

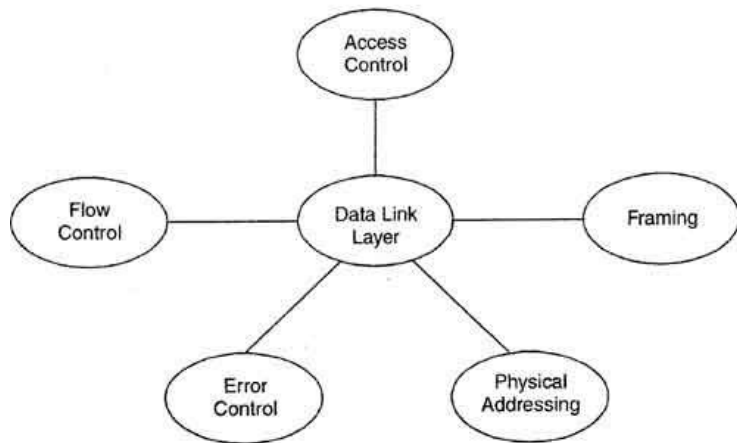
Capa Enlace

August 24, 2025

Capa de Enlace

La Capa de Enlace de datos tiene la responsabilidad de transferir datagramas **desde un nodo, al nodo adyacente**, a través de un enlace.

Funciones de la capa de enlace



Functions of data link layer

Direcciones MAC

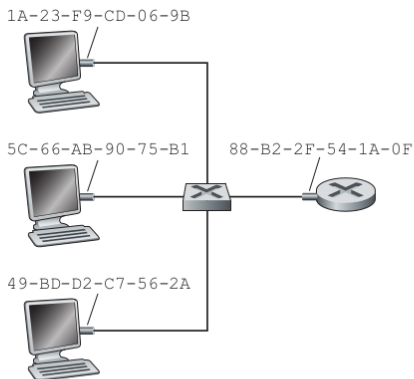


Figure 6.16 ♦ Each interface connected to a LAN has a unique MAC address

Direcciones MAC

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- Typically expressed in hexadecimal notation, with each byte of the address expressed as a pair of hexadecimal numbers.
- Although MAC addresses were designed to be permanent, it is now possible to change an adapter's MAC address via software.

Direcciones MAC e IP

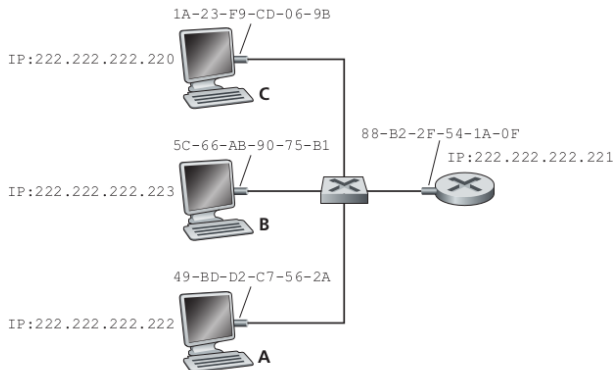


Figure 6.17 ♦ Each interface on a LAN has an IP address and a MAC address

Address Resolution Protocol: ARP (RFC 826)

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- Dos pasos: Consulta, Respuesta.
- Capa de Enlace o Capa de Red?

IP Address	MAC Address	TTL
222.222.222.221	88-B2-2F-54-1A-0F	13:45:00
222.222.222.223	5C-66-AB-90-75-B1	13:52:00

Ethernet

- Since its invention in the mid-1970s, Ethernet has continued to evolve and grow and has held on to its dominant position.
- De medio compartido a conexiones punto a punto con switches.

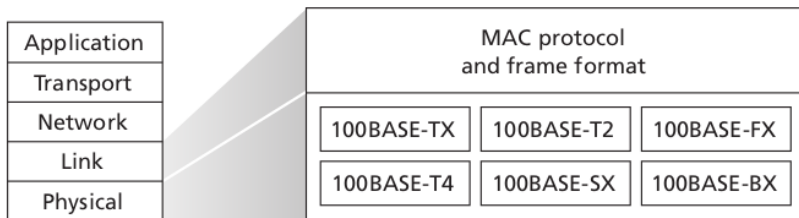
Ethernet					
8	6	6	2	De 46 a 1500	4
Preámbulo	Dirección Destino	Dirección Origen	Tipo	Datos	Secuencia de verificación de trama

Ethernet: Capa física y capa enlace

- Ethernet is both a link-layer and a physical-layer specification and is carried over a variety of physical media including coaxial cable, copper wire, and fiber.

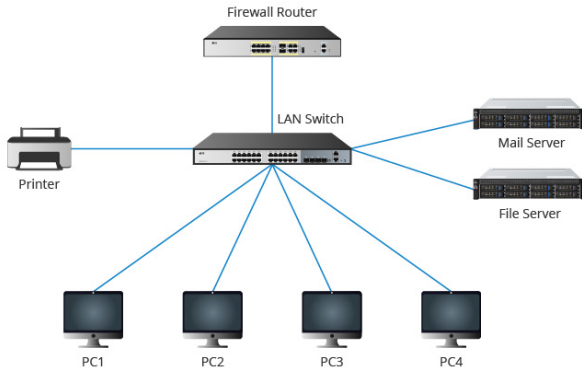
Layer	Preamble	Start frame delimiter (SFD)	MAC destination	MAC source	802.1Q tag (optional)	Ethertype (Ethernet II) or length (IEEE 802.3)	Payload	Frame check sequence (32-bit CRC)	Interpacket gap (IPG)
Length (octets)	7	1	6	6	(4)	2	42–1500 ^[c]	4	12
Layer 2 Ethernet frame	(not part of the frame)		← 64–1522 octets →						(not part of the frame)
Layer 1 Ethernet packet & IPG	← 72–1530 octets →								← 12 octets →

Ethernet: Capa física y capa enlace



- “BASE” refers to baseband Ethernet, meaning that the physical media only carries Ethernet traffic.
- Generally, a *T* refers to twisted-pair copper wires.

Conmutación de capa 2: Switches



- Reenvío y filtrado.
- Transparente: Los extremos del enlace desconocen que está allí.
- Completa su tabla automáticamente a medida que reenvía frames.