Steps to Create VPC:

1. Search for VPC & then click on VPC.
2. Click on 'Create VPC'
3. Here, we have 2 options to create the VPC
    i. VPC only
    ii. VPC & more

2^(32-24) = 2^8 = 256

VPC & more

1. Select 'VPC & more'.
2. Provide a name to the VPC.
3. Select the pool of IPs for VPC by providing a value of IP CIDR in IPv4 CIDR BLOCK.
4. Under 'Number of AZ', select whatever number you want.
5. Mention the no. of public & private subnet you need inside the VPC in 'Number of Subnets'
6. For both 'NAT Gateways' & 'VPC Endpoints', select 'None'.
7. Click on 'Create VPC'.

-> Search for EC2, & create an instance.
-> While creating an insatnce, when you come across 'Network Settings'.
-> Click on 'Edit'
-> Under 'VPC Required;, select the VPC you created.
-> In 'Subnet', select the 'public subnet'.
-> Enable 'Auto-assign public IP'.
-> Click on Create instance & launch the instance.

CIDR for VPC
10.0.0.0/24 -> 256 IPs

2 subnets w 128 IPs each

EC2 <— 1.Public subnet -> 10.0.0.1 - 10.0.0.128 IPs
2.Private subnets -> 10.0.0.129 - 10.0.0.256 IPs

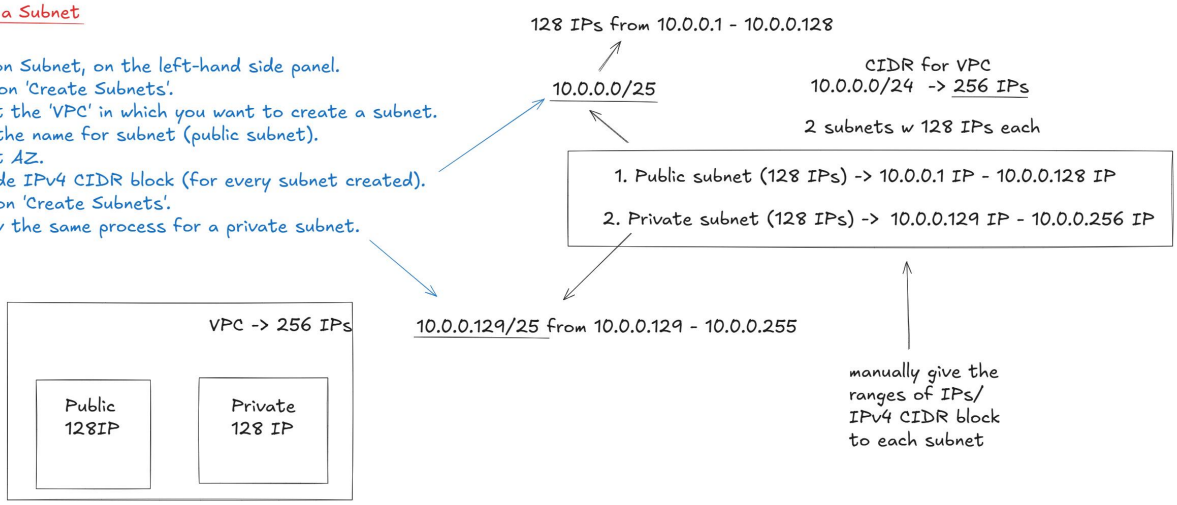
VPC only

Create a VPC

1. Select VPC only.
2. Provide a name for the VPC.
3. Select the pool of IPs for VPC by providing a value of IP CIDR in IPv4 CIDR BLOCK by selecting 'IPv4 CIDR manual input' .

Create a Subnet

1. Click on Subnet, on the left-hand side panel.
2. Click on 'Create Subnets'.
3. Select the 'VPC' in which you want to create a subnet.
4. Give the name for subnet (public subnet).
5. Select AZ.
6. Provide IPv4 CIDR block (for every subnet created).
7. Click on 'Create Subnets'.
8. Follow the same process for a private subnet.



Create a Route Table

1. Click on Route Table, on the left-hand side panel.
2. Give name for the route table (public-route).
3. Select the VPC and click on 'Create Route Table'.
4. Select the route & click on 'Subnet Associations'.
5. Click on 'Edit Subnet Associations'.
6. Select the public-subnet and click on 'Subnet Association'.

Create an Internet Gateway

1. Click on Internet Gateway, on the left-hand side panel.
2. Click on 'Create Internet Gateway'.
3. Provide a name to the IGW as 'IGW-1'.
4. Click on 'Create Internet Gateway'.
5. Select the create IGW & click on 'Actions'.
6. Select 'Attach VPC' & select the required VPC from the list.

Edit the route table

1. Go the Route Table.
2. Select the public route and click on 'Routes' & then click on 'Edit Routes'.
3. Click on 'Add route' & in 'Destination', select '0.0.0.0/0'.
4. In 'Target', select the component as 'Internet Gateway' & select the create IGW.

Create an NAT Gateway

1. On the left-hand side panel, select 'NAT Gateways'.
2. Click on 'Create NAT Gateway'.
3. Provide a name to the NATG.
4. Select the subnet (public-subnet).
5. Connectivity should be public.
6. Click on 'Allocate Elastic IP' for attaching an elastic IP for the NATG.
7. Click on 'Create NAT Gateway'.

Edit the route table

1. Go the Route Table.
2. Select the private route and click on 'Routes' & then click on 'Edit Routes'.
3. Click on 'Add route' & in 'Destination', select '0.0.0.0/0'.
4. In 'Target', select the component as 'NAT Gateway' & select the create IGW.

Create a Route Table for Private Subnet & the NATG

1. Click on Route Table, on the left-hand side panel.
2. Give name for the route table (private-route).
3. Select the VPC and click on 'Create Route Table'.
4. Select the route & click on 'Subnet Associations'.
5. Click on 'Edit Subnet Associations'.
6. Select the private-subnet and click on 'Subnet Association'.

To connect to private EC2

1. Select the public instance & connect it with SSH client.
2. Create a file (touch demo-key).
3. Go the private key in the local system and copy the content of the file (.pem)
4. Paste the content in the file which was created in the instance (demo-key).
5. Change the file's permission to 400.
6. Now, go to the private instance & select it and click on 'Connect'.
7. Go to SSH Client, and copy the SSH link.
8. Now, in the public instance, paste the link and edit the key-name to the file present in the instance.