Day 131

Topic: OSI & TCP/IP Models

Objective: To visualize data flow through the 7 layers of the OSI model and compare it with the TCP/IP suite.

Theoretical Concepts:
The OSI (Open Systems Interconnection) model is the backbone of understanding networking. We analyzed each layer in detail: Physical, Data Link, Network, Transport, Session, Presentation, and Application. We discussed Protocol Data Units (PDUs) at each layer (Bits, Frames, Packets, Segments). We then compared this to the 4-layer TCP/IP model, mapping the protocols (HTTP, TCP, IP, Ethernet) to their respective layers.

Practical Work:
We mapped real-world troubleshooting scenarios to OSI layers (e.g., a broken cable is Layer 1, a wrong IP is Layer 3). We watched a visual simulation of packet encapsulation and decapsulation. We used the *arp -a* command to see Layer 2 to Layer 3 mapping in the ARP cache.

Tools Used: Network Diagrams, Slides, CLI.

Outcome: Deep understanding of encapsulation and how different protocols operate at specific layers of the network stack.