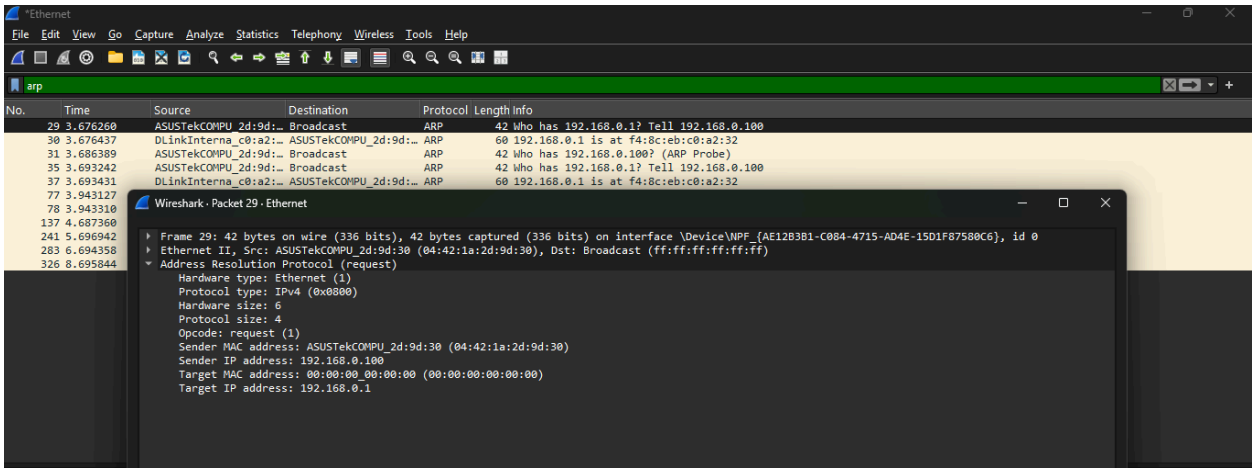
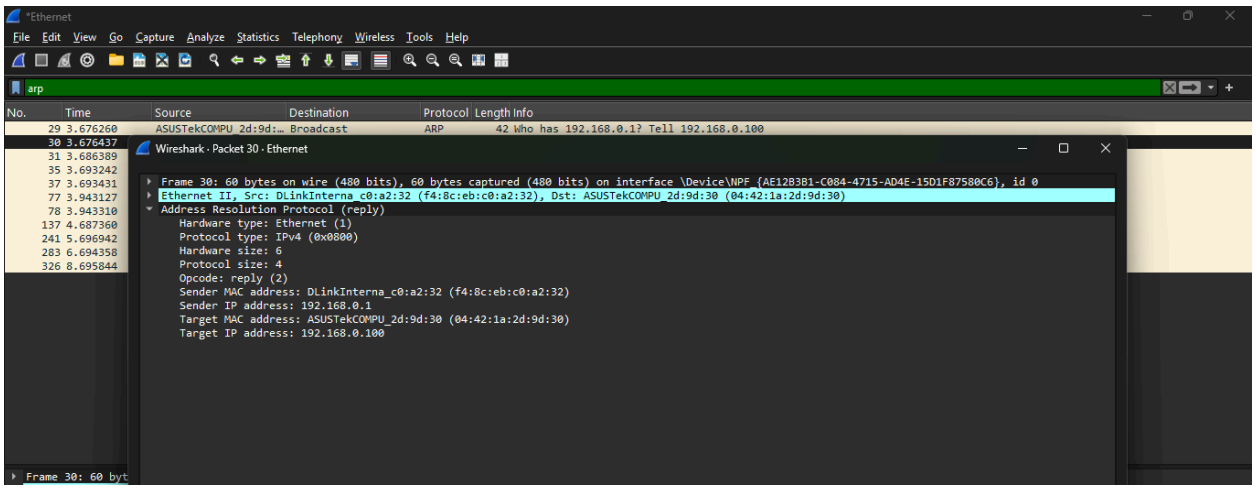
ARP Request and Reply

By restarting device, we can capture the ARP packets and analyze the communication made before connecting the internet.
ARP Request from router - asks who is the default gateway IP (here its 192.168.0.1) and reply frame received from the default gateway





Importance of ARP :

Bridging Layer 2 and Layer 3:
Packet forwarding relies on both IP addresses (Layer 3) and MAC addresses (Layer 2). When your device wants to send a packet to the router (e.g., to reach the internet), it knows the router's IP address (the default gateway) but needs its MAC address to construct the Ethernet frame. ARP resolves this by mapping the router's IP to its MAC.

Enabling Local Communication:
In a local network, devices communicate directly using MAC addresses. Without ARP, your device couldn't address the router at Layer 2, and the packet wouldn't leave your machine. ARP ensures the packet is delivered to the correct next hop (the router) within the LAN.

Facilitating Routing:
Once the router's MAC address is known, your device sends the packet to the router. The router then forwards it toward its destination (e.g., an external server). Without ARP, this handoff from your device to the router—the first step in most internet-bound traffic—would fail.