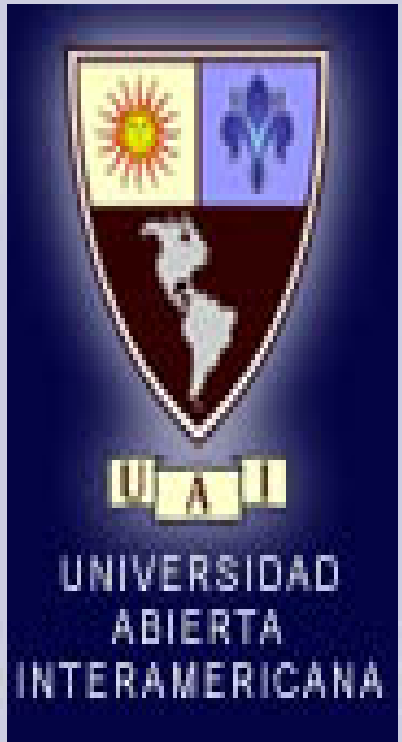
Tecnologia de Computadores

Ppt #13

La Capa de Enlace de Datos



Ing Marcelo Semeria

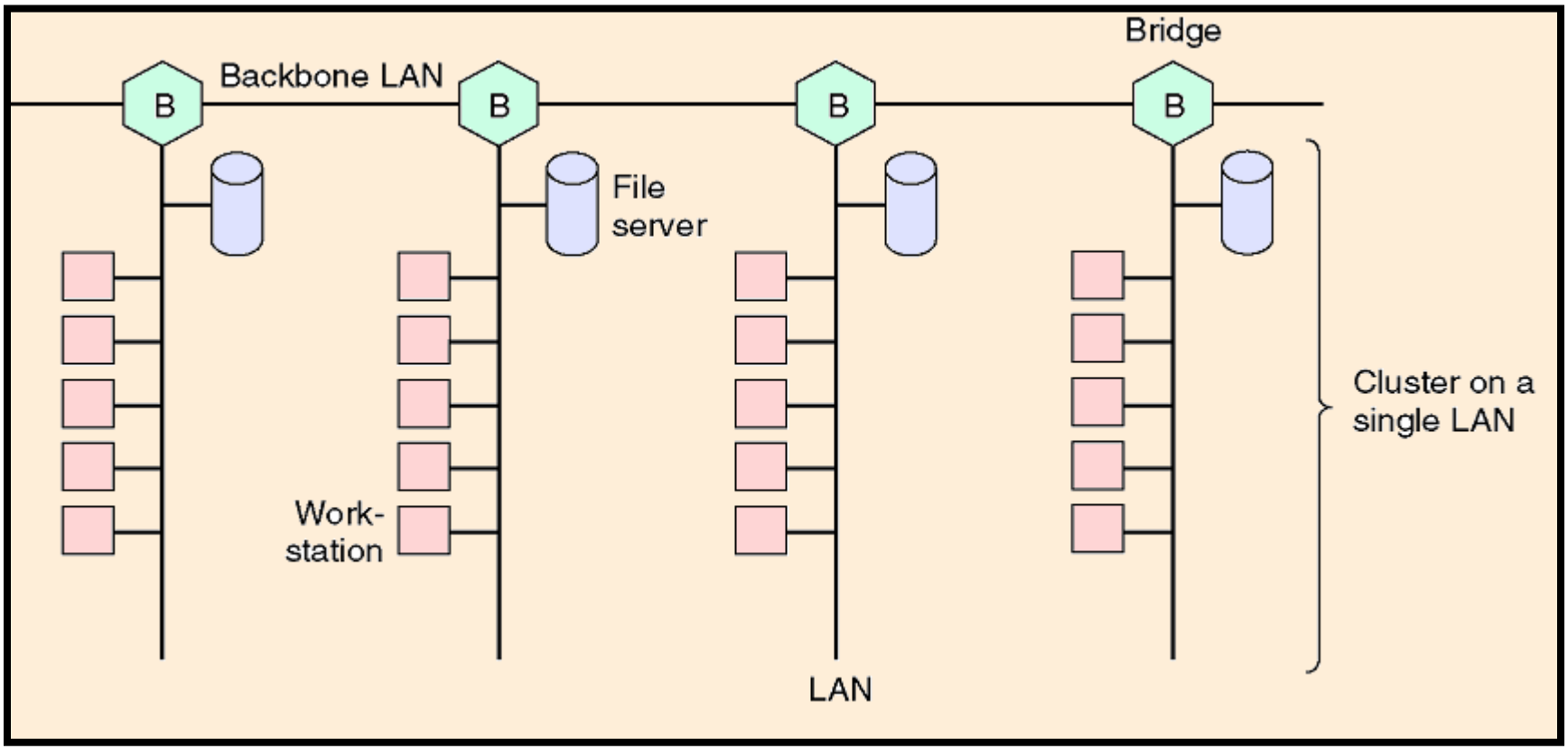
Revisión: Febrero 2007

Data Link Layer Switching

- Bridges from 802.x to 802.y
- Local Internetworking
- Spanning Tree Bridges
- Remote Bridges
- Repeaters, Hubs, Bridges, Switches, Routers, Gateways
- Virtual LANs

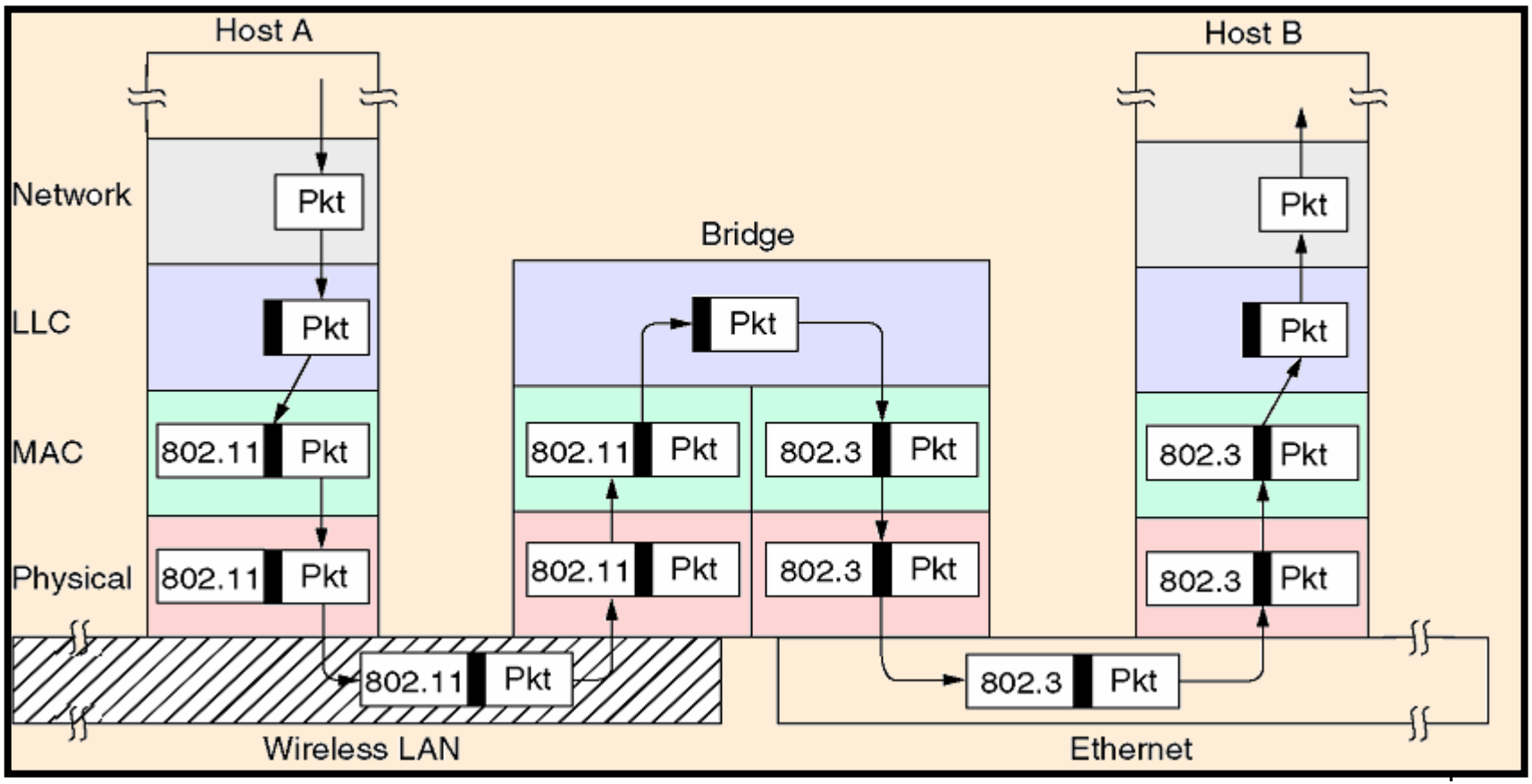
Data Link Layer Switching

Multiple LANs connected by a backbone to handle a total load higher than the capacity of a single LAN.



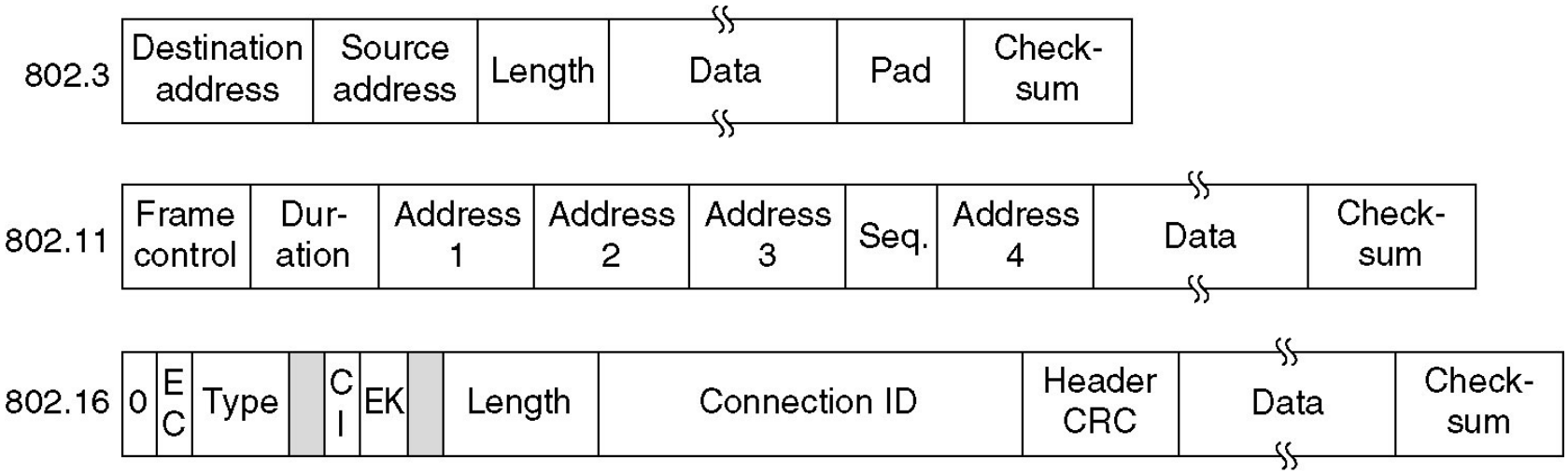
Bridges from 802.x to 802.y

Operation of a LAN bridge from 802.11 to 802.3.



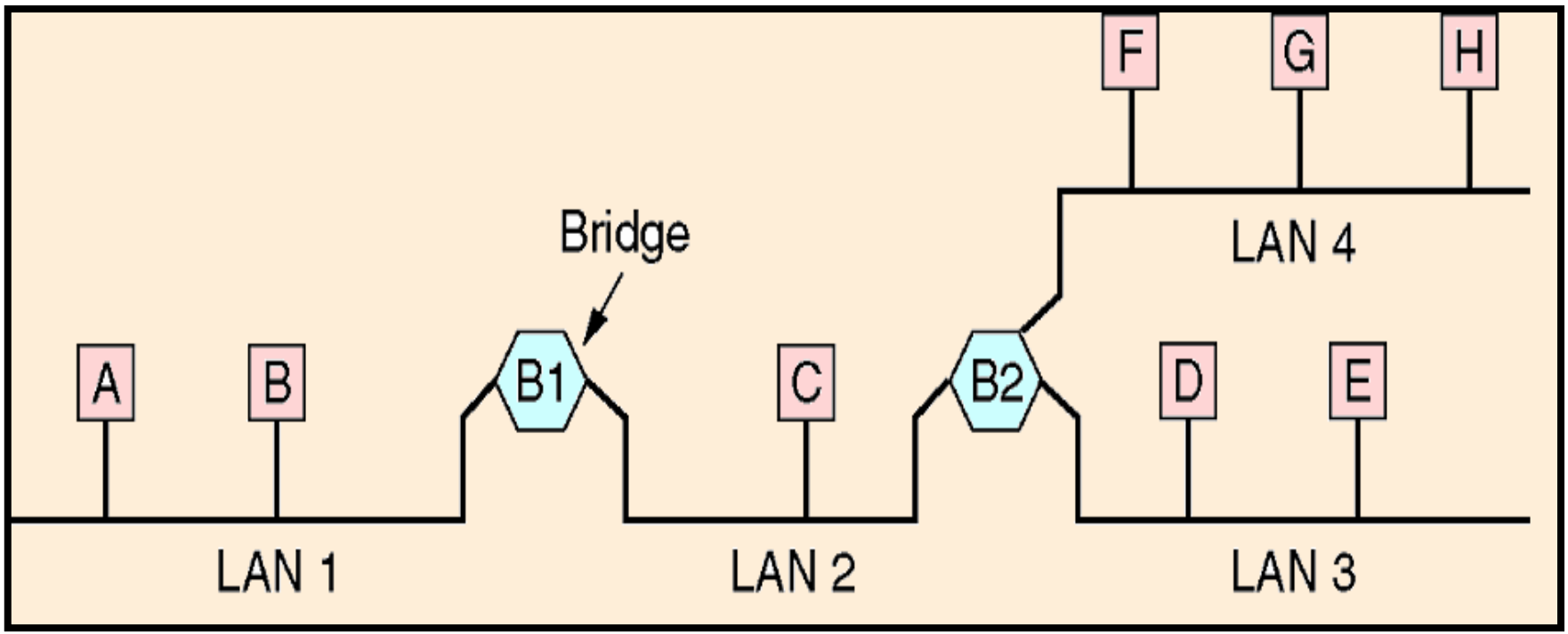
Bridges from 802.x to 802.y (2)

The IEEE 802 frame formats. The drawing is not to scale.

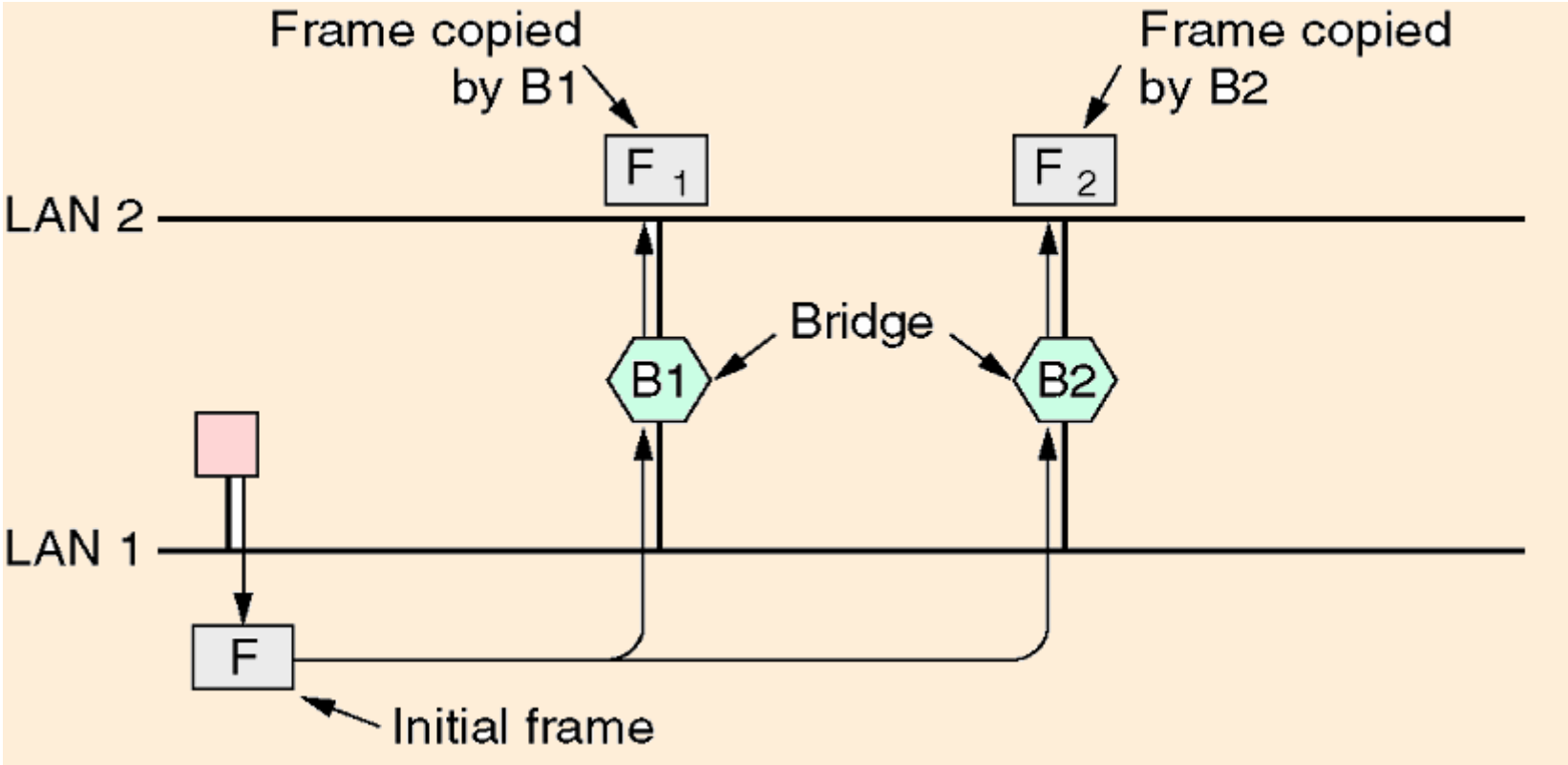


Local Internetworking

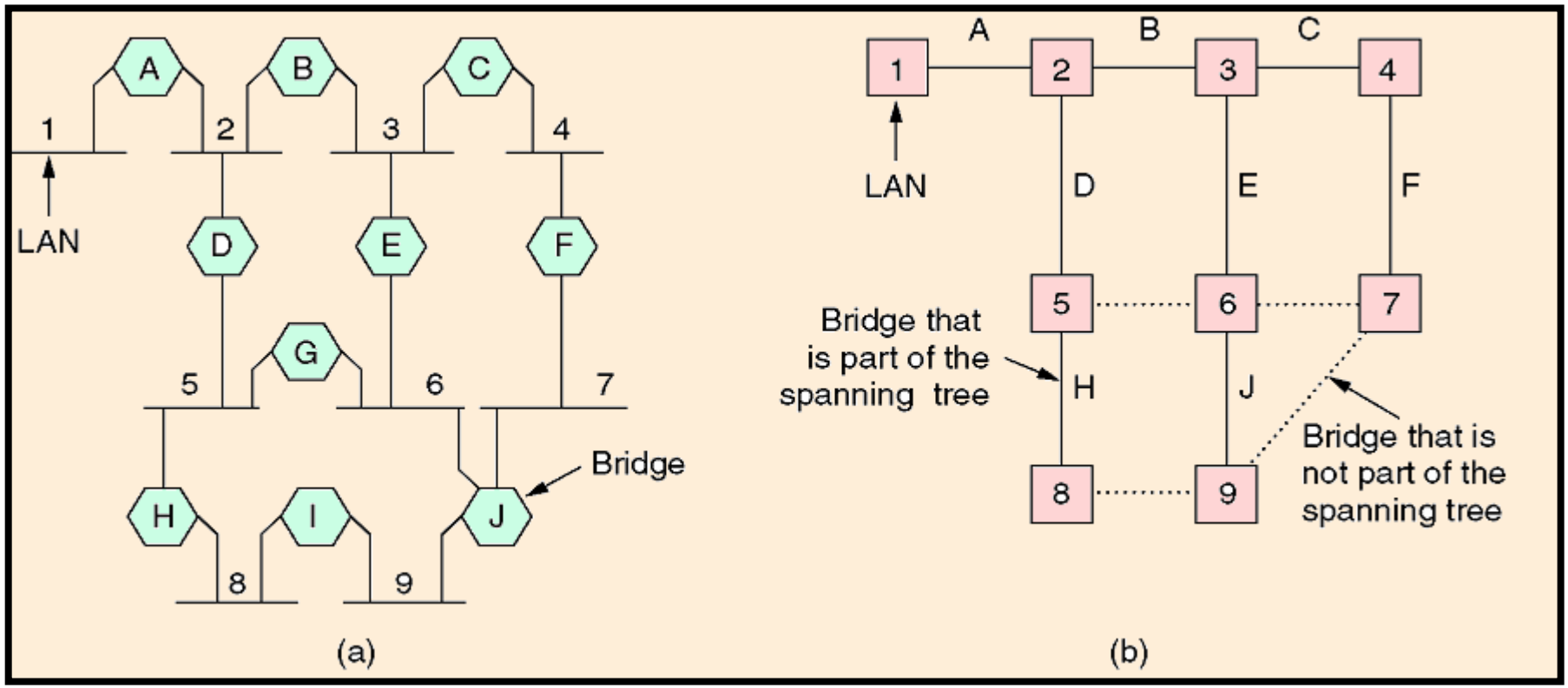
A configuration with four LANs and two bridges.



Spanning Tree Bridges



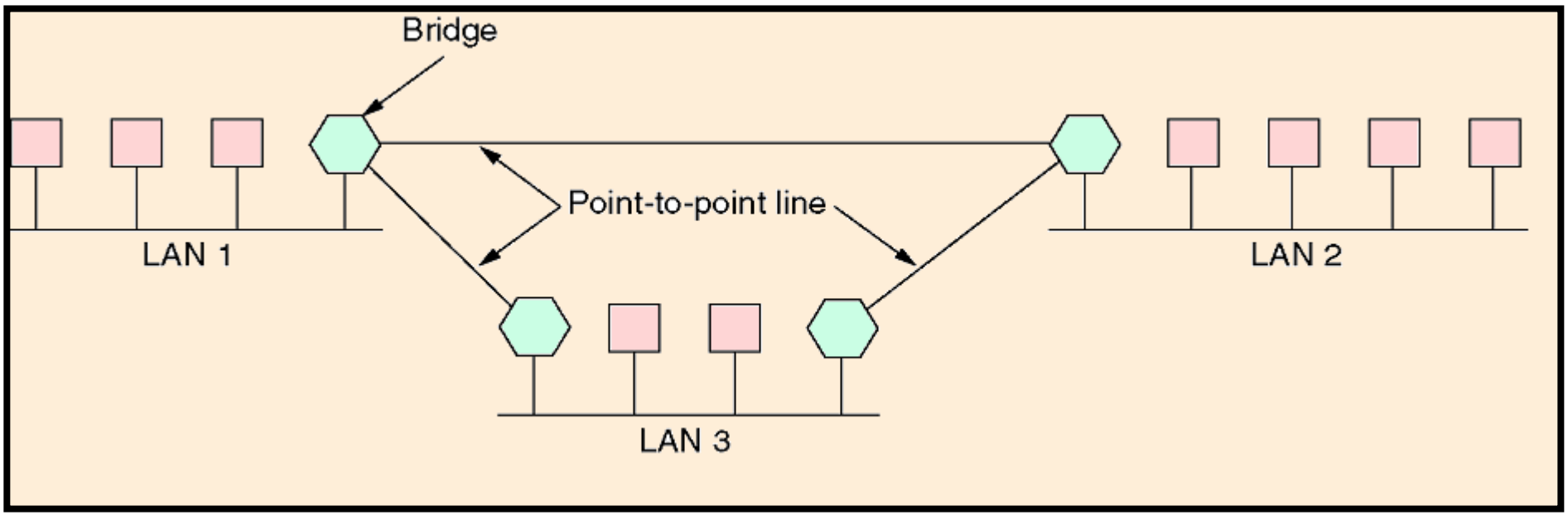
Spanning Tree Bridges (2)



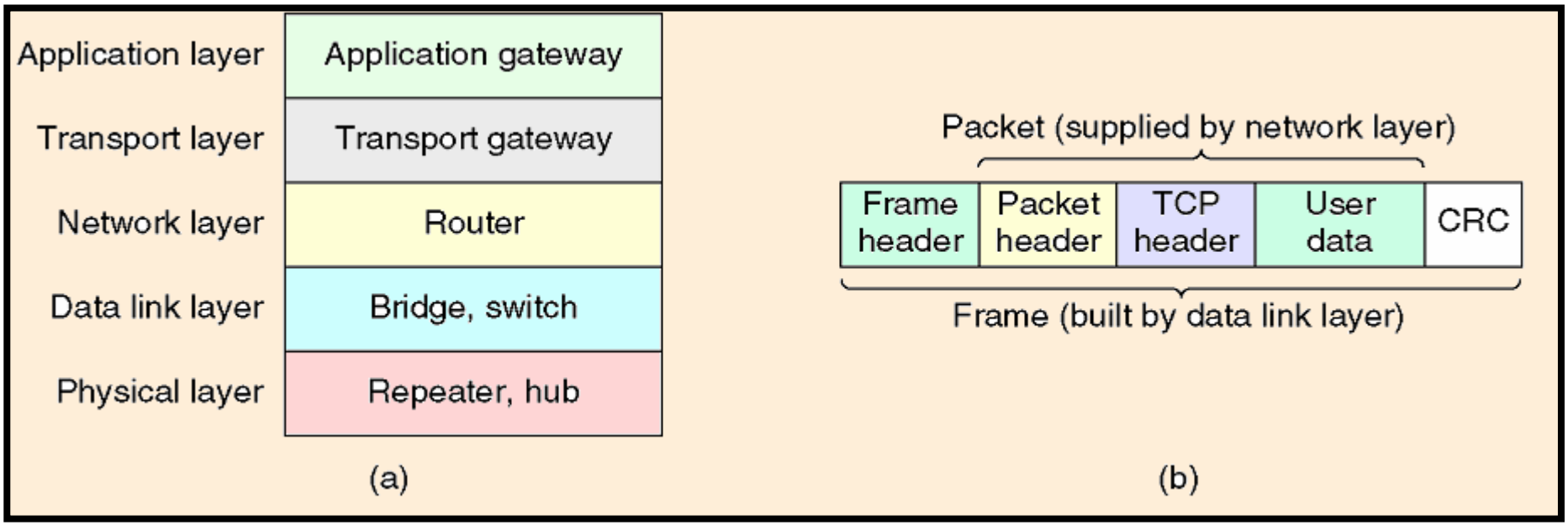
(a) Interconnected LANs. (b) A spanning tree covering the LANs. The dotted lines are not part of the spanning tree.

Remote Bridges

Remote bridges can be used to interconnect distant LANs.



Repeaters, Hubs, Bridges, Switches, Routers and Gateways

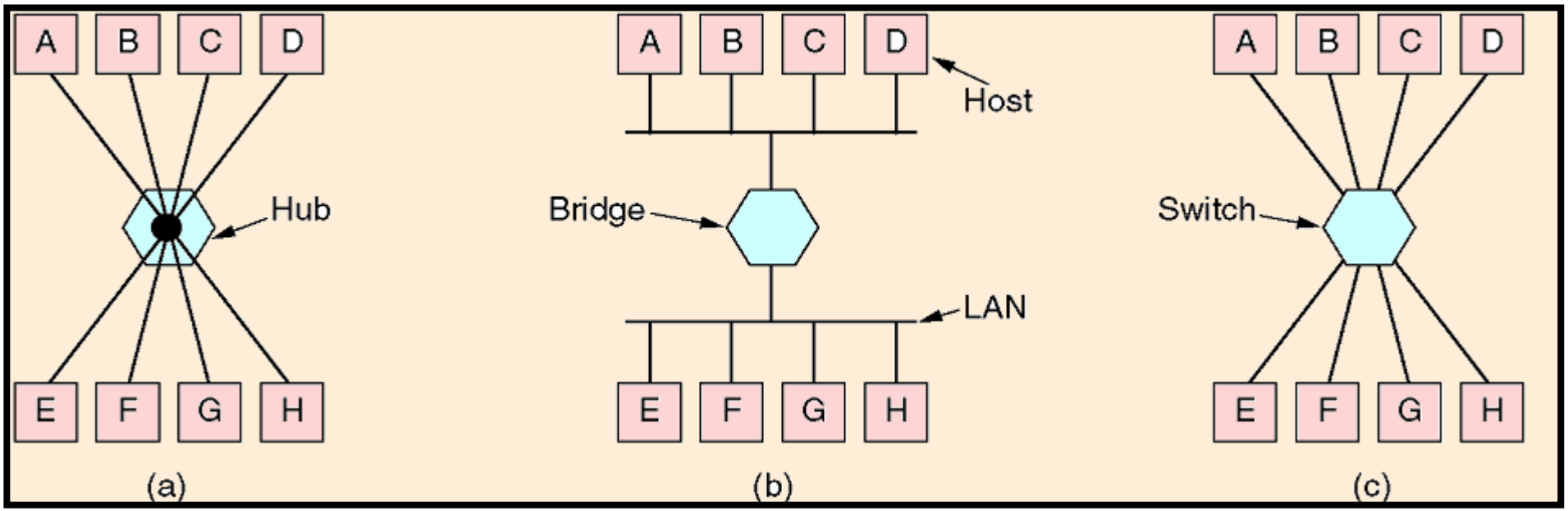


(a) Which device is in which layer.

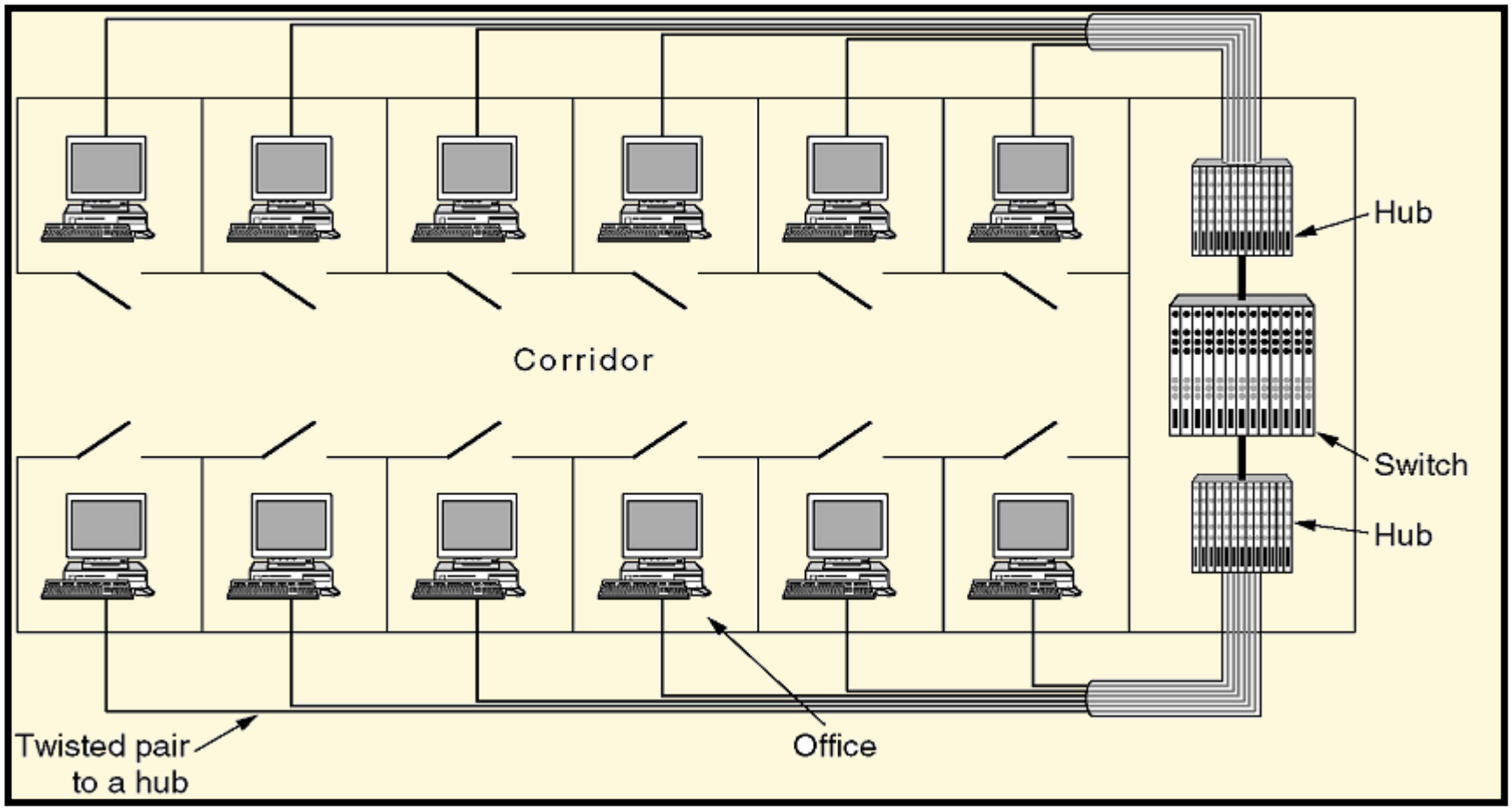
(b) Frames, packets, and headers.

Repeaters, Hubs, Bridges, Switches, Routers and Gateways (2)

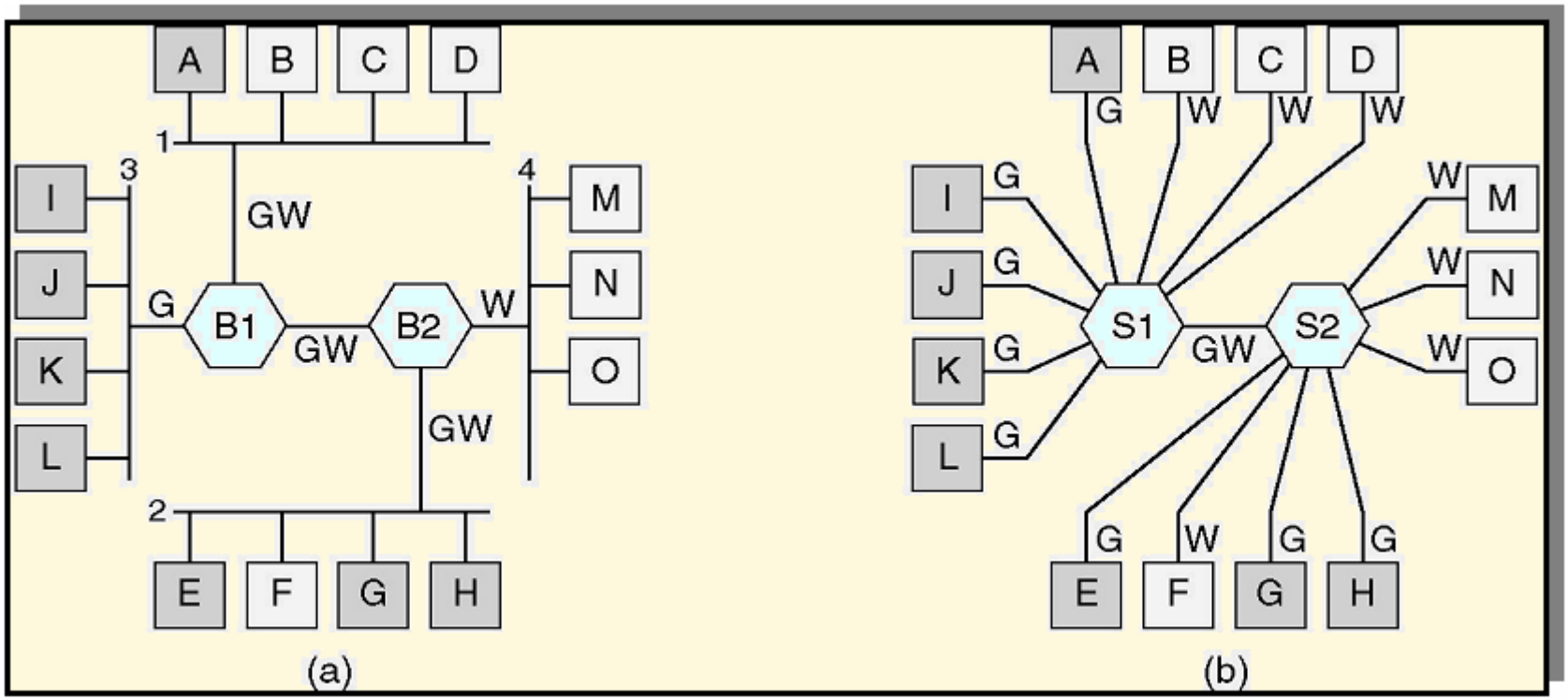
(a) A hub. (b) A bridge. (c) a switch.



Virtual LANs

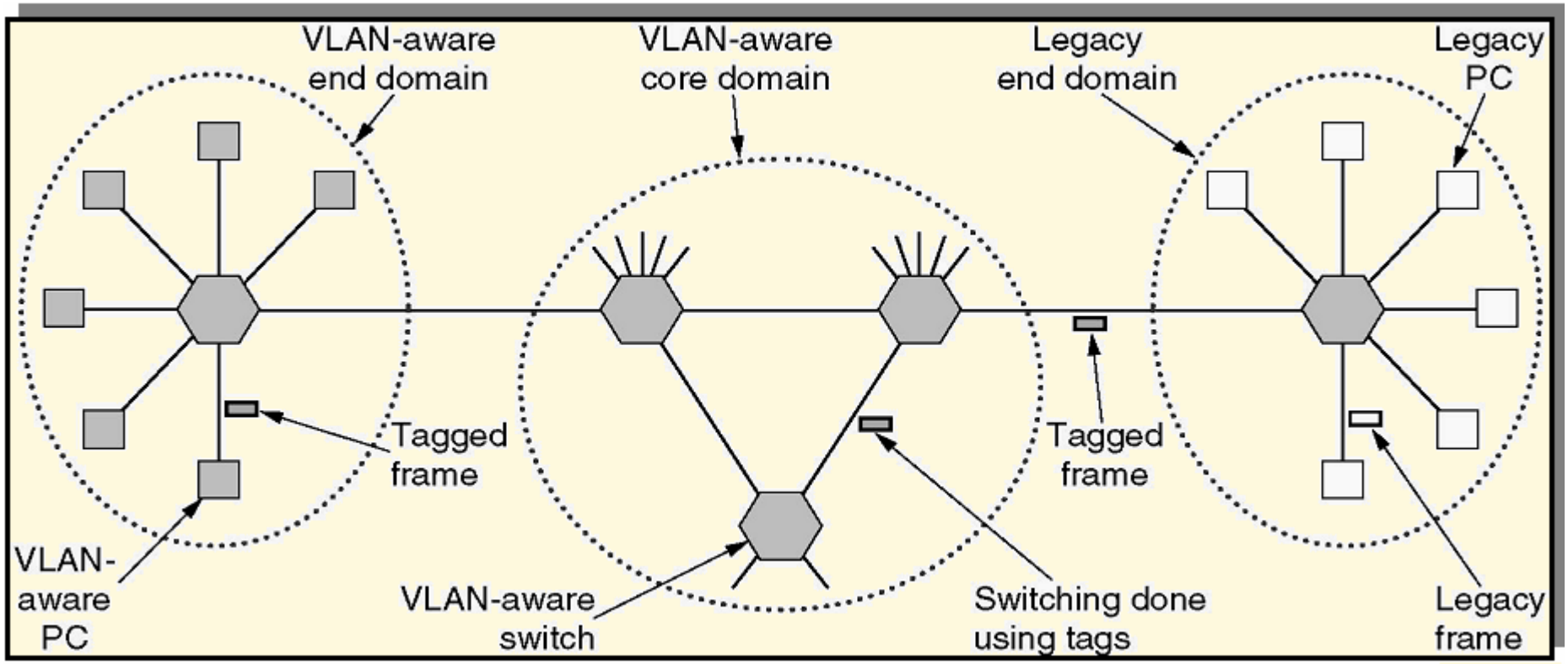


Virtual LANs (2)



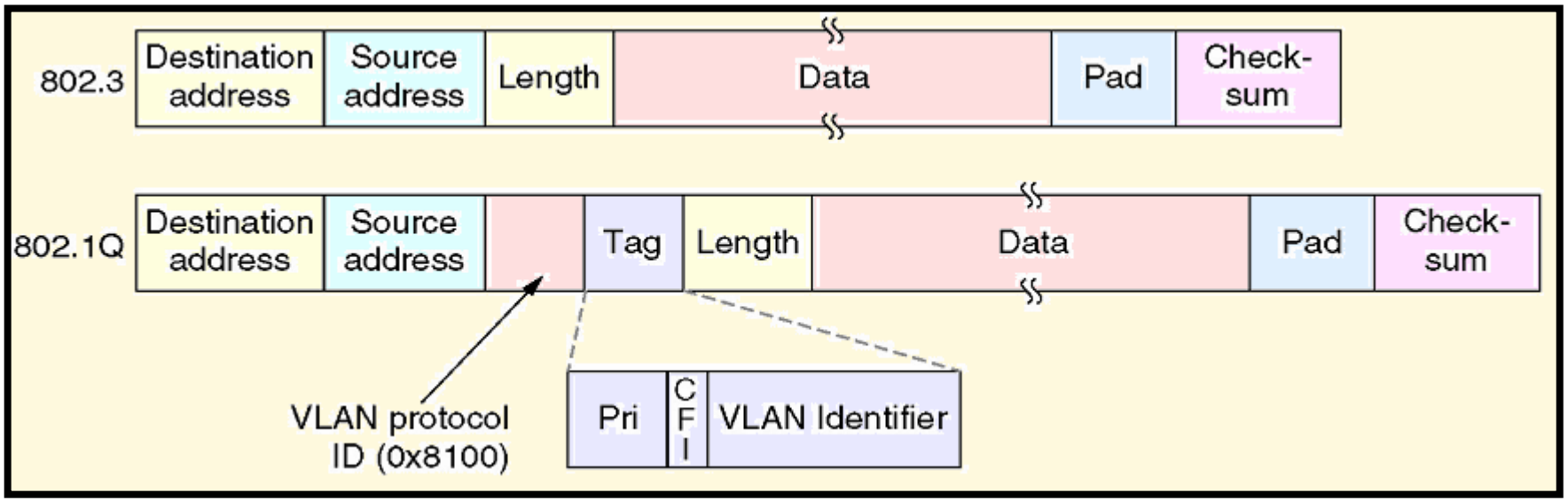
(a) Four physical LANs organized into two VLANs, gray and white, by two bridges. (b) The same 15 machines organized into two VLANs by switches.

The IEEE 802.1Q Standard



The IEEE 802.1Q Standard (2)

The 802.3 (legacy) and 802.1Q Ethernet frame formats.



Summary

Method	Description
FDM	Dedicate a frequency band to each station
WDM	A dynamic FDM scheme for fiber
TDM	Dedicate a time slot to each station
Pure ALOHA	Unsynchronized transmission at any instant
Slotted ALOHA	Random transmission in well-defined time slots
1-persistent CSMA	Standard carrier sense multiple access
Nonpersistent CSMA	Random delay when channel is sensed busy
P-persistent CSMA	CSMA, but with a probability of p of persisting
CSMA/CD	CSMA, but abort on detecting a collision
Bit map	Round robin scheduling using a bit map
Binary countdown	Highest numbered ready station goes next
Tree walk	Reduced contention by selective enabling
MACA, MACAW	Wireless LAN protocols
Ethernet	CSMA/CD with binary exponential backoff
FHSS	Frequency hopping spread spectrum
DSSS	Direct sequence spread spectrum
CSMA/CA	Carrier sense multiple access with collision avoidance

Channel allocation methods and systems for a common channel.

FIN ppt#13

Continuación
Problemas Cap4