Switching Layer Protocols - Summary

1. STP (Spanning Tree Protocol)

Prevents loops in switched networks by blocking redundant paths.

- Versions: STP (802.1D), RSTP (802.1w), MSTP (802.1s)

- Essential in redundant topologies.

2. VTP (VLAN Trunking Protocol)

Manages VLAN information distribution between Cisco switches.

- Modes: Server, Client, Transparent

- Can cause VLAN loss if misconfigured.

3. DTP (Dynamic Trunking Protocol)

Negotiates trunk links automatically between switch ports.

- Modes: Dynamic Auto, Dynamic Desirable, Trunk, Access, Nonegotiate

- Often disabled in production setups.

4. CDP (Cisco Discovery Protocol)

Cisco proprietary protocol to discover directly connected Cisco devices.

- Shows neighbor info: IP, model, port, etc.

5. LLDP (Link Layer Discovery Protocol)

Vendor-neutral protocol to discover directly connected devices.

- IEEE standard (802.1AB)

- Useful in multi-vendor environments.

6. EtherChannel (Port Aggregation)

Combines multiple physical links into a single logical link.

- Increases bandwidth and provides redundancy.

- Protocols: PAgP (Cisco), LACP (IEEE 802.3ad)

7. ARP (Address Resolution Protocol)

Resolves IP addresses to MAC addresses.

- Works at the boundary of Layer 2 and Layer 3.

- Assists switches in learning MAC addresses.

8. MAC Address Table

Maintains MAC addresses mapped to switch ports.

- Fundamental for Layer 2 frame forwarding.

- Dynamically updated as frames are received.