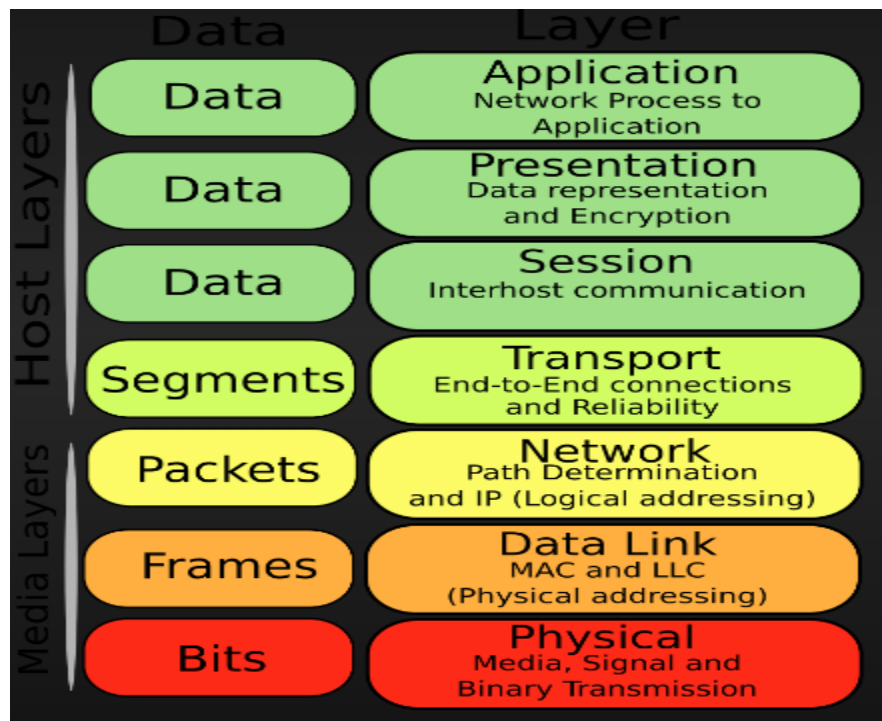


Open System Interconnect(OSI)(All People Seem To Need Data Processing)



Data is encrypted or Decrypted in the (Application + Presentation +Session ) Layers –It is the responsibility of Application Developers for the data to be encrypted or decrypted correctly (no work for network engineers in these layers).

A network engineer focuses on Layer the 1st four layers.

#### LAYER4- Transport layer

In **Transport layer** a Header is added to the data called -H4 Header so now **data** is referred as **SEGMENT**.(4 refers to the transport layer is layer 4)



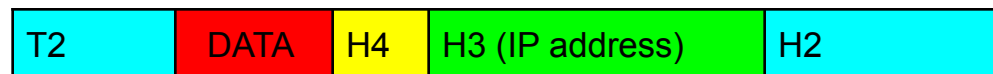
#### LAYER 3-Network layer

In the **Network layer**, again a header including the IP address is added called -H3 header and **SEGMENT** is referred to as **PACKET**.



## LAYER 2-Data link Layer

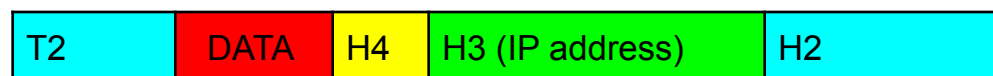
In the **Data Link** layer a H2-header and a T2-trailer is added; it includes the mac address and now the **PACKET** is called the **FRAME**. The switches operate in this layer.



## LAYER1- Physical layer

In the physical layer this **FRAME** is referred to as **BITS** to be sent out as an electrical signal or radio signal.

## PDU-Protocol Data Unit

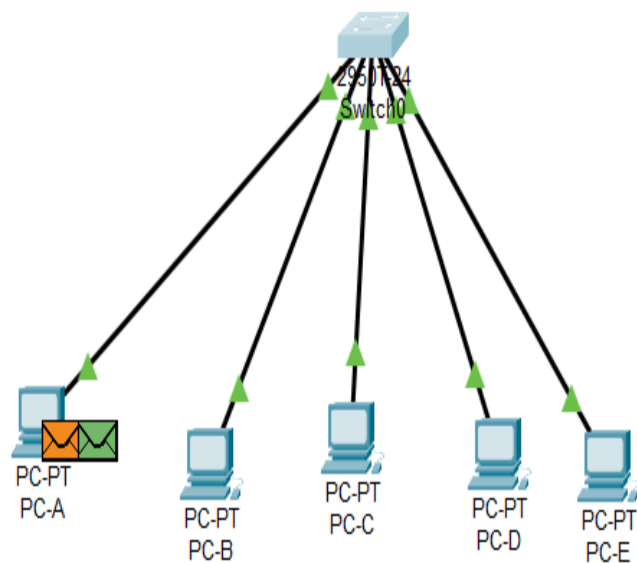


SEGMENT + PACKET + FRAME is called the **PDU** which is to be transmitted over the n/w. 

**NETWORK**– Connecting 2 or more systems together through a switch/ hub/ routers.

**SUBNET**– For manageability we break down a large network in to smaller networks called SUBNETTING.

A **BROADCAST** is when a computer sends the PDU(message/data) to all the computers on the network to locate and talk to a particular system.



The diagram (1) shows the PC-A sends a PDU to PC-E.

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But the switch does not have the MAC address of PC-E so it sends the message to all the system in the N/W -- called BROADCAST except to itself(PC-A) shown in diagram (2)

Diagram -1

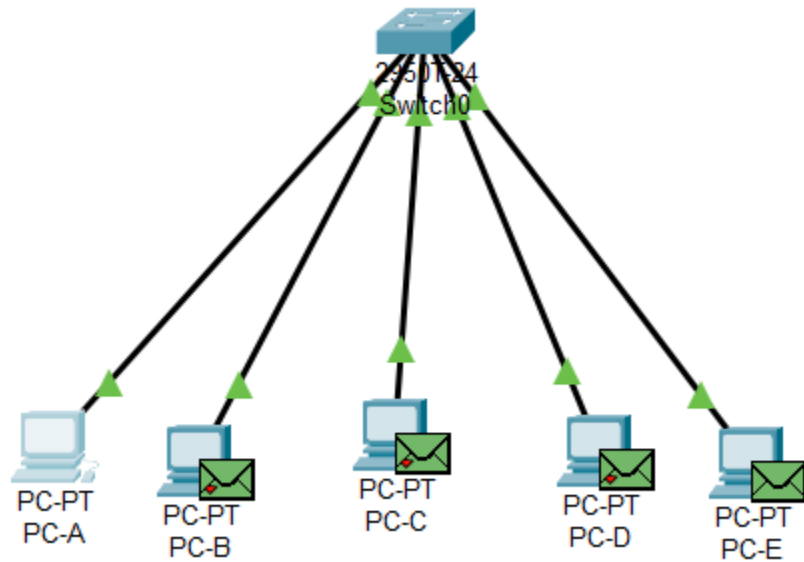
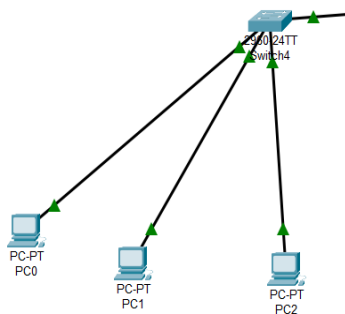


Diagram -2

To transfer this UDP within a network we need an address (mac address) between PC0 ,PC1 and PC2. The switch can read only the mac address, even though the IP address is also sent . The switch recognizes only the mac address and delivers the PDU within the n/w.This is more like a LAN(Local area n/w-within an office ,home ,small organization).

All systems will have a similar IP address i.e Pc1,Pc2 and PC3 will act as hosts within a network(A).

Target Ip address	192	168	0	1	Network
N/w address	192	168	0	2	n/w A
Host1-pc1	192	168	0	3	n/w A
Host2-pc2	192	168	0	4	n/w A
Host3-pc3	192	168	0	5	n/w A
Broadcast address	192	168	0	6	n/w A



PDU - Outside a n/w

When we need to send a PDU outside the n/w(A) to a different n/w(B) now we need the router.The Switch communicates with the router with the MacAddress of the router.

When the router receives the data from the switch, the router reads the IP address and identifies the n/w(B) then passes the data to the corresponding switch in n/w(B).

It then eventually PDU goes to the switch in the n/w(B) and now the switch reads the mac address and sends the PDU it to the corresponding system.

Target Ip address	192	168	0	1	Network
N/w address	192	168	0	7	n/w B
Host1-pc4	192	168	0	8	n/w B
Host2-pc5	192	168	0	9	n/w B
Host3-pc6	192	168	0	10	n/w B
Broadcast address	192	168	0	11	n/w B

