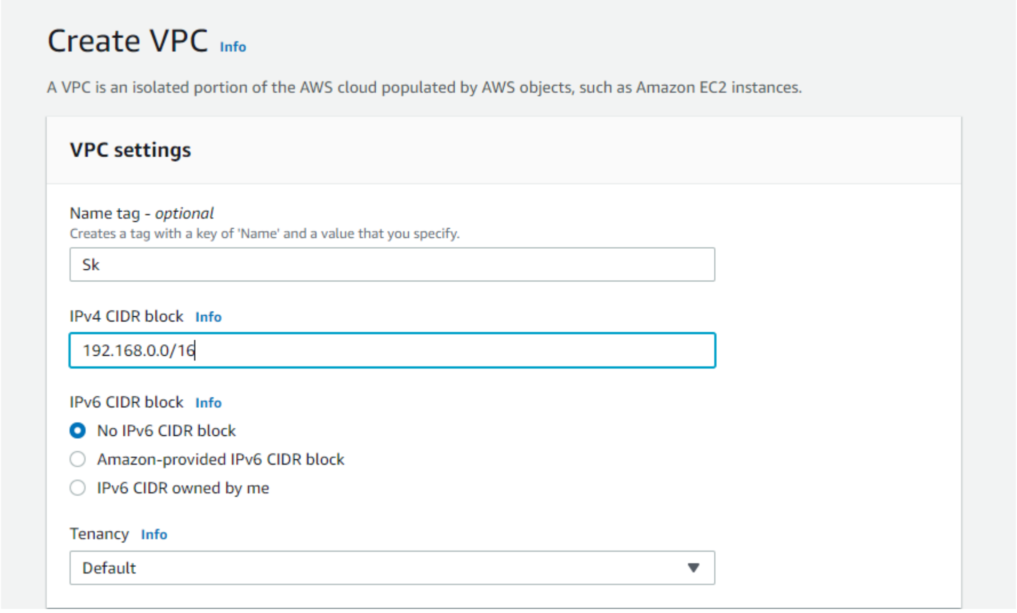
VPC in AWS

There two labs and each have a system, their own IP, router, and switch. With the help of VPC we are trying to create a similar model. Then, we shall connect the system of lab one to the internet so that anyone can ping it, but this wont be done with the lab2.

We shall create VPC over AWS such that anyone over the internet can ping to the IP of lab 1 whereas, IP of lab 2 is inaccessible. We shall use the concept of VPC that is virtual private cloud for this purpose.

Create VPC

Go to the VPC services in your AWS cloud. Give name and IP as follows.



Create VPC Info

A VPC is an isolated portion of the AWS cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

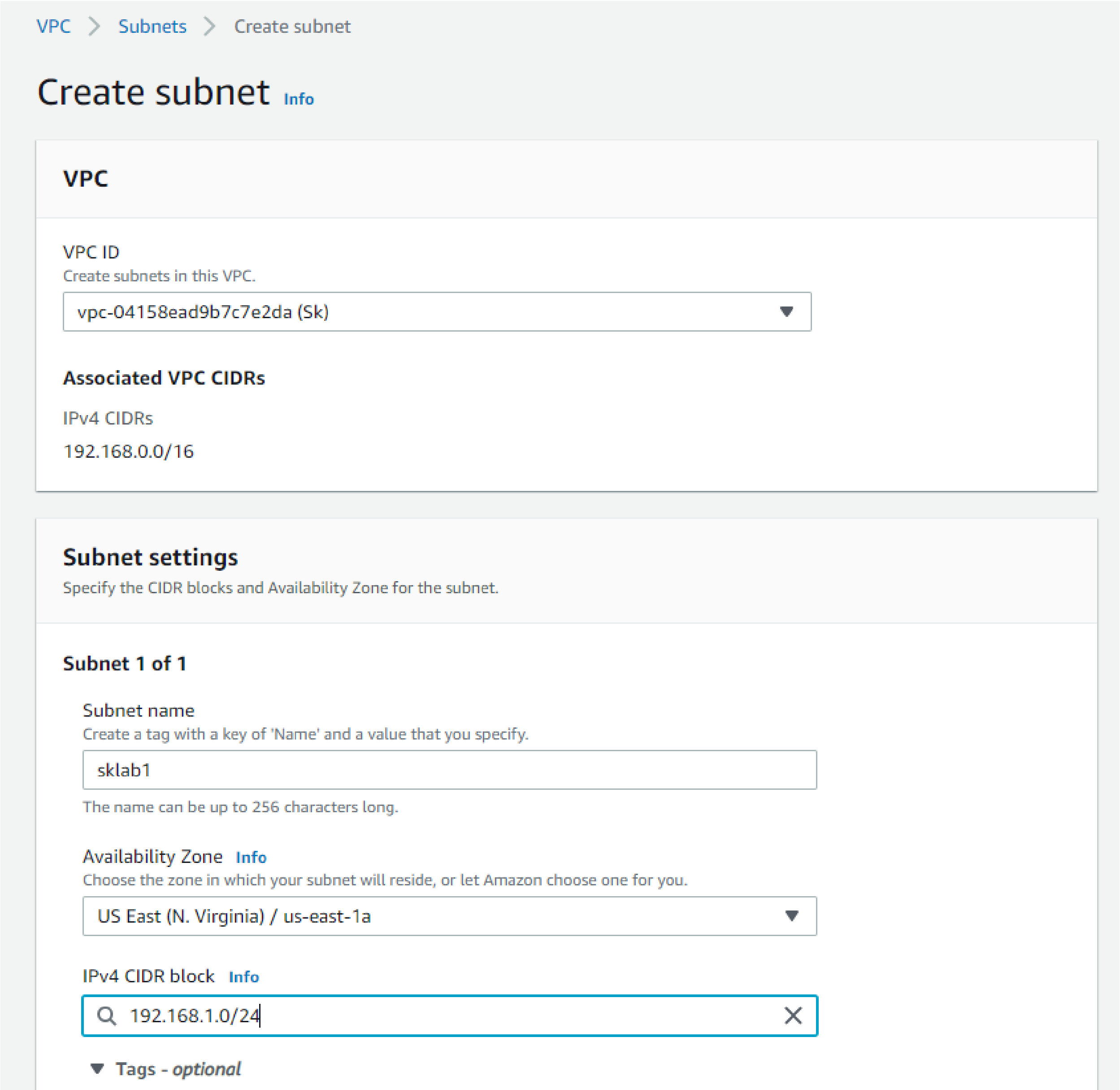
Name tag - *optional*
Creates a tag with a key of 'Name' and a value that you specify.
Sk

IPv4 CIDR block Info
192.168.0.0/16

IPv6 CIDR block Info
● No IPv6 CIDR block
○ Amazon-provided IPv6 CIDR block
○ IPv6 CIDR owned by me

Tenancy Info
Default ▼

Create subnet



Create subnet Info

VPC

VPC ID
Create subnets in this VPC.
vpc-04158ead9b7c7e2da (Sk)

Associated VPC CIDRs

IPv4 CIDRs
192.168.0.0/16

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.
sklab1
The name can be up to 256 characters long.

Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1a

IPv4 CIDR block Info
192.168.1.0/24

For depicting two labs, we need 2 subnet. Create 2subnets by providing the vpc that you have created in the previous step.

Lab1:

skalab1

us-east-1a

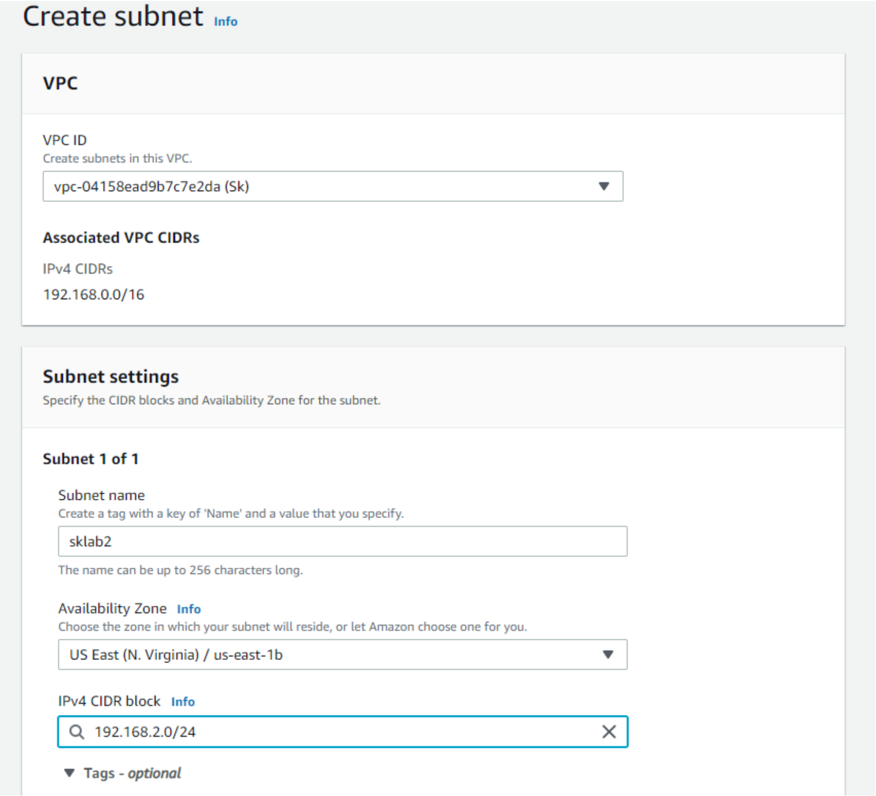
192.168.1.0/24

Lab2:

skalab2

us-east-1b

192.168.2.0/24



Create subnet

VPC

VPC ID
Create subnets in this VPC.
vpc-04158ead9b7c7e2da (Sk)

Associated VPC CIDRs

IPv4 CIDRs
192.168.0.0/16

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

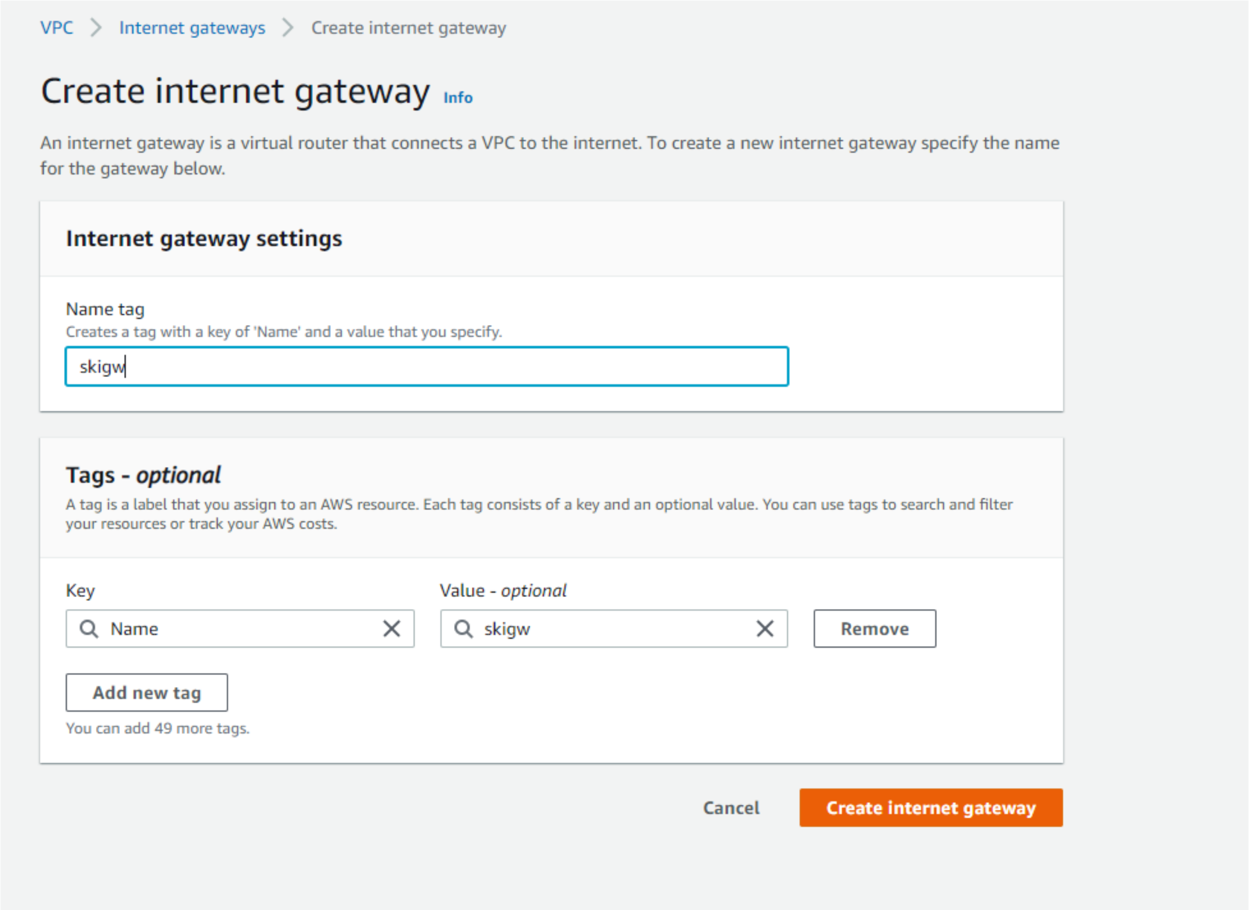
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
sklab2
The name can be up to 256 characters long.

Availability Zone
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1b

IPv4 CIDR block
192.168.2.0/24

Now, we shall create internet gateway. We just need to provide a name of the gateway as of now.

Internet gateway



VPC > Internet gateways > Create internet gateway

Create internet gateway Info

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

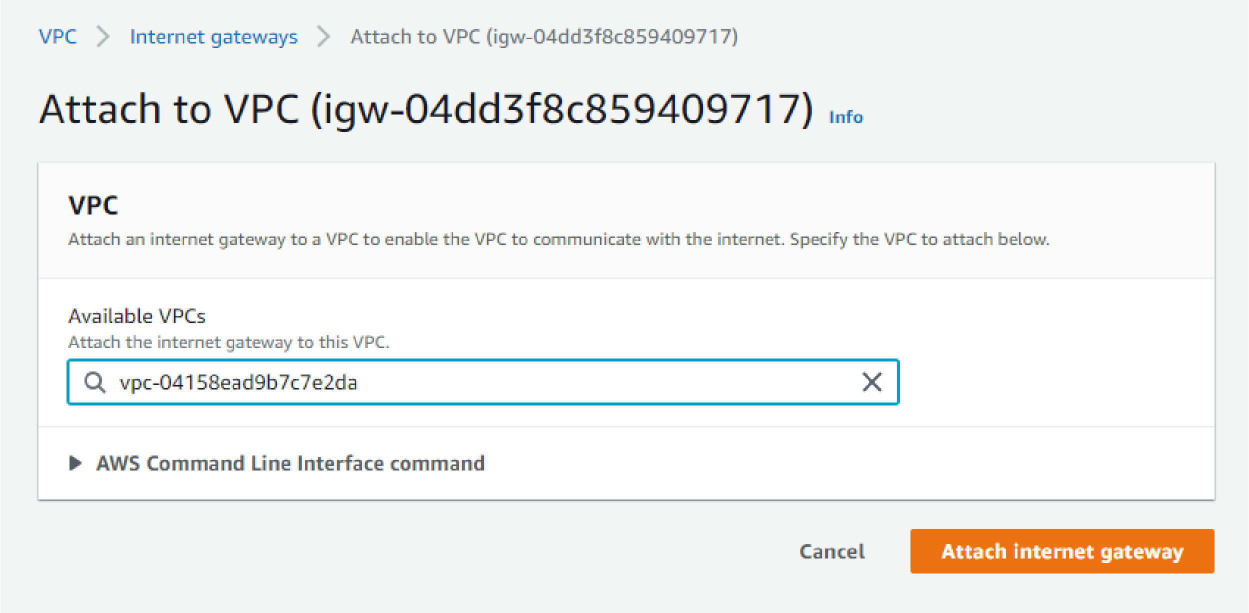
Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.
skigw

Tags - *optional*
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - *optional*	
Name	skigw	Remove

Select the gateway, go to actions and attach it to the VPC.



VPC > Internet gateways > Attach to VPC (igw-04dd3f8c859409717)

Attach to VPC (igw-04dd3f8c859409717) Info

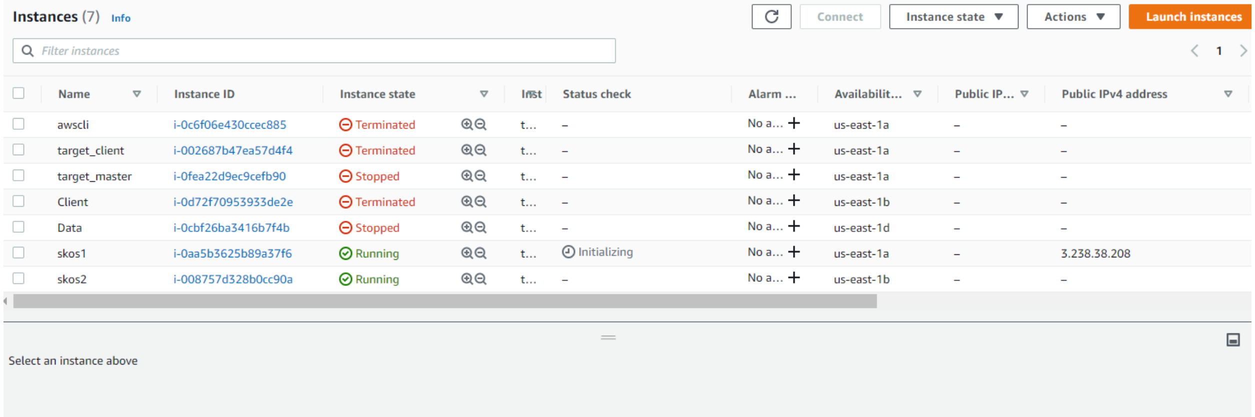
VPC
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

Available VPCs
Attach the internet gateway to this VPC.
vpc-04158ead9b7c7e2da

Launch Instances

After creating the VPC, subnet,a nd the gateway, we shall launch 2 instances. Each instance will have the following properties.

- skos1:
  attach vpc
  subnet sklab1
  public ip: enabled
- skos2:
  attach vpc
  subnet sklab2
  public ip: disabled

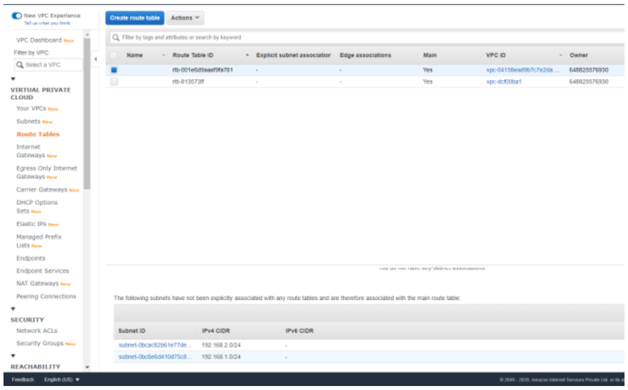


Name	Instance ID	Instance state		Inst	Status check	Alarm ...	Availabilit...	Public IP...	Public IPv4 address
awscli	i-0c6f06e430ccec885	Terminated		t...	–	No a... +	us-east-1a	–	–
target_client	i-002687b47ea57d4f4	Terminated		t...	–	No a... +	us-east-1a	–	–
target_master	i-0fea22d9ec9cefb90	Stopped		t...	–	No a... +	us-east-1a	–	–
Client	i-0d72f70953933de2e	Terminated		t...	–	No a... +	us-east-1b	–	–
Data	i-0cbf26ba3416b7f4b	Stopped		t...	–	No a... +	us-east-1d	–	–
skos1	i-0aa5b3625b89a37f6	Running		t...	Initializing	No a... +	us-east-1a	–	3.238.38.208
skos2	i-008757d328b0cc90a	Running		t...	–	No a... +	us-east-1b	–	–

Select an instance above

As seen in the above image, os1, where ip was enabled has a public IP whereas the os2 does not have any such public IP.

We want the IP of the os1 is accessible through internet. So, we need to make some changes in the rule of the routing table. For that, go to the route tables and create route table.



Name	Route Table ID	Explicit subnet association	Edge associations	Main	VPC ID	Owner
	rtb-001e6d9aaaf9fa781	-	-	Yes	vpc-04158ead9b7c7e2da ...	648825576930
	rtb-813573ff	-	-	Yes	vpc-dcf00ba1	648825576930

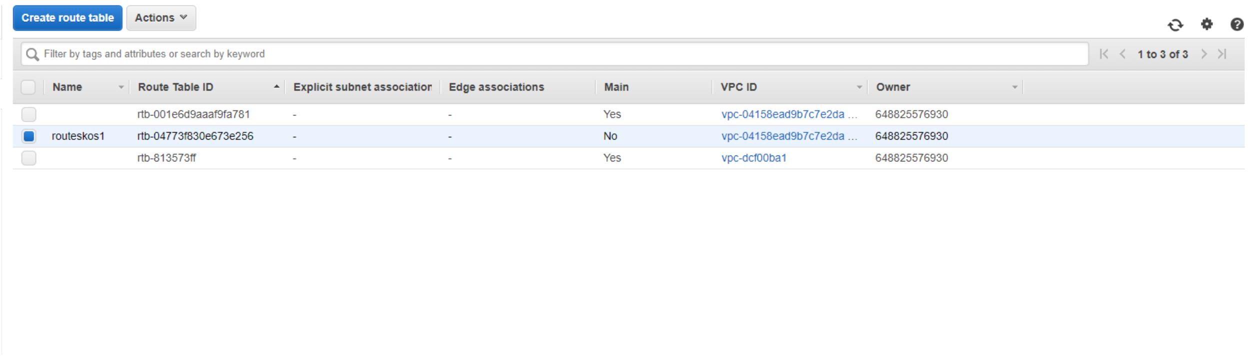
You do not have any subnet associations.

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-0bcac82b61e77de...	192.168.2.0/24	-
subnet-0bc6e6d410d75c8...	192.168.1.0/24	-

Add rule such that:

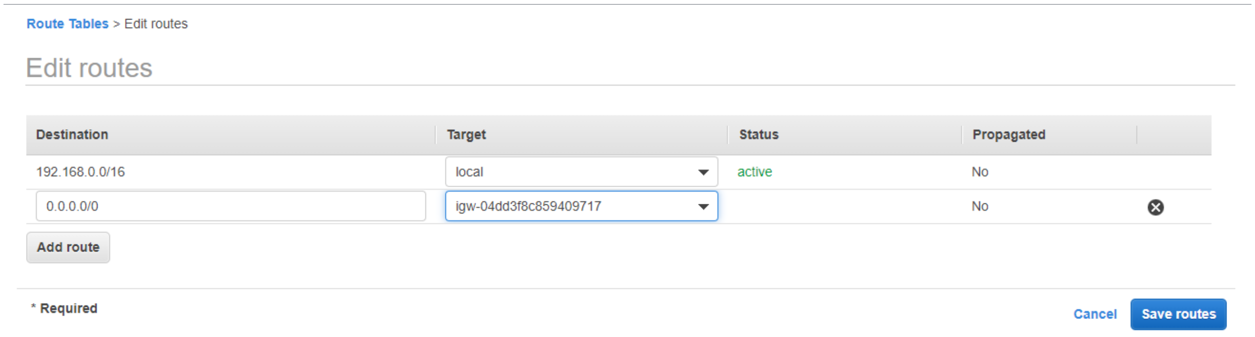
Name: routeskos1



□	Name	Route Table ID	Explicit subnet associatior	Edge associations	Main	VPC ID	Owner
□		rtb-001e6d9aaaf9fa781	-	-	Yes	vpc-04158ead9b7c7e2da ...	648825576930
■	routeskos1	rtb-04773f830e673e256	-	-	No	vpc-04158ead9b7c7e2da ...	648825576930
□		rtb-813573ff	-	-	Yes	vpc-dcf00ba1	648825576930

Des: 0.0.0.0/0

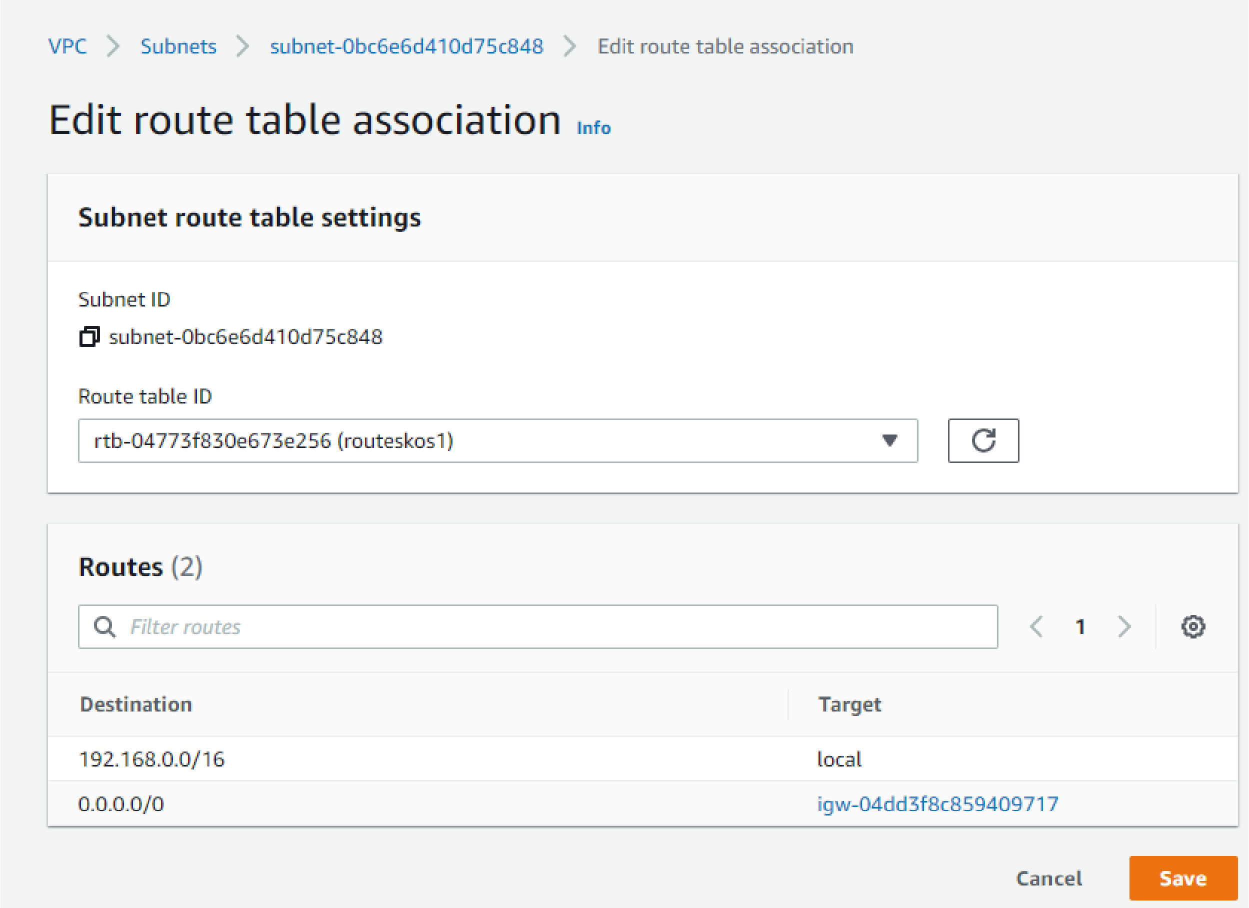
Target: internet gateway



Edit routes

Destination	Target	Status	Propagated
192.168.0.0/16	local	active	No
0.0.0.0/0	igw-04dd3f8c859409717		No

The final step is to go to the subnet1, os1 and edit route association. In the route table id, provide the name that has been created few steps ago.



VPC > Subnets > subnet-0bc6e6d410d75c848 > Edit route table association

Edit route table association

Subnet route table settings

Subnet ID

subnet-0bc6e6d410d75c848

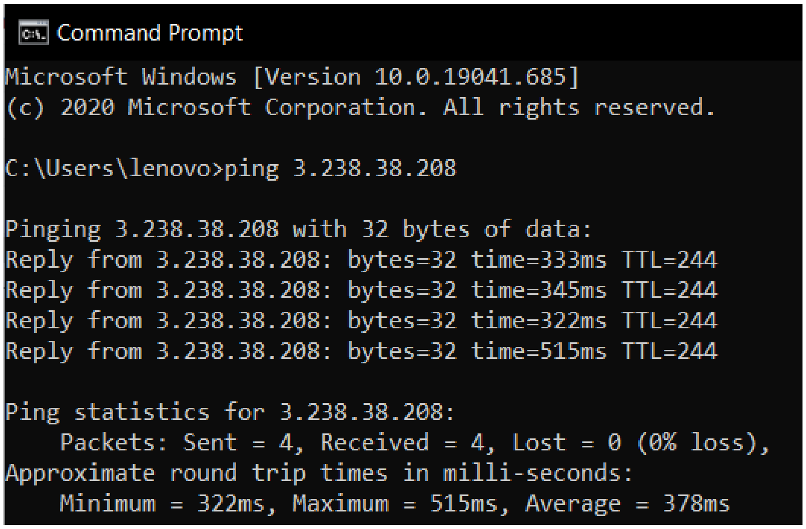
Route table ID

rtb-04773f830e673e256 (routeskos1)

Routes (2)

Destination	Target
192.168.0.0/16	local
0.0.0.0/0	igw-04dd3f8c859409717

Go to the command prompt of windows and ping to the IP of os1. It is successfully pinging and hence the demo is successful.



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Microsoft Windows [Version 10.0.19041.685]
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C:\Users\lenovo>ping 3.238.38.208

Pinging 3.238.38.208 with 32 bytes of data:
Reply from 3.238.38.208: bytes=32 time=333ms TTL=244
Reply from 3.238.38.208: bytes=32 time=345ms TTL=244
Reply from 3.238.38.208: bytes=32 time=322ms TTL=244
Reply from 3.238.38.208: bytes=32 time=515ms TTL=244

Ping statistics for 3.238.38.208:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 322ms, Maximum = 515ms, Average = 378ms
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