

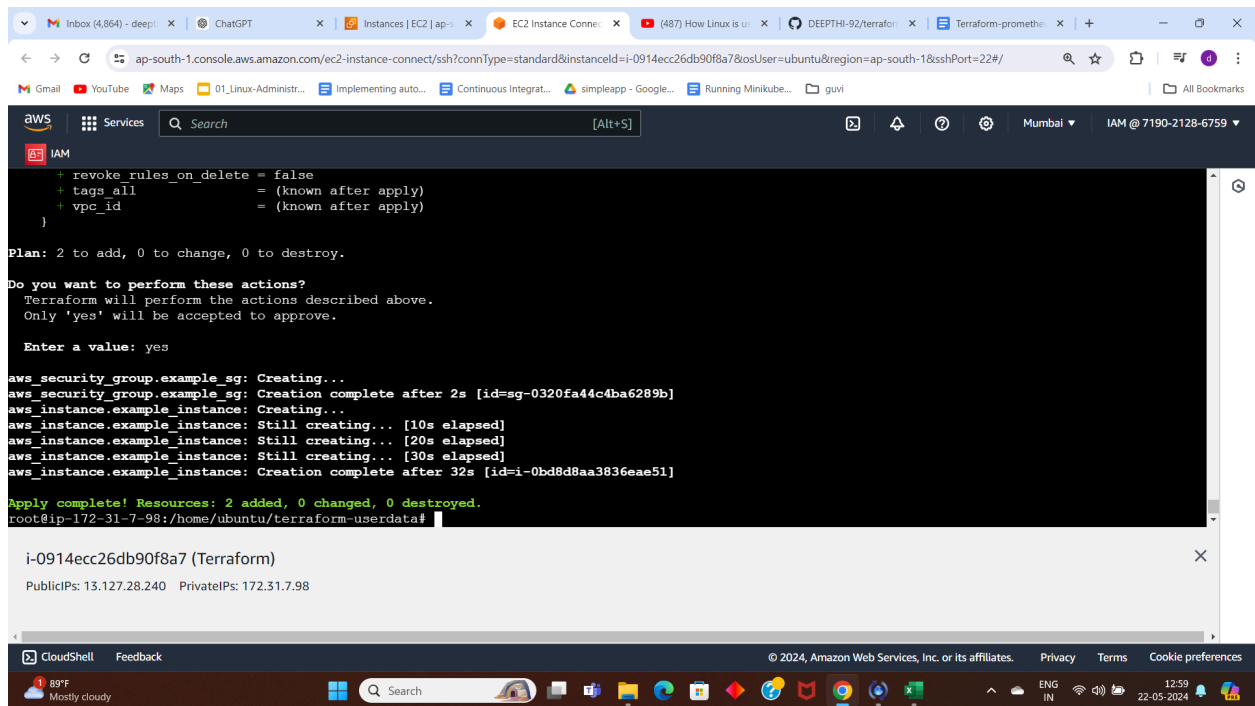
Deploy Prometheus Stack Using Docker Compose

Deploying Prometheus Stack using Docker Compose and Terraform involves orchestrating the setup of Prometheus, Grafana, and any other necessary components as Docker containers with Docker Compose.

GITHUB: <https://github.com/DEEPTHI-92/terraform-userdata.git>

Infrastructure as Code using Terraform

Create a Terraform template for creating [Ec2, Security group] and also install docker and docker-compose using userdata method.



The screenshot shows a web browser window with multiple tabs, including 'Inbox (4,864) - deep...', 'ChatGPT', 'Instances | EC2 | ap-', 'EC2 Instance Connect', '(487) How Linux is u...', 'DEEPTHI-92/terrafo...', 'Terraform-promethe...', and '+'. The active tab is 'ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0914ecc26db90f8a7&osUser=ubuntu®ion=ap-south-1&sshPort=22#/'.

The browser window displays the AWS IAM console interface. The 'IAM' section is selected, and the 'Groups' tab is active. The 'Groups' list shows a group named 'example_sg' with a status of 'Created'. The 'Users' tab is also visible, showing a user named 'example_user' with a status of 'Created'.

The terminal output shows the following Terraform execution results:

```
Plan: 2 to add, 0 to change, 0 to destroy.
Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.
Enter a value: yes
aws_security_group.example_sg: Creating...
aws_security_group.example_sg: Creation complete after 2s [id=sg-0320fa44c4ba6289b]
aws_instance.example_instance: Creating...
aws_instance.example_instance: Still creating... [10s elapsed]
aws_instance.example_instance: Still creating... [20s elapsed]
aws_instance.example_instance: Still creating... [30s elapsed]
aws_instance.example_instance: Creation complete after 32s [id=i-0bd8d8aa3836eae51]
Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
root@ip-172-31-7-98:/home/ubuntu/terraform-userdata#
```

The terminal output also shows the instance details for 'i-0914ecc26db90f8a7 (Terraform)':

```
i-0914ecc26db90f8a7 (Terraform)
PublicIPs: 13.127.28.240 PrivateIPs: 172.31.7.98
```

The bottom of the screenshot shows the Windows taskbar with the date '22-05-2024' and time '12:59'.

EC2 instance created

Instances (2) Info

Find Instance by attribute or tag (case-sensitive)

Instance state = running

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	Terraform	i-0914ecc26db90f8a7	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1b
<input type="checkbox"/>	example-insta...	i-0bd8d8aa3836eae51	Running	t2.micro	Initializing	View alarms +	ap-south-1a

Select an instance

Security group created

Security group name: example-sg

Security group ID: sg-0320fa44c4ba6289b

Description: Allow SSH and HTTP traffic

VPC ID: vpc-0ec85b34d53f758

Owner: 719021286759

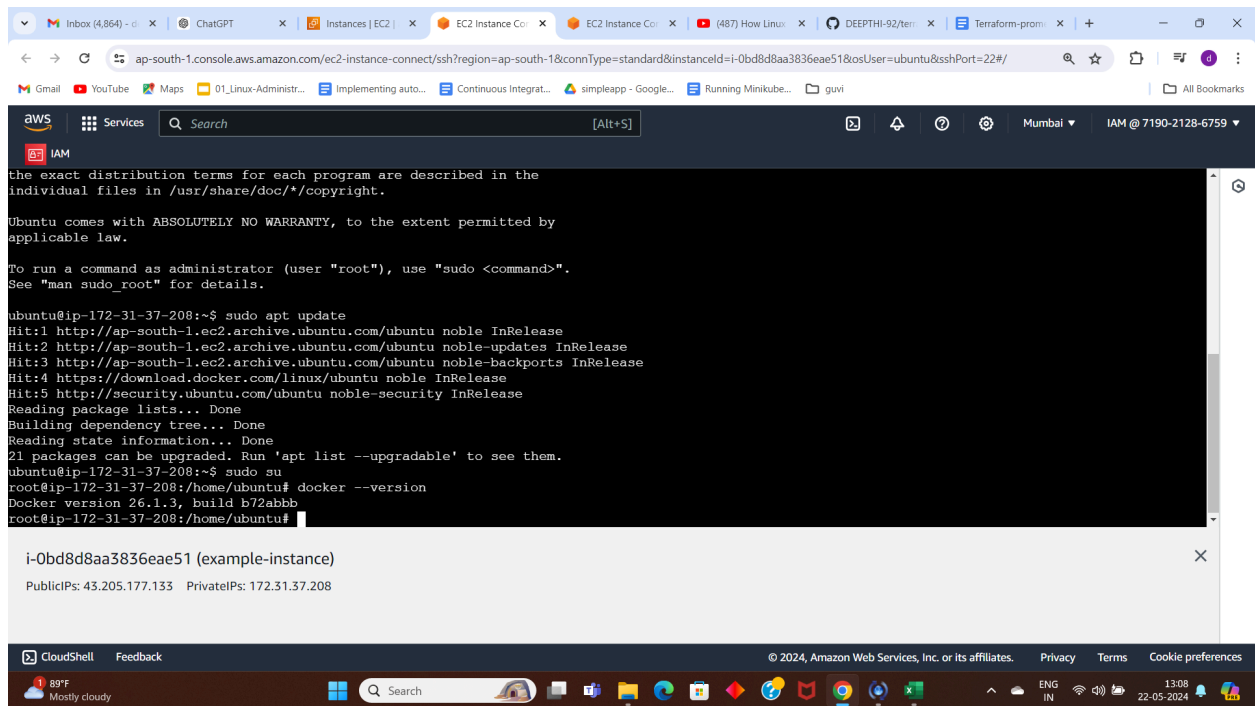
Inbound rules count: 2 Permission entries

Outbound rules count: 1 Permission entry

Inbound rules (2)

Type	Protocol	Port range	Source	Description
HTTP	TCP	80	0.0.0.0/0	Allow HTTP
SSH	TCP	22	0.0.0.0/0	Allow SSH

Installed Docker and Docker-compose using user data



The screenshot shows a web browser window with multiple tabs open, including 'Inbox (4,864)', 'ChatGPT', 'Instances | EC2', and 'EC2 Instance Connect'. The active tab is 'EC2 Instance Connect', displaying a terminal session for an EC2 instance with ID 'i-0bd8d8aa3836eae51'. The terminal output shows the following commands and results:

```
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.

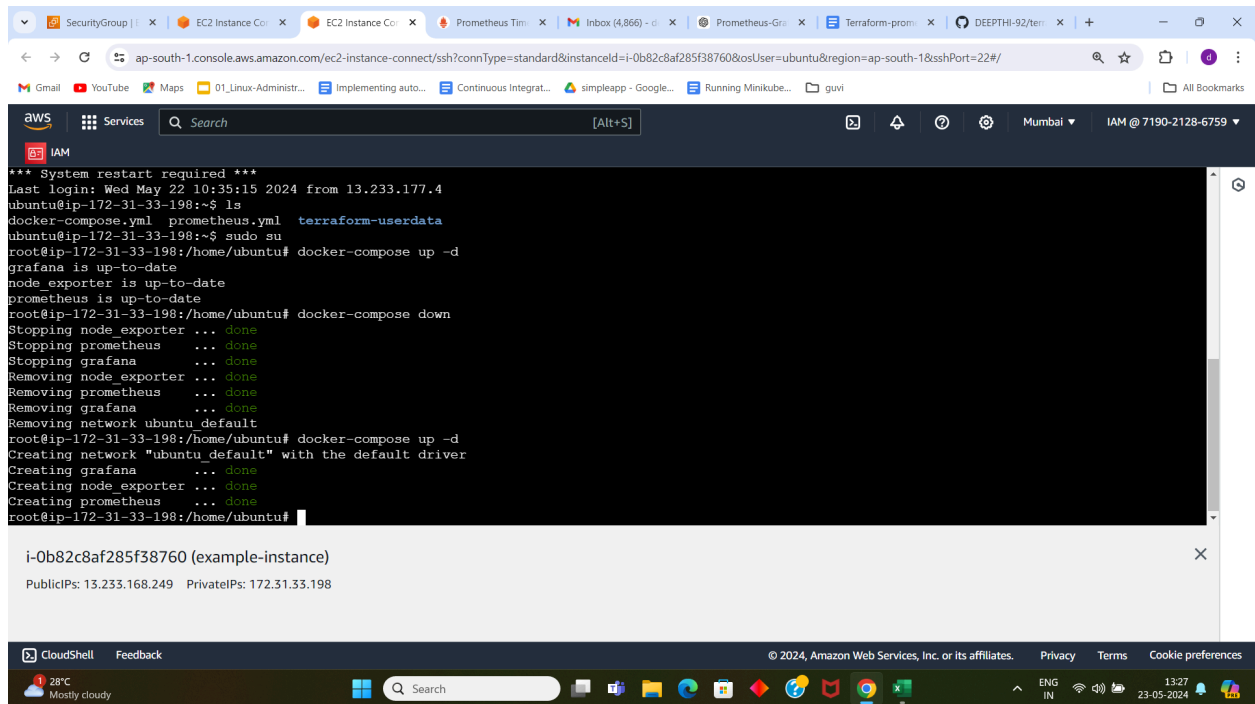
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-37-208:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://download.docker.com/linux/ubuntu noble InRelease
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
21 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-37-208:~$ sudo su
root@ip-172-31-37-208:/home/ubuntu# docker --version
Docker version 26.1.3, build b72abbb
root@ip-172-31-37-208:/home/ubuntu#
```

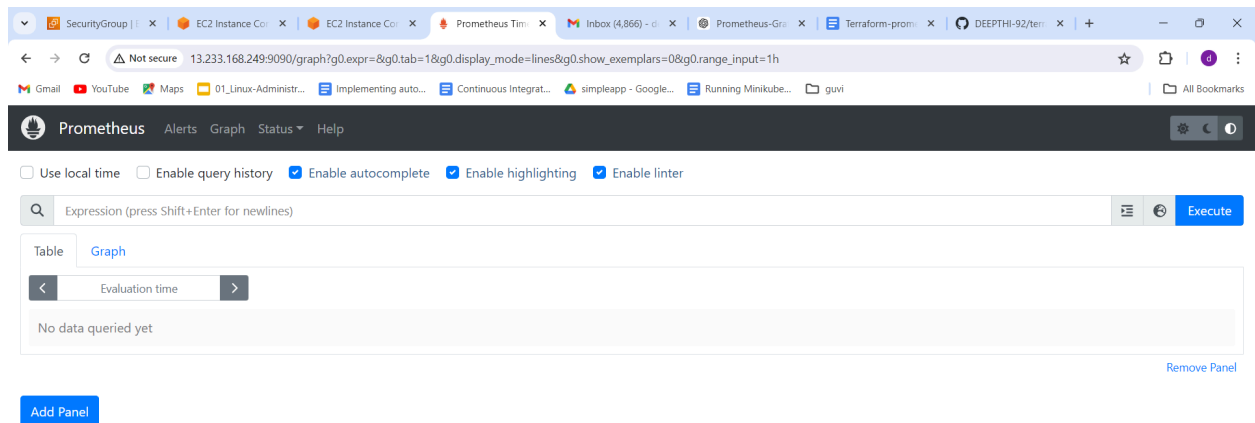
Below the terminal output, the instance details are shown: 'i-0bd8d8aa3836eae51 (example-instance)' with Public IPs: 43.205.177.133 and Private IPs: 172.31.37.208.

Multi-Container Deployments using Docker Compose

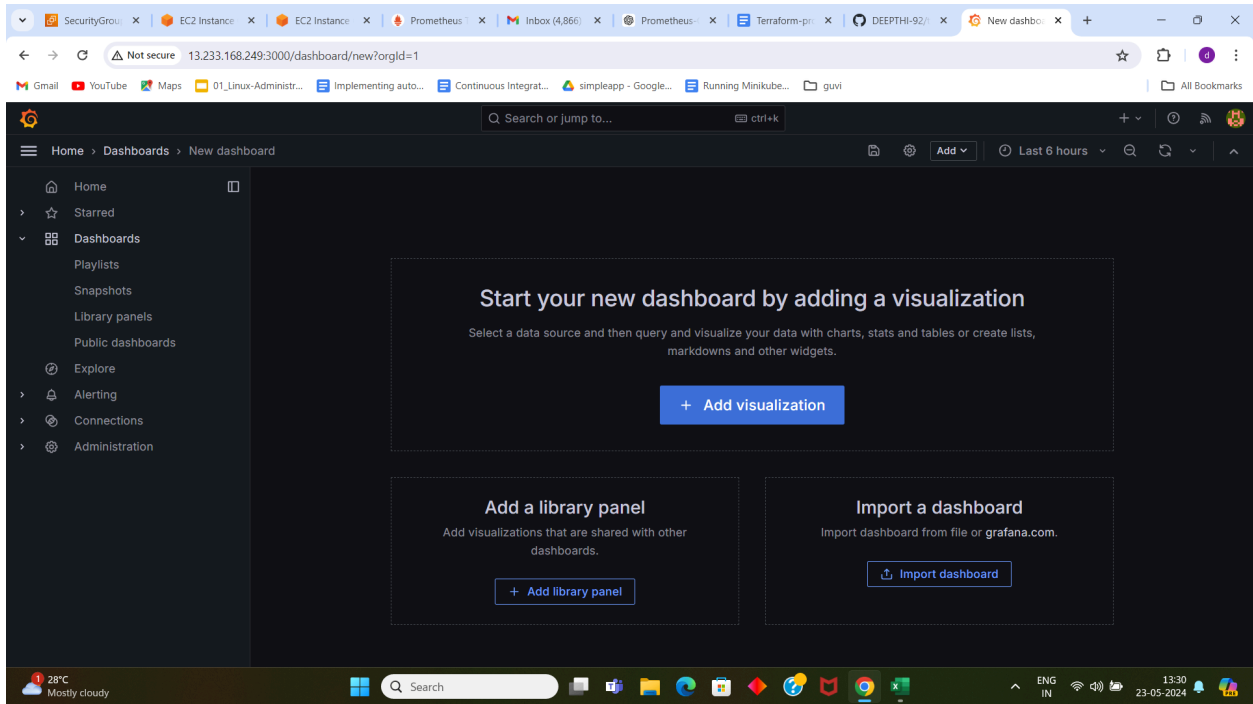
Template a docker-compose file for prometheus, Grafana and Node exporter.
Apply docker-compose file and create containers.



Prometheus : portno 9090



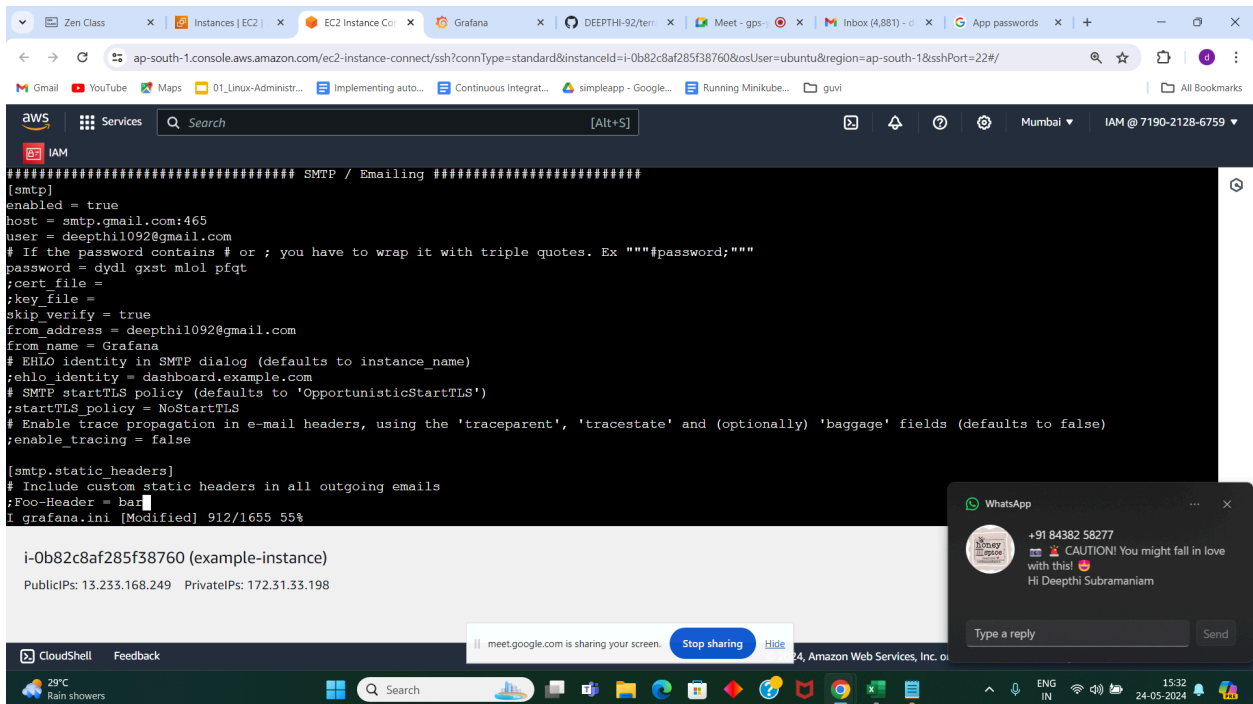
Grafana portno:3000



Monitoring & Alerting using Prometheus Stack

Configure Prometheus and Grafana containers and set alerts for high cpu usage and send information using gmail.

Setting email and APP password in grafana.ini



Setting ContactPoints and Alert rule in Grafana

The screenshot shows the Grafana web interface at the URL `13.233.168.249:3000/alerting/notifications/alertmanager=grafana&search=`. The left sidebar is expanded to the 'Alerting' section, specifically 'Contact points'. The main panel is titled 'Contact points' and includes a sub-header 'Choose how to notify your contact points when an alert instance fires'. A dropdown menu 'Choose Alertmanager' is set to 'Grafana'. Below this, there are two tabs: 'Contact Points' (active) and 'Notification Templates'. A search bar 'Search by name or type' is present. Two contact points are listed:

- grafana-alert** (status: Unused)
 - Email: `deepthi1092@gmail.com`
 - No delivery attempts
- grafana-default-email** (status: is used by 1 notification policy)
 - Email: `<example@email.com>`
 - No delivery attempts

At the bottom of the main panel, there are buttons for '+ Add contact point' and 'Export all'. A sharing notification from 'meet.google.com' is visible at the bottom of the browser window.

The screenshot shows the Grafana web interface at the URL `13.233.168.249:3000/connections/datasources/edit/admx706tibk0d`. The left sidebar is expanded to the 'Connections' section, specifically 'Data sources'. The main panel is titled 'Connection' and includes a sub-header 'Before you can use the Prometheus data source, you must configure it below or in the config file. For detailed instructions, [view the documentation](#).' Below this, there are two sections:

- Connection**: A text input field for 'Prometheus server URL' is set to `http://13.233.168.249:9090`.
- Authentication**: A dropdown menu for 'Authentication methods' is set to 'No Authentication'.

Below the authentication section, there is a 'TLS settings' section with a note 'Additional security measures that can be...'. A sharing notification from 'meet.google.com' is visible at the bottom of the browser window.

Browser tabs: Zen Cla, Instance, EC2 Inst, Alert rule, New ale, DEEPth, FIRING, App pas, Prometh, FIRING, Terrafor, +

Address bar: 13.233.168.249:3000/alerting/new?copyFrom=ddmnyflpl0ttsb&returnTo=

Search or jump to... ctrl+k

Home > Alerting > Alert rules > New alert rule

1. Enter alert rule name

Enter a name to identify your alert rule.

Name

grafana-alert (copy)

2. Define query and alert condition

Define query and alert condition [Need help?](#)

A prometheus Options 10 minutes, MD = 43200, Min. Interval = 1s [Set as alert condition](#)

Kick start your query Explain

Metric node_cpu_seconds_total Label filters cpu = 0 x +

+ Operations [hint: add rate](#)

node_cpu_seconds_total1(cpu="0")

Options Legend: Auto Format: Time series Step: auto Type: Instant

Add query

Rule type

27°C Light rain

Browser tabs: Zen Cla, Instance, EC2 Inst, Alert rule, New ale, DEEPth, FIRING, App pas, Prometh, FIRING, Terrafor, +

Address bar: 13.233.168.249:3000/alerting/new?copyFrom=ddmnyflpl0ttsb&returnTo=

Search or jump to... ctrl+k

Home > Alerting > Alert rules > New alert rule

Options Legend: Auto Format: Time series Step: auto Type: Instant

Add query

Rule type

Select where the alert rule will be managed. [Need help?](#)

Grafana-managed Data source-managed

Based on the selected data sources this alert rule will be Grafana-managed.

Expressions

Manipulate data returned from queries with math and other operations.

C Threshold [Alert condition](#)

Takes one or more time series returned from a query or an expression and checks if any of the series match the threshold condition.

Input A

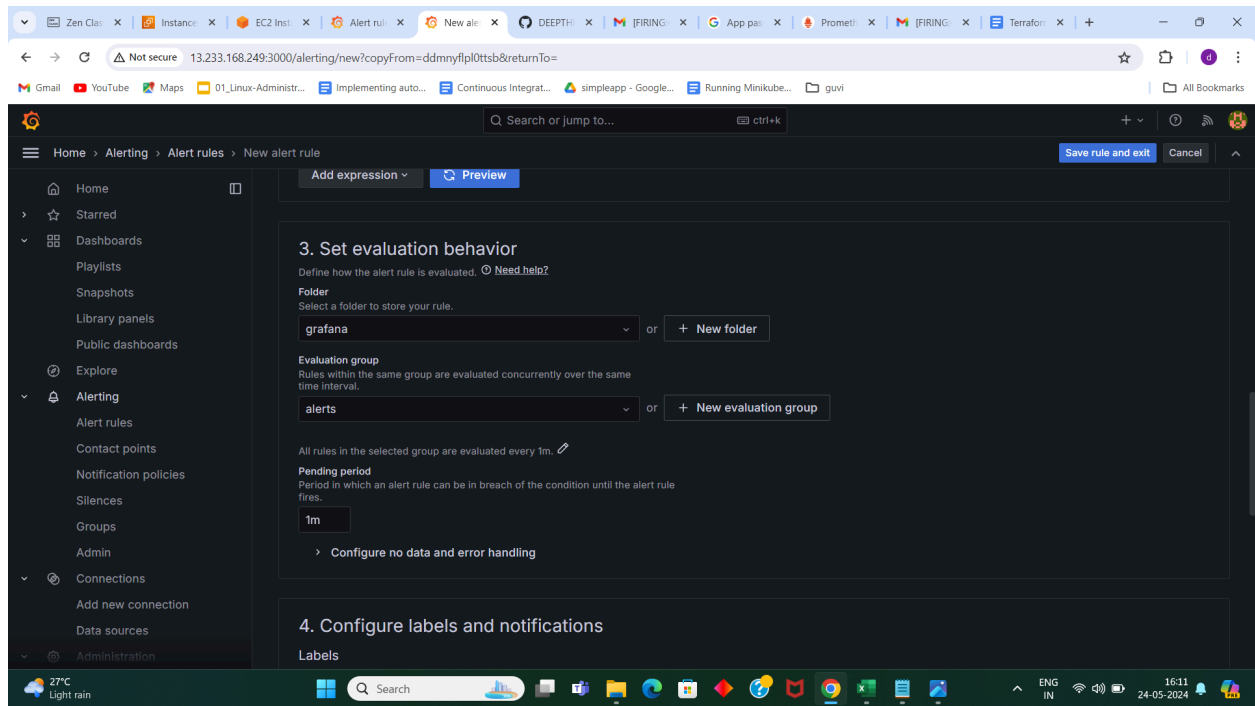
IS ABOVE 50

Custom recovery threshold

Add expression Preview

3. Set evaluation behavior

27°C Light rain



Alert in Gmail

