

Frame relay

Frame relay is a type of data transmission service that is designed to be cost effective. It uses a packet-switching technique and Wide Area Networks (WANs) to achieve this result.

The system also has flexibility, which comes from the Data Link Connection Identifier (DLCI) number that each connection uses for identification. Any station can use this number to connect to any other station in the network with only the DLCI number and the address.

Frame relay is a wide area network tool that is able to identify the physical and the logical layer of digital communication channel using packet switch method.

It is based on the X.25 packet switching technology that was designed for transmitting analog data but frame relay is a fast packet technology that always dropped a frame when an error is detected in a frame.

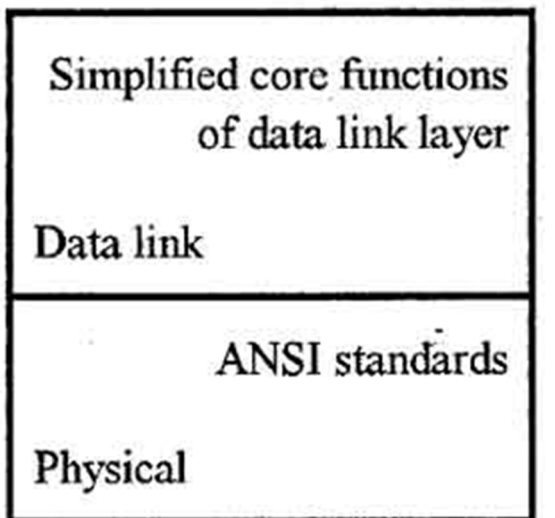
Frame relay puts data in a variable size unit called a **frame** and is used to connect LANs with major backbones as well as on WAN and public network environment.

Frame relay was developed for taking the advantage of the high data rates and low error rates in the modern communication system. It maintains a data rate at the user end of about 2 Mbps.

Frame relay also is meant for more efficient transmission scheme than the X.25 protocol.

Frame relay layers:

Frame relay has only two layers, i.e physical layer and Data Link Layer



Frame relay layers

Physical layer:

1. It supports ANSI standards
2. No specific protocol is defined for the physical layer. The user can use any protocol which is recognized by ANSI.

Data Link layer

1. A version of HDLC is needed by the frame relay at the data link layer.

The need for frame relay:

1. Higher data rates (1 Mbps to 44 Mbps).
2. It allows transfer of bulky data.
3. It has lower overheads.
4. Frame relay has a large frame size of 9000 bytes, so it can use all local area network frame sizes.
5. The damaged frame is simply dropped, there is no retransmission. So, it increases speed.

Advantages of frame relay:

1. Streamlined communication process
2. Lower delay
3. Higher throughput
4. It is cost effective

Disadvantages of frame relay:

1. Frames are delivered unreliably.
2. Packets may not be delivered in the same sequence as that at the sending end.
3. Packets having errors are simply discarded.
4. Frame relay does not provide flow control.
5. It does not provide the acknowledgement of received packets.

So, in the conclusion, we can say that,

The biggest difference between **frame relay and X.25** is that, X.25 guarantees data integrity and network managed flow control at the cost of some network delays.

Frame relay switches packet end to end much faster, but there is no guarantee of data integrity at all.

Frame relay Architecture:

Frame relay can provide two types of virtual circuits:

1. Permanent virtual circuits(PVC)
2. Switched virtual circuits (SVC)

Frame relay can support the PVC as well as SVC, whether to use PVC or SVC is decided by the user, based on the data transmission requirement and the budget.

Virtual Circuits:

The virtual circuits in frame relay are called as **DATA LINK CONNECTION IDENTIFIER (DLCI)**. This is actually a number which identifies a virtual circuit in frame relay.

