**What is a Subnet**

Networks become more complicate to manage when the size in increasing. Subnets are used to make management of complex networks easy by breaking into smaller manageable sub networks. This is why we call it as Subnet.

Subnet is nothing but a logical sub division of the bigger network.

Let’s see subnetting in real life examples. Let assume we have ordered a pizza, it is hard to eat pizza as it is, so we will make it into smaller slices to eat easily. Similarly, it is difficult to manage the whole network as it is, so we will make it into smaller sub-networks called as subnets.

**Note:** subnet is Zone specific. Each subnet must reside entirely within one Availability Zone and cannot span across multiple zones.

We have two types in subnet.

1. Public subnet

2. Private subnet

**Public subnet**

If the internet gateway is attached to the subnet then it’s a public subnet.

To provide internet to a subnet first we need to create a VPC and Internet gateway. Attach this internet gateway to the VPC.

Then after attaching IG to VPC we have to create a Route table and click on edit routes and add IG Route to the Table and Save routes. Then select the Route table and click on Edit Subnet associations on Actions menu and select the subnet and save.

**Private subnet**

If the internet gateway is not attached to the subnet then it’s a private subnet.

If we launch any service in Private subnet, we can’t access it publicly through internet gateway.

To provide internet for private subnet we will use NAT (Network Address Translator).

**CIDR (Classless Inter Domain Routing) for Subnet**

**1.** while creating a subnet we will ask for under which VPC we need to create this subnet.

**2.** what is the CIDR block range for this subnet.

**Note:**

If we want multiple subnets in VPC then the CIDR block range network suffix for subnet must be grater than VPC’s CIDR block range network suffix. Otherwise we will have only one subnet in VPC.

Let say we have VPC with CIDR 177.155.0.0/24.

This means we can have 32-24 = 8 ===🡺 28 = 256 IP address in this VPC.

Now if we want to divide this 256 IPs into 2 subnets (each subnet with 128 IPs) then the CIDR block network suffix should be greater than 24.

Subnet-1 CIDR ===🡺 177.155.0.0/25 ===🡺 177.155.0.0 to 177.155.0.127 (128)

Subnet-2 CIDR ===🡺 177.155.0.128/25 ===🡺 177.155.0.128 to 177.155.0.256 (128)

Out of this 128 IP address in each subnet we have 123 Available Addresses, remaining 5 are reserved.

Subnet-1

1 ===🡺 177.155.0.0 ===🡺 Network address.

2 ===🡺 177.155.0.1 ===🡺 Reserved by AWS for the VPC router.

3 ===🡺 177.155.0.2 ===🡺 Reserved by AWS. The IP address of the **DNS** server.

4 ===🡺 177.155.0.3 ===🡺 Reserved by AWS for future use.

5 ===🡺 177.155.0.127 ===🡺 Network broadcast address.

Subnet-2

1 ===🡺 177.155.0.128 ===🡺 Network address.

2 ===🡺 177.155.0.129 ===🡺 Reserved by AWS for the VPC router.

3 ===🡺 177.155.0.130 ===🡺 Reserved by AWS. The IP address of the **DNS** server.

4 ===🡺 177.155.0.131 ===🡺 Reserved by AWS for future use.

5 ===🡺 177.155.0.255 ===🡺 Network broadcast address.

**Internet for subnet**

Each subnet in your VPC must be associated with a route table, which controls the routing for the subnet (subnet route table).

A subnet can only be associated with one route table at a time, but you can associate multiple subnets with the same subnet route table.

We need to add the routes to the Route table for internet gateway access. We will see how to add routes to the table in Route table document.