DATA LINK LAYER

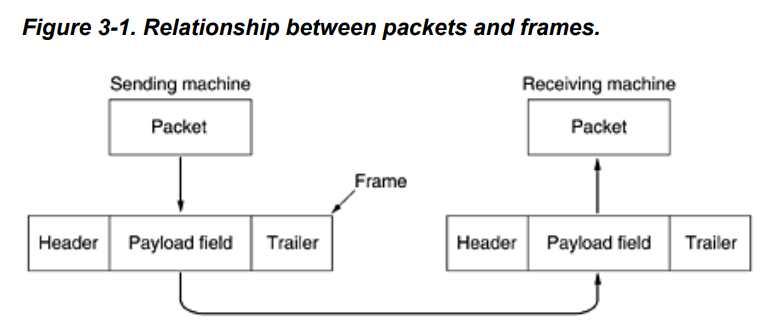
Frames

The **f**unctions of the data link layer are:-

1. Providing a service interface for the network layer.
2. Dealing with the transmission errors.
3. Regulating the flow of data so that the slow receivers are not swamped by the fast senders.

To accomplish these goals, the data link layer , takes the packets from the network layer and encapsulates them into frames . A frame contains

* Header
* Payload field for holding the packet
* Frame trailer.



The principle service is providing data from the network layer of the source machine to the network layer on the destination machine see the figure.

Data

Network Layer

Network Layer

Destination Machine

Source Machine

The services provided by this layer;

1. Unacknowledged connectionless service
2. Acknowledged connectionless service
3. Acknowledged connection-oriented service

Unacknowledged connectionless service(UDP):

* It doesn’t establishes a logical connection.
* The source machine sends independent frames to the destination machine without needing the frames to acknowledge them.
* Even if the frame is lost, no attempt is made to recover it, that is why it is used in real time traffic, such as voice where getting late data would be better than having a bad data.
* A good implementation of it would be LAN cables

Acknowledged connectionless service(WIFI):

* The only difference is that it in it, the acknowledgment is sent back to the user.
* An example is an unreliable wireless network and a reliable fibre network(where the packets loss are minimal)
* As in the example of WIFI, the sender knows whether the frame has arrived. If it hasn’t arrived within a specified time interval, then an attempt can be made to send it again.

Acknowledged connection-oriented service(TCP):

* Here first a logical connection is established between the end users.
* Each frame sent over the connection is numbered and the data link layer makes sure that each frame is indeed received *exactly once*.
* It also makes sure that the packets are received in the right order.
* It is unlike the connectionless service where the unacknowledged packets are sent several times and that results to them being received several times.