

Security Groups

A Security Group acts as a virtual firewall for your EC2 instances, managing both incoming and outgoing traffic.

As mentioned in my earlier post about creating an EC2 instance, Security Groups are important to know and think like this is firewall for your EC2 instance, controlling the flow of incoming and outgoing traffic.

Understanding these Security Groups is crucial, as they allow you to create rules that control the traffic. Each rule can either allow or deny traffic based on the IP Protocol. It's important to note that, by default, all incoming traffic is blocked, providing an initial layer of security.

Imagine our college with bouncers. These bouncers have a clear set of rules—they have to follow who's permitted to entry and who isn't. In Simple , if you have an ID card, you're in; without one, then access is denied. The bouncers strictly follow these guidelines.

They're like guardians at the gate, ensuring only those with valid Id's can entry. If anyone doesn't meet this specific requirement, they're blocked. The bouncers maintain a record of authorized guests, allowing them to move freely in and out as they meet the necessary criteria.

Think security is as a high priority task to secure our devices for additional security purpose you can add additional bouncers.

Security Group rules for different services and explain them in simple terms:

Type: SSH

Port Range: 22

Source: Usually, your own IP or a specific range of IPs. In simple Logging into server securely think like a special key to unlock your computer here for connecting purpose I will be using MobaXterm or you can use Putty and You can use terminal too.

HTTP : Hyper Text Transfer Protocol

Port Range : 80

source : 0.0.0.0/0 -> which means any IP Address

In Simple This rule lets your server receive and send regular web page requests.

HTTPS: Hypertext transfer Protocol

Type: HTTPS

Port Range : 443

source: 0.0.0.0/0 -> which means any IP Address

In Simple : Similar to HTTP, but this is for secure, encrypted communication.

FTP (File Transfer Protocol):

Type : FTP

Port Range : 21

source: Usually, your own IP or a specific range of IPs

Explanation: FTP is like a delivery service for files. This rule allows you to send and receive files to and from your server.

SMTP(Simple Mail Transfer Protocol)

Type: SMTP

Port Range: 25

Source: Usually, your own IP or a specific range of IPs.

Explanation: SMTP is like a service for emails. This rule allows your server to send out emails to others.

All Traffic (All Ports):

Type: All traffic

Port Range: All (0-65535)

Source: 0.0.0.0/0 (which means any IP address)

RDP (Remote Desktop Protocol):

Type: RDP

Port Range: 3389

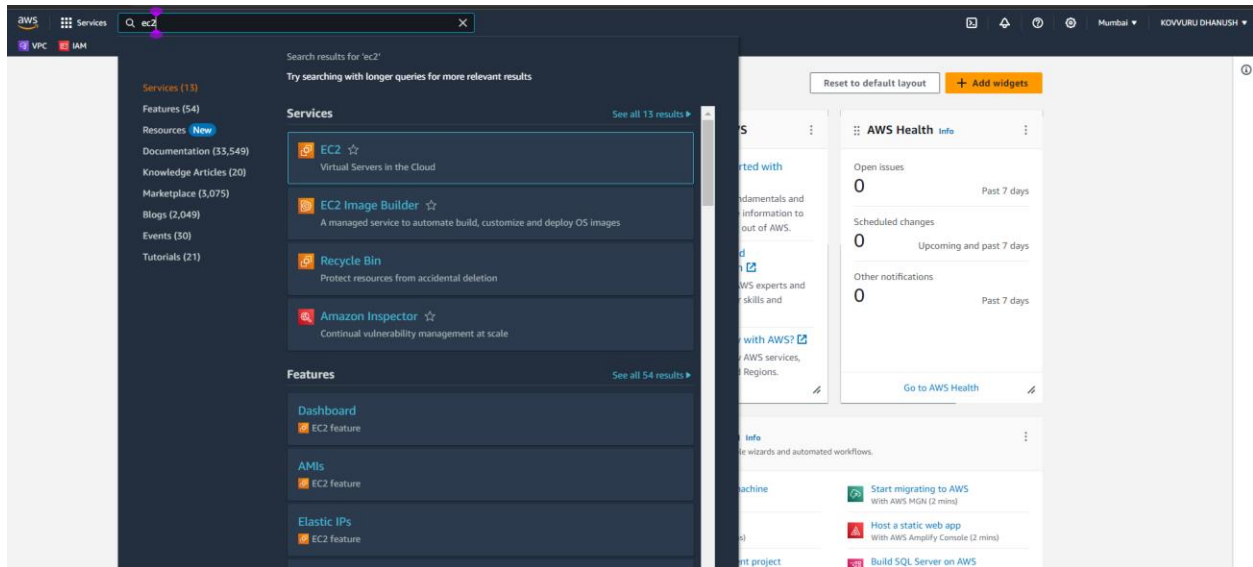
Source: Usually, your own IP or a specific range of IPs.

In Simple: This rule allows remote access to your Windows computer.

Custom Rules

Type: Custom (User-defined)

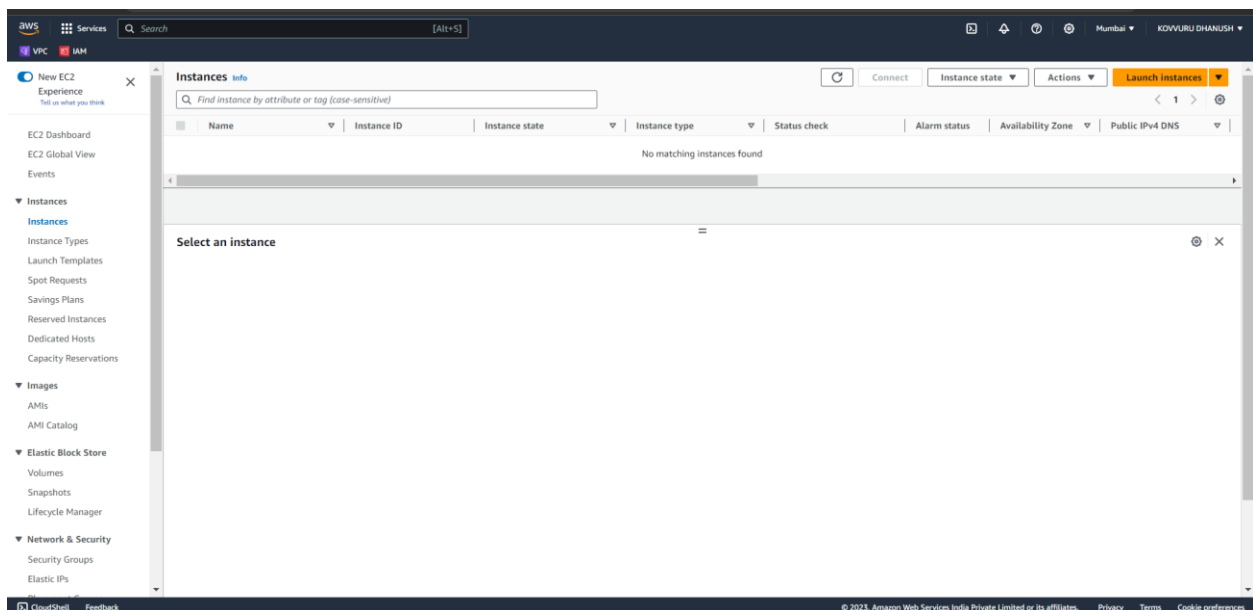
Port Range: You specify the port(s)



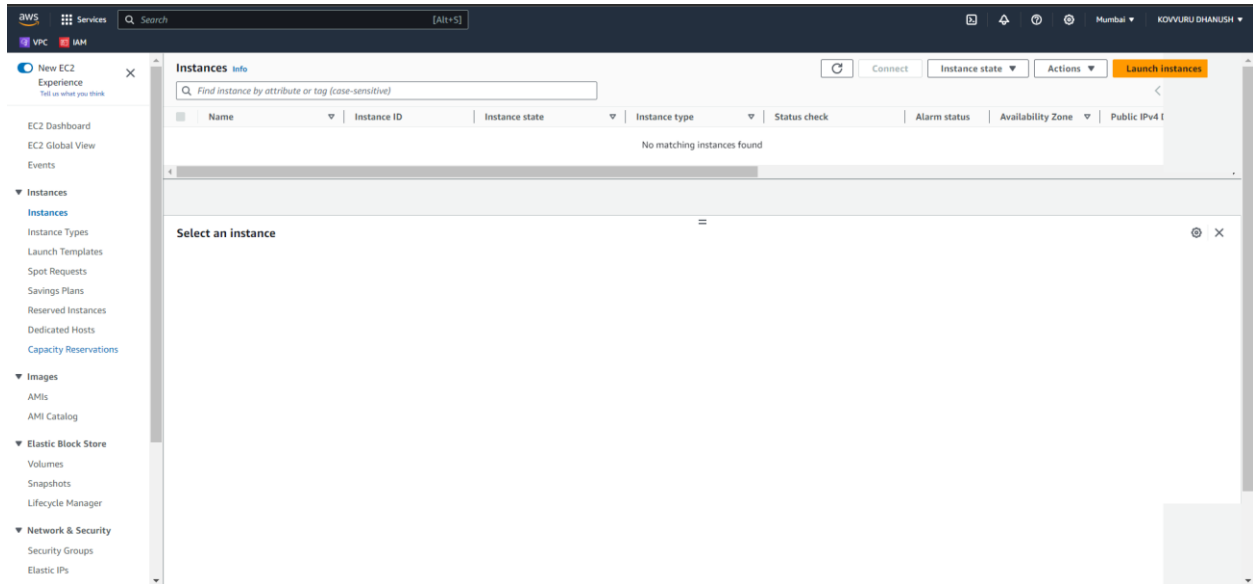
In search bar type EC2.



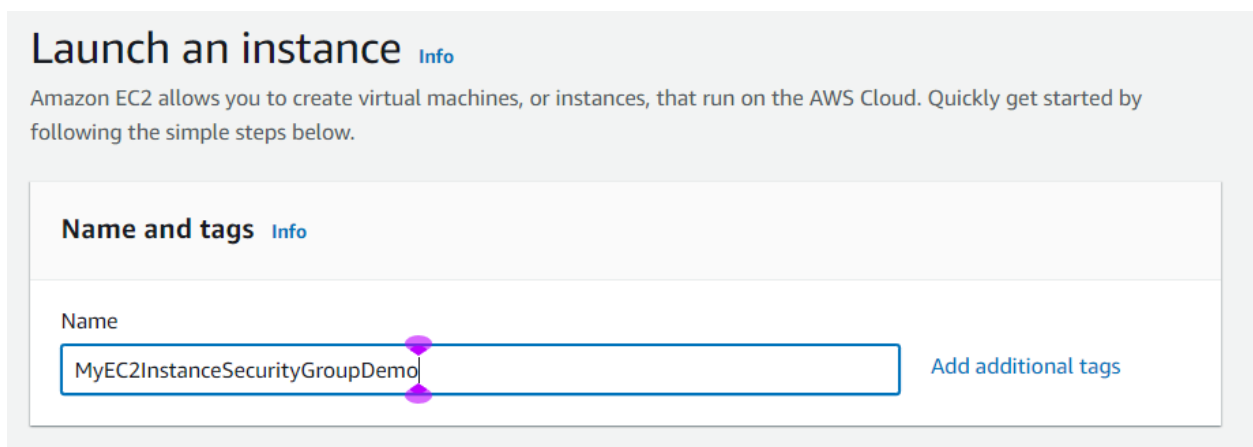
Here I'm choosing Mumbai.



In the left-hand side menu select Instances.




Click on launch instance.



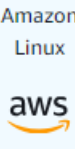
Here add your Instance Name.

▼ Application and OS Images (Amazon Machine Image) [Info](#)


An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

 Search our full catalog including 1000s of application and OS images


Quick Start




Amazon Linux




macOS




Ubuntu




Windows



Red Hat



SUSE Linux



[Browse more AMIs](#)

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI

ami-0a5ac53f63249fba0 (64-bit (x86)) / ami-03517c7a063ffd7aa (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible ▼

Description

Amazon Linux 2023 AMI 2023.2.20231011.0 x86_64 HVM kernel-6.1

Architecture

64-bit (x86) ▼

AMI ID

ami-0a5ac53f63249fba0

Verified provider

▼ Instance type [Info](#)

Instance type

t2.micro

Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0124 USD per Hour
On-Demand Windows base pricing: 0.017 USD per Hour
On-Demand RHEL base pricing: 0.0724 USD per Hour
On-Demand SUSE base pricing: 0.0124 USD per Hour

☒ All generations

[Compare instance types](#)

[Additional costs apply for AMIs with pre-installed software](#)


Here I'm using which is free tier eligible.

▼ Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

EC2_Key_Pair ▼

 [Create new key pair](#)

Here I'm using existing key pair which I used in my previous post.

▼ Network settings [Info](#)

Edit

Network [Info](#)

vpc-056053ad64ddad9d5

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

We'll create a new security group called 'launch-wizard-4' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance



Anywhere
0.0.0.0/0 ▼

☐ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☐ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only. 

Here I'm allowing SSH.

▼ **Configure storage** [Info](#)

Advanced

1x GiB ▼ Root volume (Not encrypted)

Add new volume

0 x File systems


Edit

► **Advanced details** [Info](#)

Click on advance details.

User data - *optional* [Info](#)

Upload a file with your user data or enter it in the field.

 Choose file

```
#!/bin/bash
sudo yum update -y
sudo yum install -y httpd.x86_64
sudo service httpd start
sudo service httpd enable
echo "<h1>Welcome to AWS </h1>" | sudo tee /var/www/html/index.html
```

☐ User data has already been base64 encoded

Add this user data.

▼ Summary

Number of instances [Info](#)

Software Image (AMI)

Amazon Linux 2023 AMI 2023.2.2...[read more](#)
ami-0a5ac53f63249fba0

Virtual server type (instance type)



t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

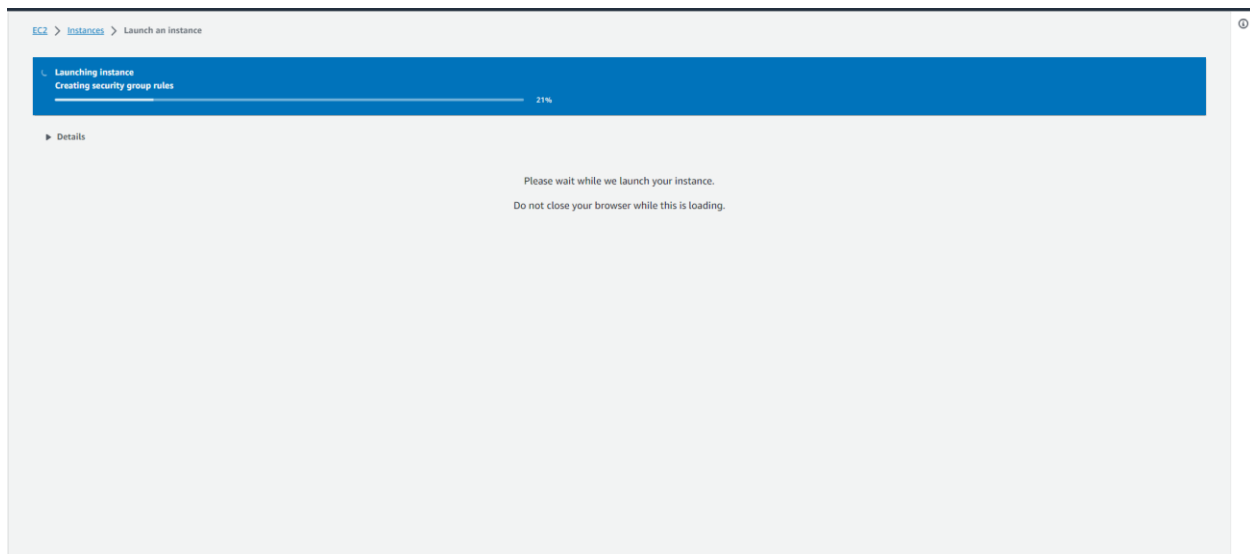
 **Free tier:** In your first year includes 
750 hours of t2.micro (or t3.micro in
the Regions in which t2.micro is
unavailable) instance usage on free
tier AMIs per month, 30 GiB of EBS
storage, 2 million IOs, 1 GB of
snapshots, and 100 GB of bandwidth
to the internet.

Cancel

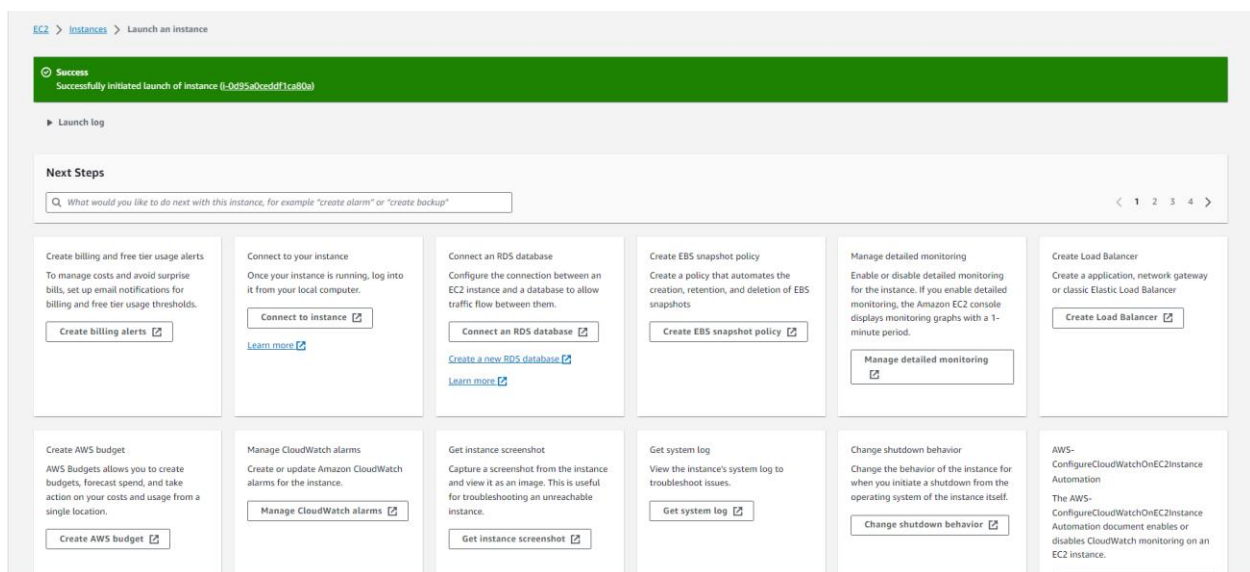
Launch instance

[Review commands](#)

Now click on launch instance.



It will take some time to create .



Instances (1) <small>info</small>									
Find instance by attribute or tag (case-sensitive)									
<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
<input type="checkbox"/>	MyEC2InstanceSecurityGrou...	i-0d95a0ceddf1ca80a	Running	t2.micro	Initializing	No alarms +	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

It's initializing wait till 2/2 status check passed.

Instances (1) Info

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
MyEC2InstanceSecurityGrou...	i-0d95a0ceddf1ca80a	Running	t2.micro	2/2 checks passed	No alarms +	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

Instances (1/1) Info

Find instance by attribute or tag (case-sensitive)

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MyEC2InstanceSecurityGrou...	i-0d95a0ceddf1ca80a	Running	t2.micro	2/2 checks passed	No alarms +	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

Instance: i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

Instance summary Info

Instance ID i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)	Public IPv4 address 3.109.49.78 open address	Private IPv4 addresses 172.31.43.11
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-3-109-49-78.ap-south-1.compute.amazonaws.com open address
Hostname type IP name: ip-172-31-43-11.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-172-31-43-11.ap-south-1.compute.internal	Elastic IP addresses -
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 3.109.49.78 [Public IP]	VPC ID vpc-056053ad64ddad9d5	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0a2e3ec9a5ff8103	
IMDSv2 Required		

Instances (1/1) Info

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
MyEC2InstanceSecurityGrou...	i-0d95a0ceddf1ca80a	Running	t2.micro	2/2 checks passed	No alarms +	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

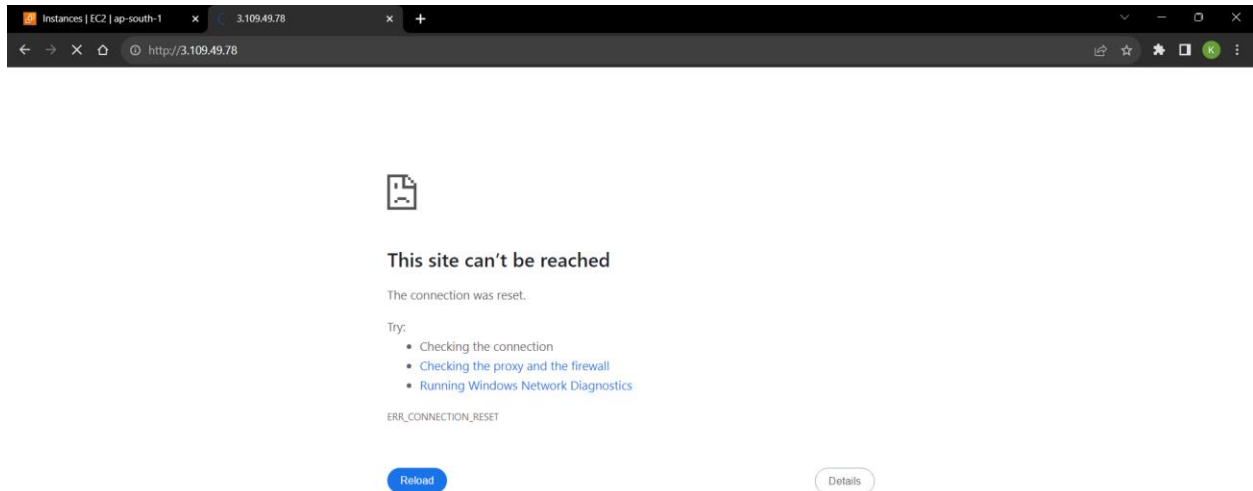
Instance: i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

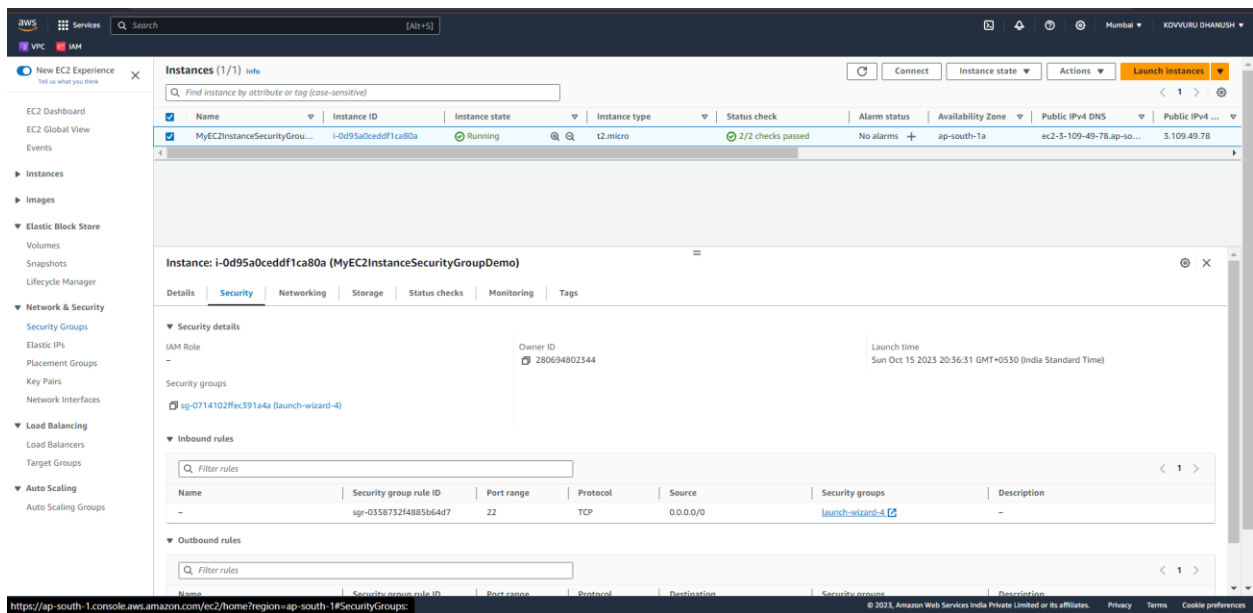
Instance summary Info

Instance ID i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)	Public IPv4 address 3.109.49.78 open address	Private IPv4 addresses 172.31.43.11
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-3-109-49-78.ap-south-1.compute.amazonaws.com open address
Hostname type IP name: ip-172-31-43-11.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-172-31-43-11.ap-south-1.compute.internal	Elastic IP addresses -
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 3.109.49.78 [Public IP]	VPC ID vpc-056053ad64ddad9d5	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0a2e3ec9a5ff8103	
IMDSv2 Required		

Copy this pubic lp and paste it on a new tab.



You will get like this.



In the left-hand menu select Security Groups.

Security Groups (1/5) [info](#)

Filter security groups

Name	Security group ID	Security group name	VPC ID	Description	Owner	Inbound rules count	Outbound rules count
launch-wizard-4	sg-0714102ffec391a4a	launch-wizard-4	vpc-056053ad64dda9d5	launch-wizard-4 create...	280694802344	1 Permission entry	1 Permission entry
launch-wizard-1	sg-0f3a2d55fb529998	launch-wizard-1	vpc-056053ad64dda9d5	launch-wizard-1 create...	280694802344	3 Permission entries	1 Permission entry
launch-wizard-5	sg-055e3087cac3e507	launch-wizard-5	vpc-056053ad64dda9d5	launch-wizard-5 create...	280694802344	2 Permission entries	1 Permission entry
default	sg-04ae306ec14bf0	default	vpc-056053ad64dda9d5	default VPC security gr...	280694802344	1 Permission entry	1 Permission entry
launch-wizard-2	sg-0e38f2cd5a953d56	launch-wizard-2	vpc-056053ad64dda9d5	launch-wizard-2 create...	280694802344	3 Permission entries	1 Permission entry

sg-0714102ffec391a4a - launch-wizard-4

Details | Inbound rules | Outbound rules | Tags

Details

Security group name launch-wizard-4	Security group ID sg-0714102ffec391a4a	Description launch-wizard-4 created 2023-10-15T15:03:39.379Z	VPC ID vpc-056053ad64dda9d5
Owner 280694802344	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

Here in my case Launch-wizard-4.

EC2 > Security Groups > sg-0714102ffec391a4a - launch-wizard-4

sg-0714102ffec391a4a - launch-wizard-4 [Actions](#)

Details

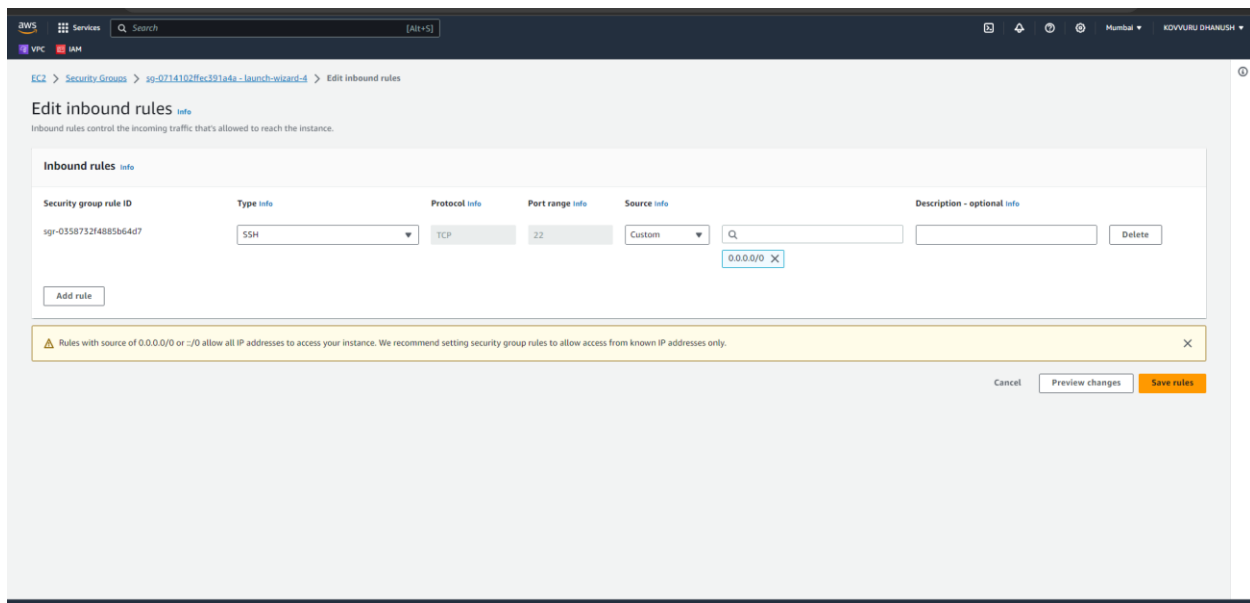
Security group name launch-wizard-4	Security group ID sg-0714102ffec391a4a	Description launch-wizard-4 created 2023-10-15T15:03:39.379Z	VPC ID vpc-056053ad64dda9d5
Owner 280694802344	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

Inbound rules (1/1) [Manage tags](#) [Edit inbound rules](#)

Filter security group rules

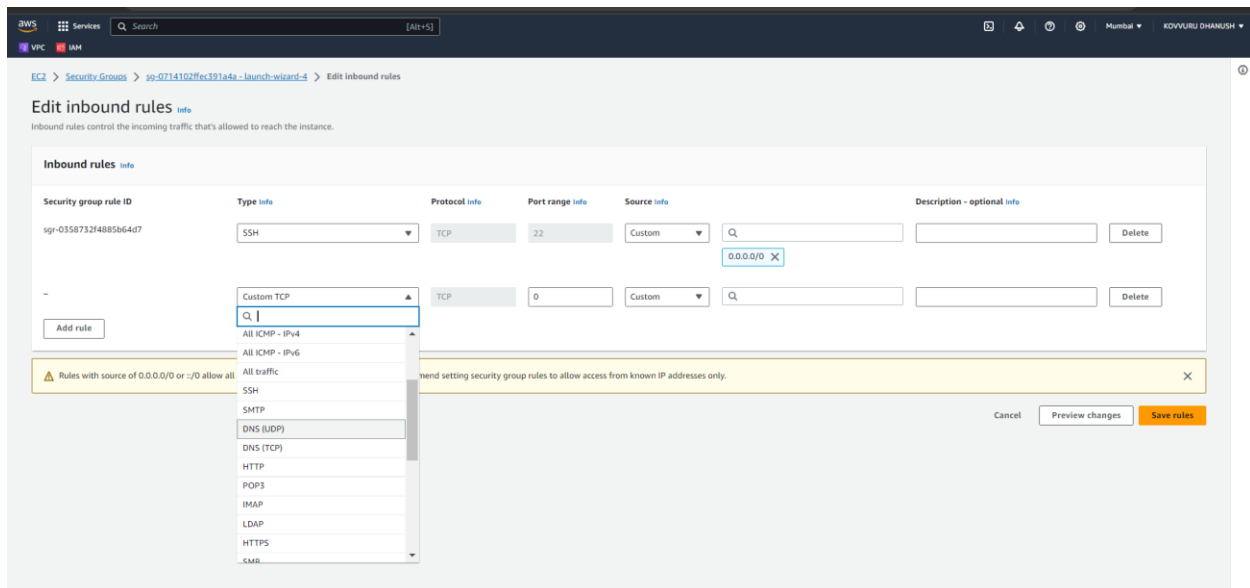
Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sg-0358732f4885b64...	IPv4	SSH	TCP	22	0.0.0.0/0	-

Now click on edit inbound rules.

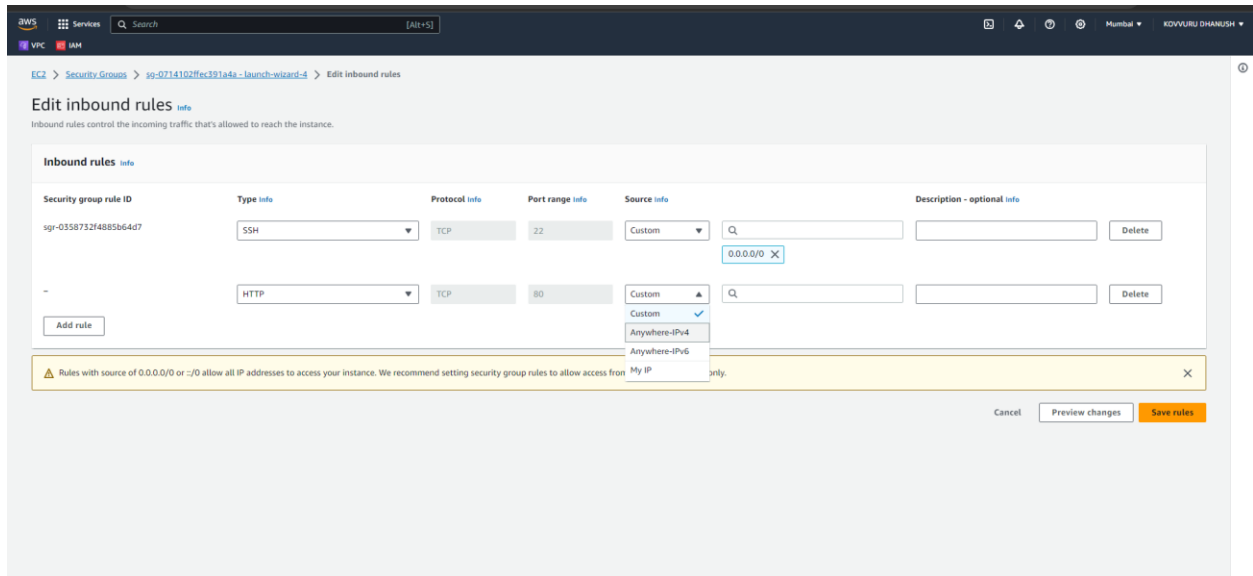


Now click on add rule.

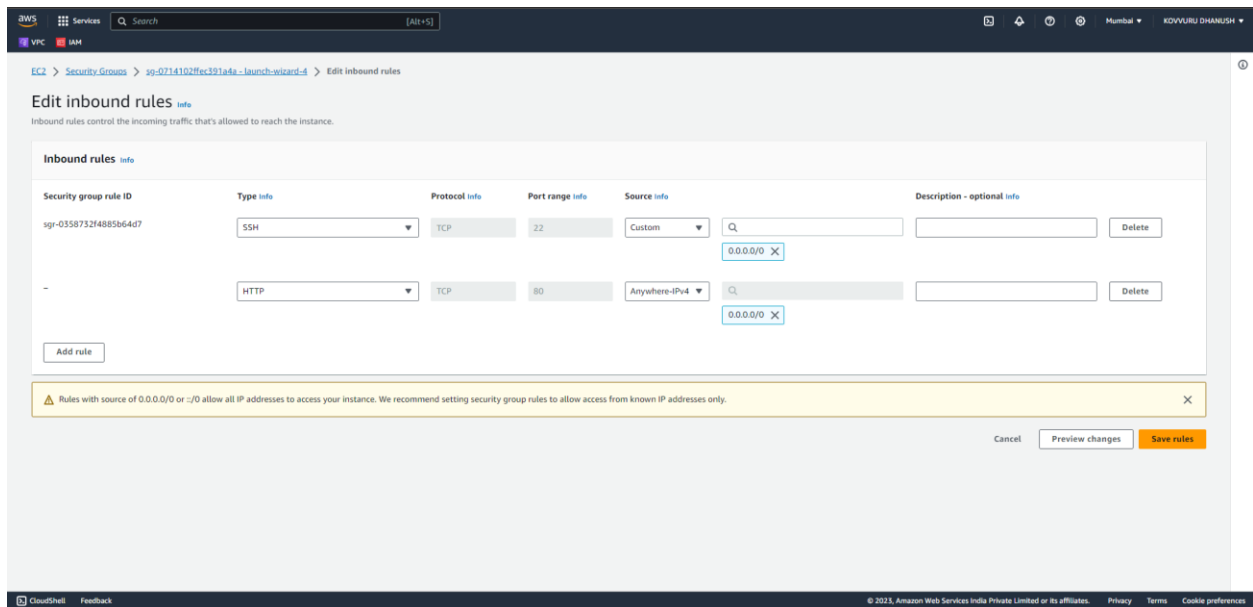
Here if you observe I mentioned few protocols right here I'm adding HTTP protocol as of now to see it's working or not.



Now click on HTTP.



Now click on IPV4 Anywhere.



Now click on save rules.

AWS Management Console screenshot showing the details of a security group named "sg-0714102ffec391a4a - launch-wizard-4". The console displays the security group's details, including its ID, description, owner, and VPC ID. It also shows the inbound rules, which are currently empty.

Details

Property	Value
Security group name	launch-wizard-4
Security group ID	sg-0714102ffec391a4a
Description	launch-wizard-4 created 2023-10-15T15:03:39.379Z
VPC ID	vpc-056053ae64ddad9d5
Owner	280694802344
Inbound rules count	2 Permission entries
Outbound rules count	1 Permission entry

Inbound rules (2)

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sg-0eb2a93a62a0181af	IPv4	HTTP	TCP	80	0.0.0.0/0	-
-	sg-0358732f4885b64...	IPv4	SSH	TCP	22	0.0.0.0/0	-

EC2 console screenshot showing the "Welcome to AWS" message. The browser address bar indicates the URL is http://3.109.49.78.

Welcome to AWS

See when I refresh the page, I got the output mean HTTP helping to access this page.

Instances (1/1) info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
MyEC2InstanceSecurityGroupDemo	i-0d95a0ceddf1ca80a	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

Instance: i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

Instance summary info

Instance ID: i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)

IPv6 address: --

Hostname type: IP name: ip-172-31-43-11.ap-south-1.compute.internal

Answer private resource DNS name: IPv4 (A)

Auto-assigned IP address: 3.109.49.78 [Public IP]

IAM Role: --

IMDSv2: Required

Instance details info

Platform: AMI ID: Monitoring:

Public IPv4 address: 3.109.49.78 [open address]

Instance state: Running

Private IP DNS name (IPv4 only): ip-172-31-43-11.ap-south-1.compute.internal

Instance type: t2.micro

VPC ID: vpc-056053ad64ddad9d5

Subnet ID: subnet-0a2e3ec9e5fd8103

Private IPv4 addresses: 172.31.43.11

Public IPv4 DNS: ec2-3-109-49-78.ap-south-1.compute.amazonaws.com [open address]

Elastic IP addresses: --

AWS Compute Optimizer finding: Opt-in to AWS Compute Optimizer for recommendations. | Learn more

Auto Scaling Group name: --

Click on security.

Instances (1/1) info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
MyEC2InstanceSecurityGroupDemo	i-0d95a0ceddf1ca80a	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-3-109-49-78.ap-so...	3.109.49.78

Instance: i-0d95a0ceddf1ca80a (MyEC2InstanceSecurityGroupDemo)

Details | **Security** | Networking | Storage | Status checks | Monitoring | Tags

Security details

IAM Role: --

Owner ID: 280694802344

Launch time: Sun Oct 15 2023 20:36:31 GMT+0530 (India Standard Time)

Security groups: sg-0714102ffec391a4a (launch-wizard-4)

Inbound rules

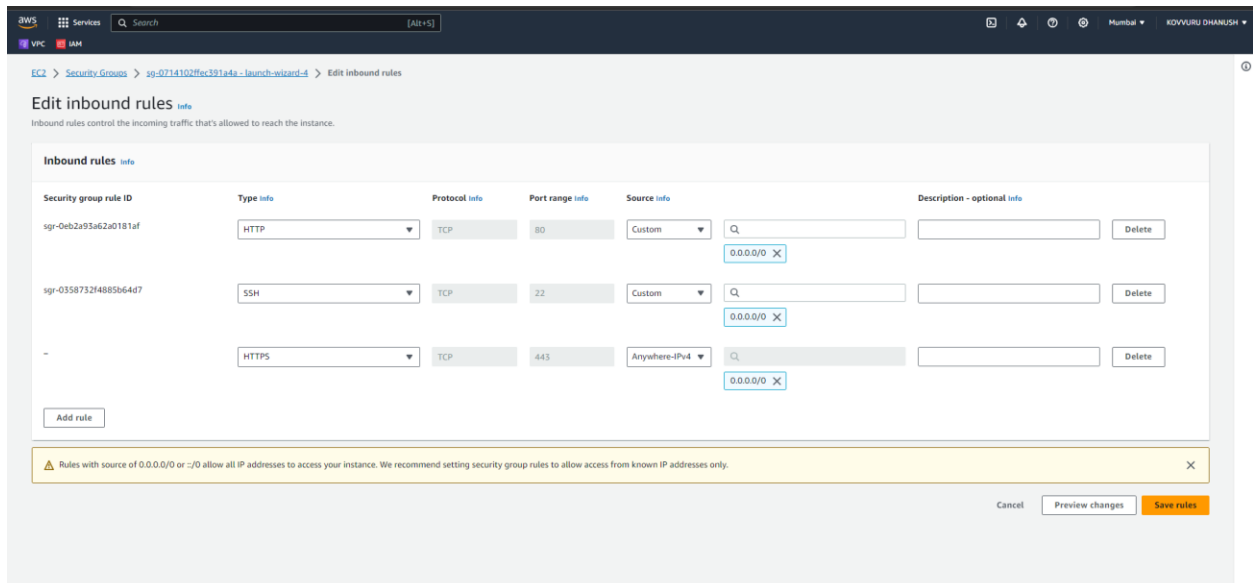
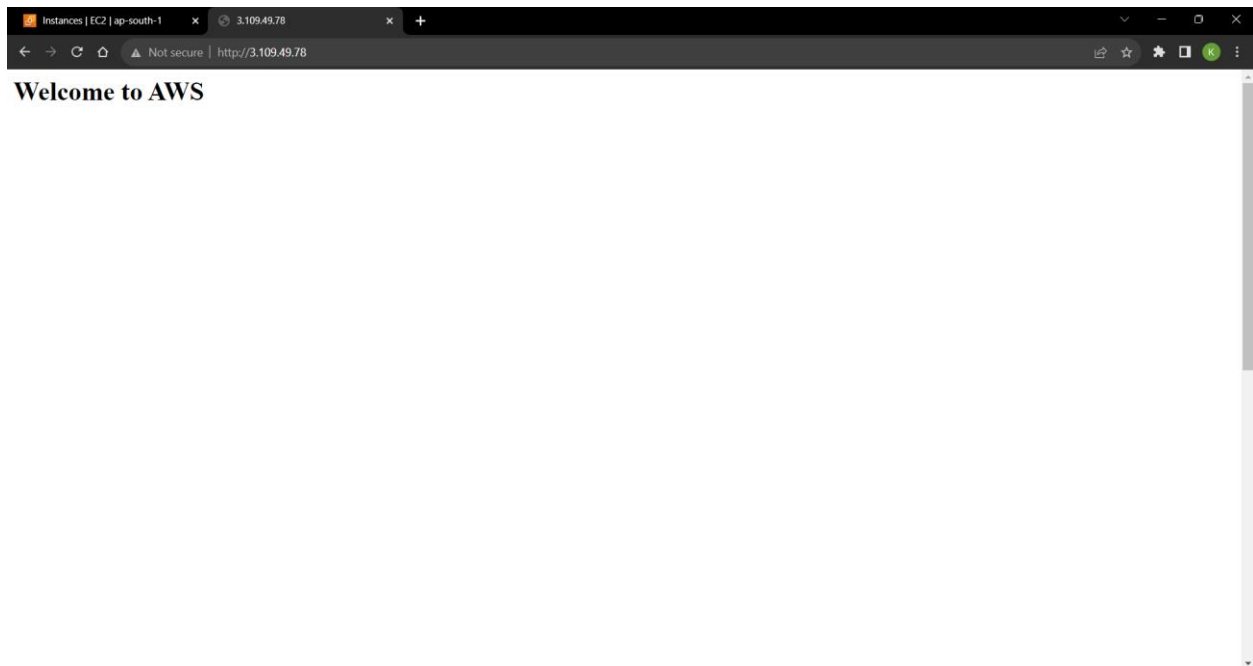
Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
--	sg-0eb2a93a62a0181af	80	TCP	0.0.0.0/0	launch-wizard-4	--
--	sg-0358732f4885b64d7	22	TCP	0.0.0.0/0	launch-wizard-4	--

Outbound rules

Name	Security group rule ID	Port range	Protocol	Destination	Security groups	Description
------	------------------------	------------	----------	-------------	-----------------	-------------

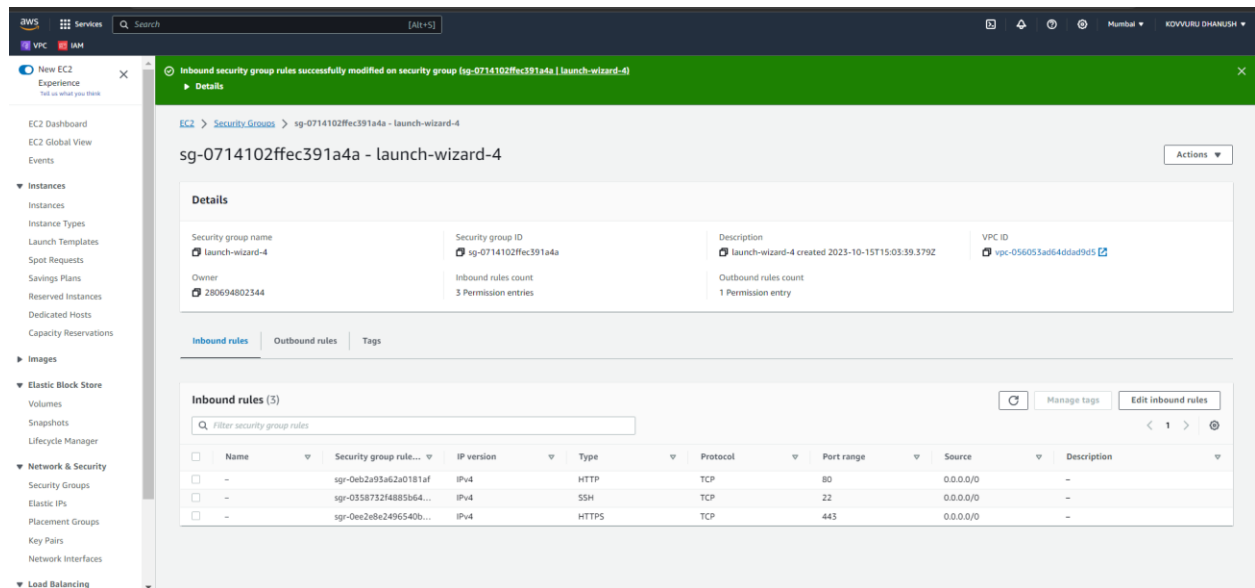
Check the port range here we are using SSH and HTTP.

For secure and encrypt communication you can add HTTPS the way we added HTTP.

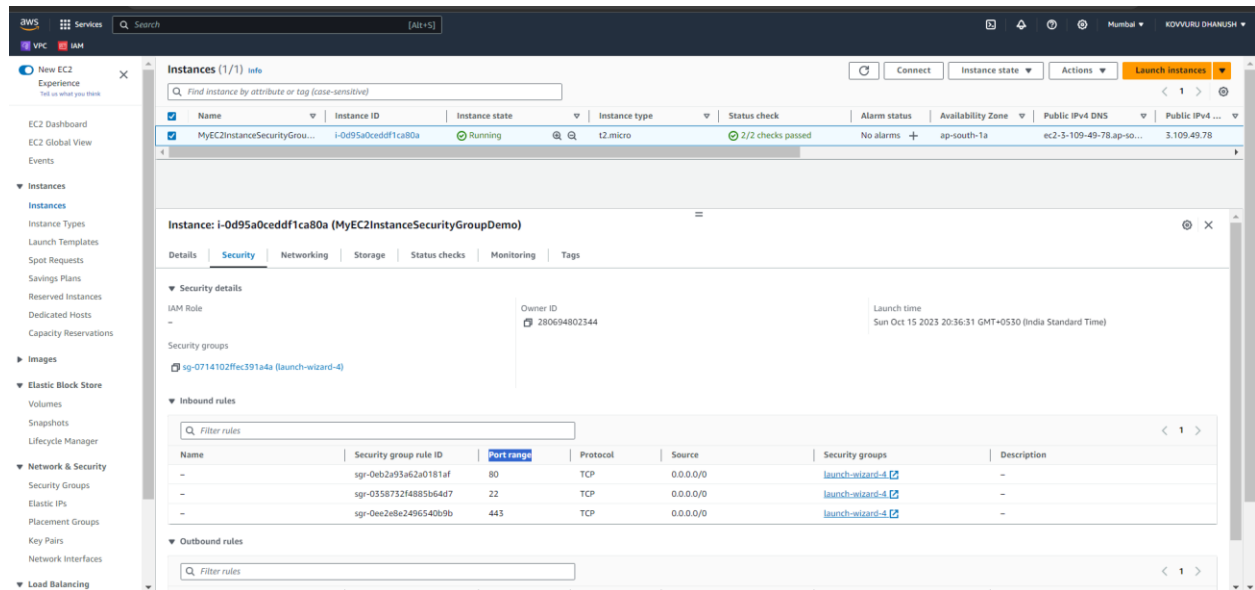


Now I'm adding HTTPS we will check now.

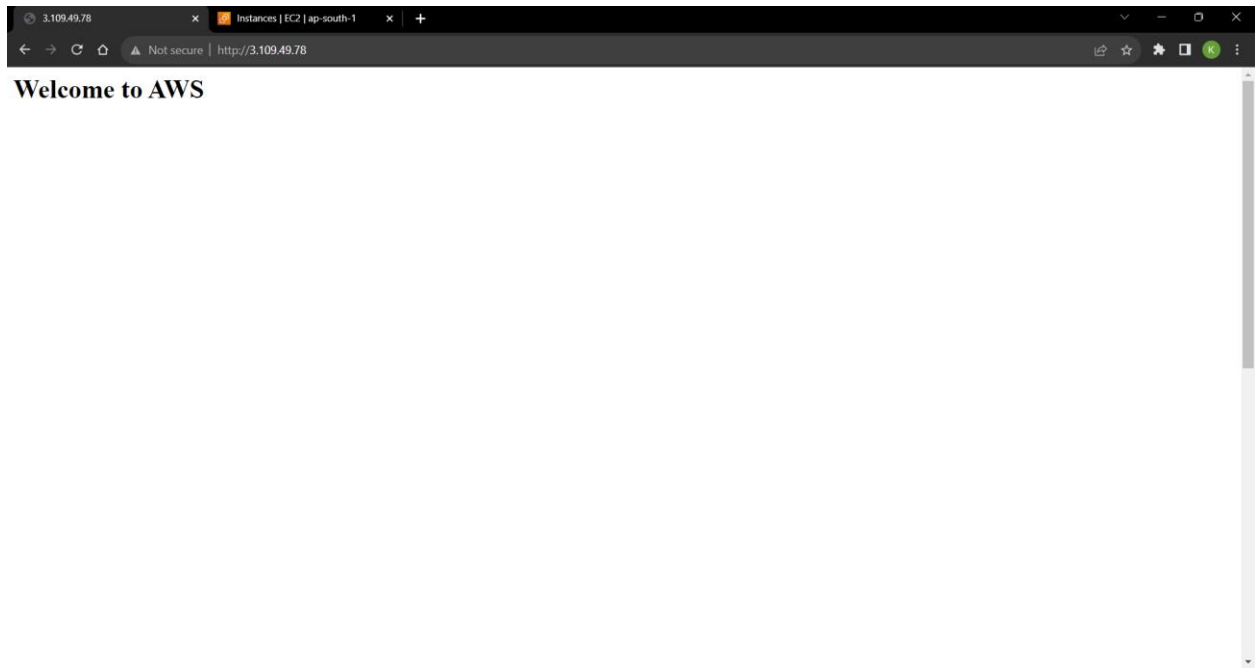
After adding click on save rule.



Inbound security group rules successfully modified on security group.



See HTTPS Protocol was added here.



See we can access securely.

THANK YOU

