

Module 9

MAC and IP

MAC address → For communications between NIC's

IP address → To address layer 3

If the destination IP is on the same LAN the destination MAC will be the same as the destination device.

If the destination IP is on a different LAN the destination MAC will be the same as the LAN gateway.

ARP

Determine the destination MAC address of a local device then it knows the IPv4 address.

- Maintains the ARP table.
- Maps IP addresses to MAC addresses.

How does it work?

Cuándo una envía una trama se chequea la tabla ARP para comprobar que la dirección IPv4 tiene un dirección MAC correspondiente.

- Si hay una dirección MAC → Se envía la trama a esa dirección MAC
- Si no hay una dirección MAC → ARP request → ARP reply → MAC addr added to table.

How to remove the ARP table?

ARP table entries are deleted when:

- The cache of the table expires
- The entries are removed manually

How to view the ARP table

Windows → arp -a

CISCO iOS → Show ip arp

Problemas con ARP

Un broadcast excesivo de ARP request congestiona la red dado que estos son procesados por todos los dispositivos de la LAN.

MAC spoofing.

IPv6 Neighbor discovery Messages

ICMPv6

- Neighbor solicitation → When it needs to discover the MAC address of a node.
- Neighbor advertisement → Response to the Neighbor solicitation.

ICMPv6

- Router solicitation → When it needs to discover the MAC address of a node.
- Router advertisement → Response to the Router solicitation.

ICMP Redirect

When a ICMP redirect message is sent to inform the host that there is a faster next hop on the network.

The host updates the routing table for the following transmission.