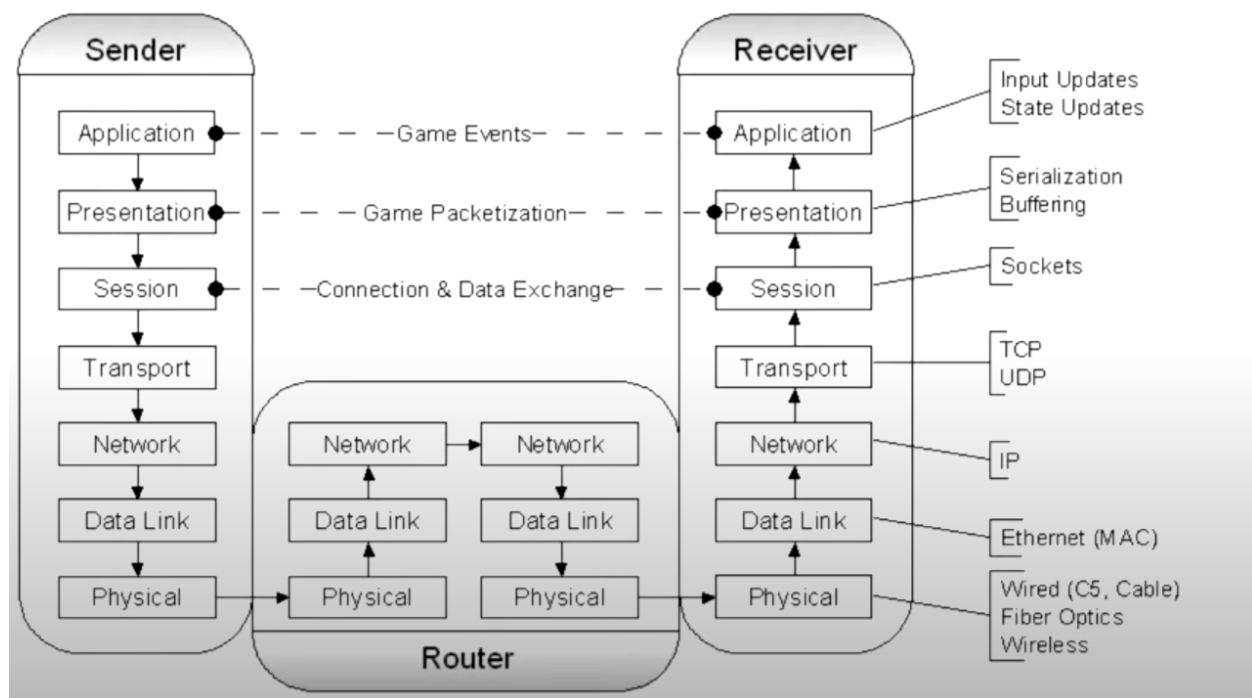# NETWORK PROGRAMMING.

Sockets → developed for UNIX.

Winsock→ windows implementation of socket.

Sockets

- Definition "A pipe between two computers on a network through which data flows" (Mulholland 2004).

- Almost all Winsock functions operate on a socket, as it's your handle to the connection. Both sides of the connection use a socket.

- Sockets are also two-way, data can be both sent and received on a socket.

- There are two common types for a socket
  - Streaming socket (SOCK_STREAM) TCP
  - Datagram socket (SOCK_DGRAM) UDP

Server Functions

1. Initialize WSA – WSAStartup().
2. Create a socket – socket().
3. Bind the socket – bind().
4. Listen on the socket – listen().
5. Accept a connection – accept(), connect().
6. Send and receive data – recv(), send(), recvfrom(), sendto().
7. Disconnect – closesocket().

Client Functions

1. Initialize WSA – WSAStartup().
2. Create a socket – socket().
3. Connect to the server – connect().
4. Send and receive data – recv(), send(), recvfrom(), sendto().
5. Disconnect – closesocket().

Subnet: Large network which is further divided into smaller groups.

IP Address: basically used to identify a unique device within,

there are two types; IPV4 AND IPV56

IPV4 is basically 32bits

IPV6: is basically of 128 bits.

The main advantage of IPV6 is that, it accommodates more user devices.

Each of the eight colon-separated groups of the IPv6 address represents 16 bits in hexadecimal number format.
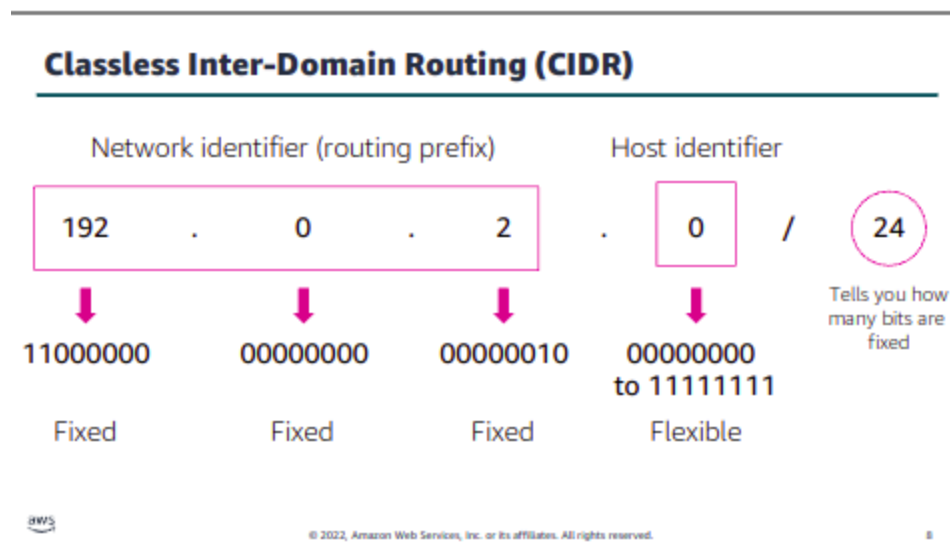
Public IP ADDRESS

This shit would keep on changing ,

It is free, since, it is provided by the ISP or internet service Provider.

Elastic IP ADDRESS: USED BY Organisations.

Can be considered it as home address or remains same.

Classless Inter-Domain Routing (CIDR)

Network identifier (routing prefix)			Host identifier	
192 .	0 .	2 .	0	/ 24
↓	↓	↓	↓	Tells you how many bits are fixed
11000000	00000000	00000010	00000000 to 11111111	
Fixed	Fixed	Fixed	Flexible	

So this basically, is used to express a group of IP ADRESS which are consecutive to each other.

it doesn't have much specific details.

CIDR (Classless Inter-Domain Routing) notation comprises of a forward slash (/) followed by a number that indicates how many bits are used for the network portion of the address.

For example, in 192.168.1.0/24, the /24 means the first 24 bits are used for the network portion.

Open Systems Interconnection (OSI) model

Layer	Number	Function	Protocol/Address
Application	7	Means for an application to access a computer network	HTTP(S), FTP, DHCP, LDAP
Presentation	6	• Ensures that the application layer can read the data • Encryption	ASCI, ICA
Session	5	Enables orderly exchange of data	NetBIOS, RPC
Transport	4	Provides protocols to support host-to-host communication	TCP, UDP
Network	3	Routing and packet forwarding (routers)	IP
Data link	2	Transfer data in the same LAN network (hubs and switches)	MAC
Physical	1	Transmission and reception of raw bitstreams over a physical medium	Signals (1s and 0s)

The Open Systems Interconnection (OSI) model is a conceptual model that is used to explain how

data travels over a network. It consists of seven layers and shows the common protocols and

addresses that are used to send data at each layer. For example, hubs and switches work at layer

2 (the data link layer). Routers work at layer 3 (the network layer). The OSI model can also be

used to understand how communication takes place in a virtual private cloud (VPC), which you

will learn about in the next section.

AWS Training and Certification