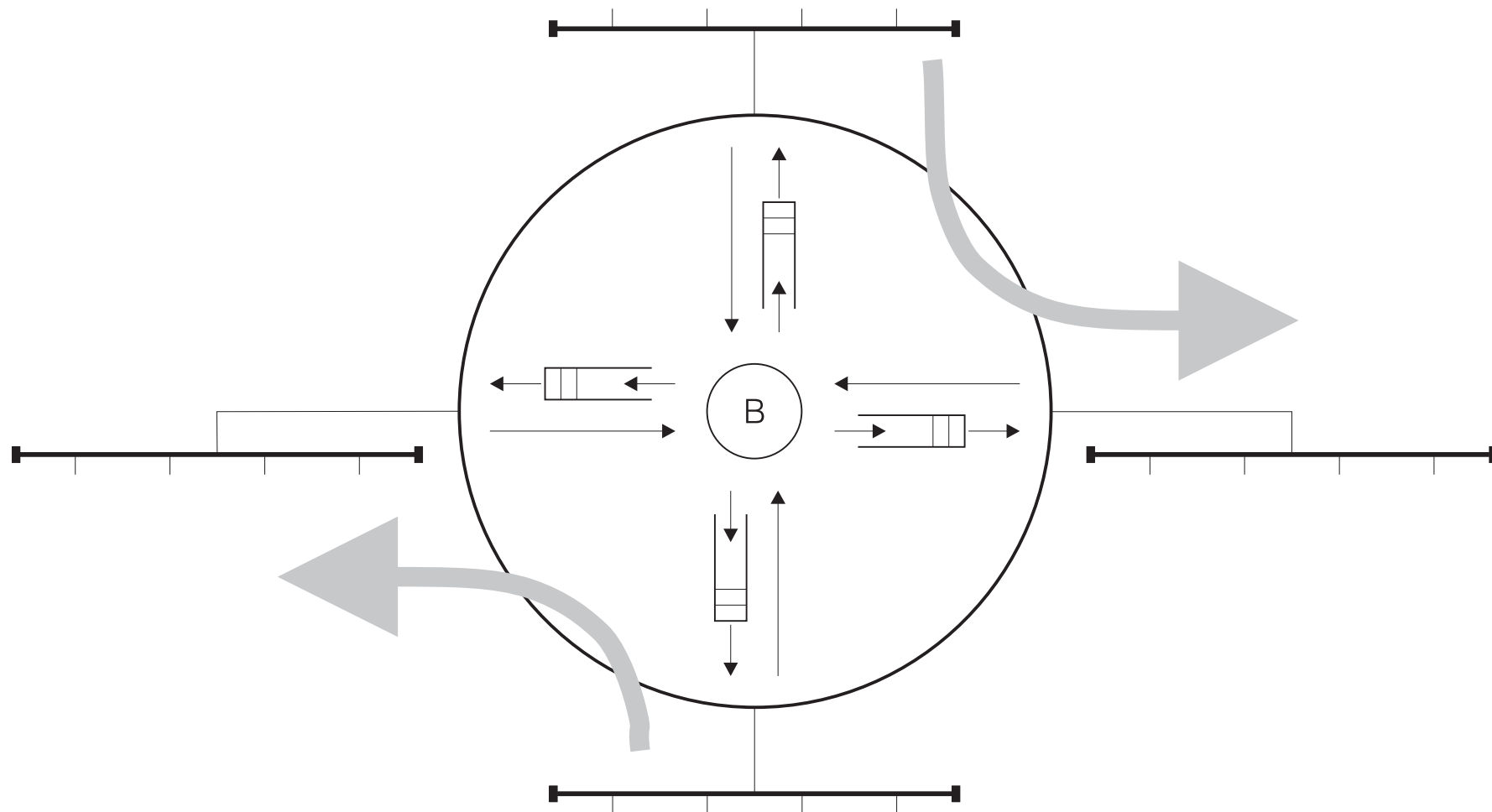
IEEE 802.1d Spanning tree



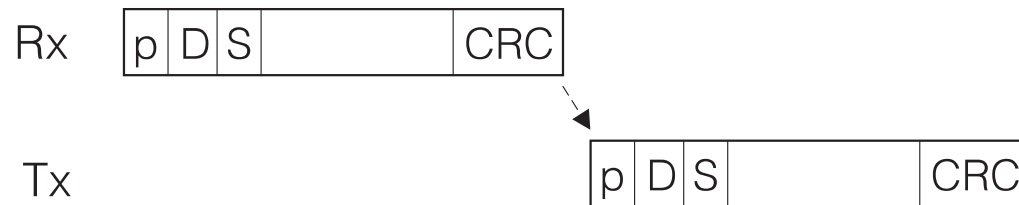
Remote & workgroup switches



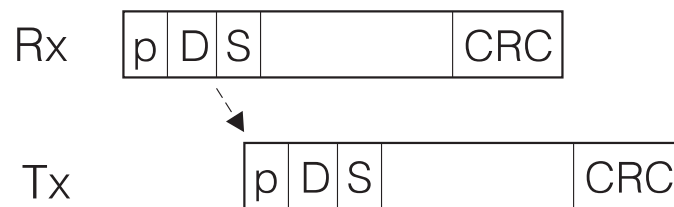
Ethernet switch



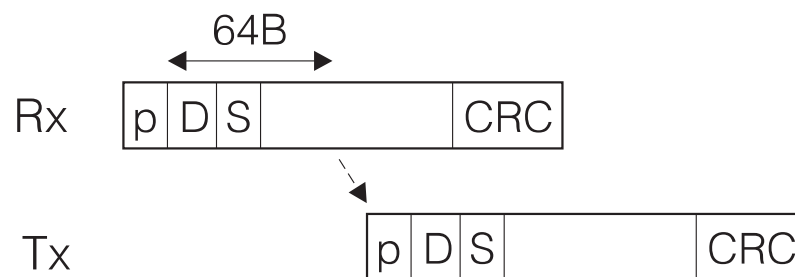
Switching modes



Store-and-Forward

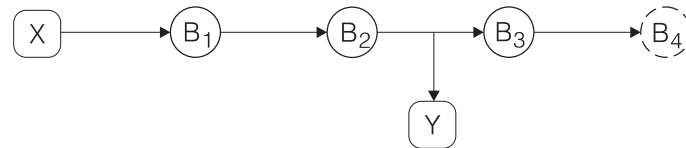
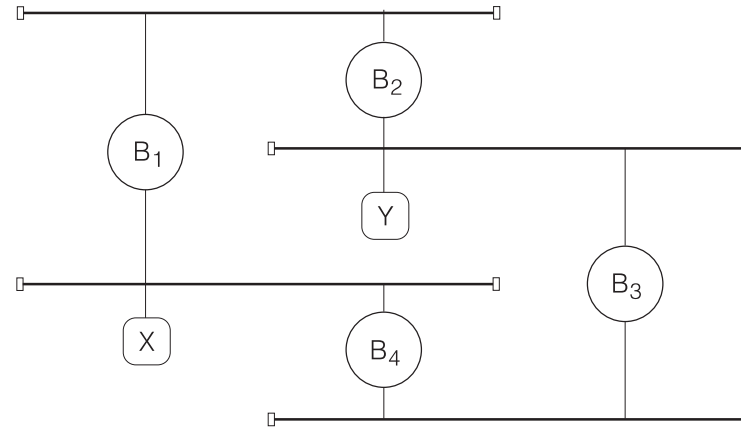


Cut-through

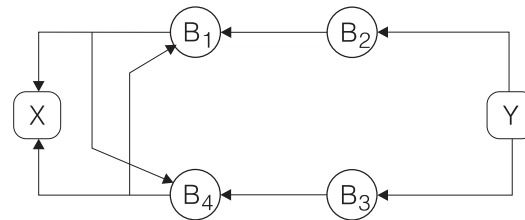


Segment-Free

Source routing

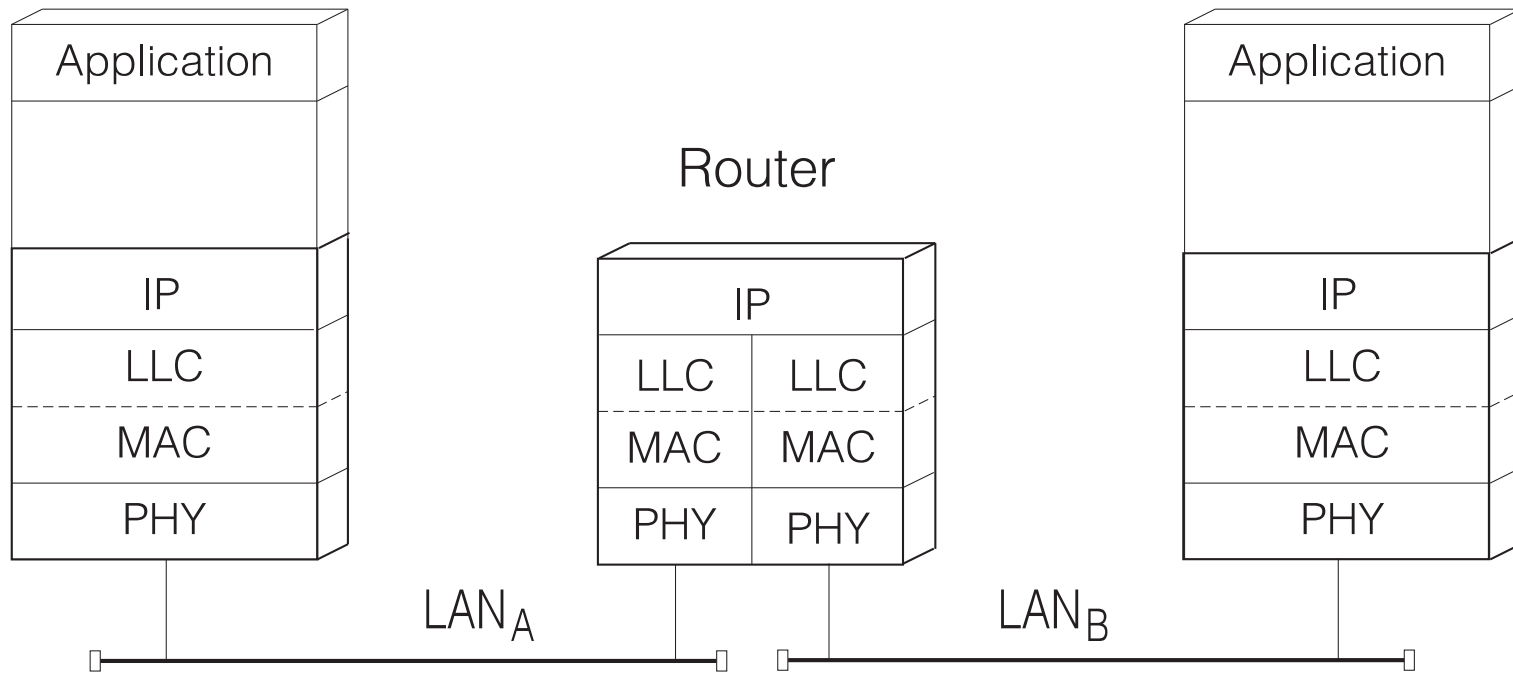


Single-Route
Broadcast
Request



All-Routes
Broadcast
Response

Routing



LAN connections

