**Data Link Layer**

❑ The Data link layer links the software and Hardware layers.

❑ Physical devices devoted to the data link layer have both hardware and software components.

❑ Data link layer protocols controls how to format a frame for use on different media.

❑ Different protocols maybe in use for different media.

**Physical Topologies**

❑ Arrangement of nodes and the physical connections between.

❑ What the network looks like

**Logical Topologies**

❑ Virtual arrangements of nodes independent of their physical connectivity

❑ The data link layer sees the logical topology. Influences network framing and MAC

**Physical Point-to-Point Topology**

❑ Limited to two nodes

❑ Adding intermediate physical connections may not change the logical topology

**Contention-Based Access**

❑ Stations can transmit at any time

❑ Collision exists

There are mechanisms to resolve contention for the media

**Example:**

i. CSMA/CD for 802.3 Ethernet networks

ii.CSMA/CA for 802.11 wireless networks

**Controlled Access**

❑ Only one station can transmit at a time.

❑ Devices wanting to transmit must wait their turn

❑ No collisions

❑ May use a token passing method

**Example:**

i. Token Ring

ii. FDDI

**Data Link frame**

What is frame in data link?

A frame is **a unit of communication in the data link layer**. Data link layer takes the packets from the Network Layer and encapsulates them into frames. If the frame size becomes too large, then the packet may be divided into small sized frames.

❑ Greater effort needed to ensure delivery = higher overhead = slower transmission rates.

❑ Less effort needed to ensure delivery = lower overhead = faster transmission rates

**Layer 2 Address**

❑ A multi-access frame has many possible destinations.

❑ A point-to-point frame has only 1 possible destination.