

Counting

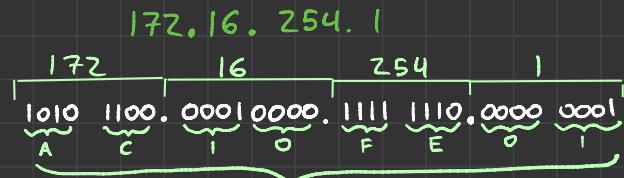
normal	Hex	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111

IP Addresses

Each digit = 1 bit, 8 bits = 1 Byte

An IP Address is a 32 bit (4 Byte) identifier of a location within the network.

Example)

172.16.254.1


$$172.16.254.1 = AC.10.FE.01$$

Subnets

To Segment the network, we define a Subnet to dictate which IP Addresses are allowed in a specific area.

Format: 172.16.254.1 255.255.255.252
 OR This is called a
 172.16.254.1 /30 Mask

From the Mask, { 172.16.254.1 = 1010 1100.0001 0000.1111 1110.0000 0001 }
 If the bit = 1, Can't Change { 255.255.255.253 = 1111 1111.1111 1111.1111 1111.1111 1110 }
 If the bit = 0, can Change
 Therefore) 172.16.254.1_{/30} = 172.16.254.0 } Addresses allowed
 in subnet

How The Network Works

Network Layers

Application Layer

Presentation Layer

Session Layer

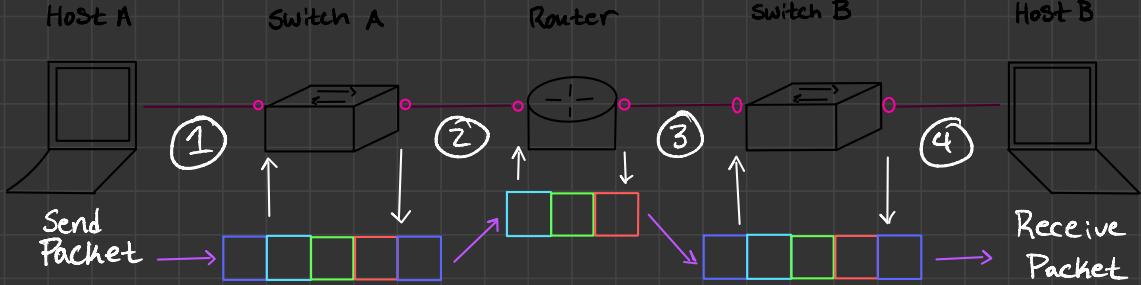
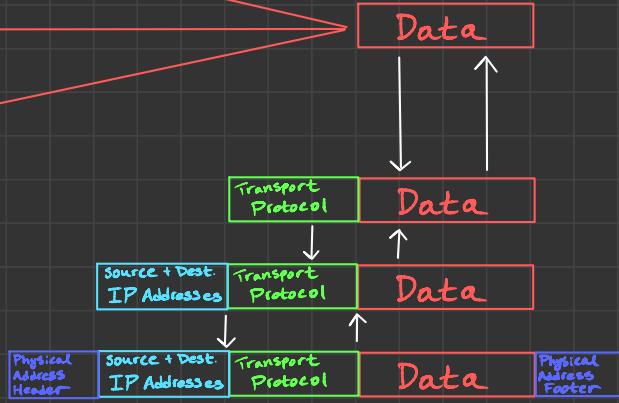
Transport Layer

Network Layer

Data Link Layer

Physical Layer

Network Packet



What is Happening?

○ = Device Interface

Switch = Layer 2 Device

Router = Layer 3 Device

- 1) Host sends Data to a Host on another Subnet
- 2) Switch A examines the Packet, sees destination is different Subnet, Forwards Packet to Router.
- 3) Router "routes" Packet to destination Subnet
- 4) Switch B looks at destination, then forwards to Host B