

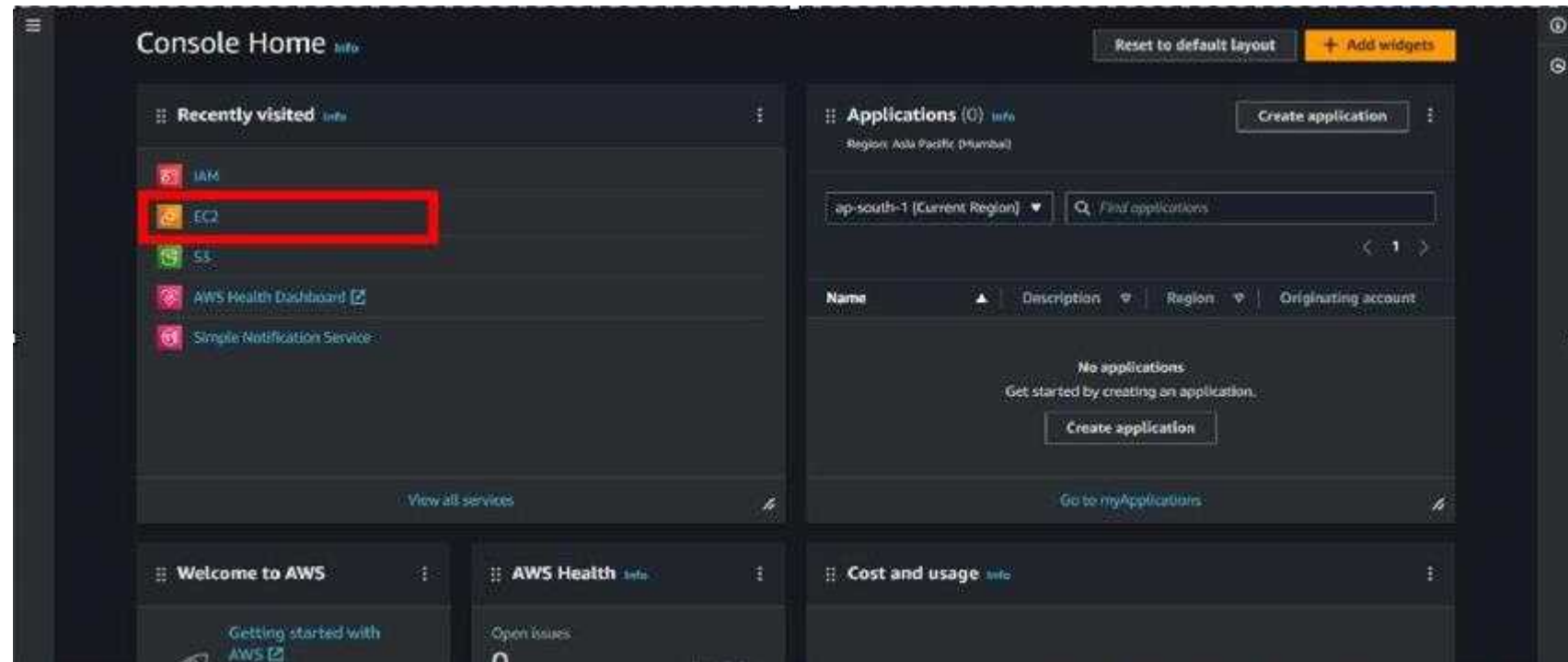
# Project 3

**Integrate Grafana with Linux Server for high cpu utilization and create a graph in Grafana.**

## Sign in to AWS Management Console

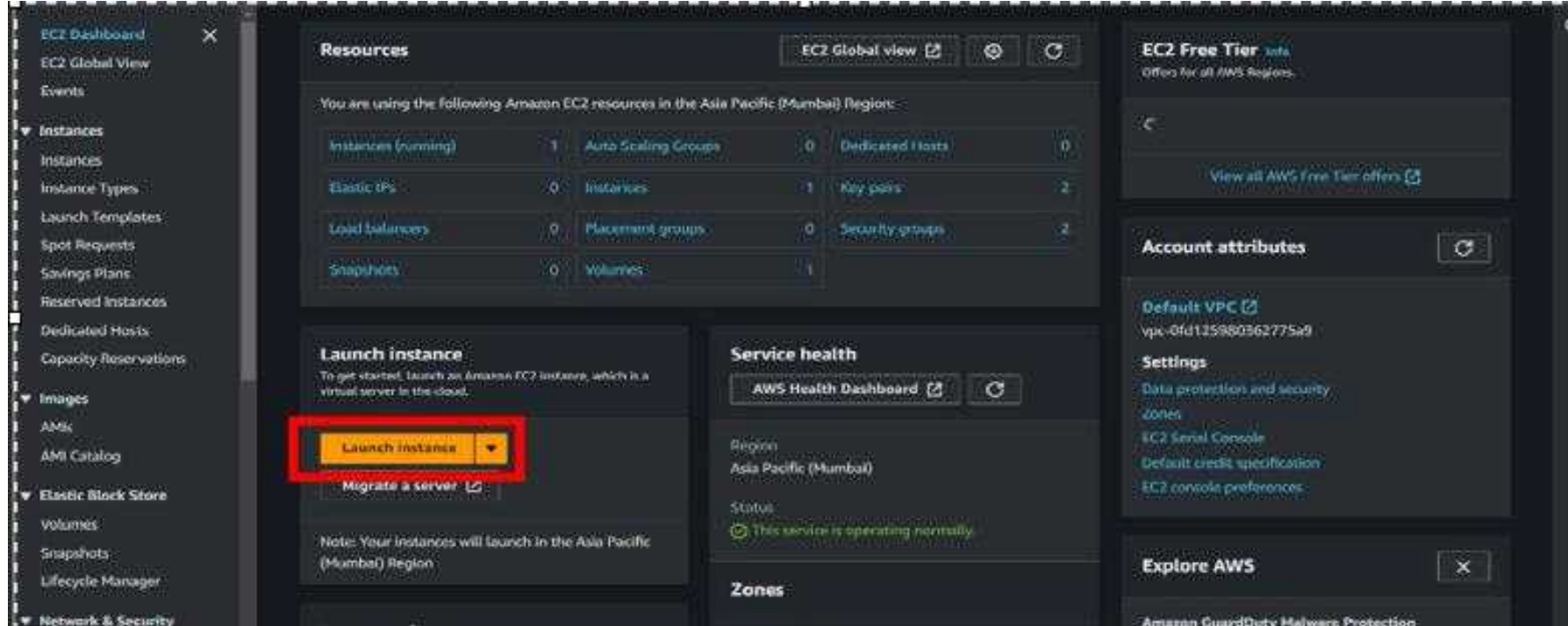
1. Click on the Open Console button, and you will get redirected to AWS Console in a new browser tab.
- On the AWS sign-in page, Leave the Account ID as default. Never edit/remove the 12-digit Account ID present in the AWS Console. otherwise, you cannot proceed with the lab.

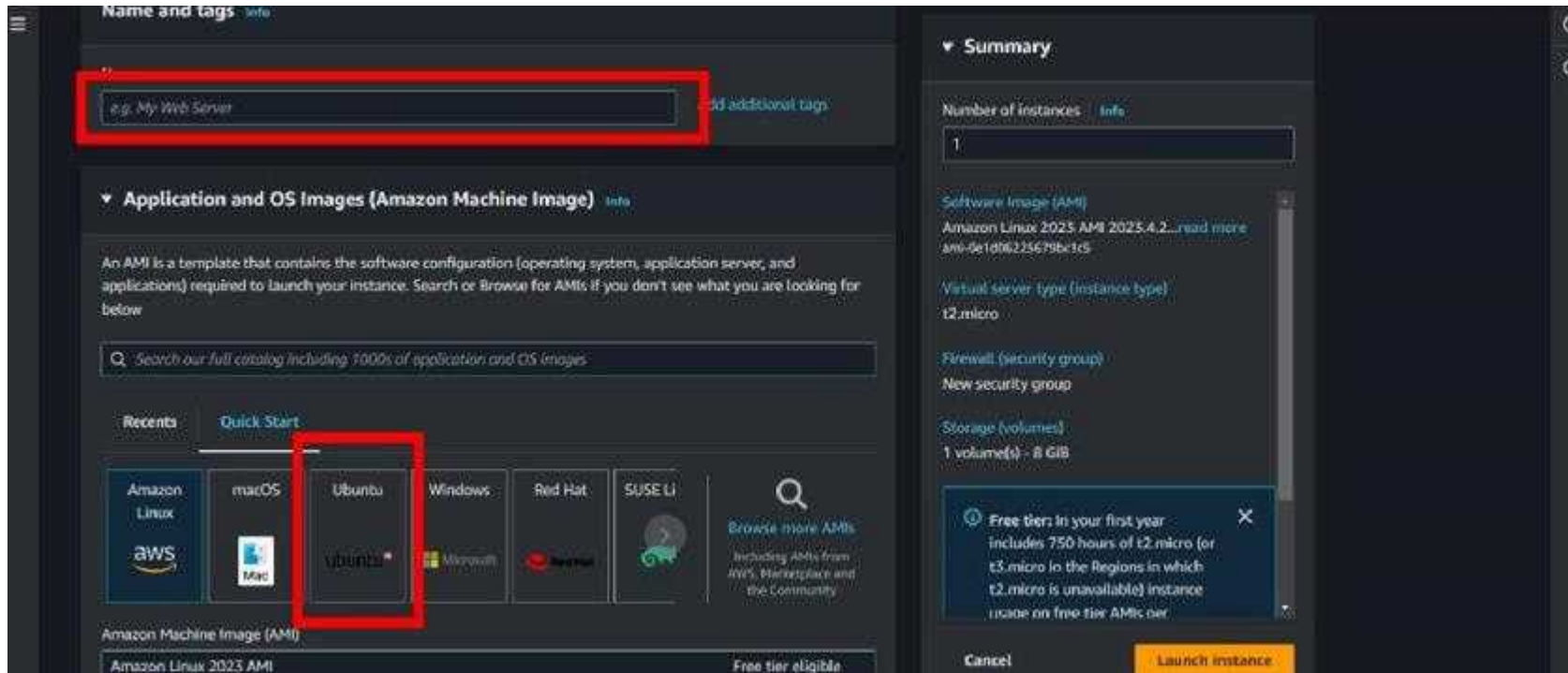
- Now copy your User Name and Password in the Lab Console to the IAM Username and Password in AWS Console and click on the Sign in button.
2. Once Signed in to the AWS Management Console, Make the default AWS Region as US East (N. Virginia) us-east-1.



Create an EC2 Instance(ubuntu):

- For creating an EC2 instance follow the following steps as shown in snapshots.





- Provide the EC2 name of your choice and select **Ubuntu** as an OS Image.

**Instance type** [Info](#) | [Get advice](#)

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 Intel base pricing: 0.0224 USD per Hour  
On-Demand SUSE base pricing: 0.0124 USD per Hour

Additional costs apply for AMIs with pre-installed software

☐ All generations [Compare instance types](#)

**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

Select ⌵ Create new key pair

**Network settings** [Info](#) [Edit](#)

Network [Info](#)

vpc-0fd125980362775a9

**Summary**

Number of instances [Info](#)

1

Software image (AMI)

Amazon Linux 2023 AMI 2023.4.2...read more  
ami-0e1d0c225079bc1c5

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

Cancel Launch instance [Review commands](#)

- Create a new key pair.

Launch an instance | EC2 | ap-south-1

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:

aws

Services

Search

[Alt+S]

Mumbai

paras @ 9054-1844-7105

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

Additional costs apply for AMIs with pre-installed software

Key pair (login)

info

You can use a key pair to securely connect to your instance. Before you launch the instance.

Key pair name - required

Select

Network settings

info

Network

info

vpc-0fd125980362775a9

Subnet

info

No preference (Default subnet in any availability zone)

Auto-assign public IP

info

Enable

Create key pair

Key pair name

Key pairs allow you to connect to your instance securely.

jaykeypair

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA

RSA encrypted private and public key pair

☐ ED25519

ED25519 encrypted private and public key pair

Private key file format

☐ .pem

For use with OpenSSH

☒ .ppk

For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Cancel

Create key pair

CloudShell

Feedback

© 2024, Amazon Web Services, Inc. or its affiliates.

Privacy

Terms

Cookie preferences

32°C

Haze

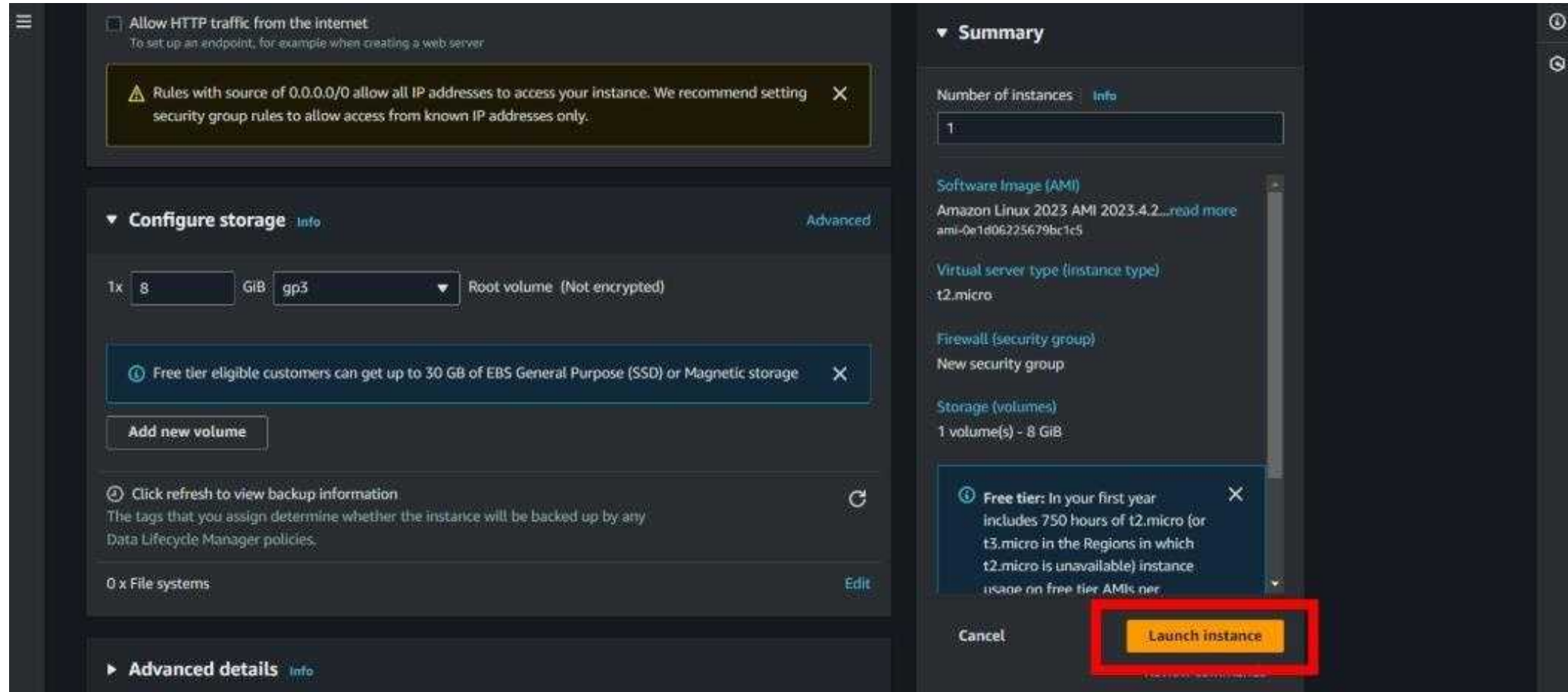
Search

ENG IN

7:11

19-06-2024

- Scroll down and click on “**LAUNCH INSTANCE**”.



- Then open your instance and connect that instance by putty or on web browser.



- After connecting the instance follow the given command or read Grafana documentation for help.

```
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1008-aws #86_84)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information disabled due to load higher than 1.0

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable SSM Apps to receive additional future security updates.
see https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
to check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-14-100:~$ sudo apt-get install -y apt-transport-https software-properties-common wget
```

*sudo apt-get install -y apt-transport-https software-properties-common wget*



```
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-14-100:~$ sudo apt-get install -y apt-transport-https software-properties-common wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'apt' instead of 'apt-transport-https'
apt is already the newest version (2.7.14build2).
apt set to manually installed.
software-properties-common is already the newest version (0.99.48).
software-properties-common set to manually installed.
wget is already the newest version (1.21.4-ubuntu4).
wget set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-14-100:~$ sudo mkdir -p /etc/apt/keyrings/
wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null
```

*sudo mkdir -p /etc/apt/keyrings/wget -q -O - https://apt.grafana.com/gpg.key |  
gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null*

```
0 updates can be applied immediately.

Enable KSM Apps to receive additional future security updates.
See https://ubuntu.com/ksm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-14-188:~$ sudo apt-get install -y apt-transport-https software-properties-common wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'apt' instead of 'apt-transport-https'
apt is already the newest version (2.7.14build2).
apt set to manually installed.
software-properties-common is already the newest version (0.99.48).
software-properties-common set to manually installed.
wget is already the newest version (1.21.4-ubuntu4).
wget set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-14-188:~$ sudo mkdir -p /etc/apt/keyrings/
wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null
ubuntu@ip-172-31-14-188:~$ echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.l...
```

*echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list*

```
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as Administrator (user "root"), use "sudo <command>".
See "man sudo root" for details.

ubuntu@ip-172-31-14-188:~$ sudo apt-get install -y apt-transport-https software-properties-common wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'apt' instead of 'apt-transport-https'
apt is already the newest version (2.7.14build2).
apt set to manually installed.
software-properties-common is already the newest version (0.99.48).
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wget is already the newest version (1.21.4-ubuntu4).
wget set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-14-188:~$ sudo mkdir -p /etc/apt/keyrings/
wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null
ubuntu@ip-172-31-14-188:~$ echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.li
st
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main
ubuntu@ip-172-31-14-188:~$ # Updates the list of available packages
sudo apt-get update
```

# To updates the list of available packages  
*sudo apt-get update*

```
Get:22 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [25.1 kB]
Get:23 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [45.0 kB]
Get:24 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [112 B]
Get:25 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [70.1 kB]
Get:26 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [14.3 kB]
Get:27 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:28 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [2960 B]
Get:29 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [968 B]
Get:30 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [212 B]
Get:31 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [116 B]
Get:32 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:33 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]
Get:34 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [6840 B]
Get:35 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [968 B]
Get:36 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [117.6 kB]
Get:37 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [116 B]
Get:38 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:39 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Metadata [116 B]
Get:40 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:41 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:42 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [158 kB]
Get:43 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [41.5 kB]
Get:44 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [6876 B]
Get:45 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [64.4 kB]
Get:46 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [17.0 kB]
Get:47 https://apt.grafana.com stable/main amd64 Packages [250 kB]
Get:48 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [10532 B]
Get:49 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [112 B]
Get:50 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [70.1 kB]
Get:51 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [14.3 kB]
Get:52 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:53 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:54 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [116 B]
Fetched 29.4 MB in 6s (4962 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-14-188:~$ sudo apt-get install grafana-enterprise
```

# To install the latest Enterprise release:  
*sudo apt-get install grafana-enterprise*

```
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 musl amd64 1.2.4-2 [416 KB]
Get:2 https://apt.grafana.com stable/main amd64 grafana-enterprise amd64 11.0.0 [120 MB]
Fetched 121 MB in 11s (10.5 MB/s)
Selecting previously unselected package musl:amd64.
(Reading database ... 71839 files and directories currently installed.)
Preparing to unpack .../musl_1.2.4-2_amd64.deb ...
Unpacking musl:amd64 (1.2.4-2) ...
Selecting previously unselected package grafana-enterprise.
Preparing to unpack .../grafana-enterprise_11.0.0_amd64.deb ...
Unpacking grafana-enterprise (11.0.0) ...
Setting up musl:amd64 (1.2.4-2) ...
Setting up grafana-enterprise (11.0.0) ...
Info: Selecting UID from range 100 to 999 ...

Info: Adding system user 'grafana' (UID 111) ...
Info: Adding new user 'grafana' (UID 111) with group 'grafana' ...
Info: Not creating home directory '/usr/share/grafana'.
*** NOT starting on installation, please execute the following statements to configure grafana to start automatically using systemd
    sudo /bin/systemctl daemon-reload
    sudo /bin/systemctl enable grafana-server
*** You can start grafana-server by executing
    sudo /bin/systemctl start grafana-server
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-14-108:~$ sudo systemctl start grafana-server
```

- *sudo systemctl start grafana-server*
- *sudo systemctl enable grafana-server.service*



```
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=provisioning.dashboard t=2024-06-18T15:11:38.331125089Z level=info msg="starting to provision dashboards"
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=provisioning.dashboard t=2024-06-18T15:11:38.331155154Z level=info msg="finished to provision dashboards"
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=http.server t=2024-06-18T15:11:38.380358573Z level=info msg="HTTP Server Listen" address=[::]:3000 protocol=
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=sqlstore.transactions t=2024-06-18T15:11:38.493822724Z level=info msg="Database locked, sleeping then retryin
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=sqlstore.transactions t=2024-06-18T15:11:38.516065191Z level=info msg="Database locked, sleeping then retryin
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=plugins.update.checker t=2024-06-18T15:11:38.853932226Z level=info msg="Update check succeeded" duration=554
Jun 18 15:11:38 ip-172-31-14-188 grafana[2028]: logger=grafana.update.checker t=2024-06-18T15:11:38.874267515Z level=info msg="Update check succeeded" duration=580
Jun 18 15:11:39 ip-172-31-14-188 grafana[2028]: logger=plugin.angular detectorsprovider.dynamic t=2024-06-18T15:11:39.007963038Z level=info msg="Patterns update fin
Jun 18 15:11:39 ip-172-31-14-188 grafana[2028]: logger=grafana-apiserver t=2024-06-18T15:11:39.383980342Z level=info msg="Adding GroupVersion playlist.grafana.app
Jun 18 15:11:39 ip-172-31-14-188 grafana[2028]: logger=grafana-apiserver t=2024-06-18T15:11:39.384644464Z level=info msg="Adding GroupVersion featuretoggle.grafana

ubuntu@ip-172-31-14-188:~$ sudo systemctl enable grafana-server.service
Synchronizing state of grafana-server.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable grafana-server
Created symlink /etc/systemd/system/multi-user.target.wants/grafana-server.service → /usr/lib/systemd/system/grafana-server.service.
ubuntu@ip-172-31-14-188:~$ sudo systemctl status grafana-server
```

*sudo systemctl status grafana-server.service*

```
aws | Services | Search [Alt+S]

o services need to be restarted.

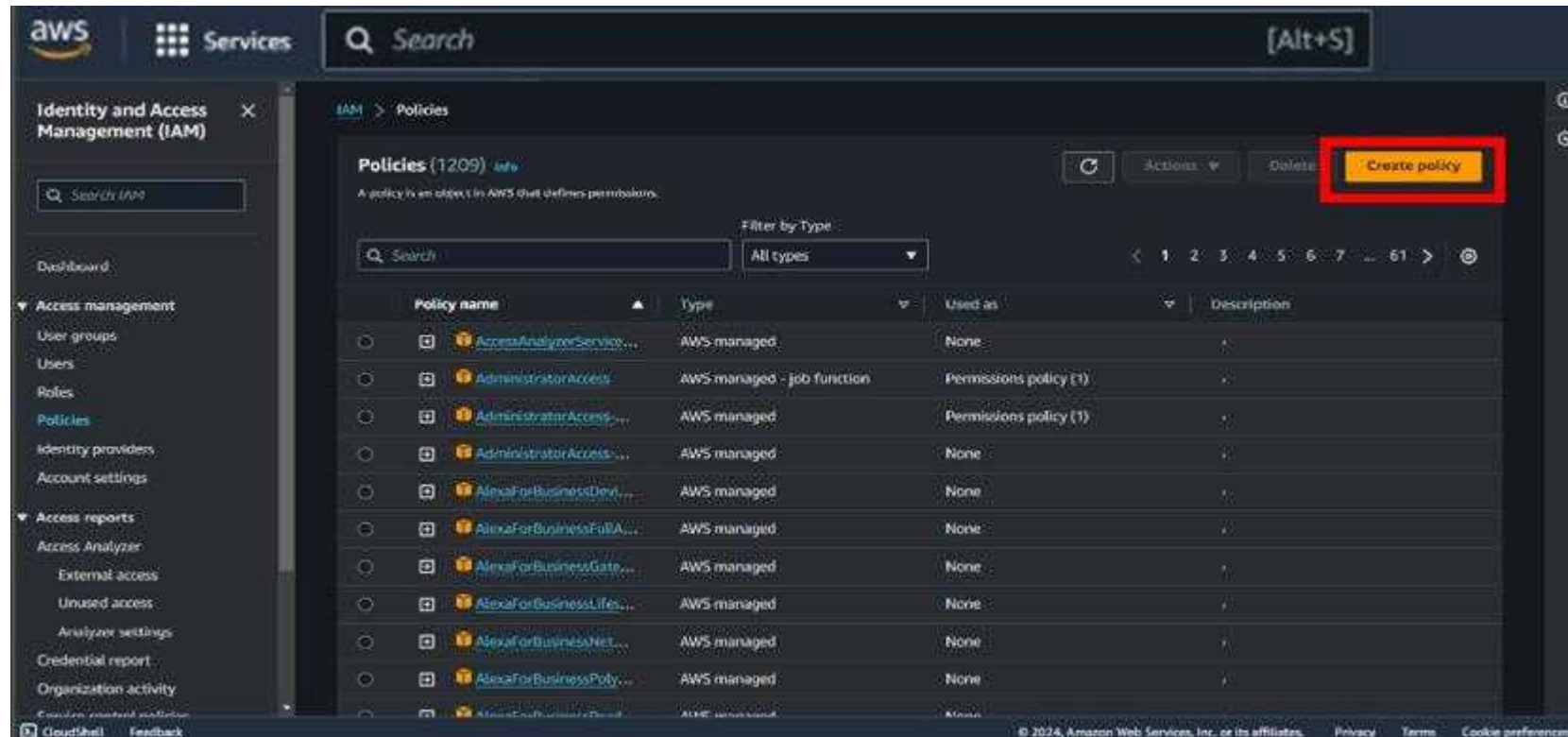
o containers need to be restarted.

o user sessions are running outdated binaries.

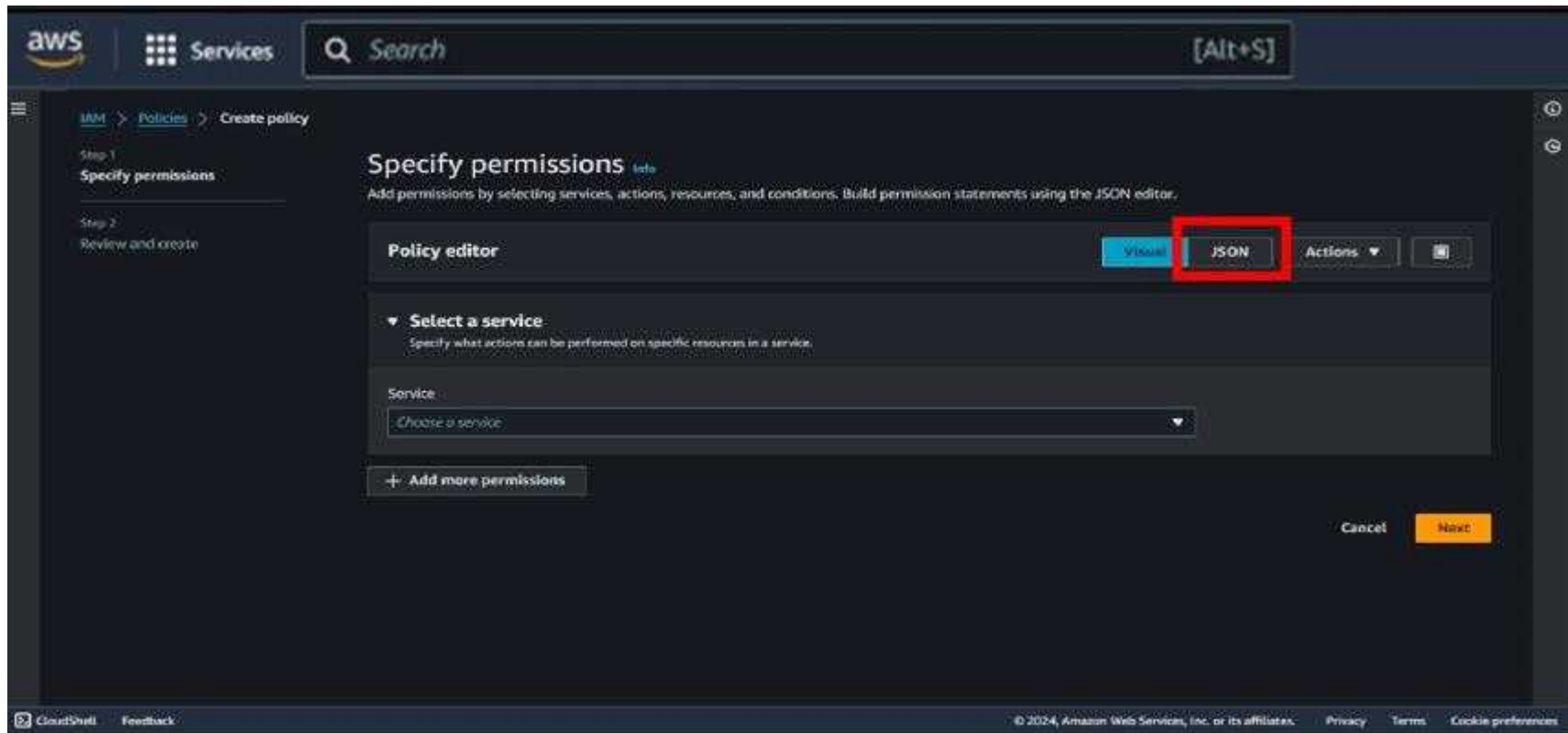
o VM guests are running outdated hypervisor (qemu) binaries on this host.

ubuntu@ip-172-31-14-188:~$ sudo systemctl start grafana-server
ubuntu@ip-172-31-14-188:~$ sudo systemctl status grafana-server
grafana-server.service - Grafana instance
Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; disabled; preset: enabled)
Active: active (running) since Tue 2024-06-18 15:11:29 UTC; 21s ago
Docs: https://grafana.com/docs
Main PID: 2028 (grafana)
Tasks: 16 (limit: 1130)
Memory: 88.9M (peak: 89.3M)
CPU: 3.284s
```

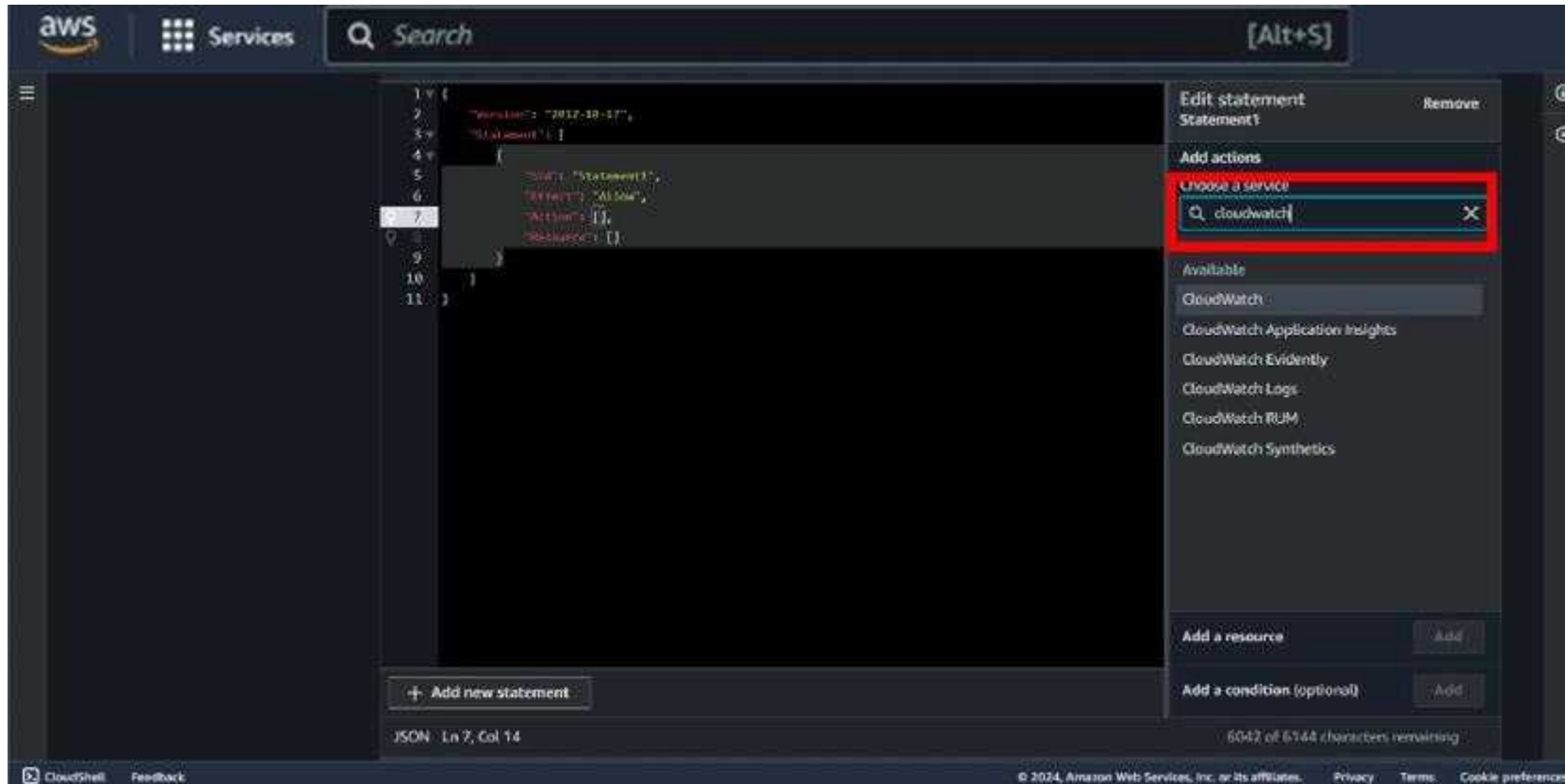




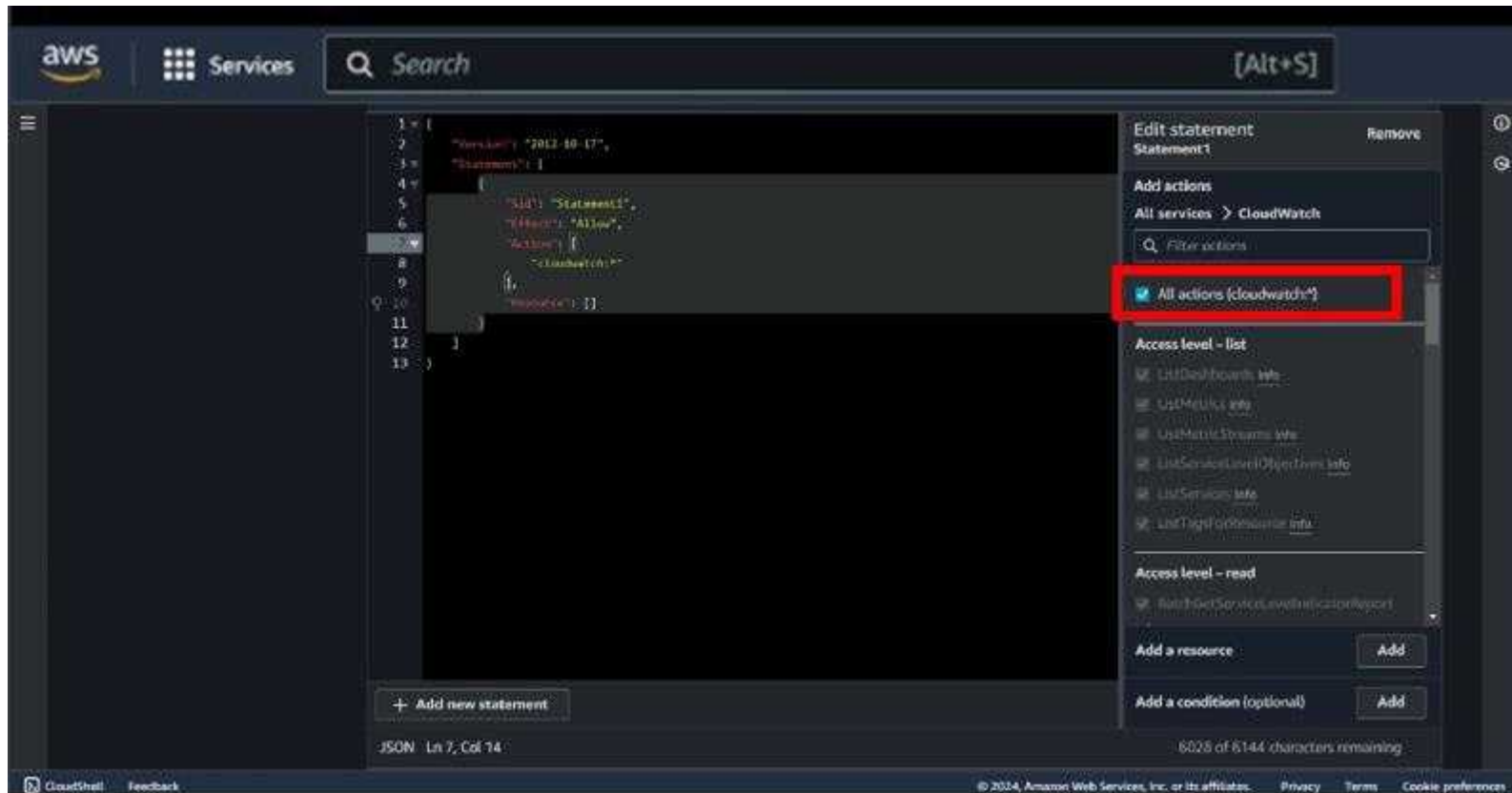
- Then search IAM role and go to policies and click on **Create policies**.



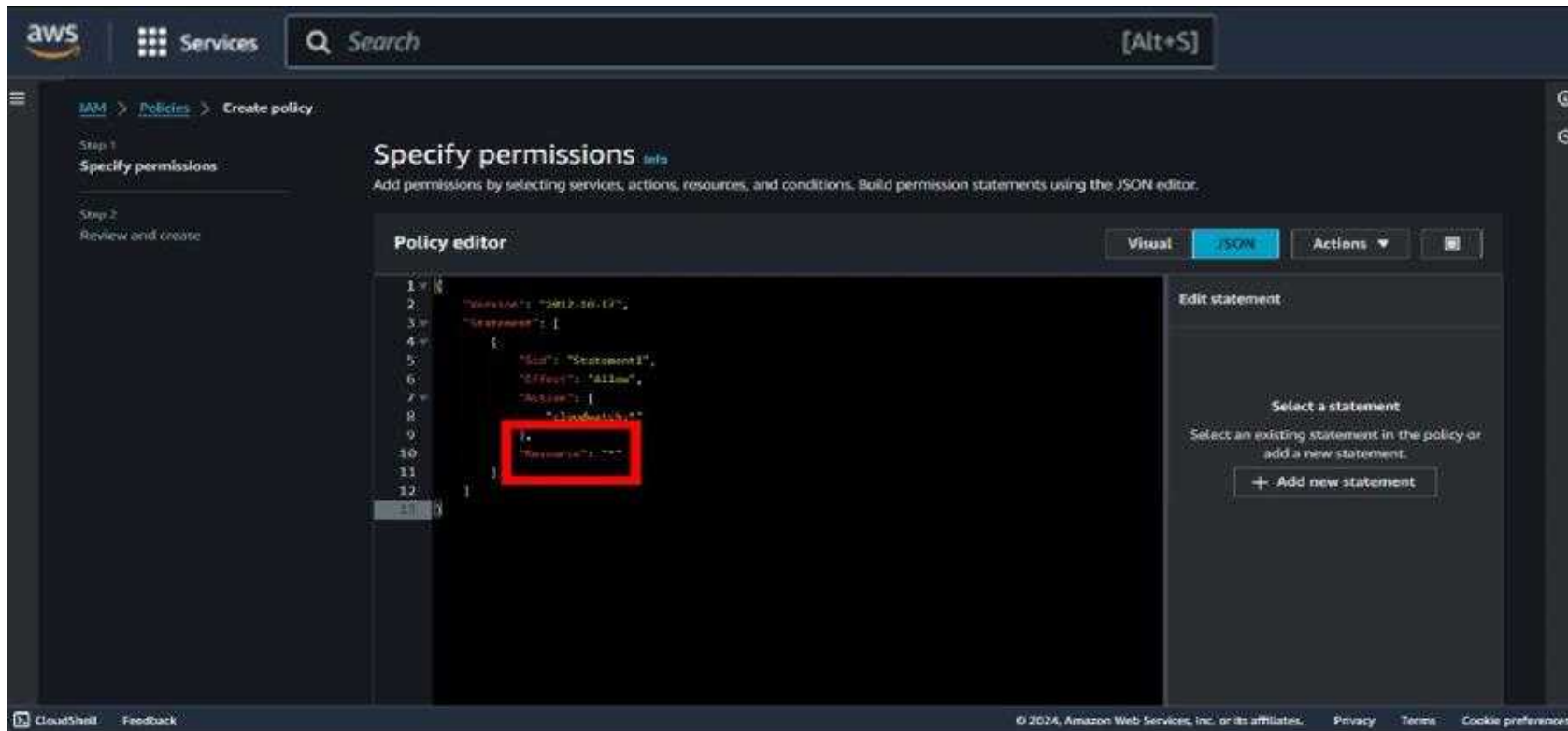
- Then go to **JSON** type.



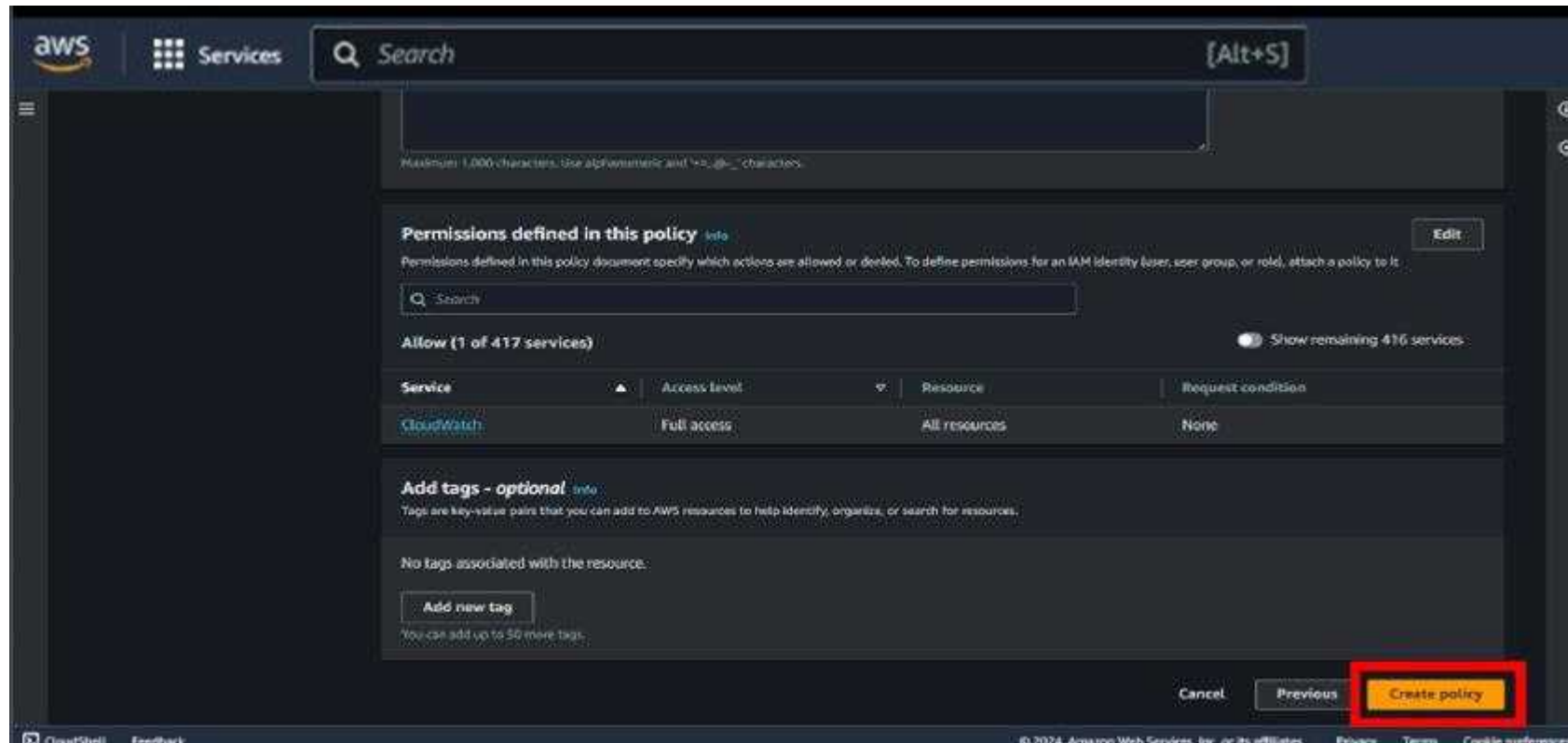
- Click on add action and search for **“Cloudwatch”**.



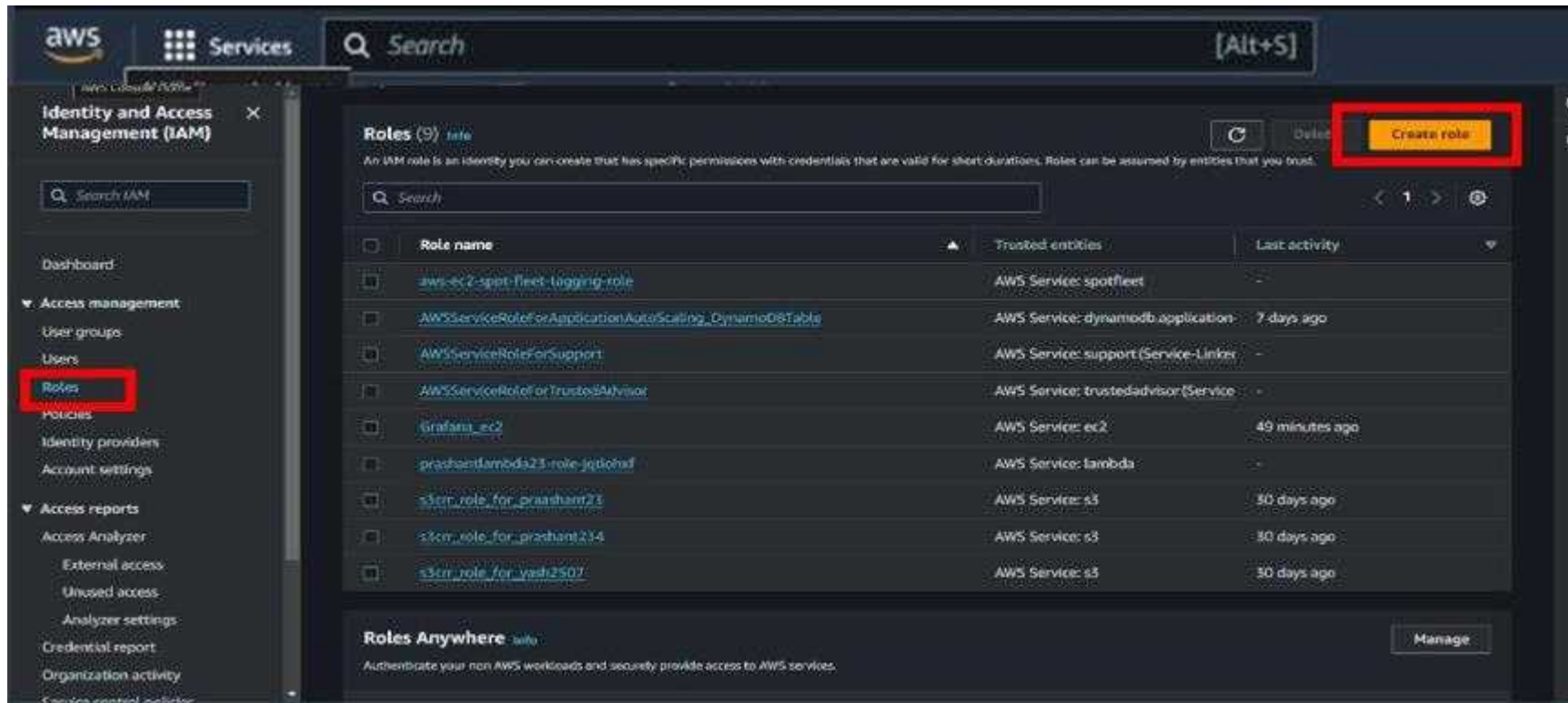
- After selecting cloudwatch select **“All actions “**.



- Then put **“Resource “ : ”\*”**

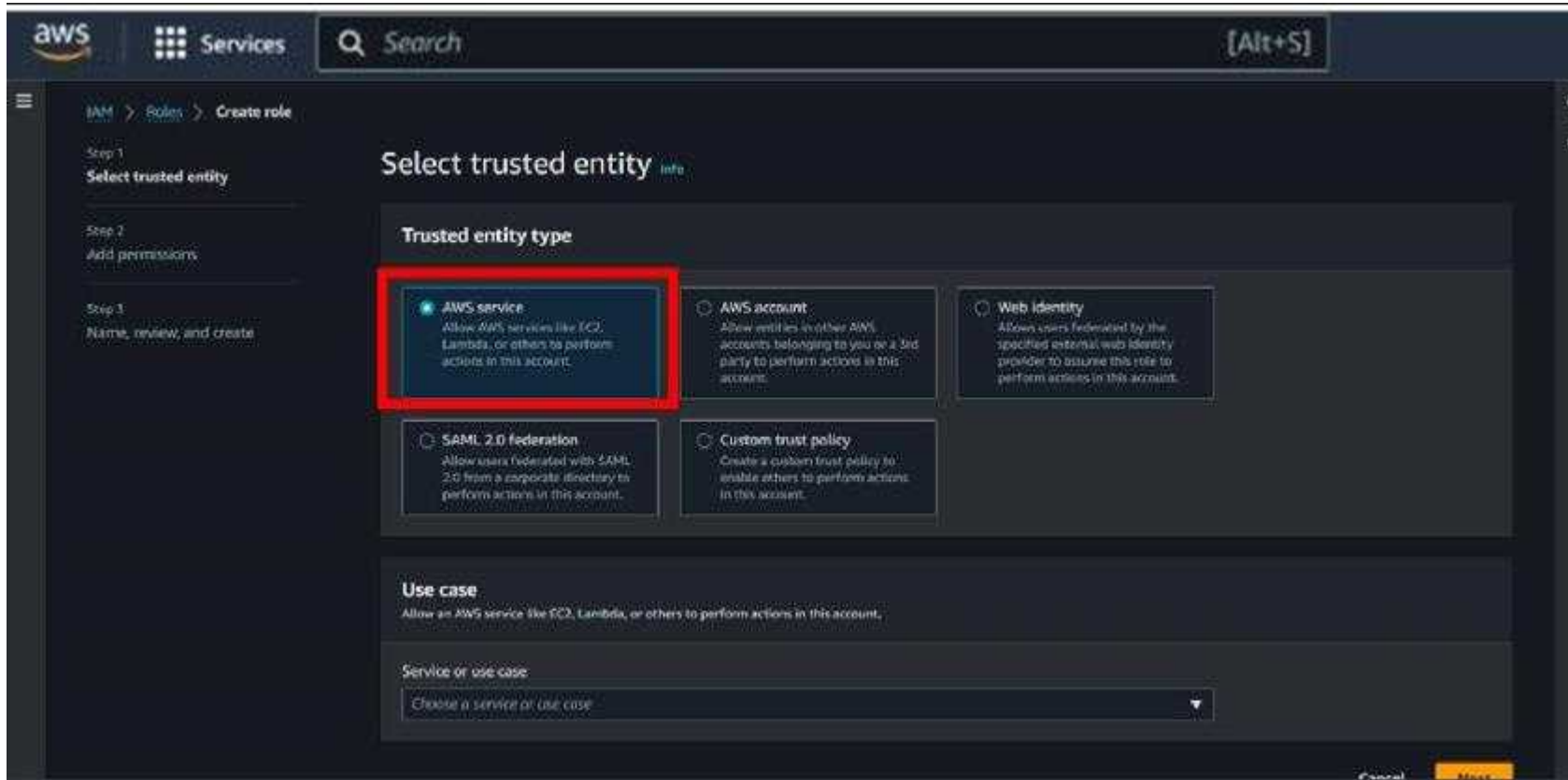


- Scroll down and click on **Create policy**.

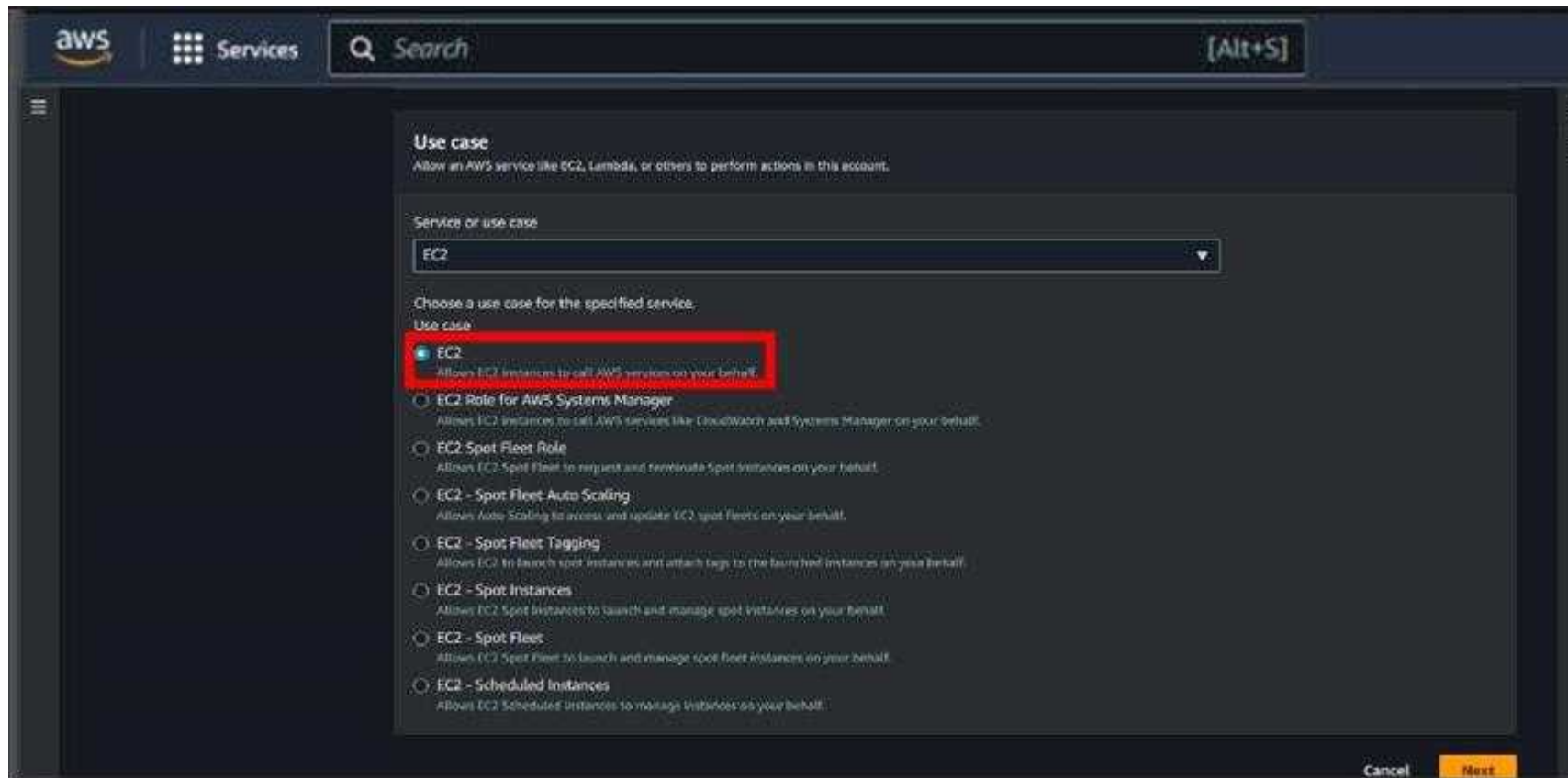


- Then go to roles and click on **Create roles**.

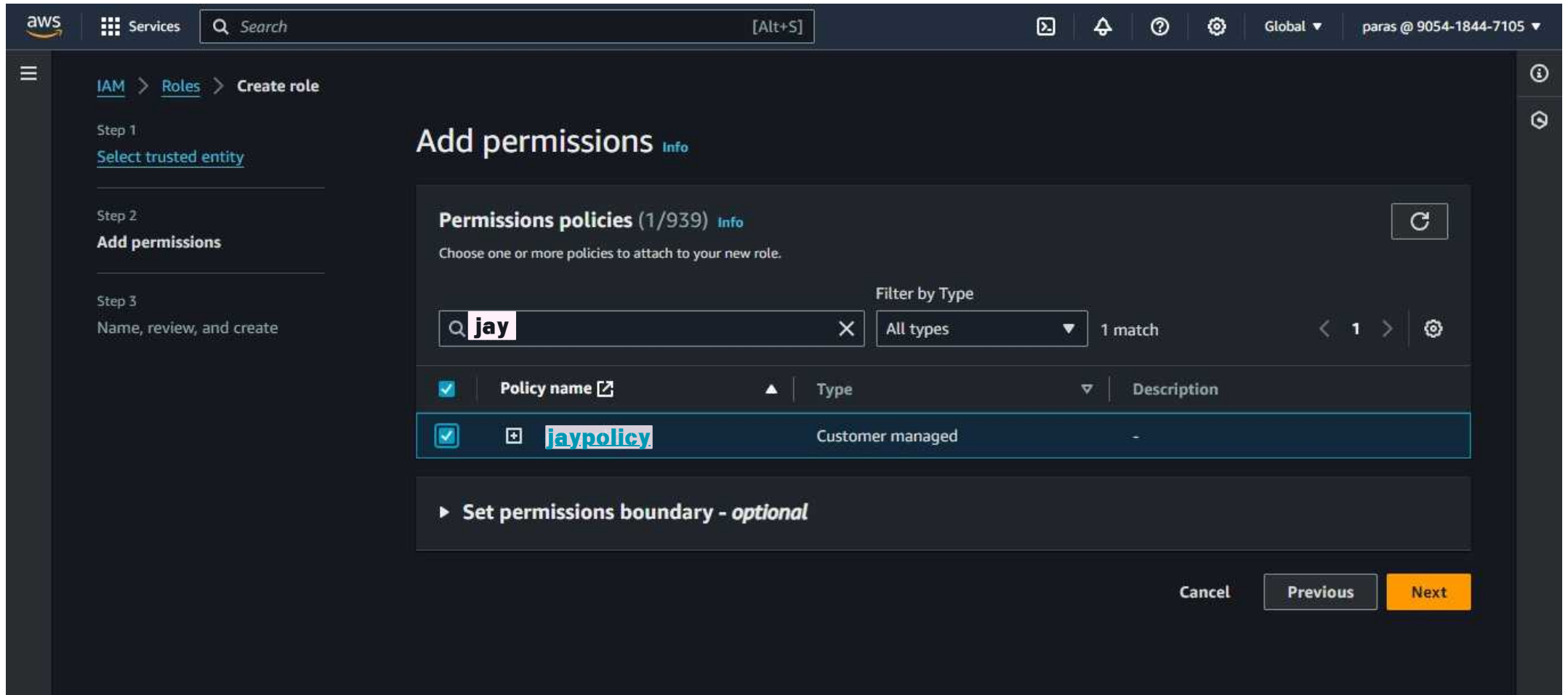




- Then select entity type is **AWS services** .

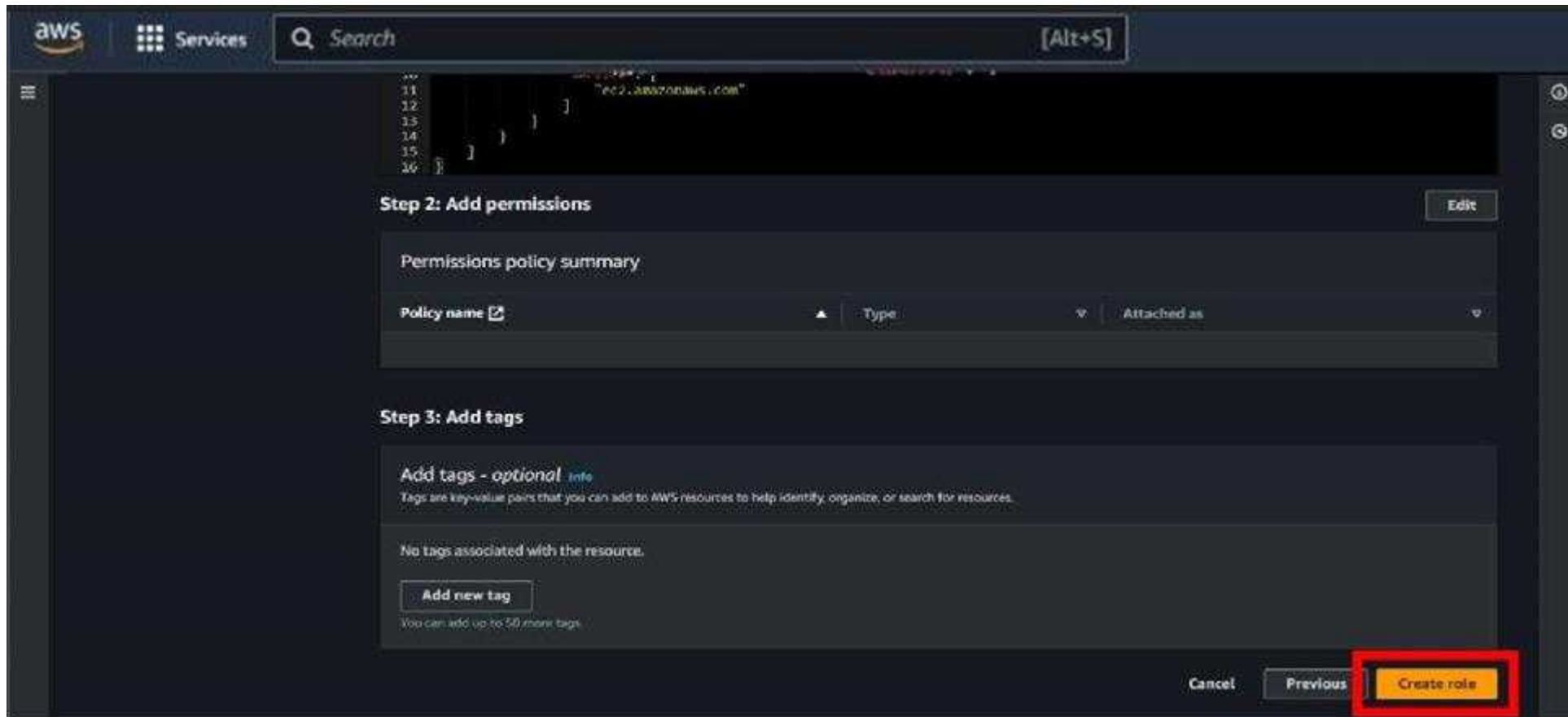


- Now , select use case as **EC2** .



- Select your policy here which you have created previously , then click on **Next**.





- Then scroll down and click on the **Create role** .

The screenshot displays the AWS Management Console's EC2 Dashboard. On the left, the navigation menu includes 'EC2 Dashboard', 'EC2 Global View', 'Events', 'Instances', 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', 'Capacity Reservations', 'Images', 'AMI Catalog', 'Elastic Block Store', 'Volumes', 'Snapshots', and 'Lifecycle Manager'. The main area shows a table of EC2 instances. The instance 'jay\_EC2' is selected, and its details are shown below the table. The instance ID 'i-02d318d42a1989ef5' is highlighted with a red box. The instance is in the 'Running' state, using the 't2.micro' instance type, and is located in the 'ap-south-1a' availability zone. The public IPv4 address is '15.206.160.83' and the private IPv4 address is '172.31.42.87'.

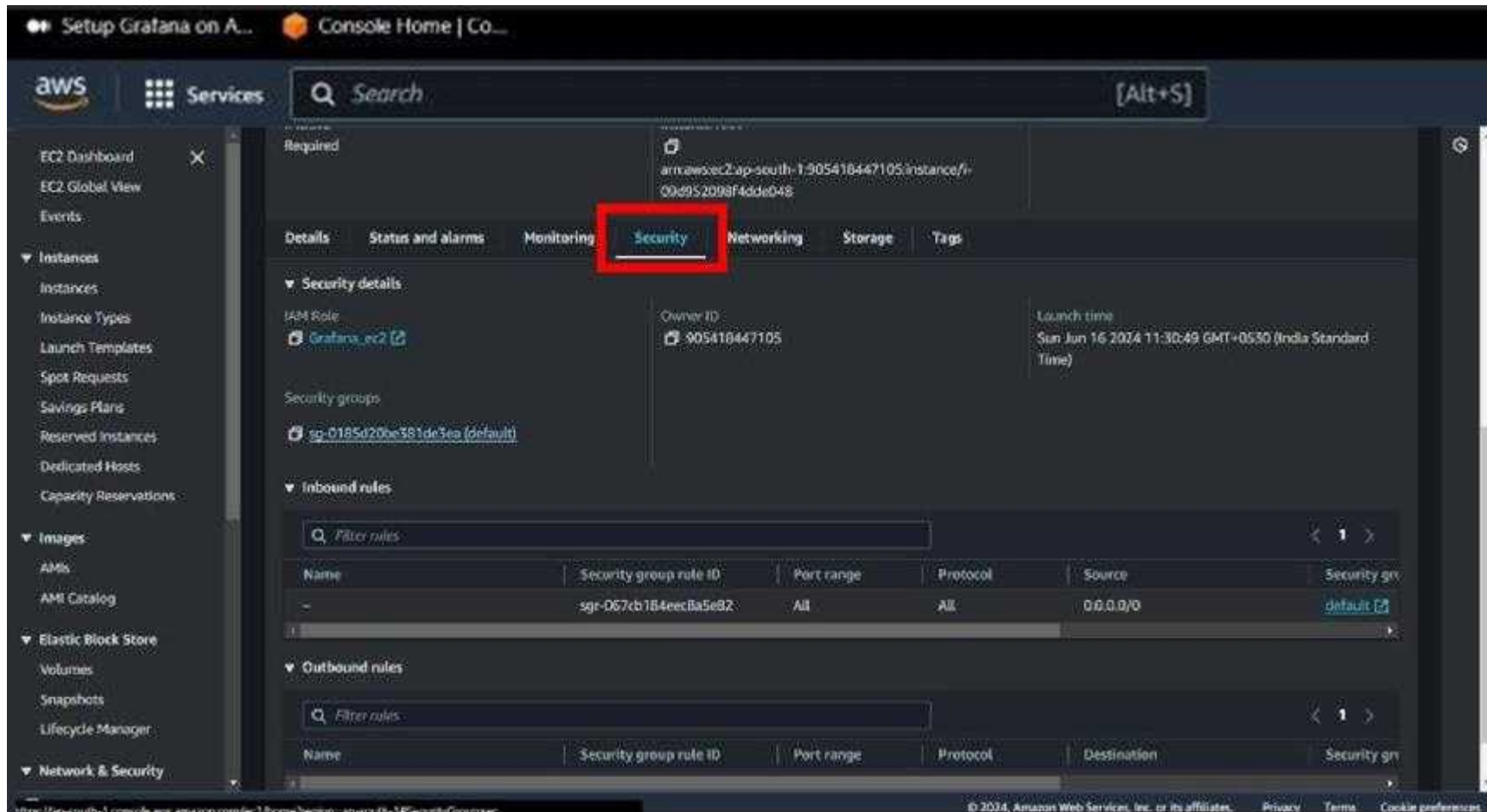
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 D
mywebserver2	i-0871c853386805764	Running	t2.micro	2/2 checks passed	View alarms	ap-south-1a	ec2-65-0-104
<b>jay_EC2</b>	<b>i-02d318d42a1989ef5</b>	Running	t2.micro	Initializing	View alarms	ap-south-1a	ec2-15-206-1

**i-02d318d42a1989ef5 (paras\_EC2)**

**Instance summary**

Instance ID i-02d318d42a1989ef5 (paras_EC2)	Public IPv4 address 15.206.160.83   <a href="#">open address</a>	Private IPv4 addresses 172.31.42.87
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-15-206-160-83.ap-south-1.compute.amazonaws.com   <a href="#">open address</a>

- After creating your role and policy go to instance and open your instance , which you have already created.



- Scroll down and go to **Security** option.



The screenshot shows the AWS Management Console interface for a security group. The left sidebar contains navigation links for EC2 Dashboard, EC2 Global View, Events, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, AMI Catalog, Elastic Block Store, Volumes, Snapshots, Lifecycle Manager, and Network & Security. The main content area displays the details for the security group 'sg-0185d20be381de3ea - default'. The 'Details' section includes fields for Security group name, Security group ID, Description, VPC ID, Owner, Inbound rules count, and Outbound rules count. The 'Inbound rules' tab is selected, showing a table with one rule. The 'Edit inbound rules' button is highlighted with a red box.

EC2 > Security Groups > sg-0185d20be381de3ea - default

### sg-0185d20be381de3ea - default

Actions

#### Details

Security group name default	Security group ID sg-0185d20be381de3ea	Description default VPC security group	VPC ID vpc-06d125980262725a9
Owner 905418447105	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

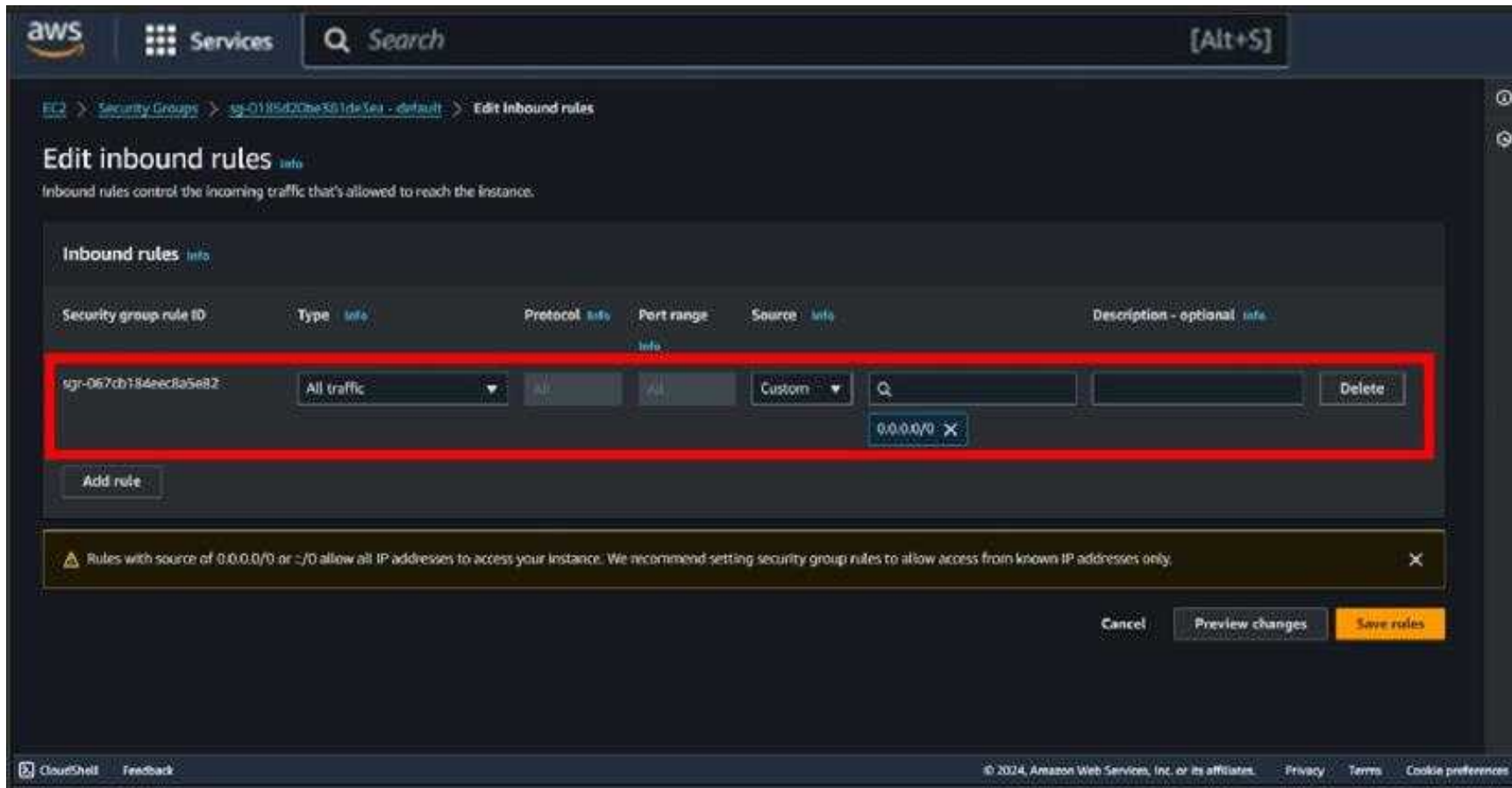
Inbound rules Outbound rules Tags

#### Inbound rules (1)

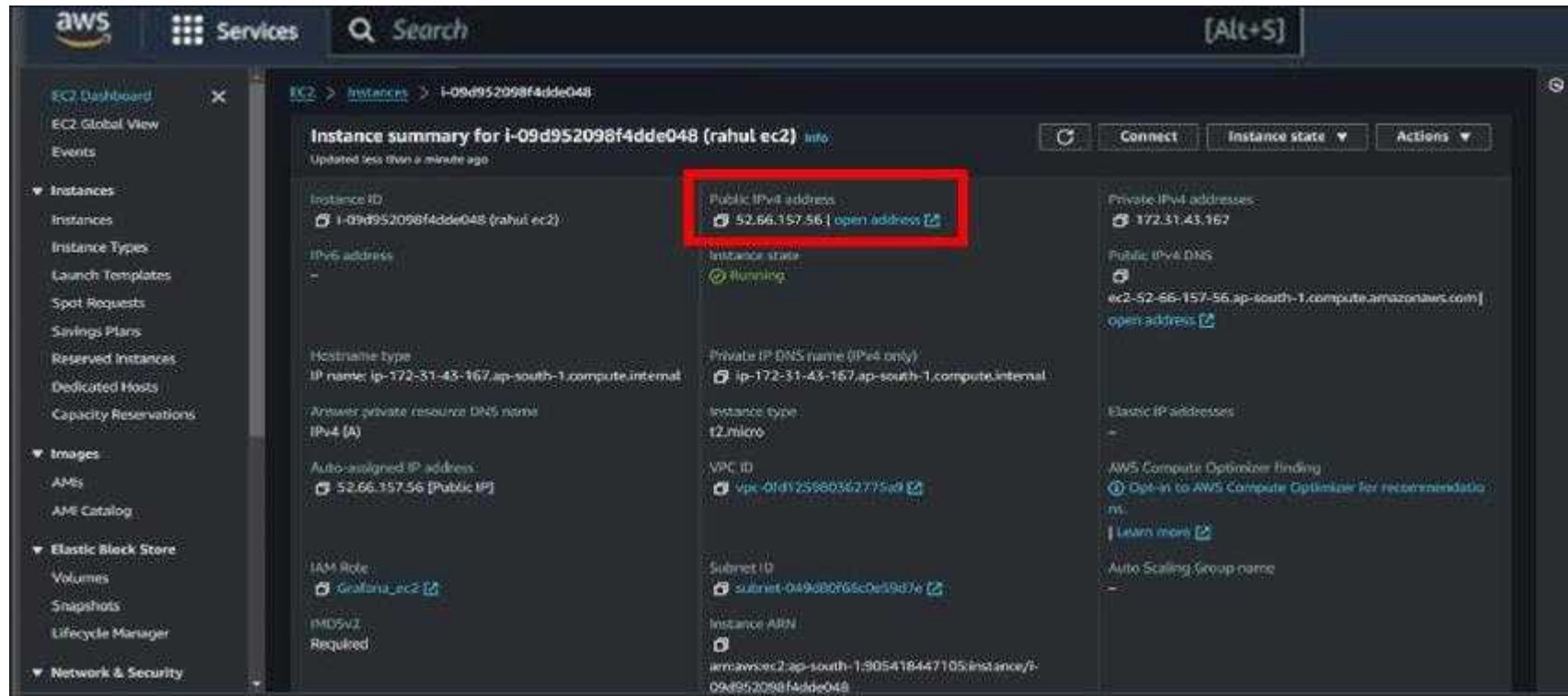
Manage tags Edit inbound rules

Name	Security group rule...	IP version	Type	Protocol	Port range
	sg-067cb184eec8a5e82	IPv4	All traffic	All	All

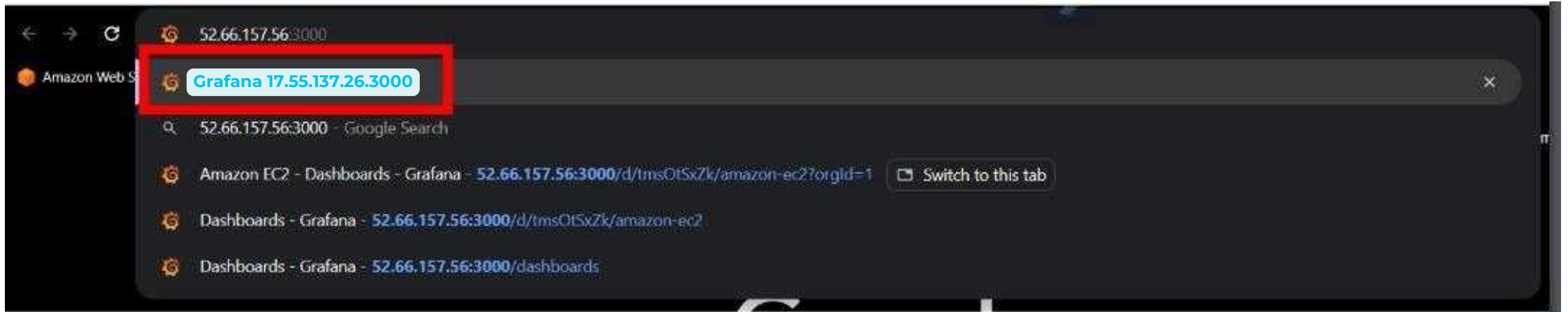
- Then click on **Edit inbound rule**.



- Then modify your rule **select type = All traffic** and **source =0.0.0.0/0**



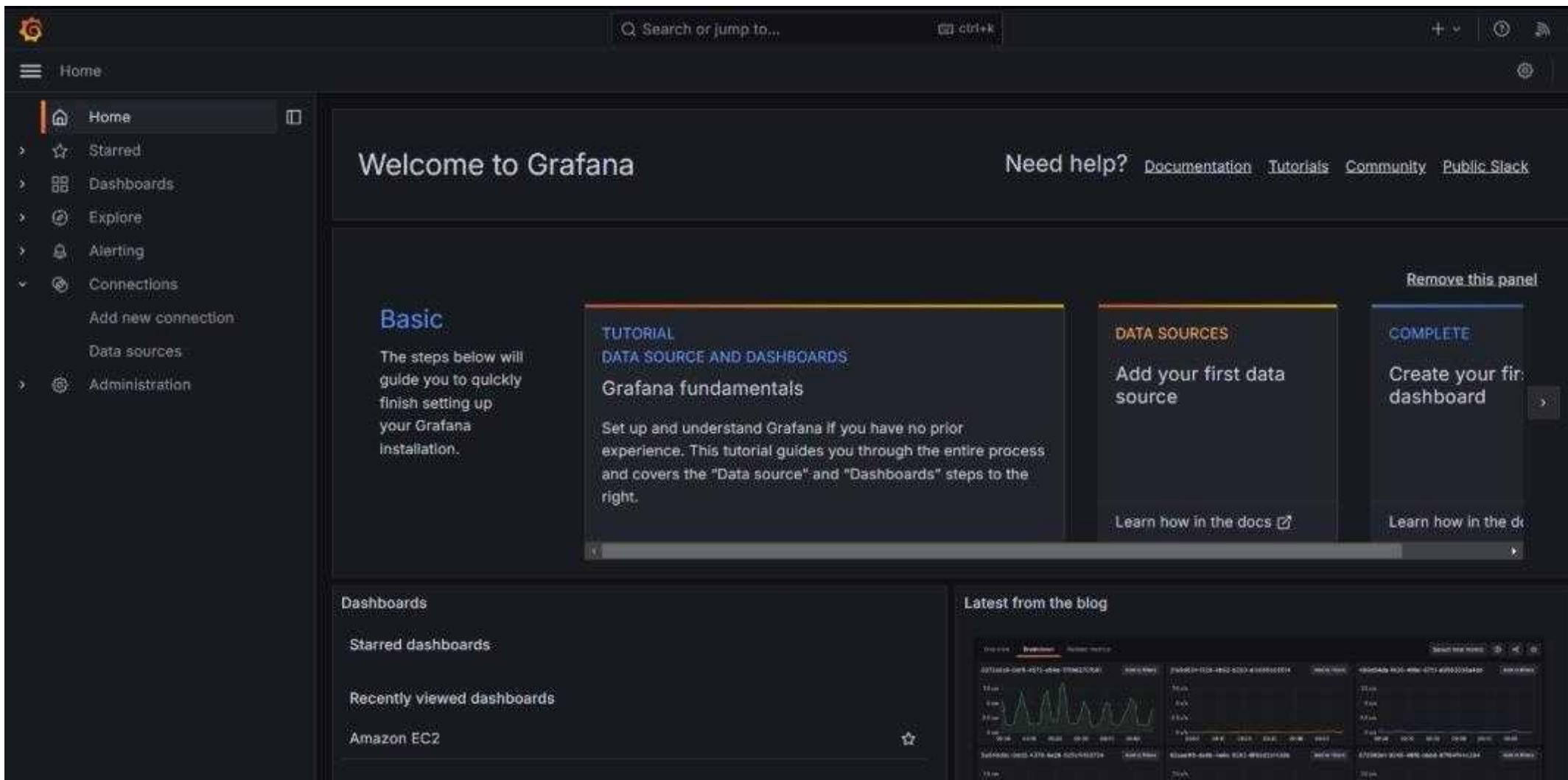
- Then copy your **public IPv4 address** of your instance .

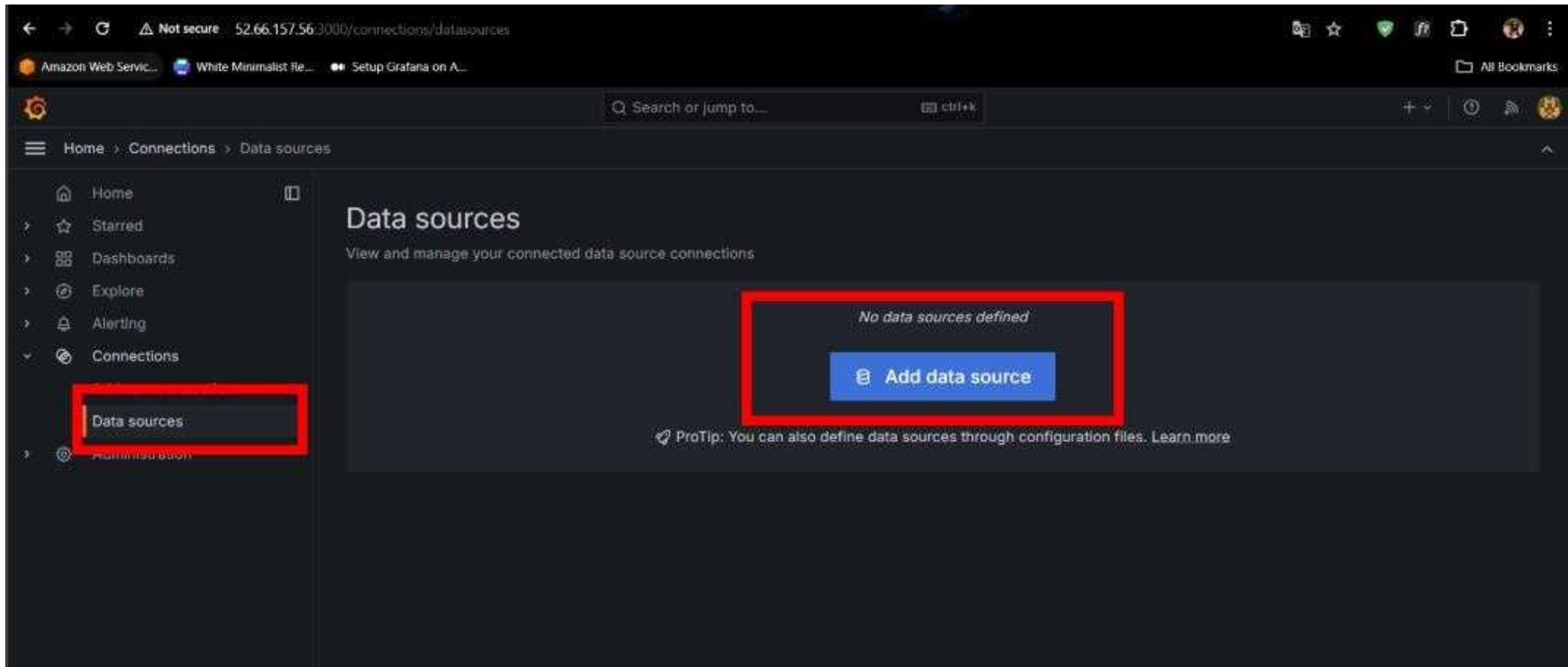


- Then paste your copied ip address and type “:3000” after ip address and search it .



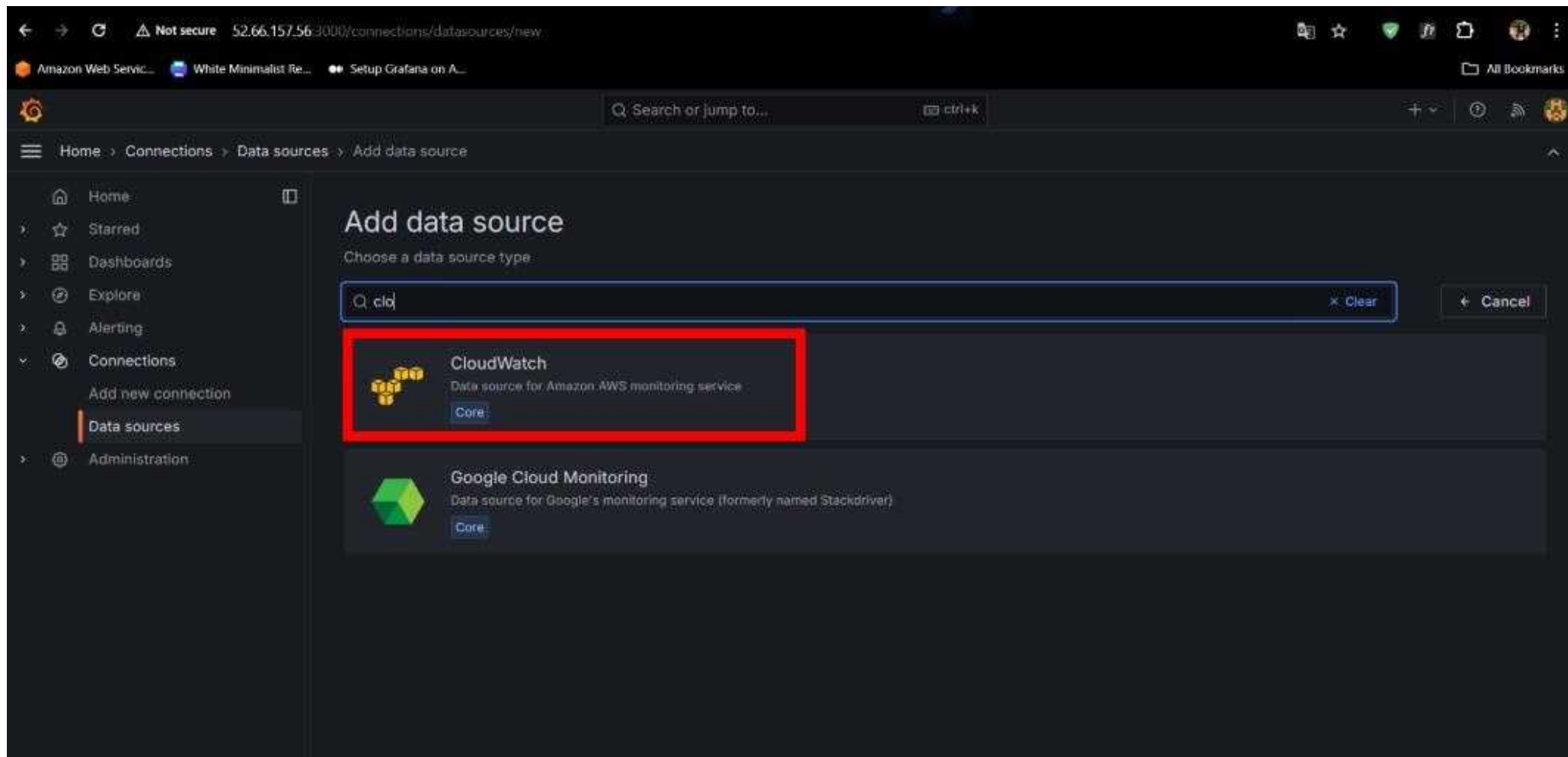
- Then login in Grafana by the help of credentials shown in above snapshot.



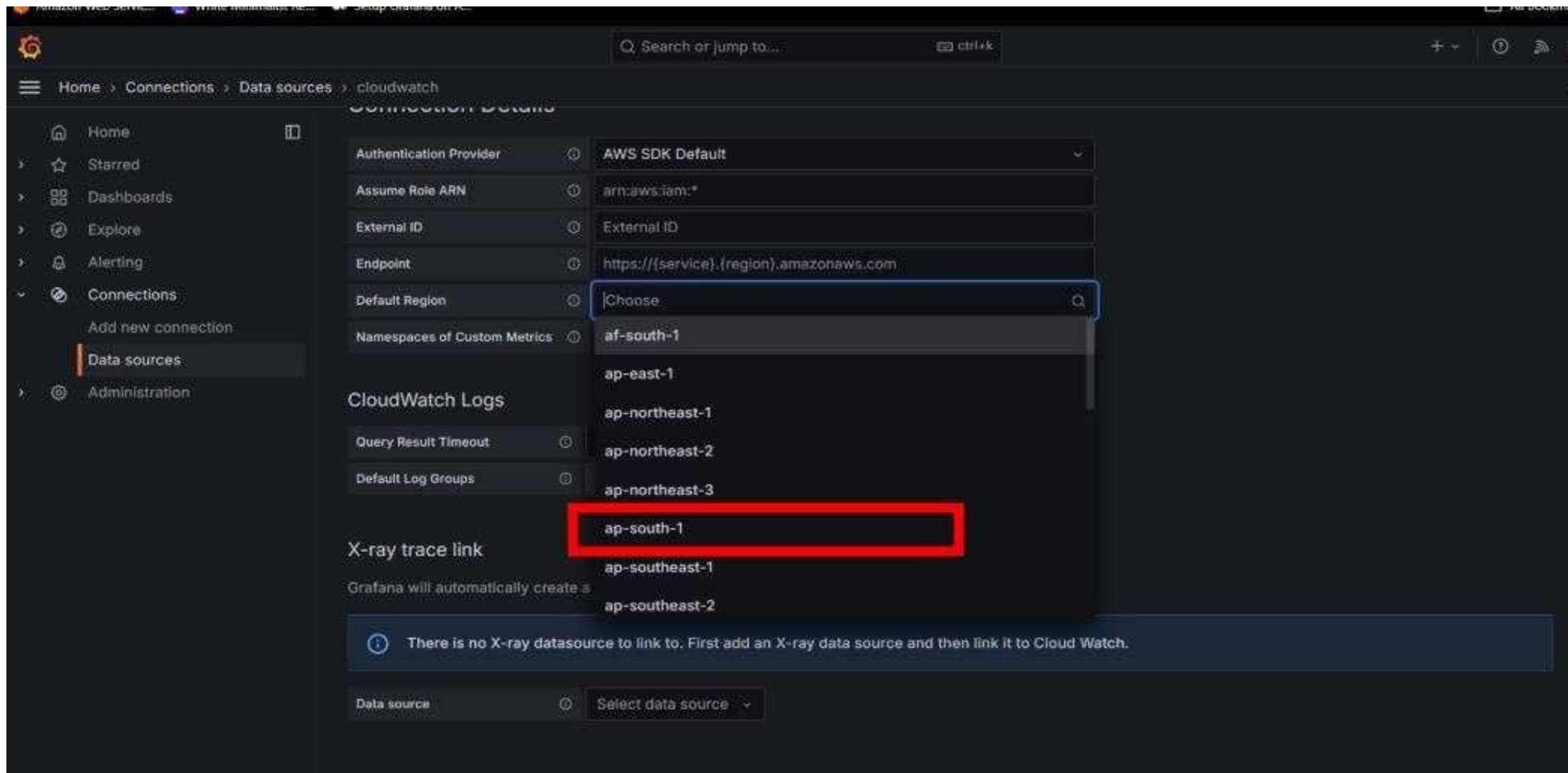


- Then go to **Dashboard** and click on **Add data source**.

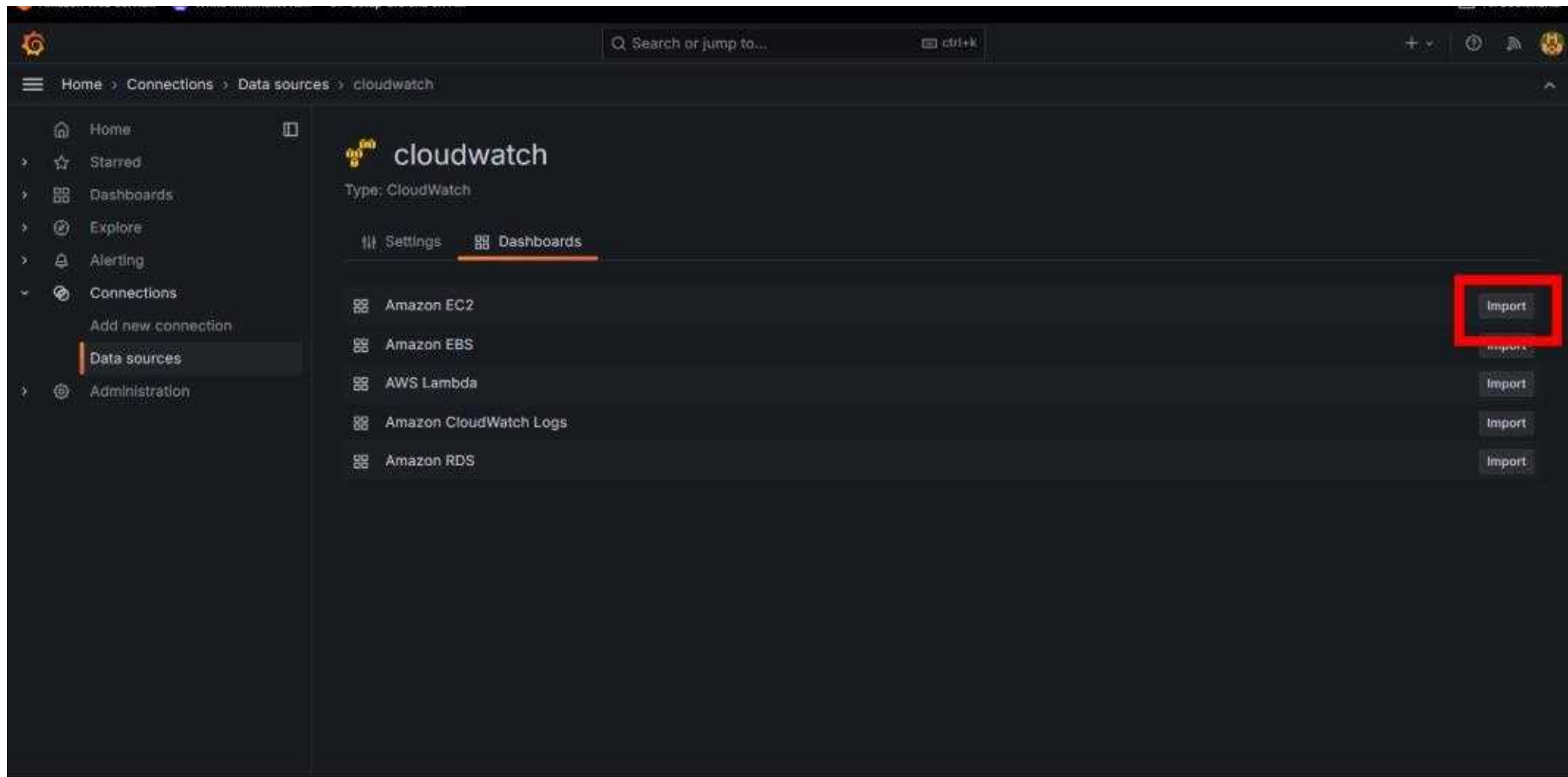




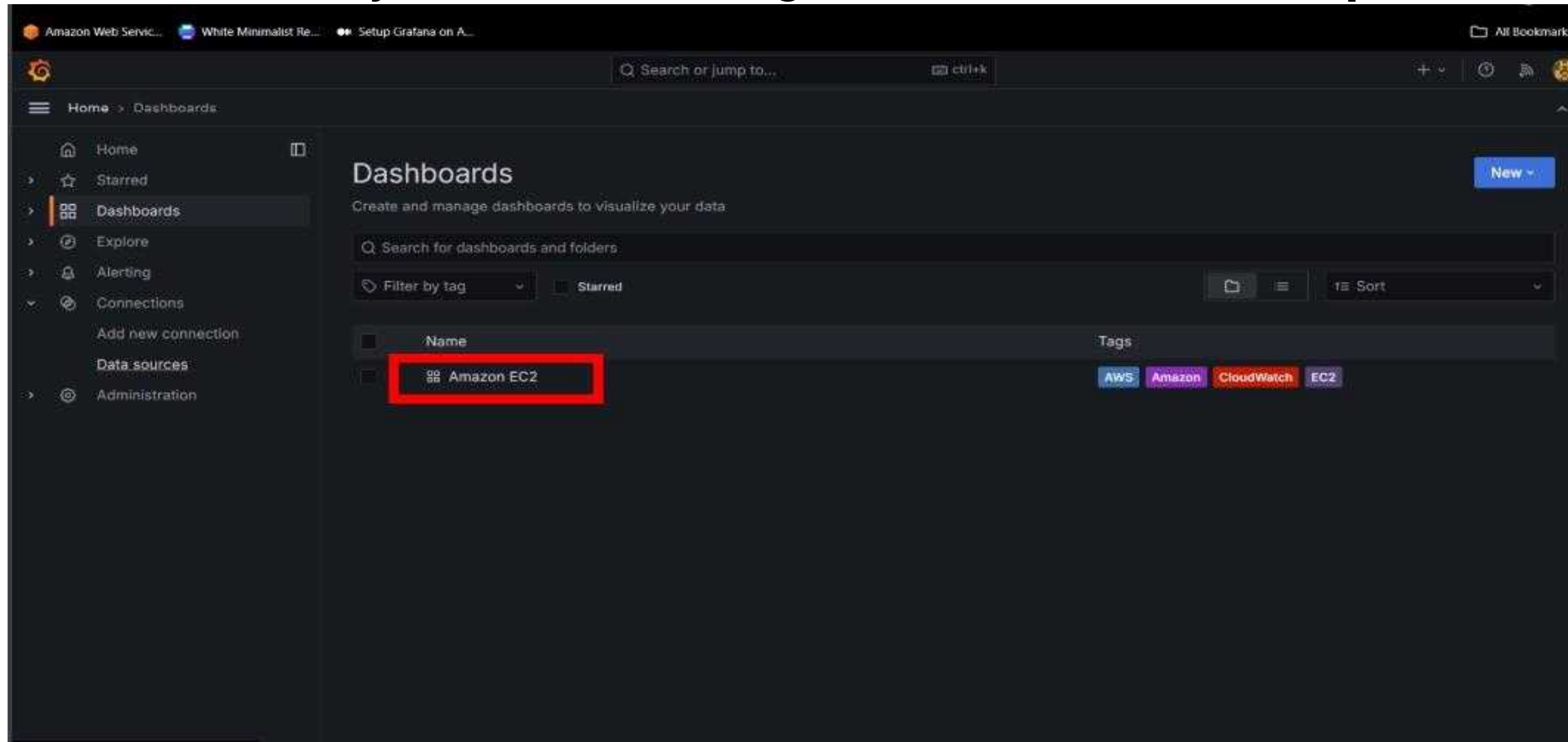
- Now , select “**Cloudwatch**” as an data source .



- Then after selecting cloudwatch select your region .



- Then inside your cloudwatch go to dashboard and **Import EC2**.



- Then go to dashboard and open your **Amazon EC2**.

