Day 36

Topic: DNS, DHCP and Protocols

Objective: To understand critical network protocols: Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP).

Theoretical Concepts:
We explored how DNS translates human-readable domain names (google.com) into machine-readable IP addresses. We discussed DNS record types (A, AAAA, MX, CNAME, NS). Then, we moved to DHCP, the protocol that automates IP assignment. We learned the DORA process (Discover, Offer, Request, Acknowledge) used by clients to obtain an IP from a server. We also touched upon common ports: HTTP (80), HTTPS (443), FTP (21), and SSH (22).

Practical Work:
Using Kali Linux, we performed DNS reconnaissance. We used *nslookup* and *dig* to query specific DNS servers. We analyzed the output to find mail servers and subdomains. We also released and renewed IP addresses using *ipconfig /release* and */renew* to trigger the DHCP process.

Tools Used: nslookup, dig, Wireshark (to see DORA).

Outcome: Ability to troubleshoot name resolution errors and understand dynamic IP allocation.