

# Networking Terminologies



- **VPC:** A private, isolated network in Google Cloud where your resources communicate securely.
- **Subnets:** Smaller networks inside a VPC, created per region to organize and control traffic.
- **IP Ranges (CIDR):** A defined range of IP addresses that sets the boundary of a network.
- **Firewalls:** Security rules that allow or block network traffic based on IP, port, and protocol.
- **Cloud NAT:** Allows private resources to access the internet without having public IPs.





# CIDR Block Explained

*(The 10.0.0.0/24 Story)*



## 📌 What is a CIDR Block?

- CIDR defines the size and boundary of a network.

- Think of it as your network's fence.

## 📌 10.0.0.0 – Starting IP

- This is the first IP address of the network.
- All IPs in this network start from here.

 /24 – The Mask

/24 tells how many IP addresses are available.

Formula:

$$2^{(32 - 24)} = 2^8 = 256 \text{ IPs}$$

 CIDR Size Examples

/24 → 256 IPs

/16 → 65,536 IPs

$$2^{(32 - 16)} = 2^{16} = 65,536$$



# Stateful vs Stateless Firewall



## Stateful Firewall (GCP Default)

- Automatically allows return traffic.
- More secure and easier to manage.
- Used by default in GCP.

## Stateless Firewall

- Each request is checked separately.
- Return traffic must be explicitly allowed
- More complex to manage.

