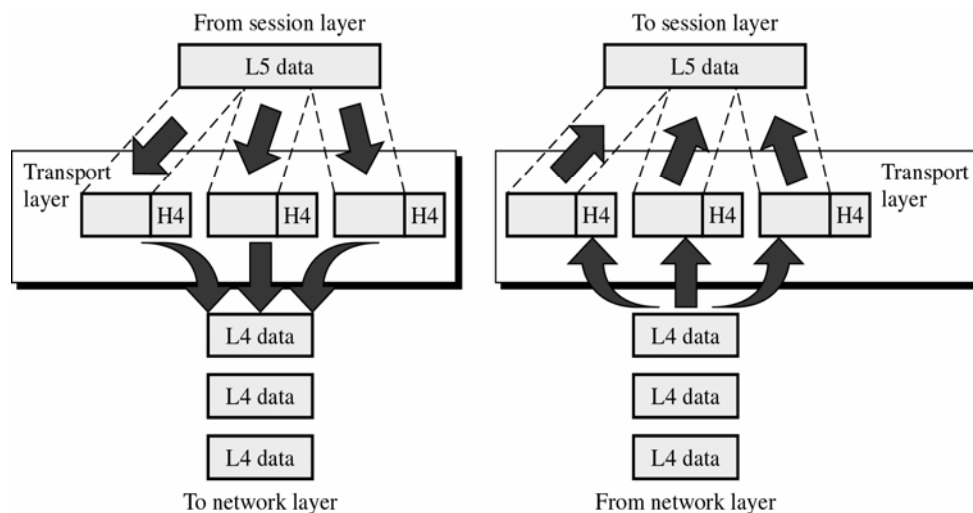


LECTURE #9

❖ **Transport Layer**

- Responsible for Source-to-Destination delivery of Entire Message
- Network Layer oversees source-to-destination delivery of the entire packets but it does not recognize any relationship b/w those packets
- Network layer treats each packet independently
- Transport Layer ensures that whole message arrives at the destination intact



• **Functions of Transport Layer**

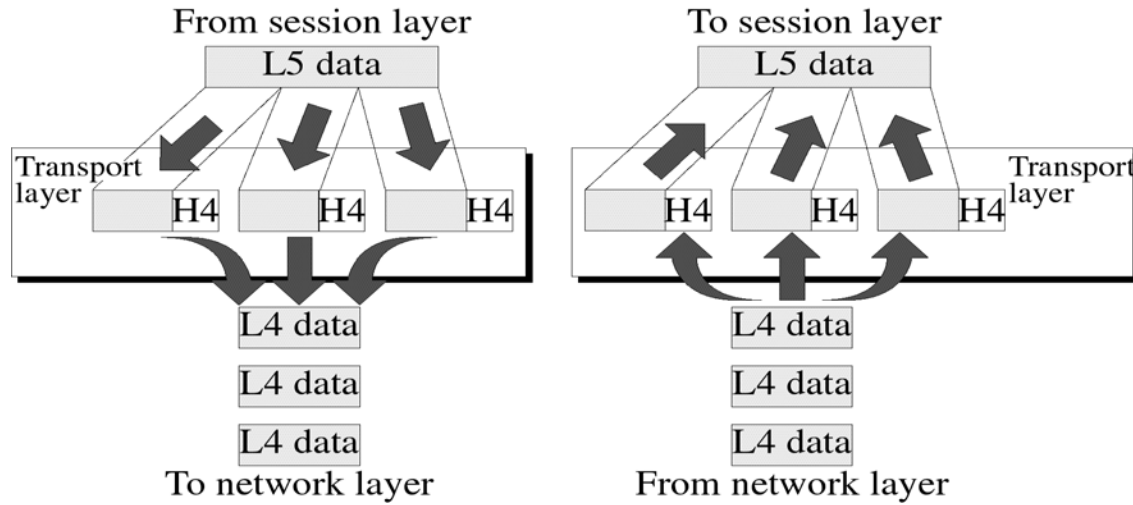
○ **Service Point Addressing**

- Computers run several programs at the same time
- Source-to-Destination delivery means delivery not only from only from one computer to the other but also from a specific process on one computer to a specific process on the other
- Transport layer header includes a type of address called Service Point Address or PORT Address
- Network layer each packet to the correct computer while Transport layer gets entire message to the correct process on that computer

○ **Segmentation and Reassembly**

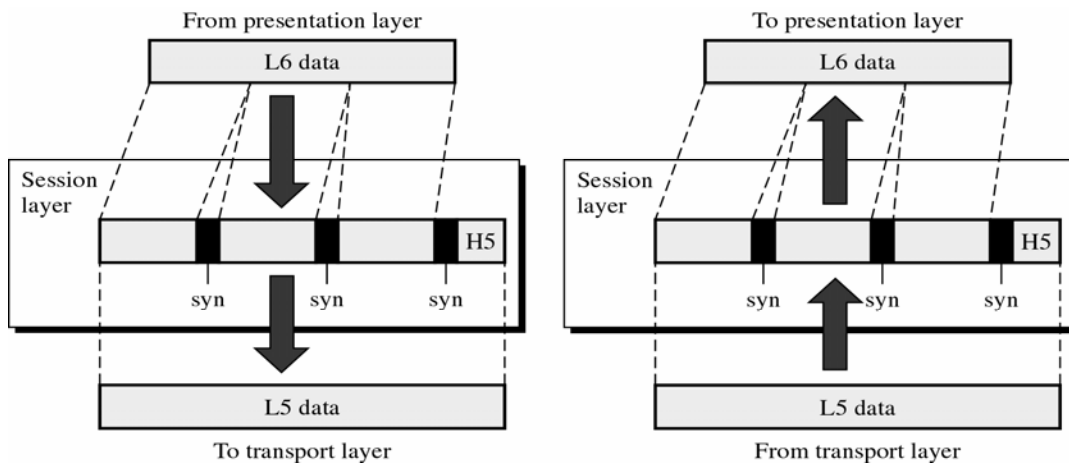
- Message is divided into transmittable segments
- Each segment contains a sequence number
- These sequence no.s enable Transport layer at the receiving m/c to reassemble message correctly at the destination and to identify and replace lost packets
- **Connection Control**
 - Transport layer can be either connection-less or connection-oriented
 - **ConnectionLess**
 - Treats each segment as an independent packet and delivers it to the transport layer of the destination m/c
 - **Connection-Oriented**
 - A connection is established first with Transport layer before delivering the packet .
 - After all data is Tx. , the connection is disconnected
- **Flow Control**
 - Like Data link layer, Transport layer is also responsible for Flow control
 - Flow control is performed end-to-end rather than across a single link
- **Error Control**
 - Like data link layer, Transport layer is responsible for the Error Control
 - Error control is performed end-to-end
 - This layer makes sure that entire message reaches Rx Transport layer w/o error
 - Error can be a result of Lost, damaged or duplicated data and usually Re Tx is done

Example Figure



❖ Session Layer

- Session layer is the Network Dialog Controller
- Establishes, Maintains, and Synchronizes the interaction between communicating systems



• **Function of Session Layer**

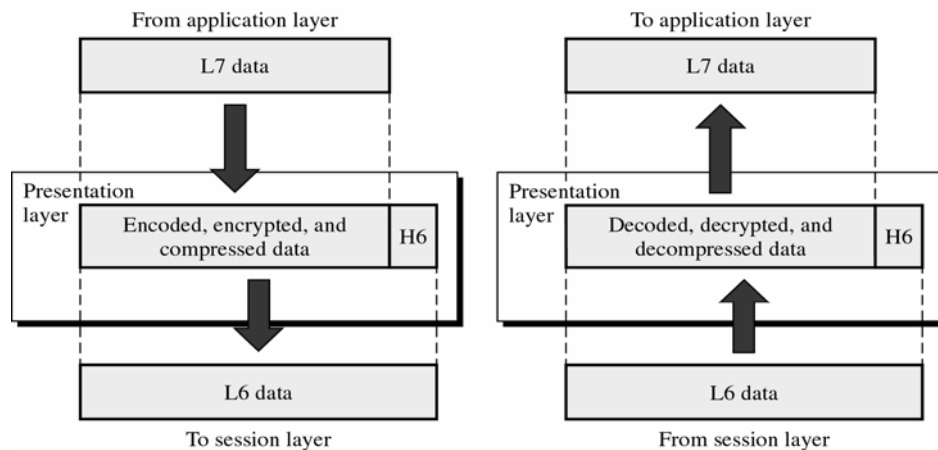
- **Dialog Control**
 - Session layer allows two systems to enter into a dialog.
 - It allows communication between two processes to take place either in half duplex or full duplex mode

- **Synchronization**

- Session layer allows a process to add check points (synchronization points) in a stream of data
- If a system is sending a file of 2000 pages, it is advisable to insert check points after every 100 page to ensure that each 100 page unit is received and acknowledged independently
- In this case, if a crash happens during the transmission of page 523 , retransmission at page 501
- Page 1-500 need not be retransmitted

- ❖ **Presentation Layer**

- This layer is concerned with Syntax and Semantics of info exchange between two systems



Summary

- ◆ The OSI Model
- ◆ Functions of Layers

Reading Sections

- ◆ Section 3.2 “Data Communications and Networking” 2nd Edition by Behrouz A. Forouzan