# A Step-by-step guide

we are following a **Warm Standby Disaster recovery strategy** so we are going to utilize two regions during our deployment. *us-east-1* **AKA** North Virginia **as primary** and **us-west-2 AKA** Oregon as secondary or DR.

⬦ VPC (Virtual Private Cloud)

firstly, we are going to set up VPC in both regions to isolate our resources from the internet. The below image contained all the subnets, their IP range, and their uses. you can use your own VPC setup if you have a better idea. and if you are a beginner, please create VPC as I have shown below.

| VPC	172.20.0.0/16			
Availability zone	us-east-1a / us-west-2a		us-east-1b / us-west-2b	
uses	name of the sbunet	subnet ip range	name of the subnet	subnet ip range
ALB frontend ALB backend	pub-sub-1a	172.20.1.0/24	pub-sub-2b	172.20.2.0/24
Web servers	pri-sub-3a	172.20.3.0/24	pri-sub-4b	172.20.4.0/24
App servers	pri-sub-5a	172.20.5.0./24	pri-sub-6b	172.20.6.0/24
Databases	pri-sub-7a	172.20.7.0/24	pri-sub-8b	172.20.1.0/24

Please log in to your AWS Account and type VPC in the AWS console. and click on VPC service.
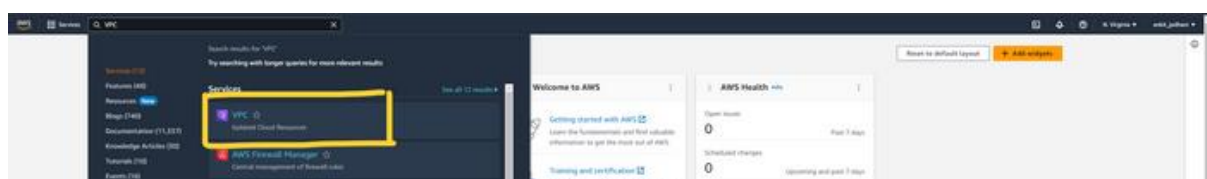
Click on `Your VPC's` button on the left and then click on `Create VPC` the button on the top right corner of the page.
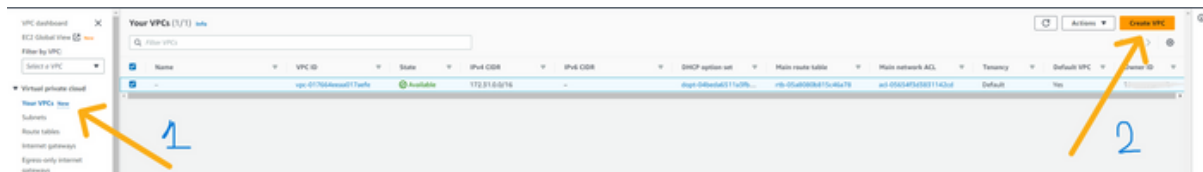
here we can see the form where we can fill the configuration of VPC. please enter the name that you want to keep and the IPV4 CIDR block. in my case CIDE block is 172.20.0.0/16.
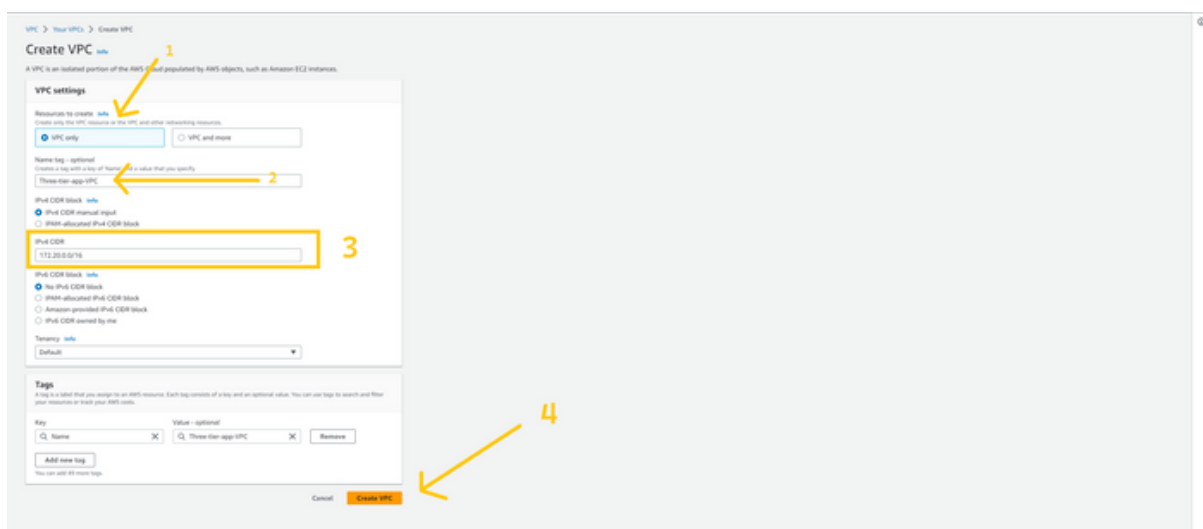
Now click on the `subnet` button which is located on the left side and then click on the `Create subnet` button on the top right corner of the page.
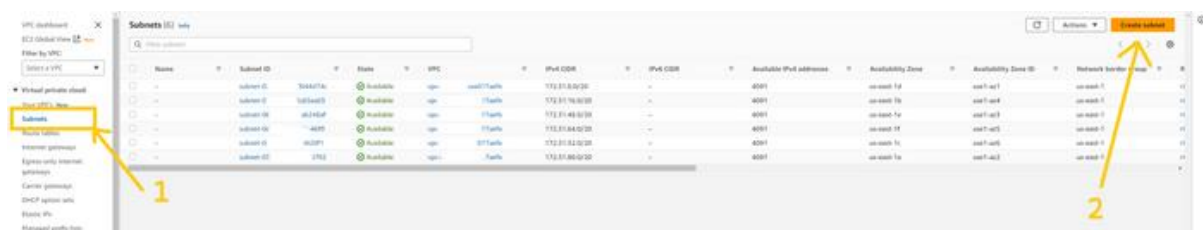
Please remove the default VPC ID and choose the VPC ID that we have just created in the VPC ID field. and click on the Add Subnet button at the bottom.


now we need to configure our subnets. Again you can use the VPC configuration image that I shared earlier on the blog to get the IP range and to know which subnet will be used for what purpose. we are going to create a total of 8 subnets of which 2 of them are public and the rest of 6 subnets are private. you can create a subnet as I have shown in the below image. after adding all the subnets click on `Create subnet` button.

After the successful creation of all 8 subnets, they look like this. you can verify with my subnets.

now we are going to create Internet Gateway also known as **IGW.** it is responsible for communication between VPC, VPC's public subnet with the Internet. without IGW we won't be able to communicate with the Internet. so let's create that. click on the `internet gateways` button at the left panel. and then click on the `Create Internet gateways` button on the top right corner of the page.
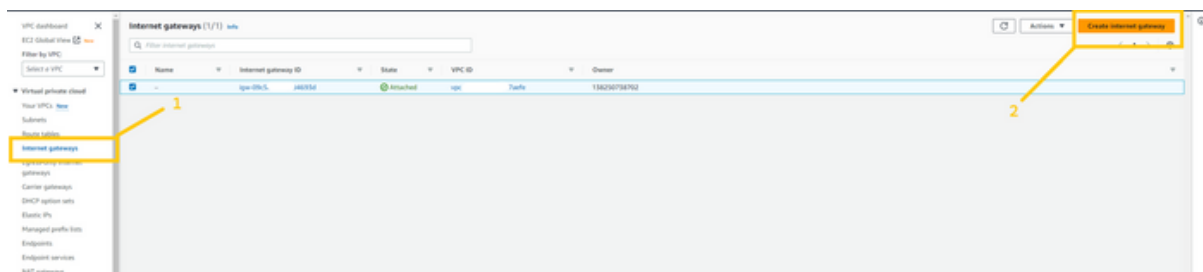
give any name you want to give to IGW. and click on Create Internet gateway button.

after creating an internet gateway, we need to attach it with VPC to use it. for that click on the Action button. here you can see the drop-down list. please select the option Attach to VPC.
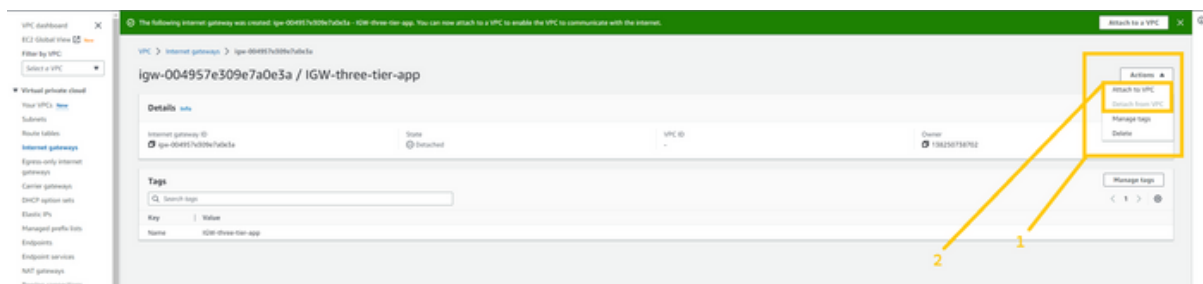
please select VPC that we have created just now from the Available VPC list. and then click on the `Attach Internet gateway` button.
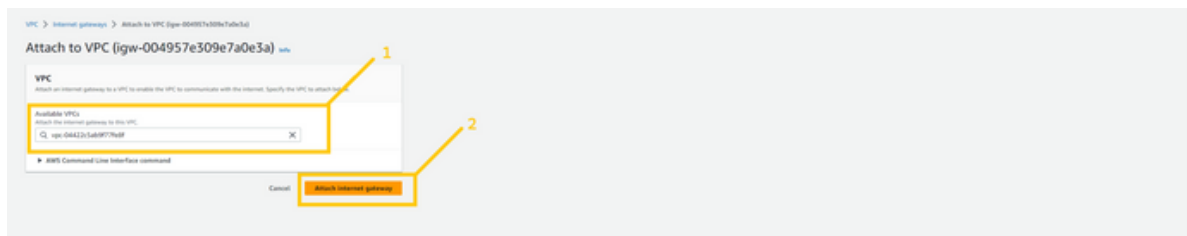
   Now we need to create a NAT gateway. NAT gateway is responsible to connect resources that are in the private subnet to communicate with the internet. all the resources which will be there in a private subnet will communicate to the internet through the NAT gateway. we will keep the NAT gateway in the public subnet so that it can access the internet. NAT gateway is a chargeable resource. so you will be charged by AWS as long as you keep it up. Now to create a NAT gateway click on the `NAT gateways` button on the left panel of the web page. and then click on the `Create NAT gateways` button in the top right corner of the page.
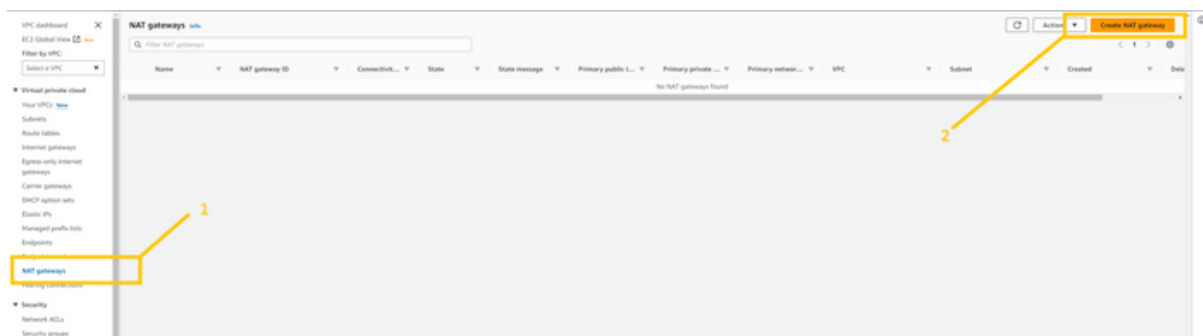
give any name you want to give to the NAT gateway. but be cautious with selecting a subnet. ***You have to select one of the Public subnets among the two. either pub-sub-1a or pub-sub-2b***. then click on the `Allocate Elastic IP` button to allocate Elastic IP. and then click on the `Create` NAT gateways button. NAT gateways creation takes 2-4 minutes.


Now we need to have a route table to handle traffic for public subnet and private subnet and for that, we need to create a Route table. we are going to create two route tables one for the public subnet and another one for the private subnet. first, we are going to create RT for the public subnet. so click on the Route table button which you can see on the left panel. and click on the Create Route table button on the top corner of the page.
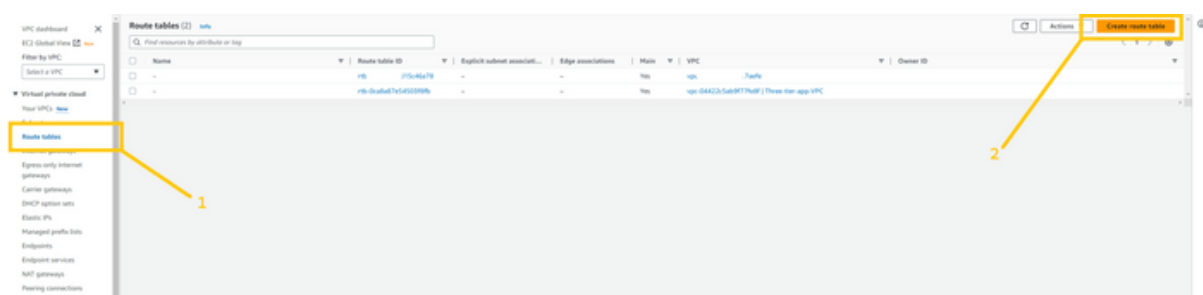
give a name to your RT such as Pub-RT. please give a name that is appropriate for resources then it will be easy to organize the things. make sure you select the correct VPC. and then click on the `create route table`.
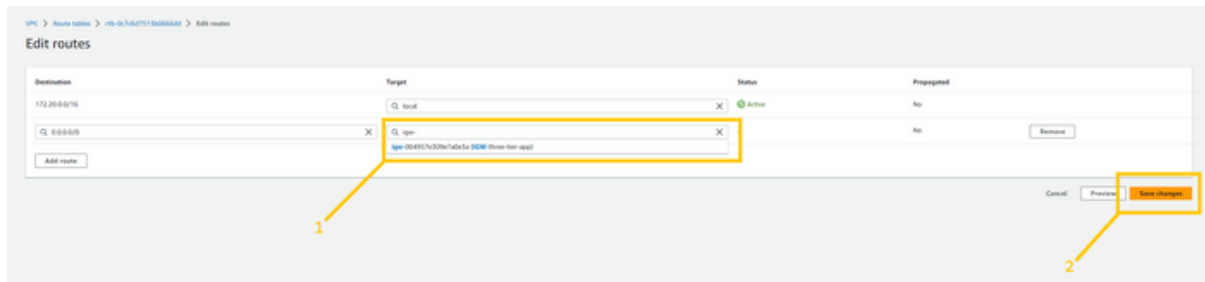

let's create RT for the private subnet.
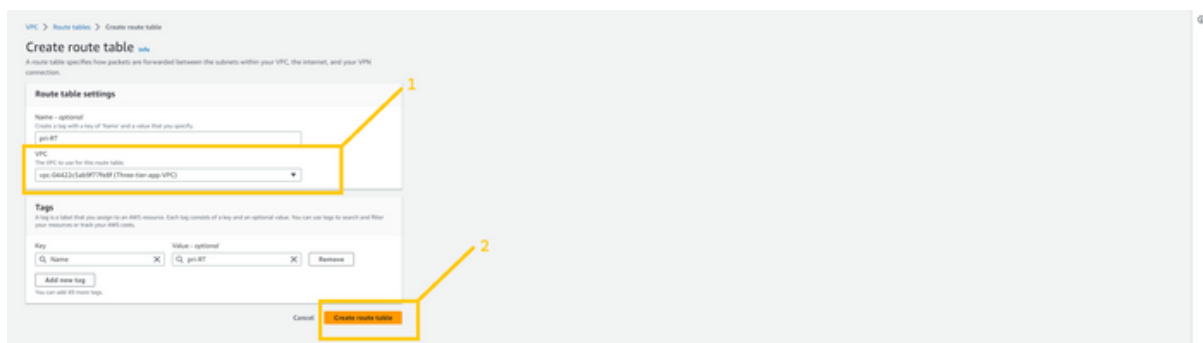
Now, we need to do some association with both RTs so select **Pub-RT** and click on the `Routes` tab at the bottom and then click on the `edit route` button.
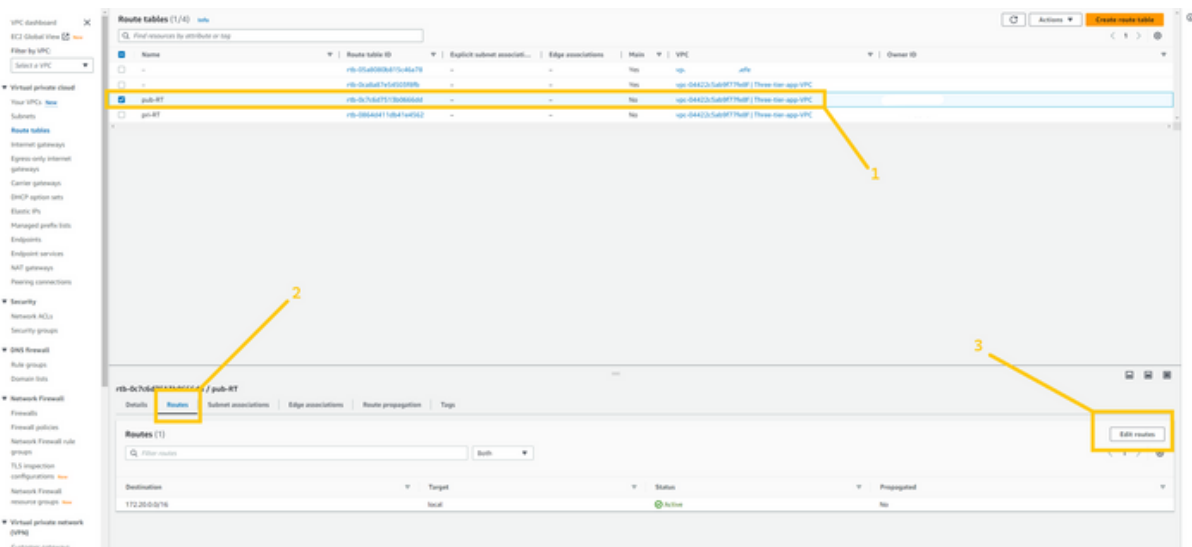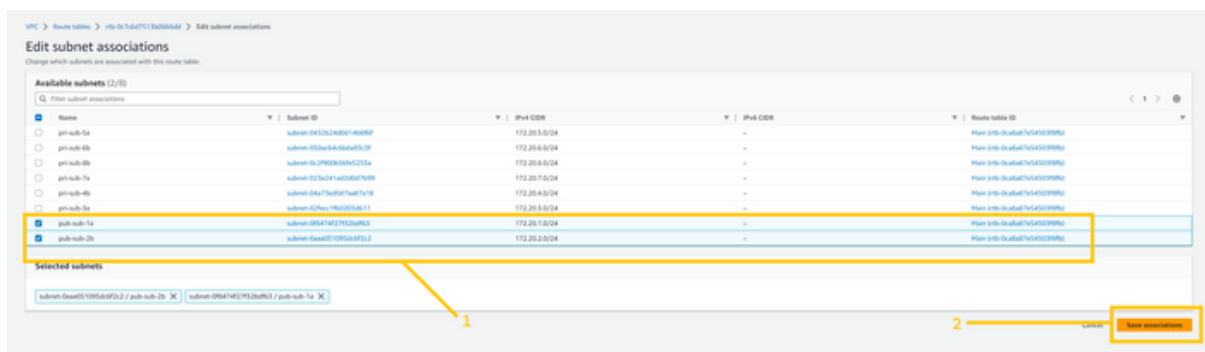
here you can see the IGW that we created earlier. select that IGW and click the save changes button.

keep Pub-RT selected and click on the `Subnet associations tab` next to the `Routes` tab. and then click on the `Edit subnet associations`. as shown in the below image.
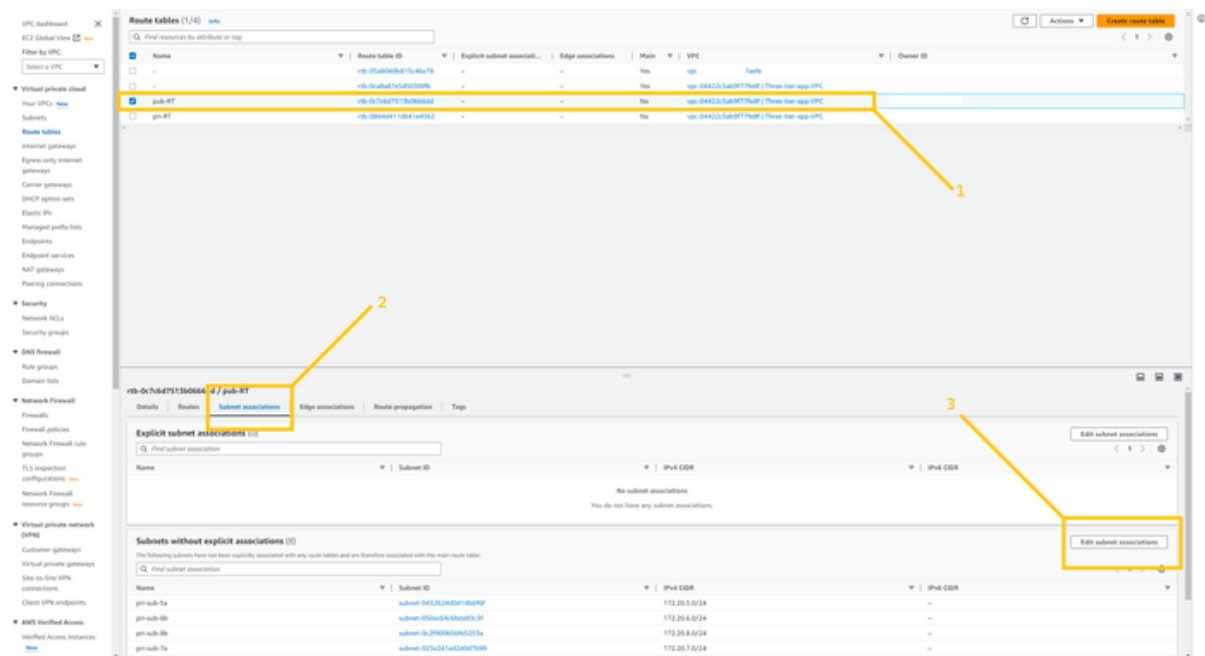
now select both public subnets. **pub-sub-1a** and **pub-sub-2b.** and click on the `save associations` button.

now we have to do the same thing for the Pri-RT as well. but there is one slight change. let me show you. Please select Pri-RT and click on the Routes tab at the bottom of the page.

Here please select `0.0.0.0/0` in the destination field and click on the target. As soon as you click on the target you will see the drop-down list. Please select NAT gateway from the drop-down list. As shown in the below image.

Select the NAT gateway that we have just created. and click on the **save changes** button.

keep Pri-RT selected and click on the `subnet associations` tab at the bottom next to the Routes tab. And then click on the `Edit route associations` button.
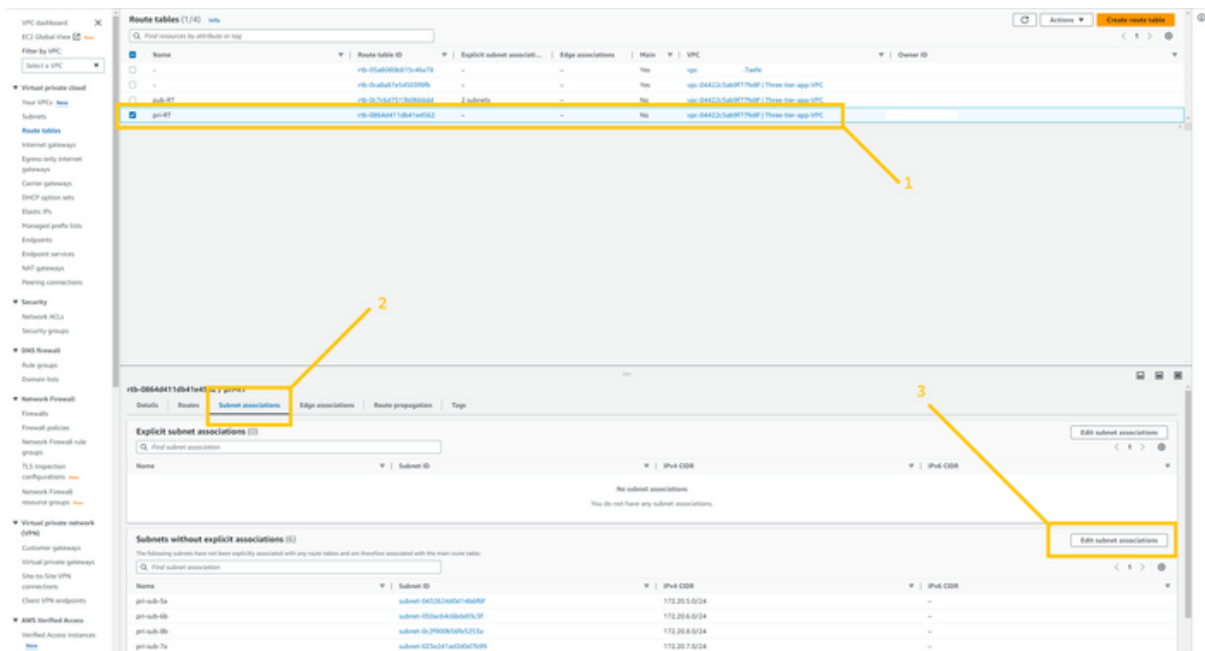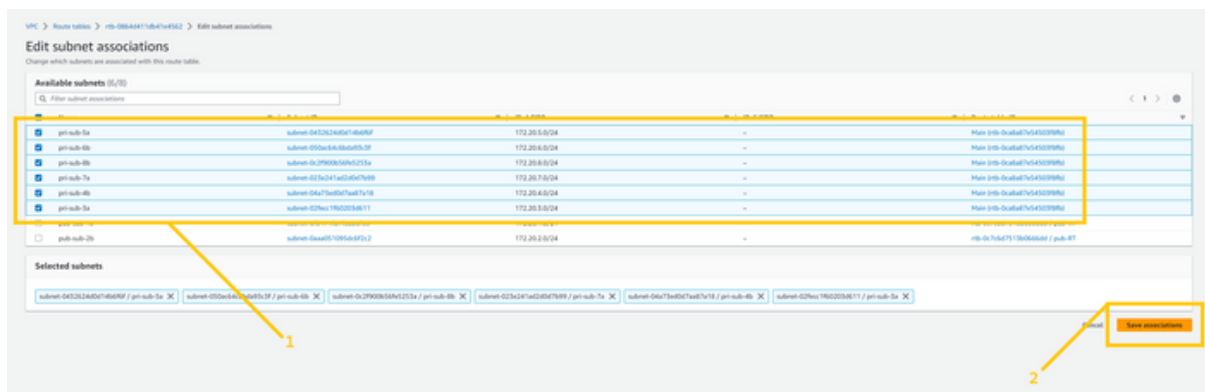

Here you can see the same situation as we saw before. But here we are going to select all the 6 private subnets. And then click on the `save association` button.

Before we move ahead I want to change the settings of VPC and two public subnets. So just click on the Your VPC button on the left panel and select VPC that we have created and click on the `action` button and there you will see the drop-down menu. Select the `Edit VPC setting` button. As shown in the image.


And here please enable **Enable DNS hostname** checkbox by clicking on it. and then click on the `Save` button.
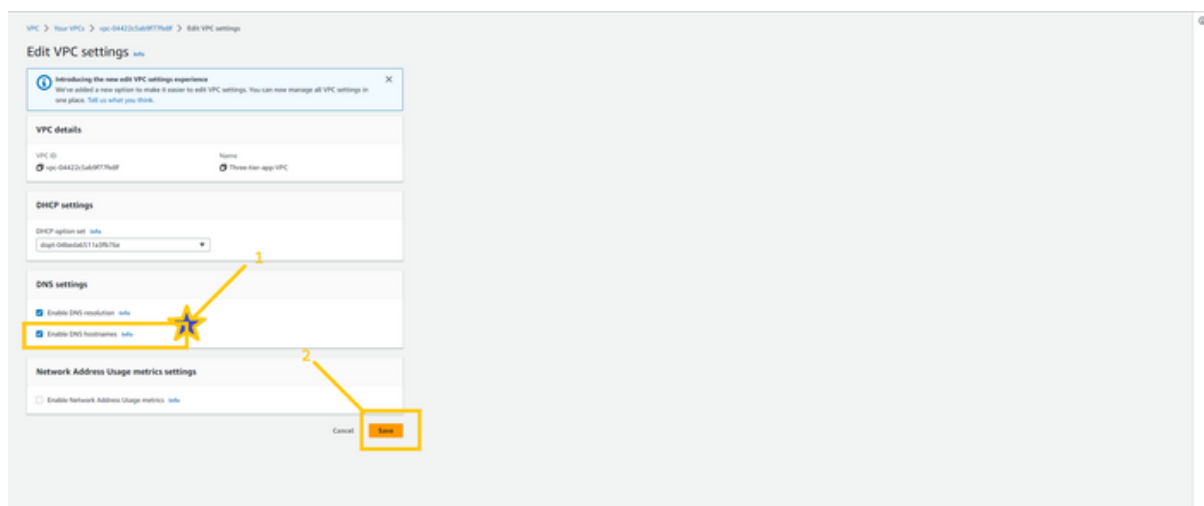
Please go to the subnet page and select the public subnet and click on the `action` button and then choose the `Edit subnet setting` button from the drop-down list.
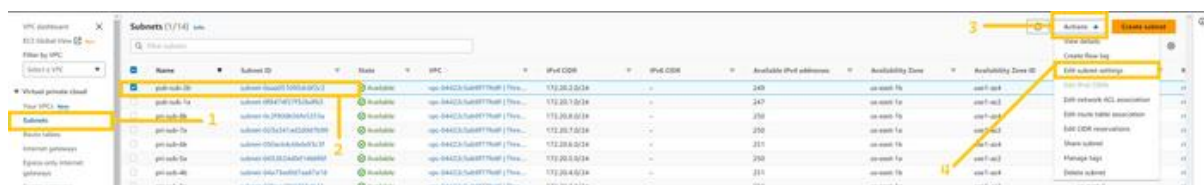
Here you have to mark right on **Enable public assign public IPV4 address**. And then click on the `save` button.
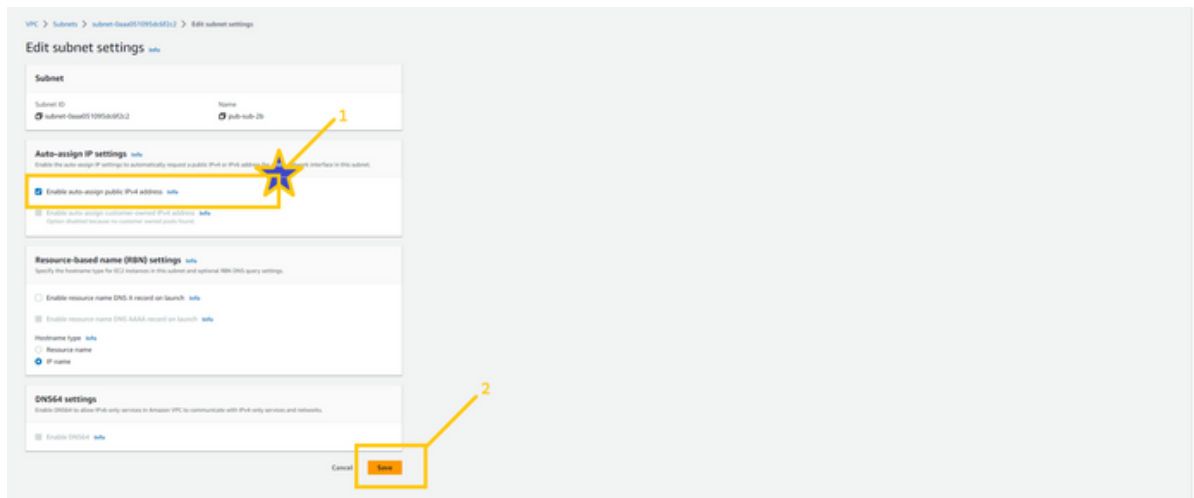
And here we are done with VPC configuration in the primary region. In my case **us-east-1 (N.Virginia)**. But we have to do the same setup in the secondary region as well. As you know I am going to use the **us-west-2 (Oregon)** as my second region AKA Oregon.

Your task is to set up VPC in the secondary region. All the setup is completely similar. You just have to change the region. And please do VPC set up in the secondary region.

I hope you did the setup. Now let's move ahead