



SNS College of Engineering Coimbatore - 641107



UNIT 2

DATA LINK LAYER

Services, ARP, DLC Protocols, HDLC, PPP, Media Access control, Wired LANs: Ethernet, wireless LANs: IEEE 802.11, Bluetooth, Connecting devices: Hubs, Routers, Switches

31.08.2023

1

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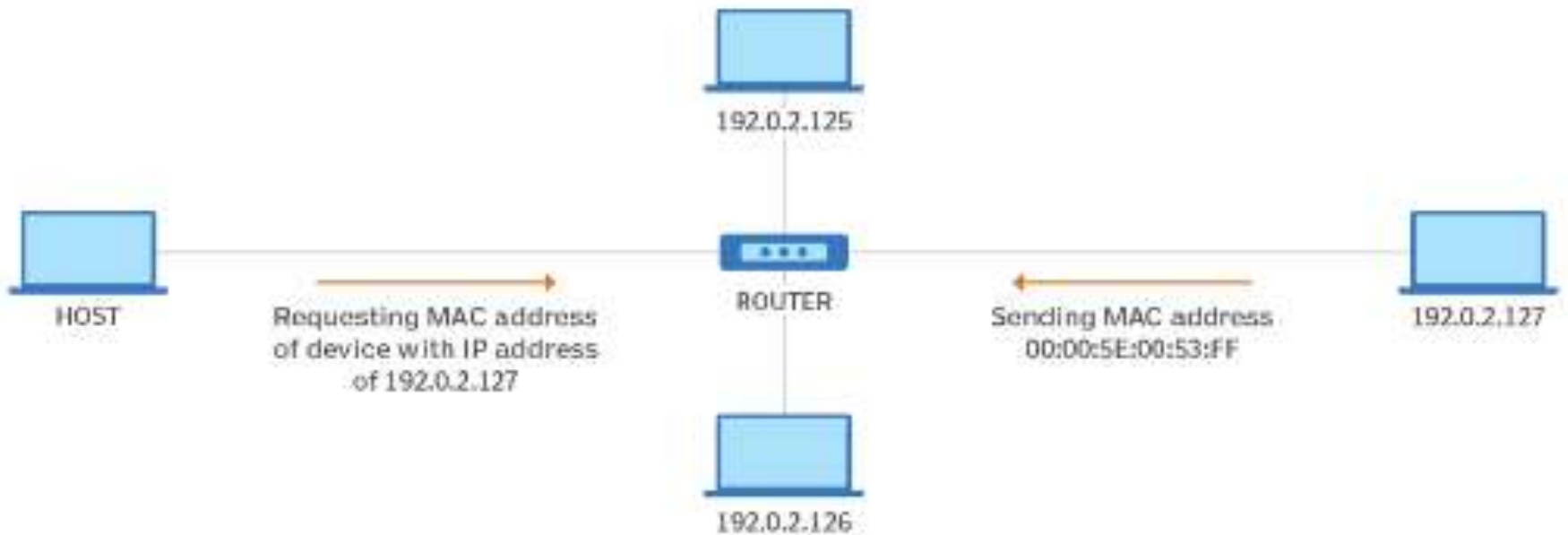
ARP

Address Resolution Protocol (ARP) is a procedure for mapping a dynamic IP address to a permanent physical machine address in a local area network (LAN).

The physical machine address is also known as a media access control (MAC) address.



Working of ARP





ARP Packet format

Hardware Type (HTYPE) 16-bit		Protocol Type (PTYPE) 16-bit
Hardware Length (HLEN)	Protocol Length (PLEN)	Operational request (1), reply (2)
Sender Hardware Address (SHA)		
Sender Protocol Address (SPA)		
Target Hardware Address (THA)		
Target Protocol Address (TPA)		



Hardware & Protocol type



- The size of the hardware type field is 16 bit. This field defines the network type that the local network needs to transmit the ARP message.
- The protocol type is a 16-bit field used to specify the type of protocol.



Hardware length



The size of the hardware length field is 8-bit. This field specifies the length of the physical address in bytes.

Example: For this, the address length of Ethernet is 6.



Protocol Length



The size of the protocol length field is 8-bit long. It defines the length of the IP address in bytes.



Operation



- It is a 16-bit field that determines the type of ARP packet.
- There are two types of ARP packets, i.e., ARP request(1) and ARP Reply(2).



Sender & Protocol Address



SHA: This field specifies the physical address of the sender, and the length of this field is not fixed.

SPA: This field is used to determine the logical address of the sender, and the length of this field is not fixed.



Target hardware & Protocol Address



THA: The target hardware address specifies the physical address of the target. It is a variable-length field.

TPA: This field determines the logical address of the target. TPA is a variable-length field.