LINUX NETWORKING MODULE 5 ASSESSMENT SOLUTION

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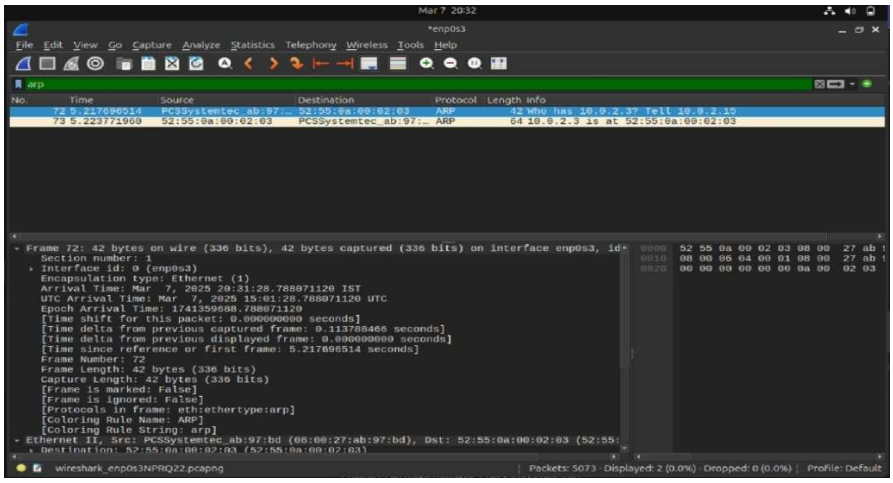
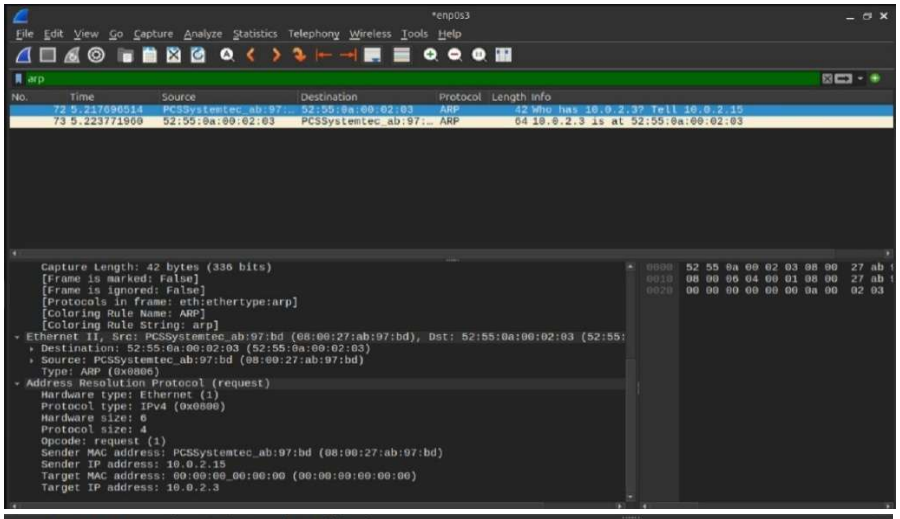
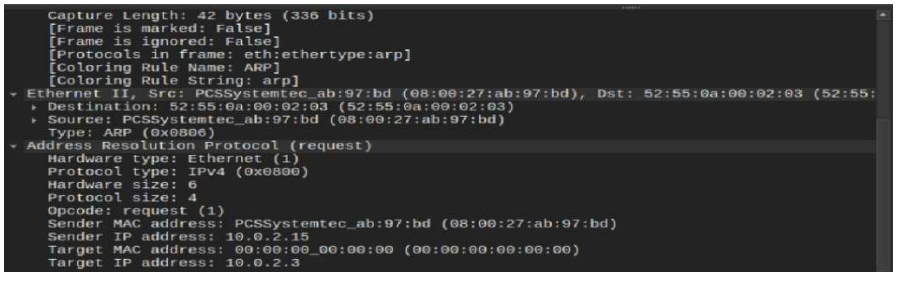
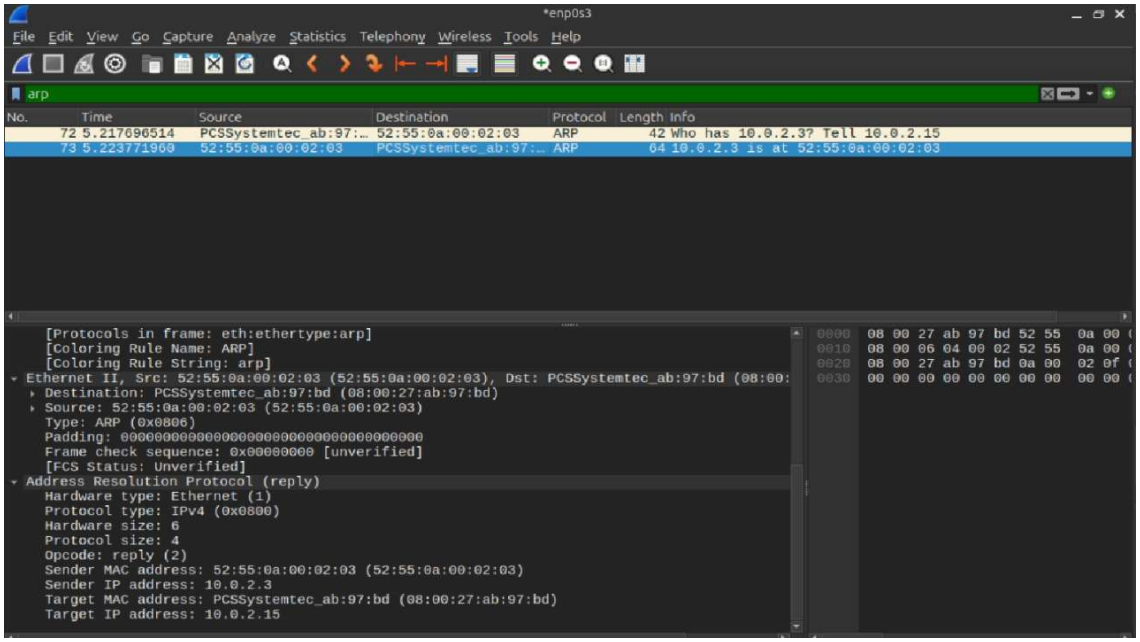
1) Capture and analyze ARP packets using Wireshark. Inspect the ARP request and reply frames, and discuss the role of the sender's IP and MAC address in these packets.









ARP (Address Resolution Protocol) maps an IP address to a MAC address on a local network. When a device wants to communicate with another device on the same LAN, it must resolve the IP address to the corresponding physical (MAC) address.

1)ARP Request Frame:

Broadcast Nature: Sent as a broadcast (destination MAC: FF:FF:FF:FF:FF:FF) so all devices on the LAN receive it.

Sender's Role:

- IP Address: Identifies the source device's IP address.
- MAC Address: Contains the source device's MAC address, allowing the recipient to know where to send the reply.
- Target Information: Specifies the IP address for which the MAC is requested (the target's MAC is initially unknown).

2)ARP Reply Frame:

- Unicast Communication: Sent directly to the requester's MAC address.
- Role of Addresses:
- Sender's IP and MAC: The replying device includes its own MAC address along with its IP address, confirming the mapping.
- Purpose: This allows the requester to update its ARP cache and send future frames directly to the target without broadcasting.