

# Agenda

- ▶ Network
- ▶ What is VPC?
- ▶ Understanding Subnet.
- ▶ Creating VPC and Subnet
- ▶ Behaviour of Public and Private Subnet





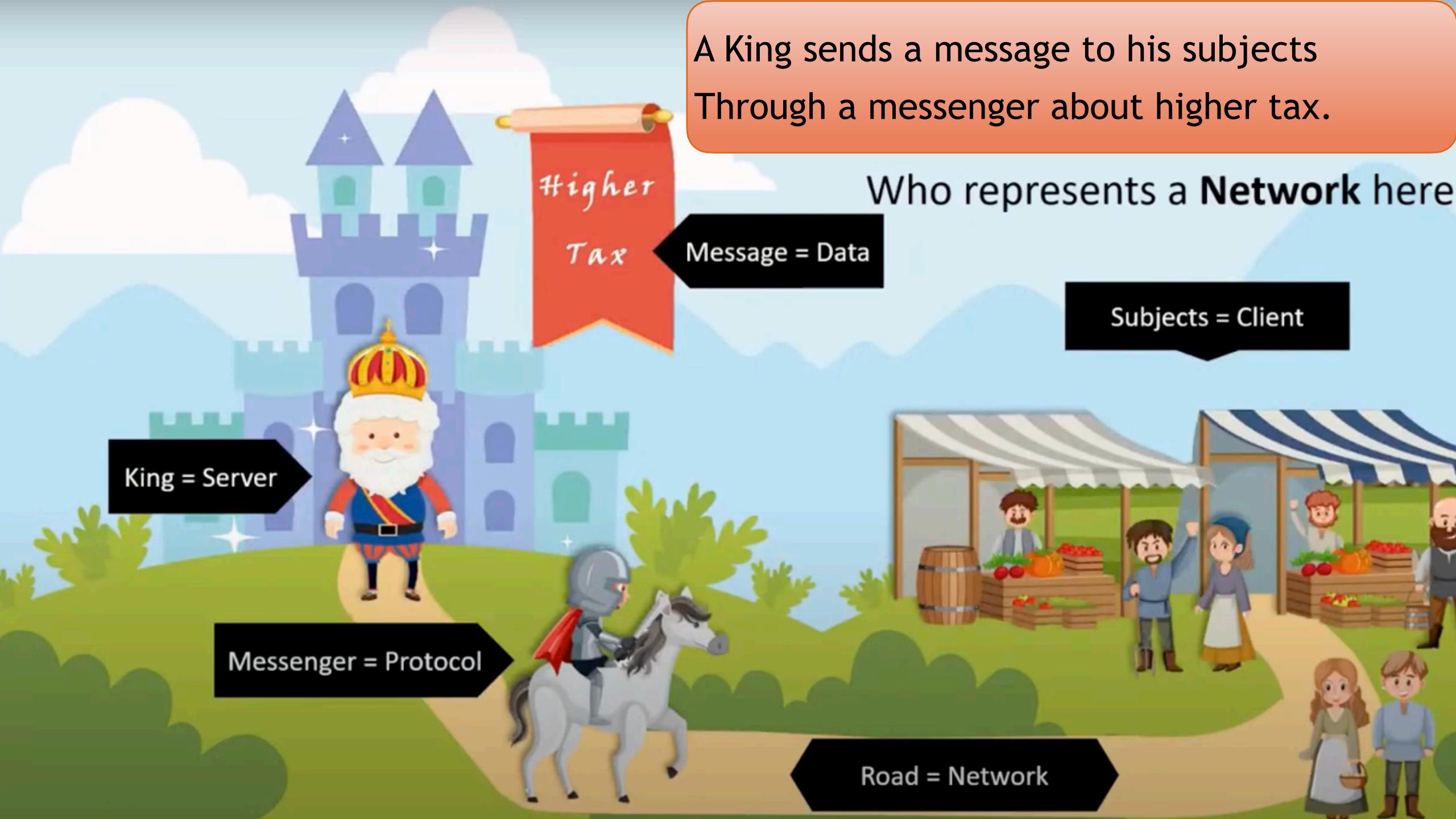
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Who represents a **Network** here?



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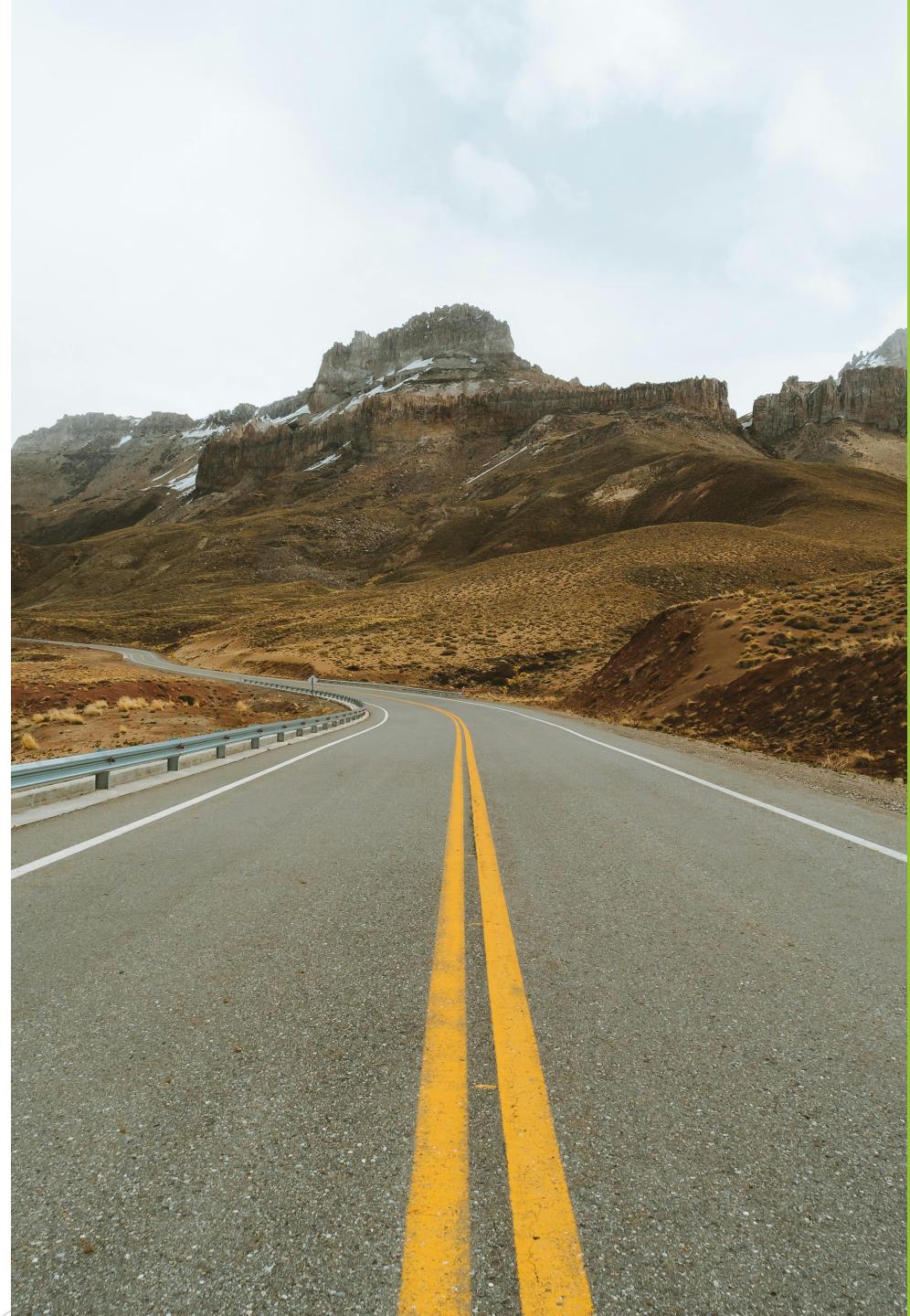
Subjects = Client

Message = Data

King = Server

Messenger = Protocol

Road = Network



# What is the Network?

- ▶ A collection of devices that can communicate together.
- ▶ The fabric that ties business applications together.



# Networking Components

- ▶ Client
- ▶ Server
- ▶ NIC
- ▶ Network cables
- ▶ Switch
- ▶ Router

# Amazon VPC

- ▶ Amazon VPC is a service that you can use to provision a logically isolated section of the AWS cloud..
- ▶ This service is called a virtual private cloud, or Amazon VPC with an Amazon VPC you can launch your AWS resources in a virtual network that you define.



**Pic -1**



Build a House which pic is suitable?

**Pic -2**



# What does it do?

- ▶ Gives you control over your virtual networking resources, including:
  - ▶ Selecting an IP address range
  - ▶ Creating subnets
  - ▶ Configuring route tables and network gateway
  - ▶ Give you the ability to customize its network configuration
  - ▶ Gives you the ability to use multiple layers of security

# Types of IP address:

- ▶ **Public** : A public IP address is an IPV4 address that is reachable from the internet.
  - ▶ Need to purchase public IP from ISP
  - ▶ Fixed for organization
- 
- ▶ **Private** : A private IP address is a range of non-internet facing IP address used in an internal network.
  - ▶ Private IP addresses are provided by network devices, such as routers, using network address translation.

# What is an IP, and how can you find yours ?

- ▶ Commands:

#ipconfig

#ifconfig

- ▶ Google.
- ▶ Search in google “what is my IP”

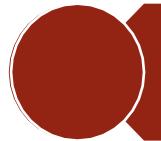
# Private IP range

From	To
10.0.0.0	10.255.255.255
172.16.0.0	172.31.255.255
192.168.0.0	192.168.255.255

# Subnet

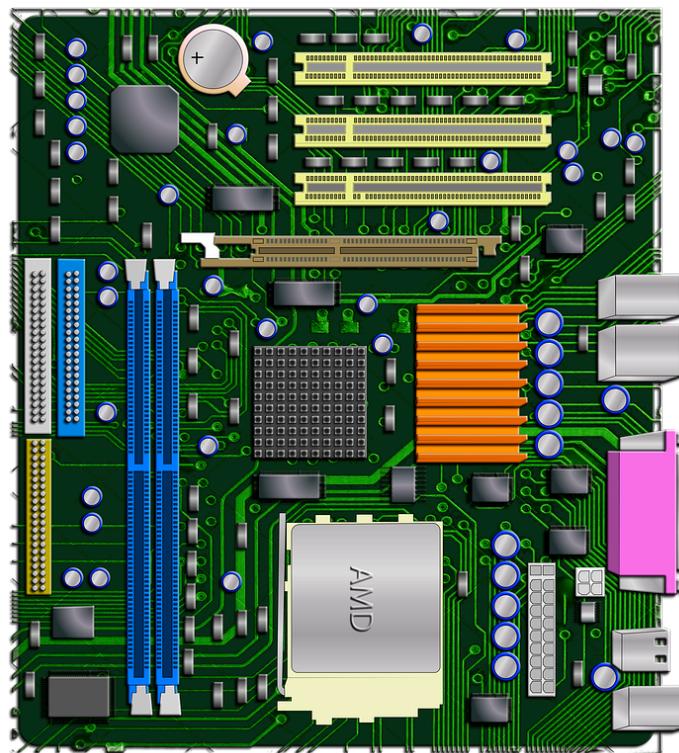
- ▶ Virtual Private Cloud (VPC) networks are global resources. Each VPC network consists of one or more IP address ranges called subnets.
- ▶ Subnets are regional resources, and have IP address ranges associated with them.
- ▶ A Subnet, or subnetwork, is a segmented piece of a larger network. More specifically, subnets are a logical partition of an IP network into multiple, smaller network segments.

# VPC - Components

-  Network Interfaces
-  Route Tables
-  Internet Gateway
-  Network Address Translation (NAT)
-  Security (Security Groups and NACL)

## ► Network Interface

- Interface between a computer and an internet network
- Network IO happens via N/W interface cards
- N/W interfaces contain - Elastic IP. Public IP. Private IP. Security Groups

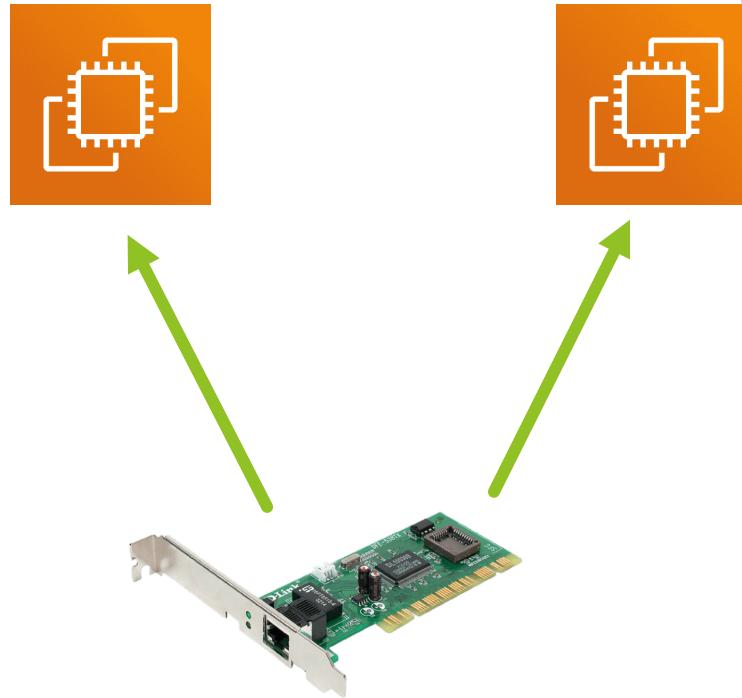


Elastic IP

# Elastic Network Interface

**Network interface can be:**

- ❖ Created to an Instance
- ❖ Attached to an Instance
- ❖ Detached form an Instance
- ❖ Re-attached to another instance



Private IP  
Elastic IP  
Public IP  
Security Group  
MAC Address

# Route Tables

- ▶ Route table tells a machine/network where traffic is directed.
- ▶ Directions are defined by “routes” in Route Tables.
- ▶ Each subnet must be associated with a Route.
- ▶ All VPCs come with an implicit router and a main route table which can be modified.

Destination	Target
10.0.0.9	Local
0.0.0.0/0	IGW

# Internet Gateway

- ▶ An internet gateway is a horizontally scaled, redundant, and highly available VPC component that allows communication between instances in your VPC and the internet.

## Purpose of an Internet Gateway

- ❖ Created to an Instance
- ❖ Attached to an Instance
- ❖ Detached form an Instance
- ❖ Re-attached to another instance

# Bastion host / Jump server

A **bastion host** in AWS is like a secure entry point that lets you access servers in a private network. Imagine it as a guarded door to a locked room—you can only use it to get in if you have the right key. It helps you safely connect to private servers without exposing them directly to the internet.

- It's placed in a public area (public subnet) so it can be accessed from outside.
- You use it to log in to other servers inside the private network.
- It's set up with strong locks (security settings) to ensure only trusted people can get through.

In short, it's a secure way to manage and access your private servers without making them vulnerable to the outside world.