**🌐 What is a VPC?**

**VPC** stands for **Virtual Private Cloud**. Imagine it like a **private network inside the cloud** (e.g., AWS, Azure, or Google Cloud), just for you.

Think of it like your **own Wi-Fi router at home**, which creates a private network for your phone, laptop, and smart devices to talk to each other securely. Similarly:

* A **VPC** gives you a **safe and isolated environment** to run your applications (like virtual machines, databases, etc.) in the cloud.
* You decide the **network range (IP addresses)**, what can come in/out (firewall rules), and how resources talk to each other.

**🧩 What is a Subnet?**

A **subnet** (short for **subnetwork**) is like dividing your VPC into **smaller parts**.

👉 Example:

* VPC = Big house 🏠
* Subnets = Rooms inside the house 🛏️🛋️
* Each **subnet** has a specific **range of IP addresses**, and you place your resources (like virtual machines or VMs) inside these subnets.

There are two types:

1. **Public subnet**: Can talk to the internet.
2. **Private subnet**: Cannot directly talk to the internet.

**✅ What is a Default VPC and Default Subnet?**

When you create a new cloud account (like AWS), a **default VPC** is automatically created for you in each region, with:

* One **default subnet** in each **Availability Zone**
* **Internet access** allowed by default
* Some basic **security rules** in place

It’s like a pre-configured home with rooms already set up. It helps beginners start quickly.

**🔍 Case Study: Two Subnets, One VM in Each**

**Scenario:** You created a VPC with 2 subnets. Each subnet has one VM (Virtual Machine). Can the VMs ping each other?

**✅ Can VMs ping each other?**

Initially no. We need to setup firewall rule with icmp enable

What is ICMP?

**ICMP** stands for **Internet Control Message Protocol**.

It’s a **communication protocol** used by computers and servers to **send messages about the network** — like checking if another computer is reachable.