**Virtual private cloud (VPC):**

Network : it is a connection between the people or group who wants to do a common work or executes a application

VPC: vpc is a network, within the network, all the resources are available from which we can do some tasks

VPC COMPONENTS : 1. Subnet

2. route table

3. Nat gateway

4. CIDR or supernetting

5. IPAM (IP address manager )

By using vpc, we can choose range of ip addresses, creation of subnets, configuration of route table and internet gateways

CIDR : classless interdomain routing or super netting . it reduces the size of route table by combining the class c IP address ( ip addresses provided by the internet service providers ) into single network or route .

Subnet and ip address points:

1. Default subnets doesn’t not have public ip address , so we need to add public ip address by selecting auto enabling public ip to have public ip address . then only we can communicate or connect the instance to the internet
2. By default public ip address and public dns names are defined . dns names are taken either by resource based(RBN) or by ip based (IPBN)
3. We need to create a subnet for each zone , subnet doesn’t have span option to cover more than one zone. To overcome the issue of zone failure , we need to add more subnets for one resources .
4. Ipv4 supports nat gateway, elastic ip, vpc endpoints whereas ipv6 doesn’t support all of the above
5. Prefix of ipv4 is 10.10.10.0/16 (subnet mask range is from 0 to 32 ) . it is four groups of three decimal groups and one zero group separated by .(period ) and followed by forward slash and subnet mask value
6. Vpc range for ipv6 is fixed at /56 and subnet mask range is fixed at /64
7. Cidr: class less inerdomain routing . it is for private ip address. For public ip address , you need to mention type of class (A,B,C,D,E). class E ip addresses are the ones which are provided by internet service providers (ISP)
8. Aws provides two types of securities , those are SG(security groups which applies at resource stage ), NACL(network access control list, which applies at subnet level )
9. Aws block first four (10.0.0.0 to 10.0.0.3 ) and last ip address (10.0.0.255 ) for 256 ip address range subnet.
10. 10.0.0.0 is for network address
11. 10.0.0.1 is for vpc router
12. 10.0.0.2 is for dns server ip address ( network address +2 )
13. 10.0.0.3 is for future use
14. 10.0.0.255 is for broadcast but aws doesn’t support broadcast
15. Any subnet configuration is for private ip not for public ip. We need to allowcate public ip by selecting the option “auto enable public ip” while configuring ec2 instance.