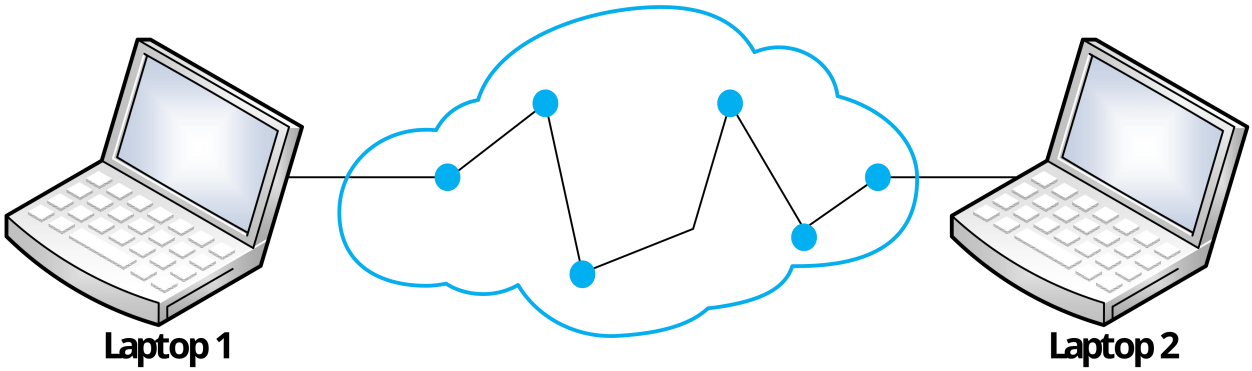
Introduction

Session 03

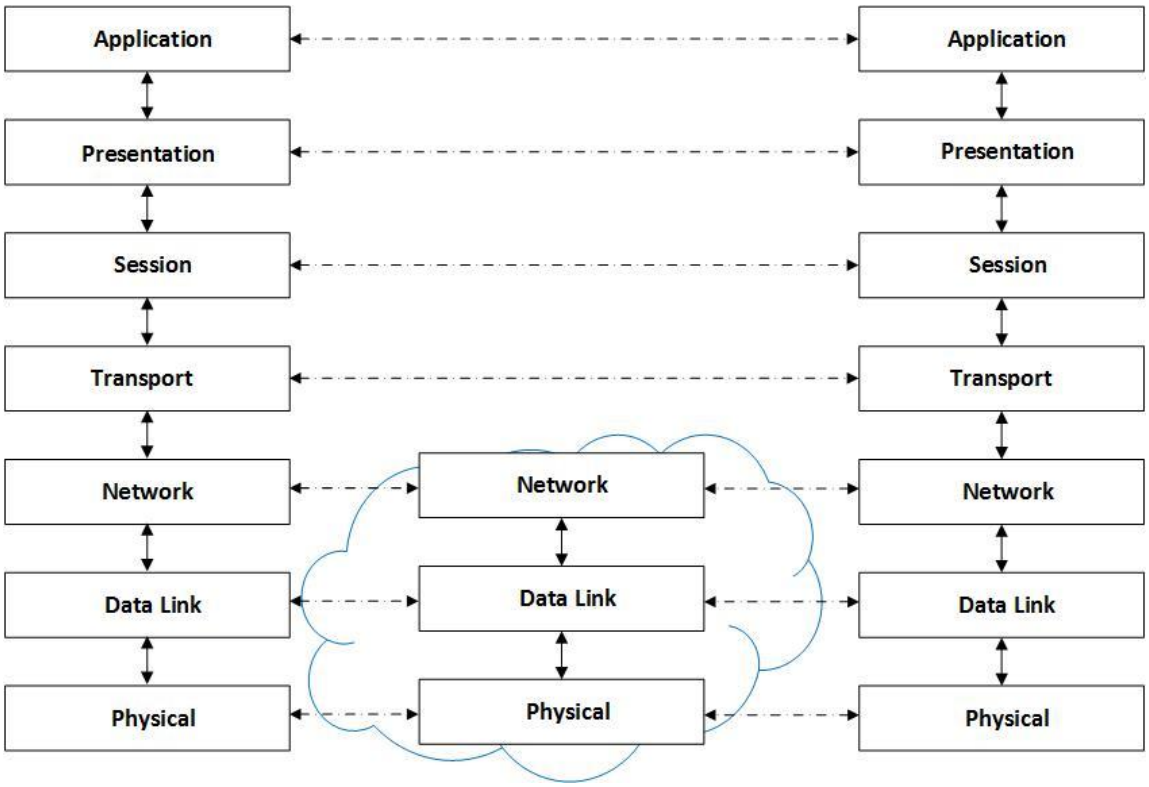
OSI Model – TCP Model

■ OSI Model:



- OSI Stand for Open System Interconnection
- Data transfer from Laptop 1 to Laptop 2 Through protocol
  - Using protocol to transfer data, to secure data and ensure that data send currently.
  - OSI Model use at Intranet or (LAN).

■ 7 layer of OSI model:

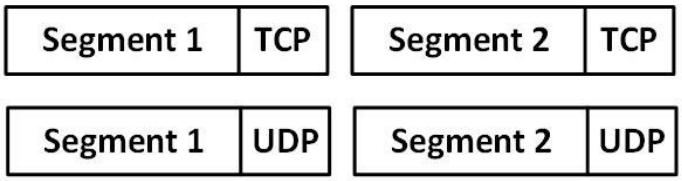


- Explain 7 layers:
  - Layer 7 – Application:
    - Determine which protocol will used.
      - Example:
      - Browser app.: use http protocol.
      - Transfer file app.: use ftp protocol.
  - Layer 6 – presentation:
    - Looking for suitable extension.
    - Present data by calling suitable software (app).
    - Compression – Decompression.
    - Encryption – Decryption.
  - Layer 5 – Session:
    - Setup path
    - Manage path

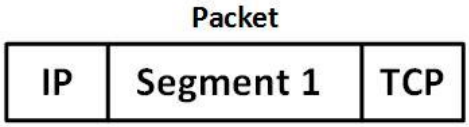
- End path
- Independent connection

Note: Path mean that port.
Data Stream: 01110101110011110000010100011
Data Stream: group of data.

- Layer 4 – Transport:
  - Segmentation.
  - TCP (connection) or UDP (connectionless)



- Layer 3 – Network:
  - IP Packet
  - Router work at layer 3



- Layer 2 – Data link
  - Data link divided into 2 sub layers
    - 1- logical link control.
      - LLC: convert packet to frame (frame network layer).
      - LLC: determine used type of network (local network or Wide network, ether-net technical).
    - 2- media access control.
      - MAC: address the frame, where determine mac addresses of source and destination by using ARP (Address Resolution Protocol).
      - MAC: make head & trailer

Note: Header contain MAC addresses, Trailer contain error detected.
Note: Switch work at layer 2, which mean that switch depend on MAC addresses and work with ARP Protocol.

- Layer 1 – Physical
  - Network card.
  - Receive & send bit (TX – RX).
  - Convert bit to byte to can be stored.

Note: HUB work at layer 1.

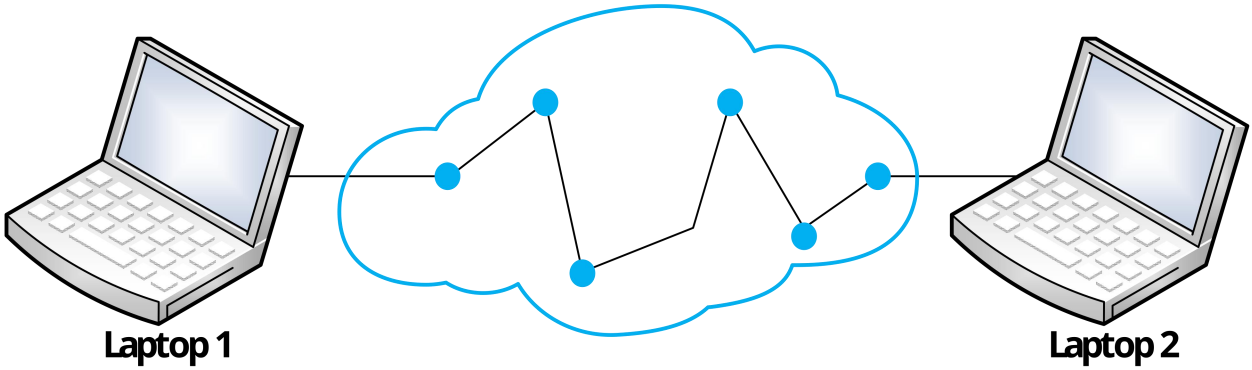
- In View Of Receiver (Device that receive Data).

Layers	Encapsulation	Device	Protocol
7- Application	Data (Packet)	PC	http – hhtps - ftp
6- Presentation	Data (Packet)		Jpg - swf – mp4
5- Session	Data (Packet)		SQL
4- Transport	Segmentation		TCP – UDP
3- Network	IP Packet	Router	IP – ICMP – IPX
2- Data Link	Bytes – Frames	Switch (Bridge)	ARP 802.3,802.11
1- Physical	Bits	Hub - repeater	Cable-rj

Note: any device work in specific layer understand pervious layers example:
- Router work at layer 3(Network), which mean router can understand layer 2 and 1.
- PC work at layer 7 which mean understand all pervious layers, so we can convert behavior of PC to work as switch or router.

Note: ARP 802.3 mean network work by cables, while
ARP 802.11 mean network work by wireless.
Note: OSI Model Help in troubleshooting.

■ TCP Model:



- o TCP/IP stand for Transmission Control Protocol/Internet Protocol.
- o Work at WAN.
- o Work as OSI Model but some layers in TCP are merged.

OSI Model	TCP Model
7- application 6- Presentation 5- Session	4- Application
4- Transport	3- Transport
3- Network	2- Internet
2- Data Link 1- Physical	1- Network

Note: Merge of layers cause speed of transmission of data.

TCP model is details :
http://www.inetdaemon.com/tutorials/internet/tcp/index.shtml