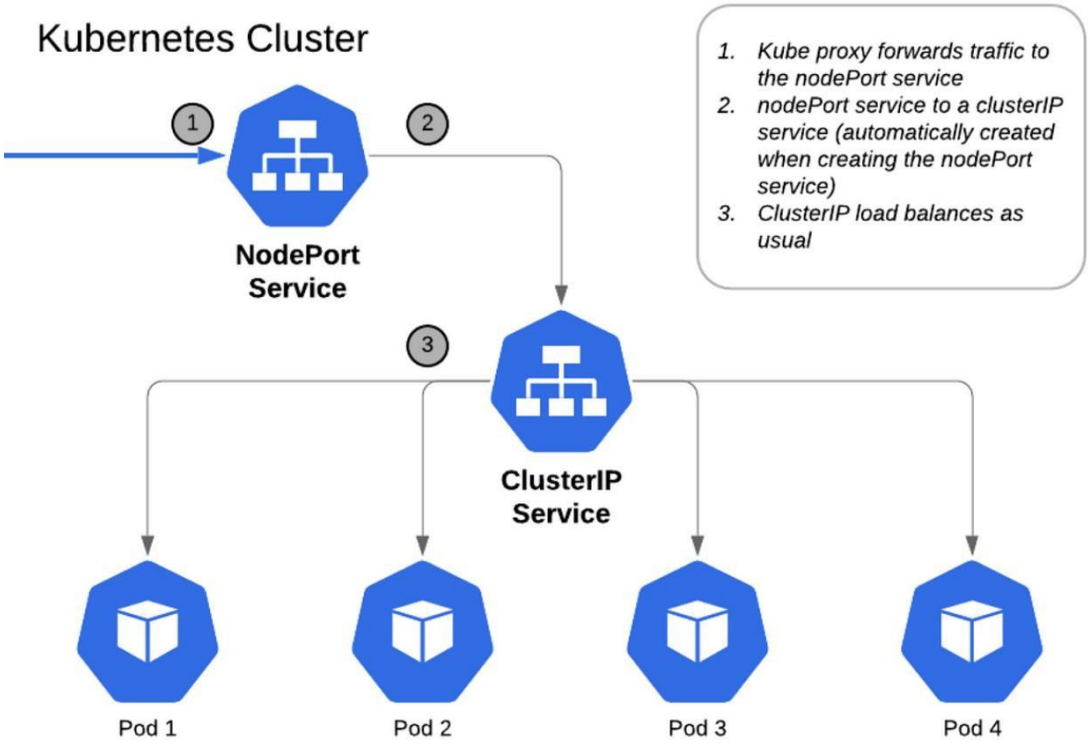
KUBERNETES PROJECT WITH NODEPORT SERVICE



Files and Configurations Used in This Project

1. NGINX Configuration

- NGINX Deployment with 3 Replicas
- Expose in NodePort Service at Port 30007

2. Database Configuration

- MySQL Headless
- MySQL Persistent Volume (PV)
- MySQL StatefulSet

3. Secrets and Configurations

- MySQL Secrets
- MySQL ConfigMaps
- Service Account for Secrets and ConfigMaps
- Read-Only Roles for Secrets and ConfigMaps
- Read-Only Role-Binding for Secrets and ConfigMaps

4. Monitoring and Logging

- DaemonSet (Prometheus)
- Prometheus RBAC
- Prometheus NodePort Exposed on Port 30090
- Promtail DaemonSet
- Loki DaemonSet
- Loki NodePort Exposed on Port 30091
- Grafana Daemon with Exposed Port 30080

Project Summary

1. NGINX Deployment and Services

- Sabse pehle NGINX web server ko 3 replicas ke saath deploy karna.
- Phir, NodePort service ka use karke expose karna.

2. Database Configuration

- MySQL StatefulSet deploy karna.
- Persistent Volume (PV) configure karna taake data storage manage ho sake.

3. Secrets & ConfigMaps

- Security ke liye Secrets (MYSQL Database ka password aur username store karne ke liye
- ConfigMaps (port, hostname, database name ke liye) ka use.

4. Security Enhancements

- Service Accounts create karna.
- RBAC roles aur RoleBindings configure karna jo Secrets aur ConfigMaps ke liye read-only access provide karein.

5. Monitoring & Logging

- Prometheus DaemonSet deploy karna, RBAC configure karna aur port 30090 par expose karte hue read-write permissions dena.
- Promtail ka use karna logs collect karne ke liye.
- Loki ko logging backend banakar port 30091 par expose karna.
- Grafana deploy karna jo metrics visualize karega aur port 30080 par expose hoga.

Understanding Each File

Is project me hum har YAML aur Configuration file ko samjhenge ki kaise ye Deployment, Networking ko Manage karne, Security implement karne, aur Monitoring Setup karne me madad kar rahi hai.

Achievements:

1. Successfully Deployed NGINX with NodePort Service

NGINX web server ko 3 replicas ke saath deploy kiya aur NodePort service ka use karke expose kiya, jo direct access allow karta hai specific nodes ke through.

2. Persistent & Secure MySQL Database

StatefulSet aur Persistent Volumes (PV) ka use karke MySQL database ko secure aur reliable banaya, taake data loss na ho.

3. Secrets & ConfigMaps Implementation

Sensitive information jaise database credentials, hostname, aur configuration settings securely manage kiye.

4. RBAC-based Access Control

Service Accounts, RBAC roles, aur RoleBindings implement kiye jo Secrets aur ConfigMaps ke liye read-only access provide karte hain, taake security maintain ho.

5. Monitoring & Logging Setup

Prometheus, Loki, aur Grafana ka use karke complete observability stack setup kiya jo system ki health aur performance track karne me madad karta hai.

Note: Sabse pehle EKS Cluster ki installation karni hai, jaise hum pehle Installation part mein kar chuke hain. Agar tumne EKS setup nahi kiya hai, toh neeche diye gaye URL ko kholo aur EKS Cluster ka setup complete karo.

URL :

https://github.com/Faikhan147/Kubernetes/blob/main/03-Installations/03-EKS-Cluster-Creation.pdf

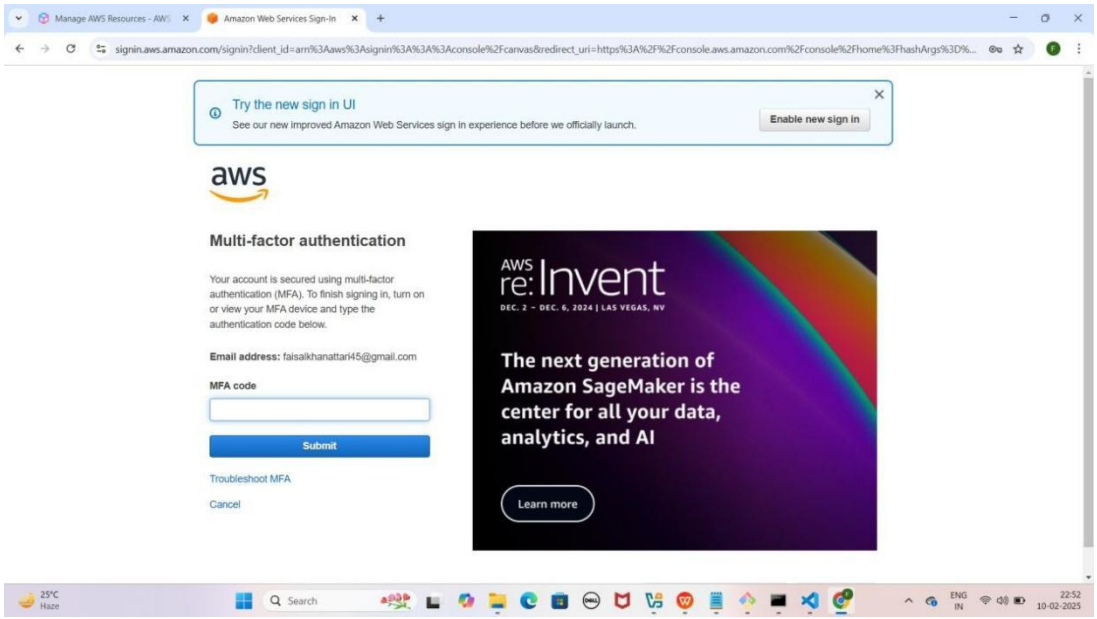
PROJECT TYPE 1-->(Stockholm Region Select Karo)

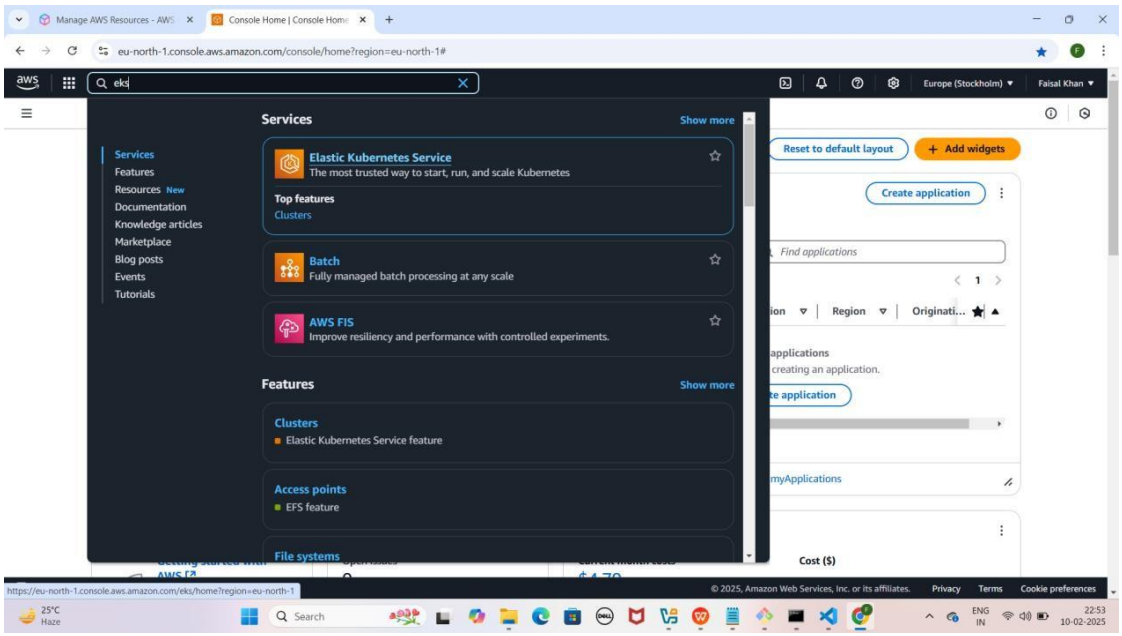
Part 1: EKS Cluster Creation and Setup

Step 1: AWS Login aur EKS Cluster Create Karna

1. **AWS login karo**
2. **Search bar mein "EKS" likho** aur open karo
3. **"Create Cluster"** pe click karo
4. **Custom configuration select karo** aur **"EKS Auto Mode - New" disable karo**
5. **Cluster Configuration**
    1. **Cluster Name:** Faisal name karo ---> (Aapka Name Likho)
    2. **Cluster IAM Role:** AmazonEKSAutoClusterRole select karo
6. **Scroll down karo, "Secrets encryption" enable karo** aur **KMS key select karo**
7. **Next** pe click karo

YE KUCH ISTARHA LAGEGA




Manage AWS Resources - AWS
Console Home | Console Home
eu-north-1.console.aws.amazon.com/console/home?region=eu-north-1#
eks
Europe (Stockholm)
Faisal Khan
Services
Show more
Services
Features
Resources New
Documentation
Knowledge articles
Marketplace
Blog posts
Events
Tutorials
Elastic Kubernetes Service
The most trusted way to start, run, and scale Kubernetes
Top features
Clusters
Batch
Fully managed batch processing at any scale
AWS FIS
Improve resiliency and performance with controlled experiments.
Features
Show more
Clusters
Elastic Kubernetes Service feature
Access points
EFS feature
File systems
Reset to default layout
+ Add widgets
Create application
Find applications
Region
creating an application.
Cost ($)
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Terms
Cookie preferences
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Haze
Search
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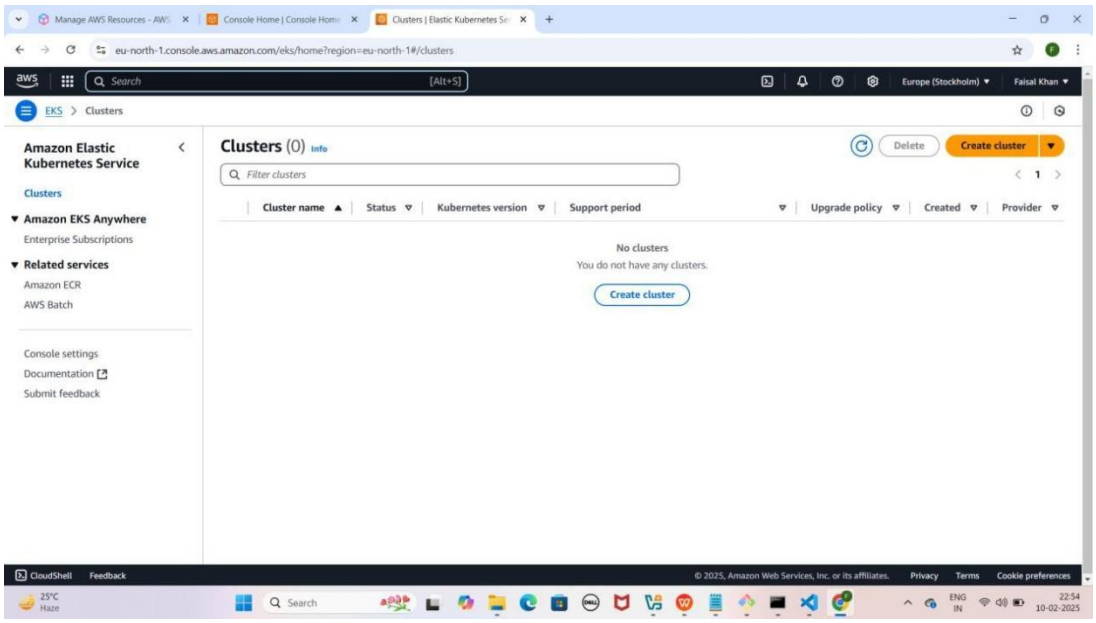
Manage AWS Resources - AWS
Console Home | Console Home
Clusters | Elastic Kubernetes Se
eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EKS
Clusters
Amazon Elastic Kubernetes Service
Clusters
Amazon EKS Anywhere
Enterprise Subscriptions
Related services
Amazon ECR
AWS Batch
Console settings
Documentation
Submit feedback
Clusters (0) Info
Delete
Create cluster
Filter clusters
Cluster name
Status
Kubernetes version
Support period
Upgrade policy
Created
Provider
No clusters
You do not have any clusters.
Create cluster
CloudShell
Feedback
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Cookie preferences
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Haze
Search
ENG
IN
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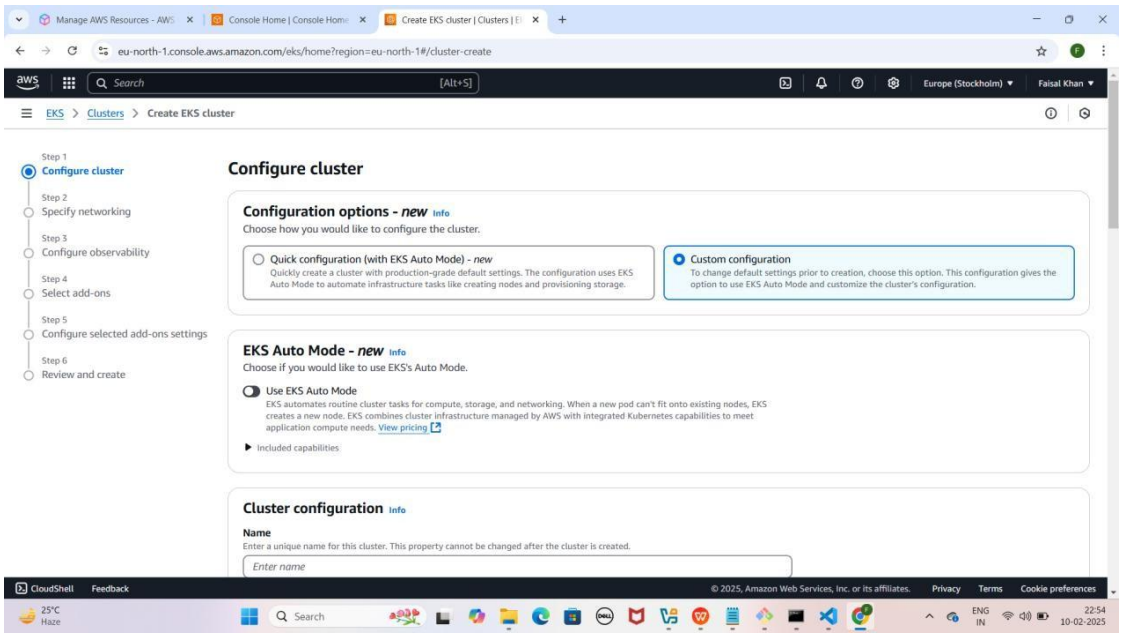
10-02-2025


Manage AWS Resources - AWS
Console Home | Console Home
Create EKS cluster | Clusters | E
eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/cluster-create
Search [Alt+S]
Europe (Stockholm)
Faisal Khan
EKS > Clusters > Create EKS cluster
Step 1 Configure cluster
Step 2 Specify networking
Step 3 Configure observability
Step 4 Select add-ons
Step 5 Configure selected add-ons settings
Step 6 Review and create
Configure cluster
Configuration options - new Info
Choose how you would like to configure the cluster.
Quick configuration (with EKS Auto Mode) - new
Quickly create a cluster with production-grade default settings. The configuration uses EKS Auto Mode to automate infrastructure tasks like creating nodes and provisioning storage.
Custom configuration
To change default settings prior to creation, choose this option. This configuration gives the option to use EKS Auto Mode and customize the cluster's configuration.
EKS Auto Mode - new Info
Choose if you would like to use EKS's Auto Mode.
Use EKS Auto Mode
EKS automates routine cluster tasks for compute, storage, and networking. When a new pod can't fit onto existing nodes, EKS creates a new node. EKS combines cluster infrastructure managed by AWS with integrated Kubernetes capabilities to meet application compute needs. View pricing
Included capabilities
Cluster configuration Info
Name
Enter a unique name for this cluster. This property cannot be changed after the cluster is created.
Enter name
CloudShell Feedback
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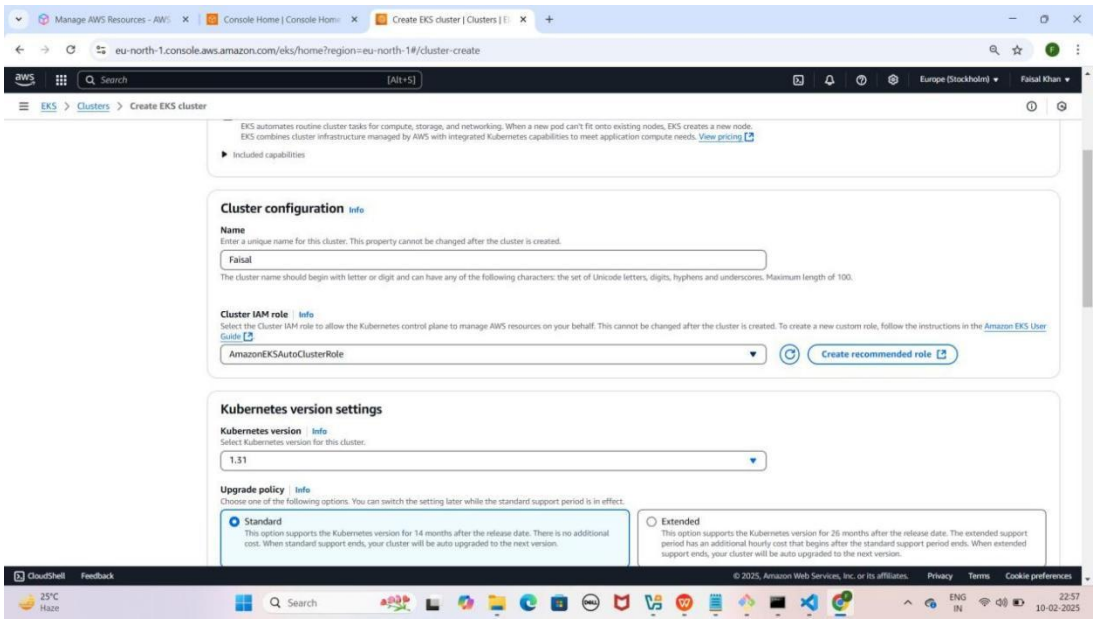
Manage AWS Resources - AWS
Console Home | Console Home
Create EKS cluster | Clusters | E
eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/cluster-create
Search [Alt+S]
Europe (Stockholm)
Faisal Khan
EKS > Clusters > Create EKS cluster
EKS automates routine cluster tasks for compute, storage, and networking. When a new pod can't fit onto existing nodes, EKS creates a new node.
EKS combines cluster infrastructure managed by AWS with integrated Kubernetes capabilities to meet application compute needs. View pricing
Included capabilities
Cluster configuration Info
Name
Enter a unique name for this cluster. This property cannot be changed after the cluster is created.
Faisal
The cluster name should begin with letter or digit and can have any of the following characters: the set of Unicode letters, digits, hyphens and underscores. Maximum length of 100.
Cluster IAM role Info
Select the Cluster IAM role to allow the Kubernetes control plane to manage AWS resources on your behalf. This cannot be changed after the cluster is created. To create a new custom role, follow the instructions in the Amazon EKS User Guide
AmazonEKSAutoClusterRole
Create recommended role
Kubernetes version settings
Kubernetes version Info
Select Kubernetes version for this cluster.
1.31
Upgrade policy Info
Choose one of the following options. You can switch the setting later while the standard support period is in effect.
Standard
This option supports the Kubernetes version for 14 months after the release date. There is no additional cost. When standard support ends, your cluster will be auto upgraded to the next version.
Extended
This option supports the Kubernetes version for 26 months after the release date. The extended support period has an additional hourly cost that begins after the standard support period ends. When extended support ends, your cluster will be auto upgraded to the next version.
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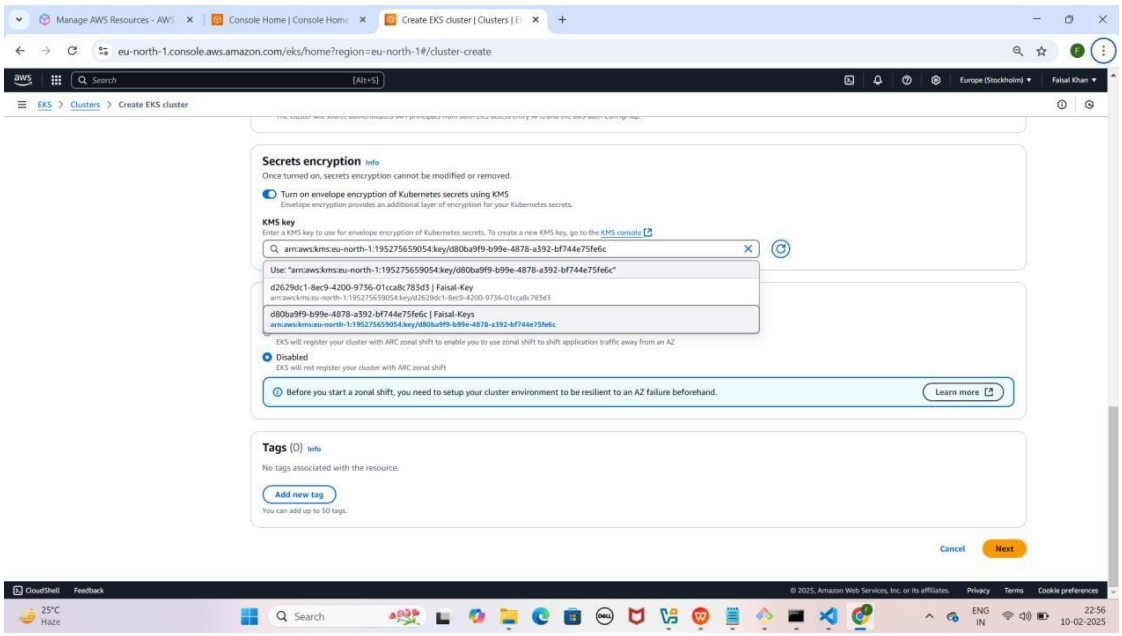

Step 2: Networking Configuration

1. **Specify networking section mein jao**
2. **"Additional Security Groups - Optional"** mein **"ALL-TRAFFIC-ALLOW"** select karo
3. **Next** pe click karo

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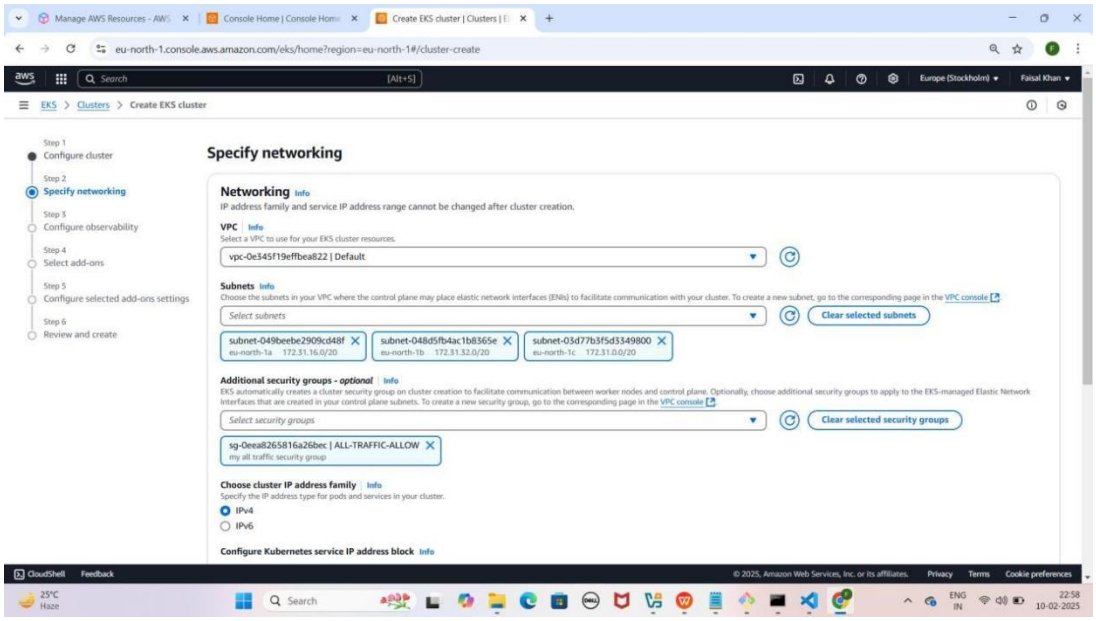

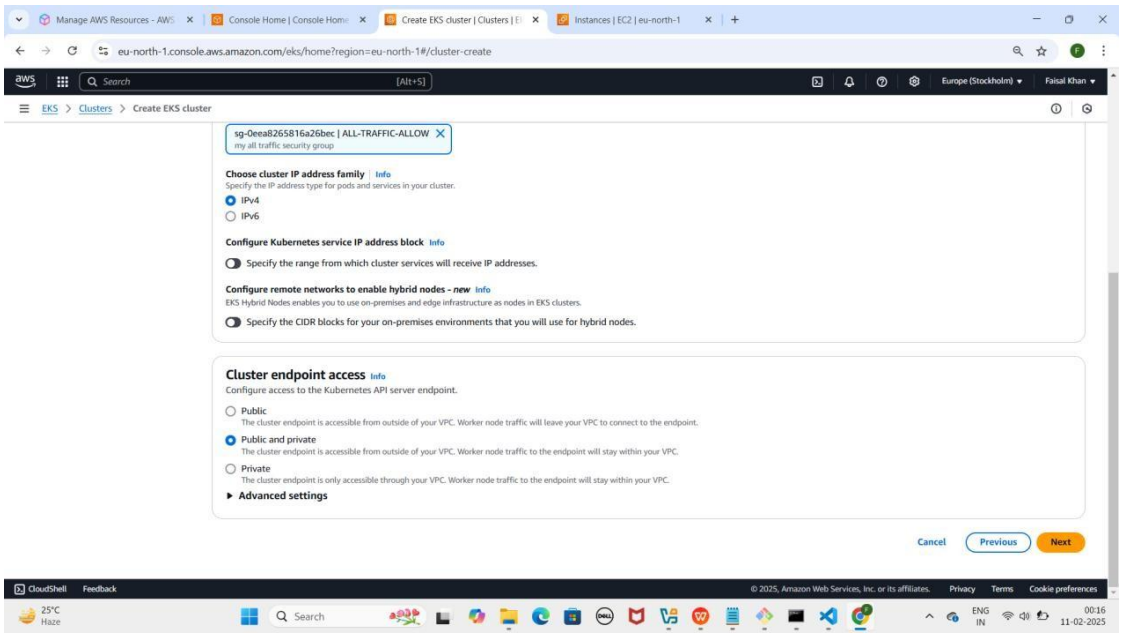

Step 3: Observability Configure Karna

1. **"Configure observability" section** mein
2. **"Control Plane Logs" enable karo**
3. **Next** pe click karo

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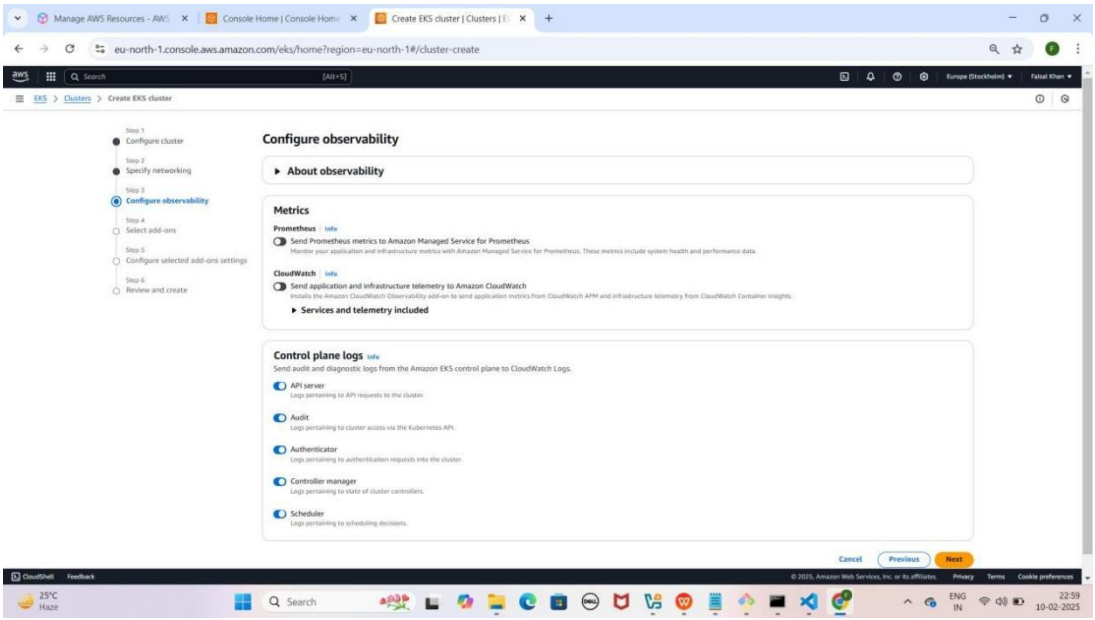

Step 4: Add-ons Configure Karna

1. **"Select add-ons" section** mein kuch default selected add-ons honge, unko waise hi rehne do
2. **Next** pe click karo
3. **"Amazon VPC CNI" section mein**
4. **"Pod Identity IAM Role for Service Account: PODS-ROLE"** select karo
5. **Next** pe click karo

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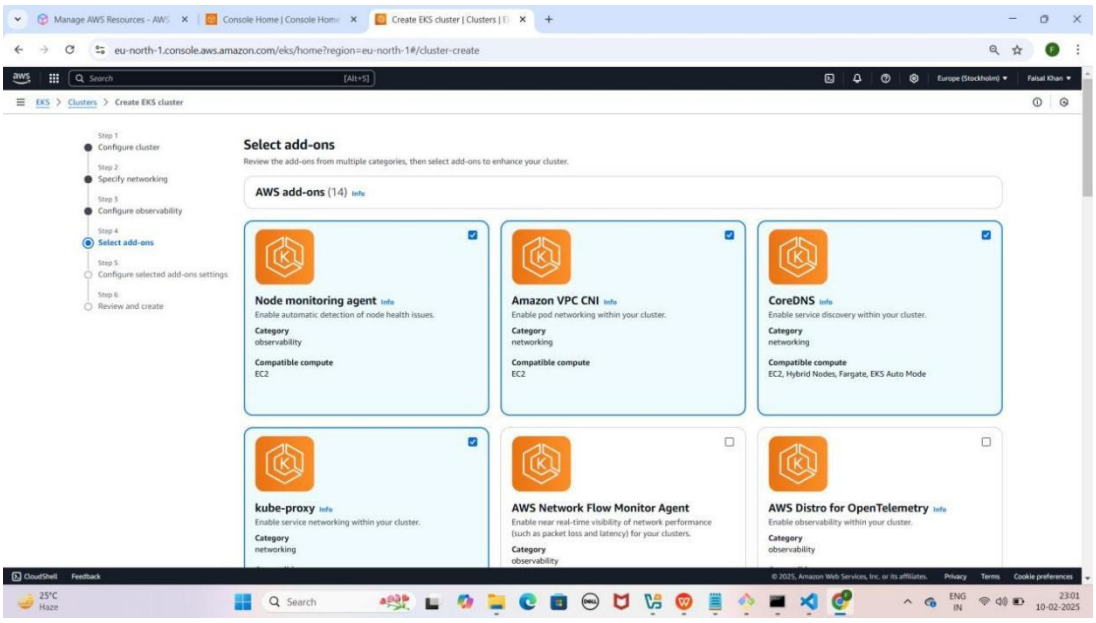
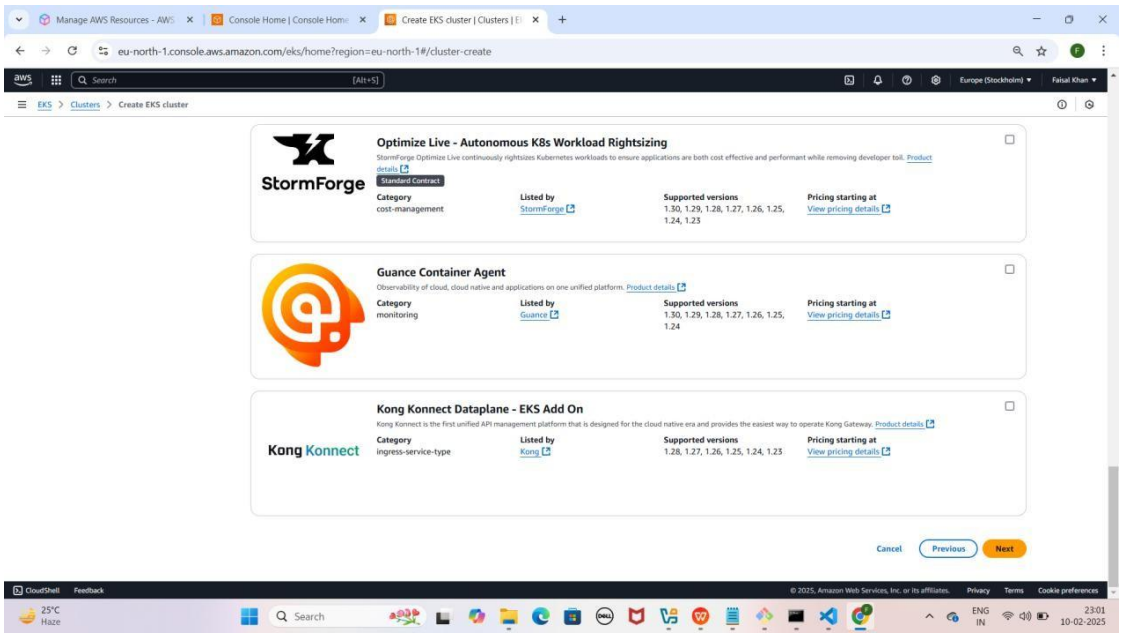
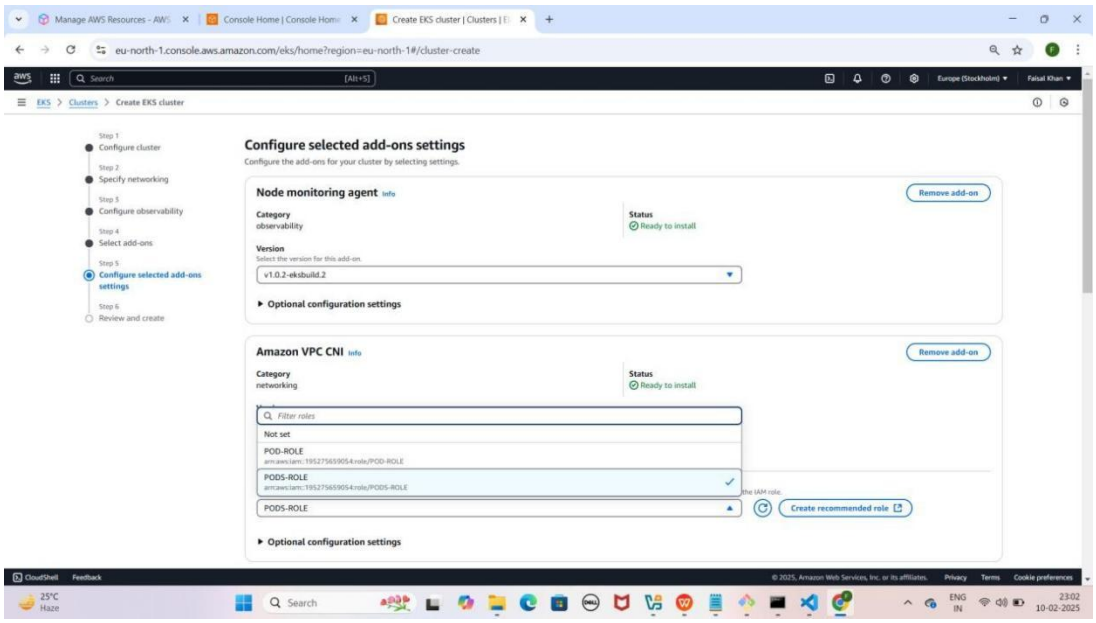
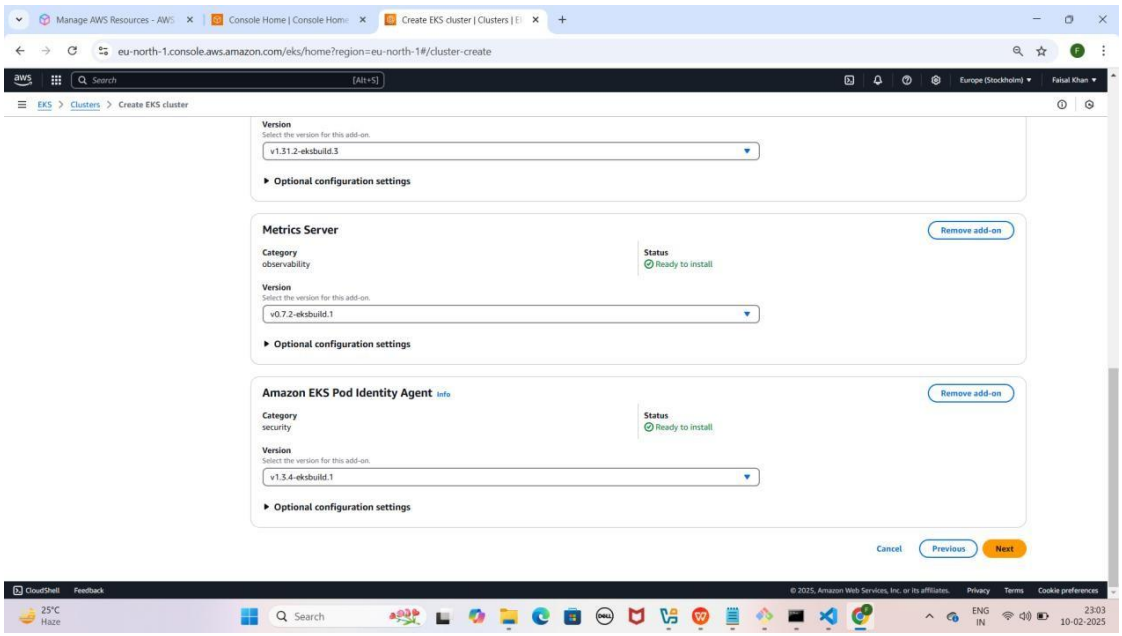



Optimize Live - Autonomous K8s Workload Rightsizing
StormForge
Standard Contract
Guance Container Agent
Kong Konnect Dataplane - EKS Add On
Cancel
Previous
Next


Configure selected add-ons settings
Node monitoring agent
Remove add-on
Amazon VPC CNI
Not set
POD-ROLE
PODS-ROLE
Create recommended role
Optional configuration settings



Step 5: Cluster Create Karna

1. **"Review and Create" section mein scroll down karo** aur **"Create" pe click karo**
2. **"Clusters" section mein jao, Status "Creating" hoga**
3. **15-20 min tak wait karo** aur **har 5 min baad refresh karo**
4. Jab **status "Active" hojaye**, tab next step karo

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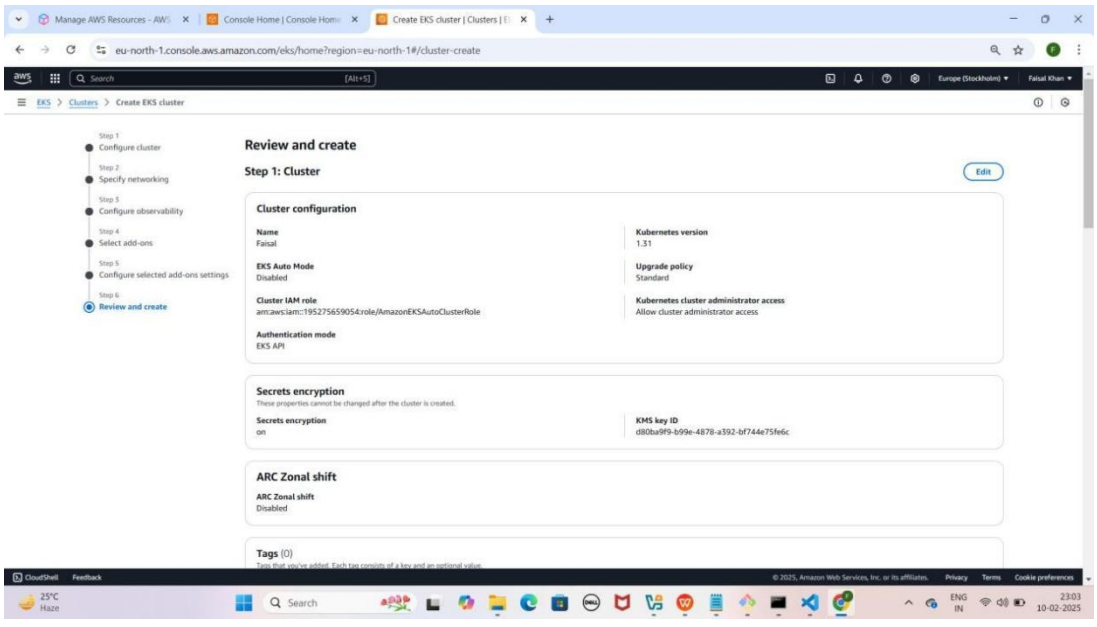
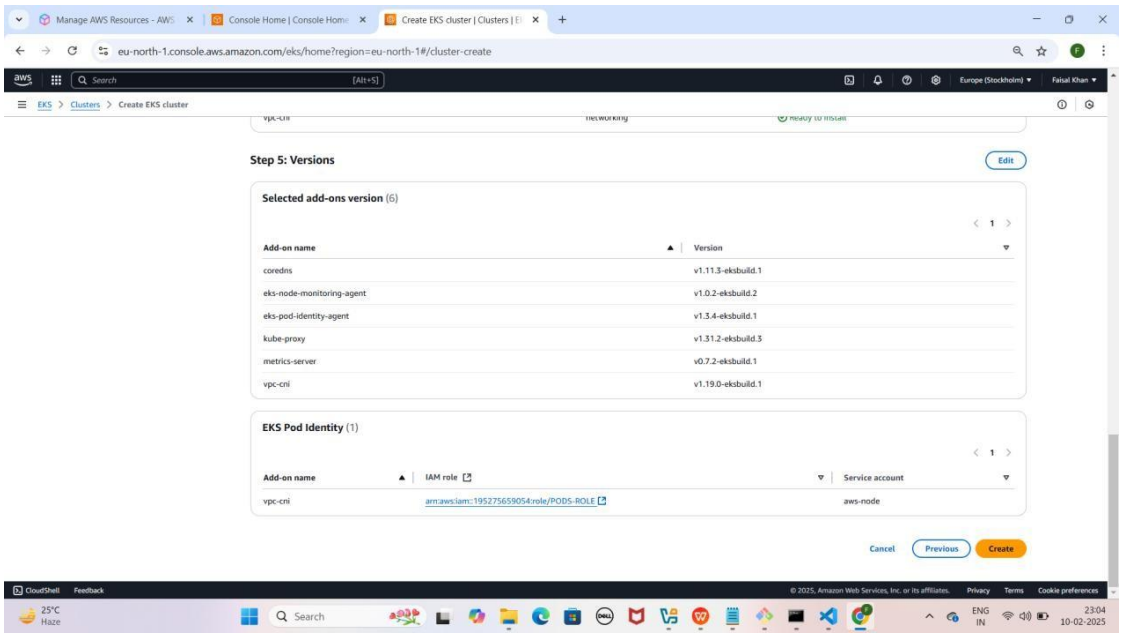
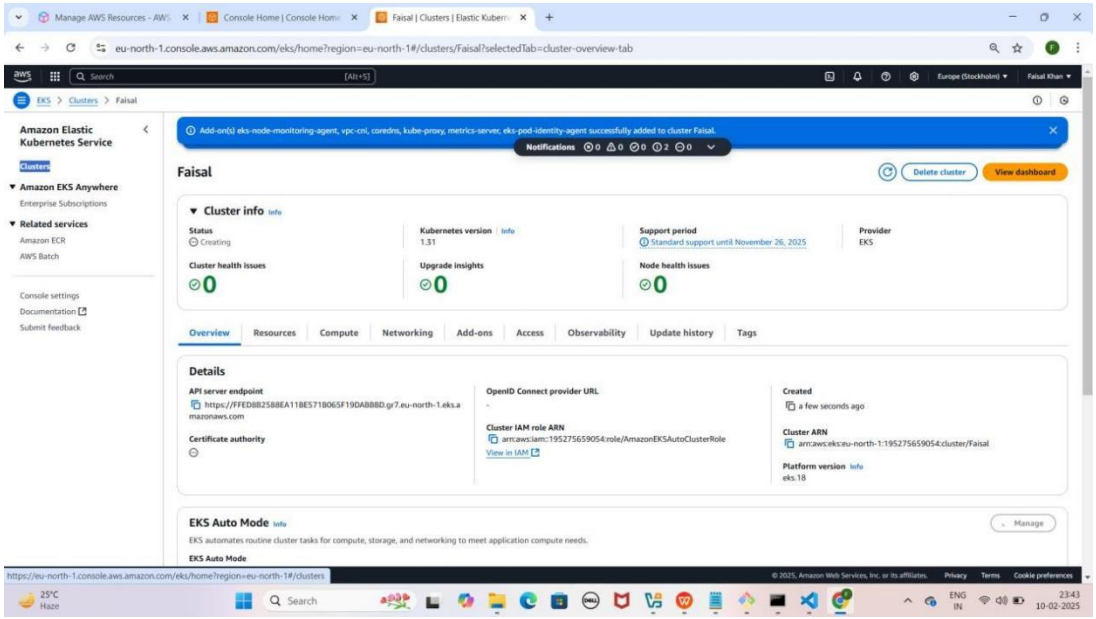
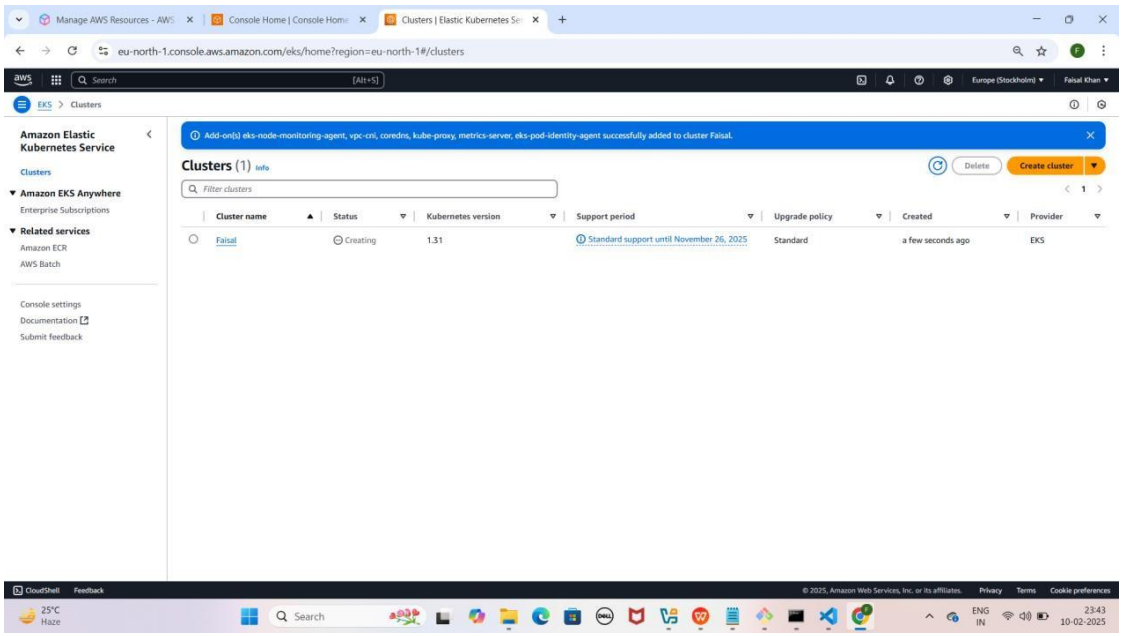
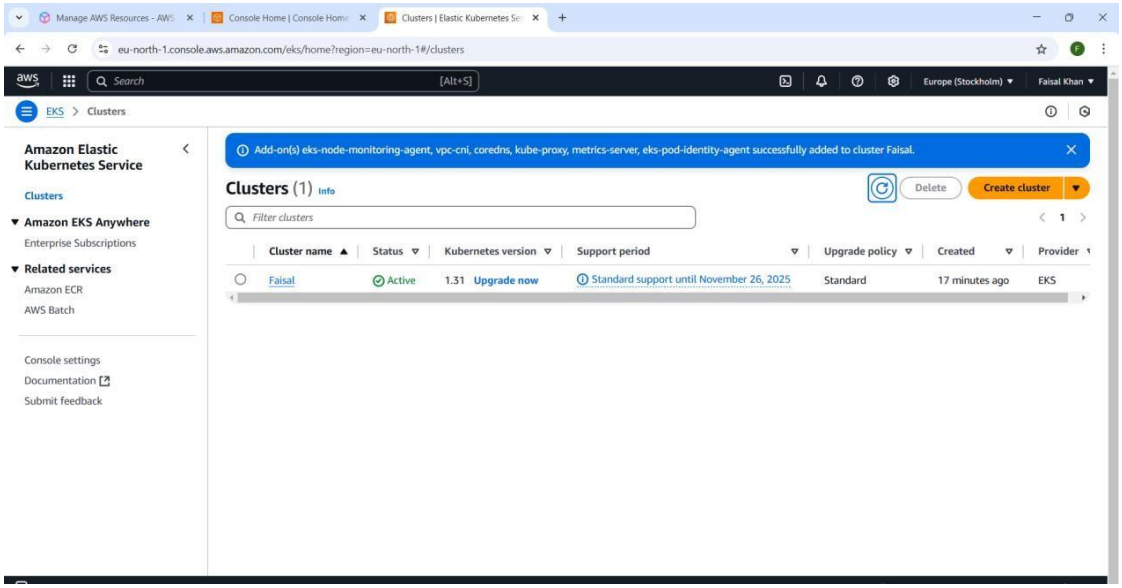



Step 5: Versions
Edit
Selected add-ons version (6)
Add-on name
Version
coredns
v1.11.3-eksbuild.1
eks-node-monitoring-agent
v1.0.2-eksbuild.2
eks-pod-identity-agent
v1.3.4-eksbuild.1
kube-proxy
v1.31.2-eksbuild.3
metrics-server
v0.7.2-eksbuild.1
vpc-cni
v1.19.0-eksbuild.1
EKS Pod Identity (1)
Add-on name
IAM role
Service account
vpc-cni
arn:aws:iam::195275659054:role/PODS-ROLE
aws-node
Cancel
Previous
Create


Add-on(s) eks-node-monitoring-agent, vpc-cni, coredns, kube-proxy, metrics-server, eks-pod-identity-agent successfully added to cluster Faisal.
Faisal
Delete cluster
View dashboard
Cluster info
Status
Creating
Kubernetes version
1.31
Support period
Standard support until November 26, 2025
Provider
EKS
Cluster health issues
0
Upgrade insights
0
Node health issues
0
Overview
Resources
Compute
Networking
Add-ons
Access
Observability
Update history
Tags
Details
API server endpoint
https://FFED8B2588EA11BE571B065F19DAB8BD.gr7.eu-north-1.eks.amazonaws.com
OpenID Connect provider URL
Created
a few seconds ago
Certificate authority
Cluster IAM role ARN
arn:aws:iam::195275659054:role/AmazonEKSAutoClusterRole
Cluster ARN
arn:aws:eks:eu-north-1:195275659054:cluster/Faisal
Platform version
eks.18
EKS Auto Mode
Manage
EKS automates routine cluster tasks for compute, storage, and networking to meet application compute needs.





Step 6: Node Group Create Karna

1. **Cluster open karo, "Compute" section mein jao**
2. **"Add Node Group" pe click karo**
3. **Node Group Configuration**

    - **Node Group Name:** Faisal-Node name karo
    - **Node IAM Role:** AmazonEKSAutoNodeRole select karo

4. **Next** pe click karo

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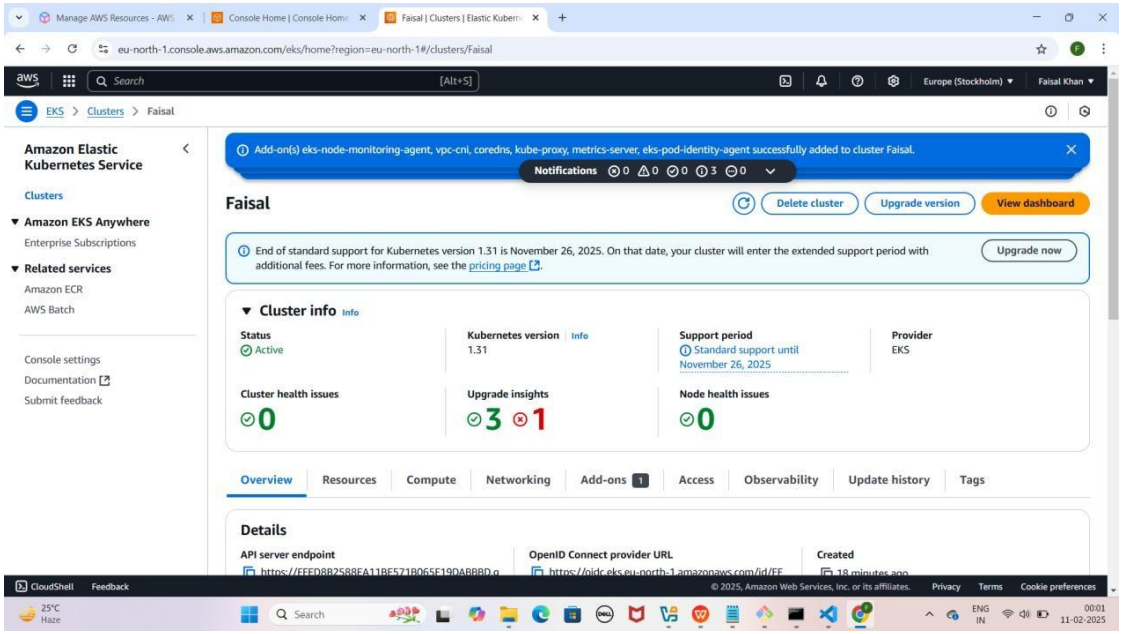

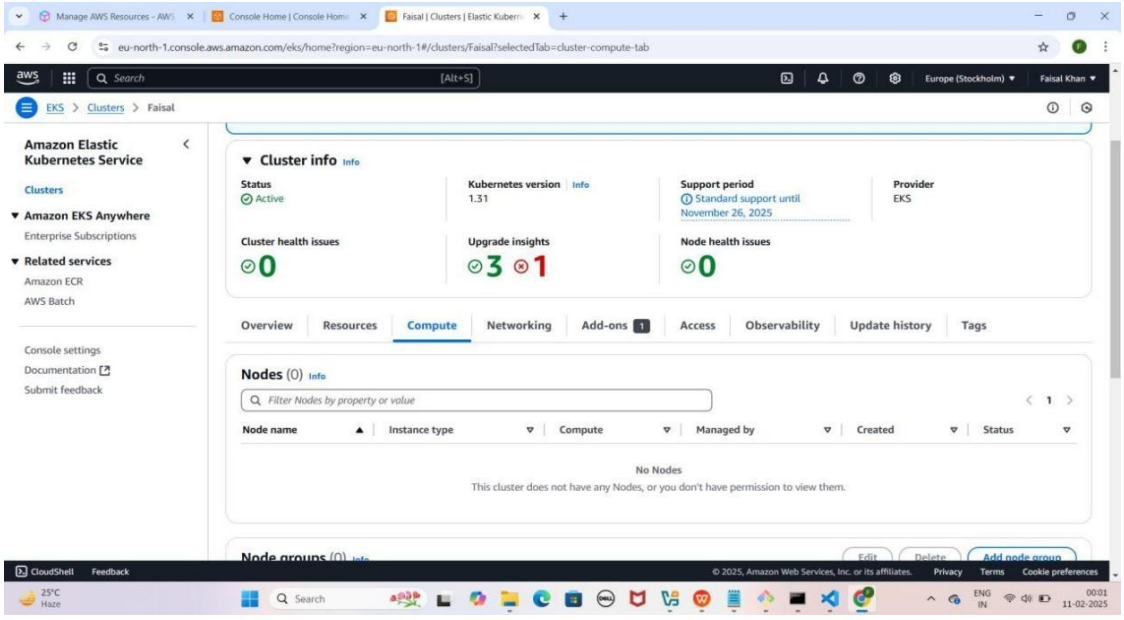

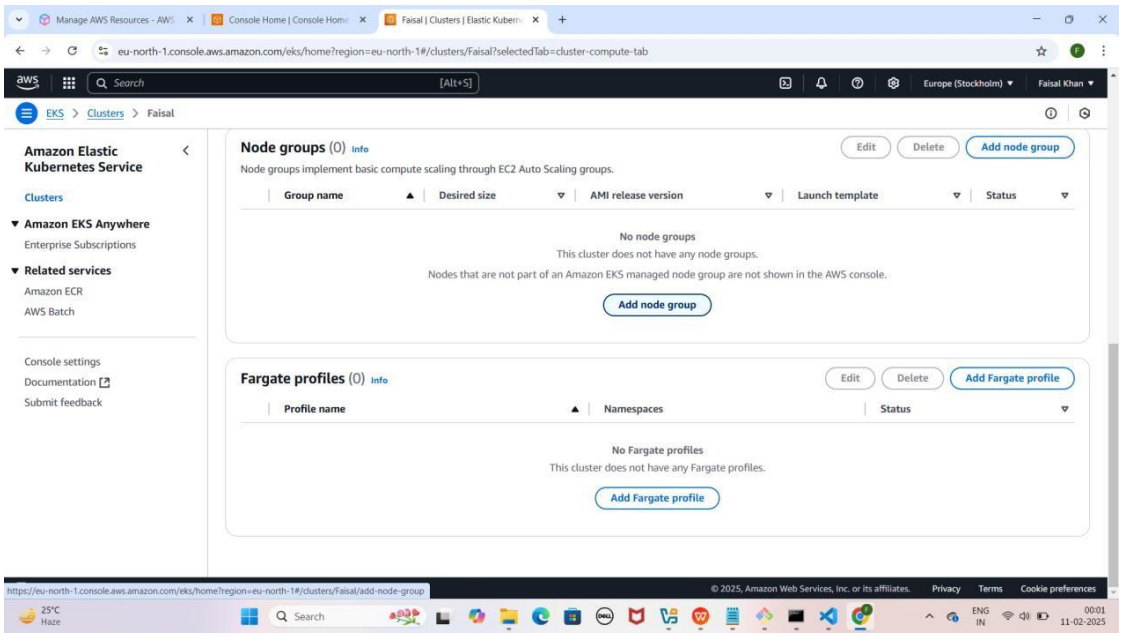
Manage AWS Resources - AWS
Console Home | Console Home
Faisal | Clusters | Elastic Kubern
eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters/Faisal?selectedTab=cluster-compute-tab
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EKS > Clusters > Faisal
Amazon Elastic Kubernetes Service
Clusters
Amazon EKS Anywhere
Enterprise Subscriptions
Related services
Amazon ECR
AWS Batch
Console settings
Documentation
Submit feedback
Node groups (0) Info
Edit
Delete
Add node group
Node groups implement basic compute scaling through EC2 Auto Scaling groups.
Group name
Desired size
AMI release version
Launch template
Status
No node groups
This cluster does not have any node groups.
Nodes that are not part of an Amazon EKS managed node group are not shown in the AWS console.
Add node group
Fargate profiles (0) Info
Edit
Delete
Add Fargate profile
Profile name
Namespaces
Status
No Fargate profiles
This cluster does not have any Fargate profiles.
Add Fargate profile
https://eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters/Faisal/add-node-group
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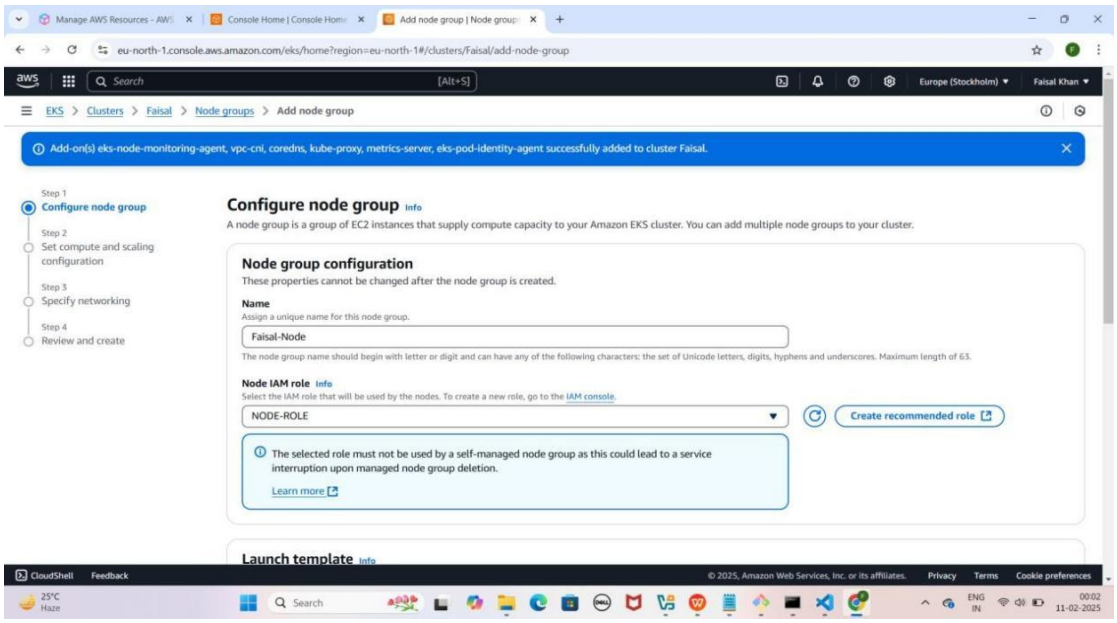
Manage AWS Resources - AWS
Console Home | Console Home
Add node group | Node group
eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters/Faisal/add-node-group
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EKS > Clusters > Faisal > Node groups > Add node group
Add-on(s) eks-node-monitoring-agent, vpc-cni, coredns, kube-proxy, metrics-server, eks-pod-identity-agent successfully added to cluster Faisal.
Step 1
Configure node group
Step 2
Set compute and scaling configuration
Step 3
Specify networking
Step 4
Review and create
Configure node group Info
A node group is a group of EC2 instances that supply compute capacity to your Amazon EKS cluster. You can add multiple node groups to your cluster.
Node group configuration
These properties cannot be changed after the node group is created.
Name
Assign a unique name for this node group.
Faisal-Node
The node group name should begin with letter or digit and can have any of the following characters: the set of Unicode letters, digits, hyphens and underscores. Maximum length of 63.
Node IAM role Info
Select the IAM role that will be used by the nodes. To create a new role, go to the IAM console.
NODE-ROLE
Create recommended role
The selected role must not be used by a self-managed node group as this could lead to a service interruption upon managed node group deletion.
Learn more
Launch template Info
CloudShell
Feedback
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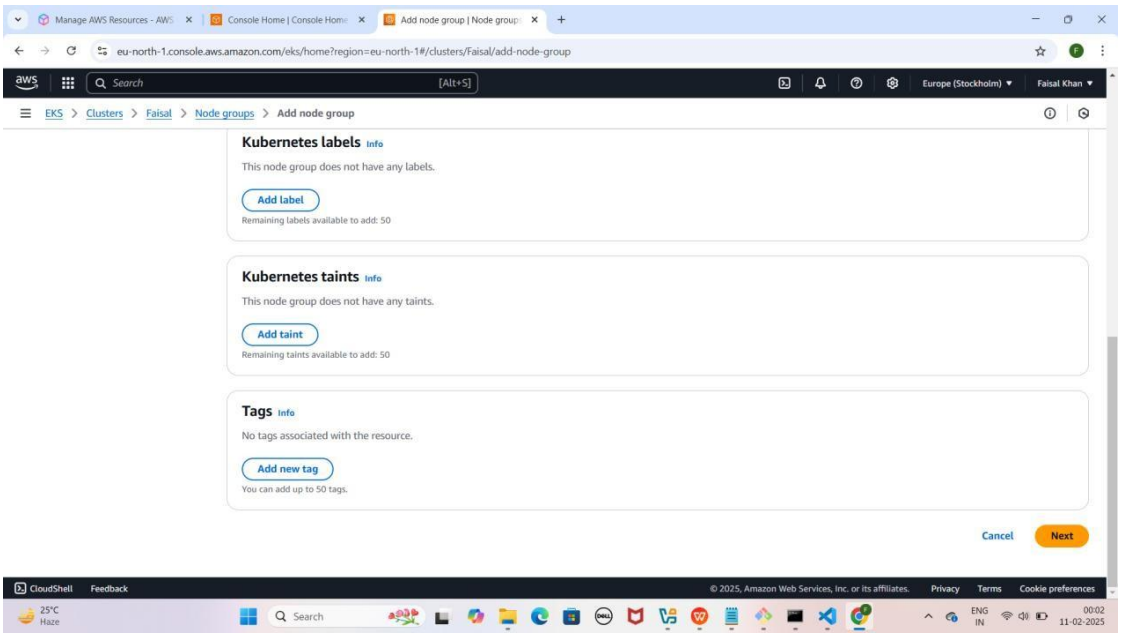
11-02-2025



Step 7: Compute aur Scaling Configuration

1. **"Set Compute and Scaling Configuration" section**

- **"t3.medium" remove karo** aur **"t3.large" add karo**
- **Disk Size:** 100 GiB set karo
- **Desired Size, Minimum Size, Maximum Size:** 1 rakho
- **"Node Auto Repair" enable karo**

2. **Next** pe click karo

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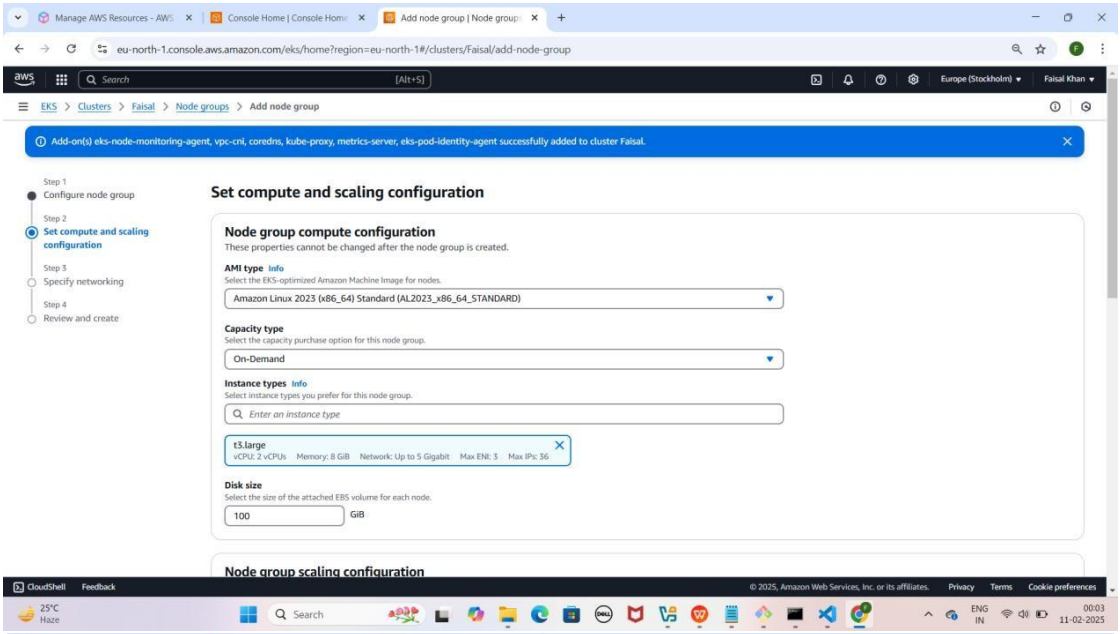
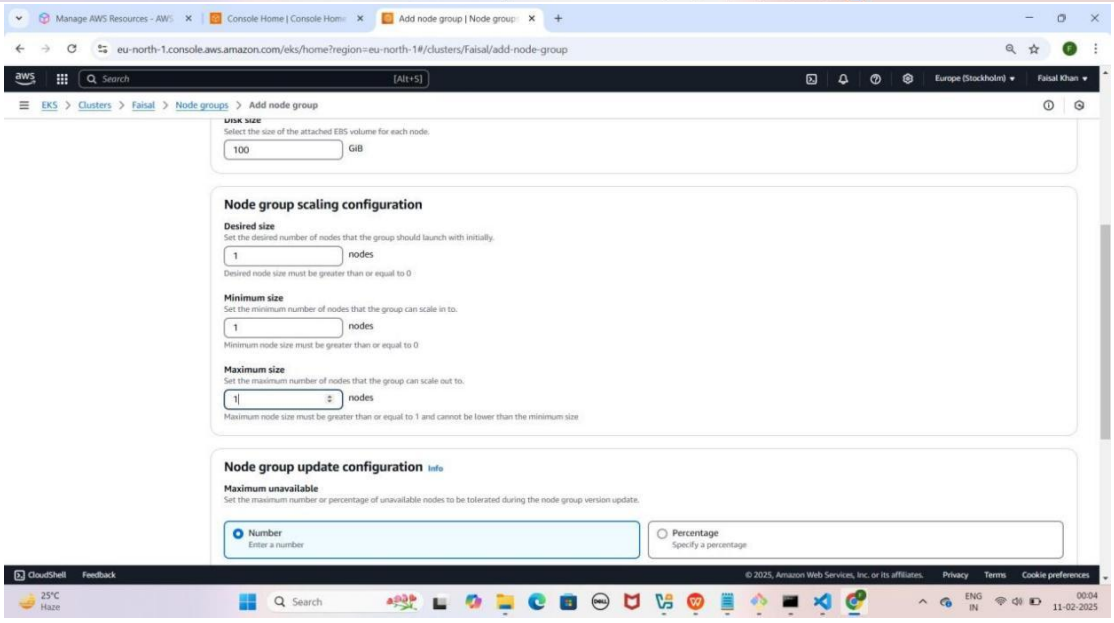
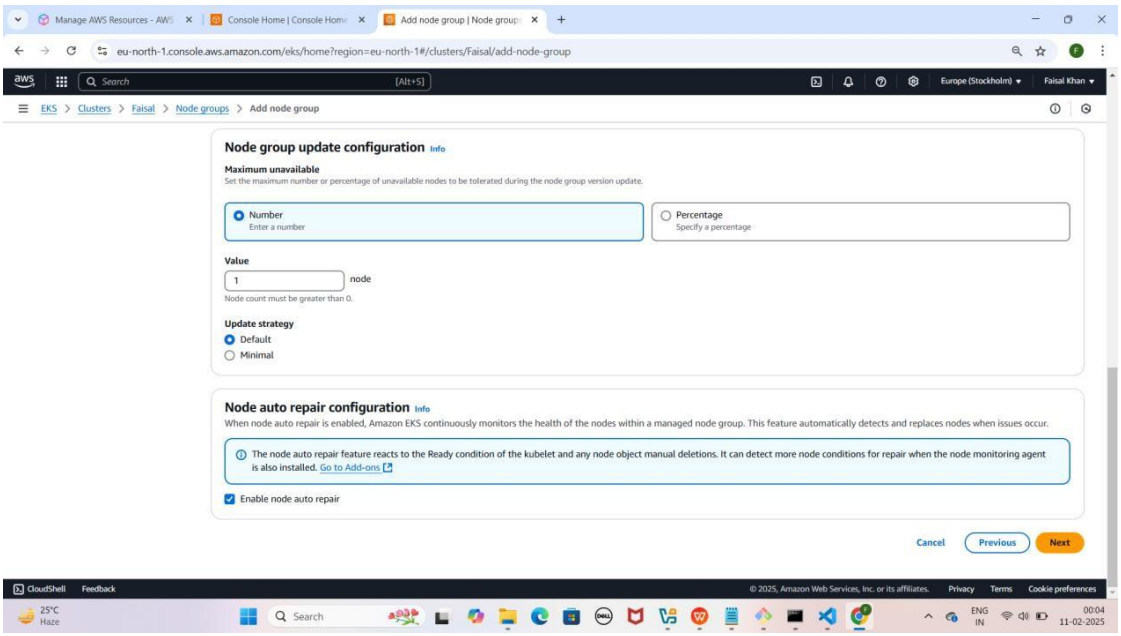






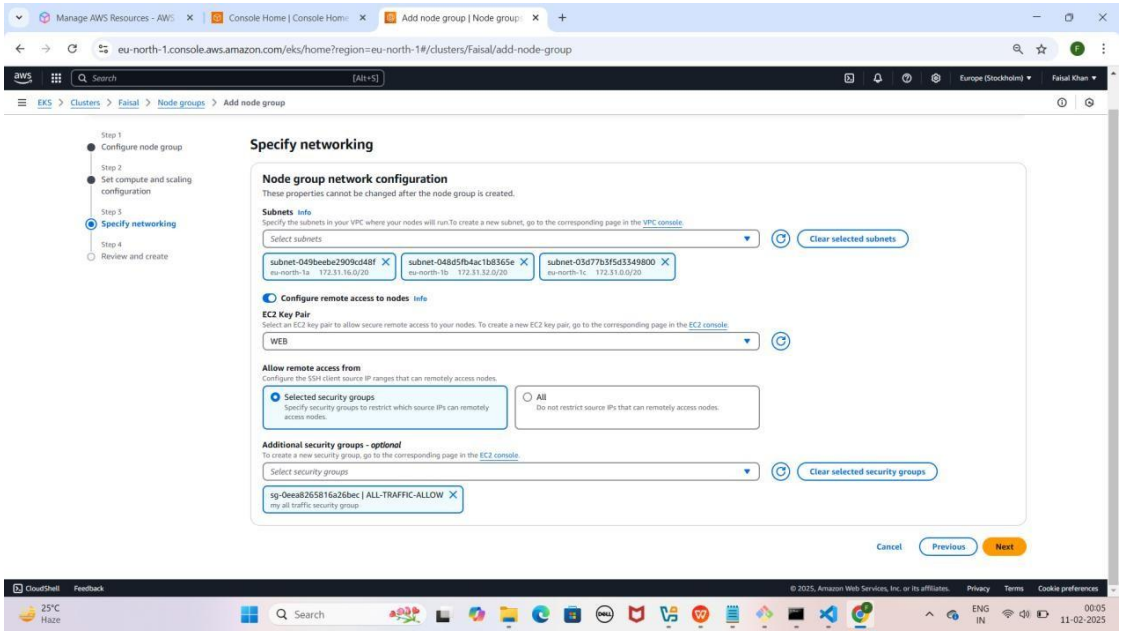
Step 8: Node Group ki Networking Configure Karna

1. **"Specify Networking" section**

- **"Configure Remote Access to Nodes" enable karo**
- **Key Pair select karo**
- **"Additional Security Groups - Optional" mein "ALL-TRAFFIC-ALLOW" select karo**

2. **Next** pe click karo

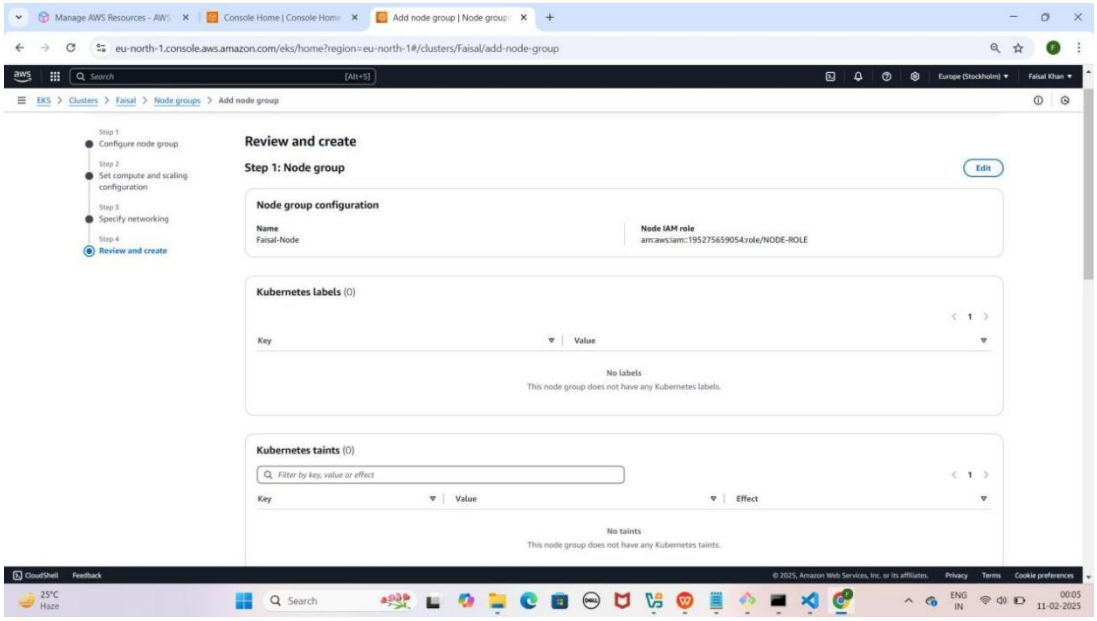
YE KUCH ISTARHA LAGEGA

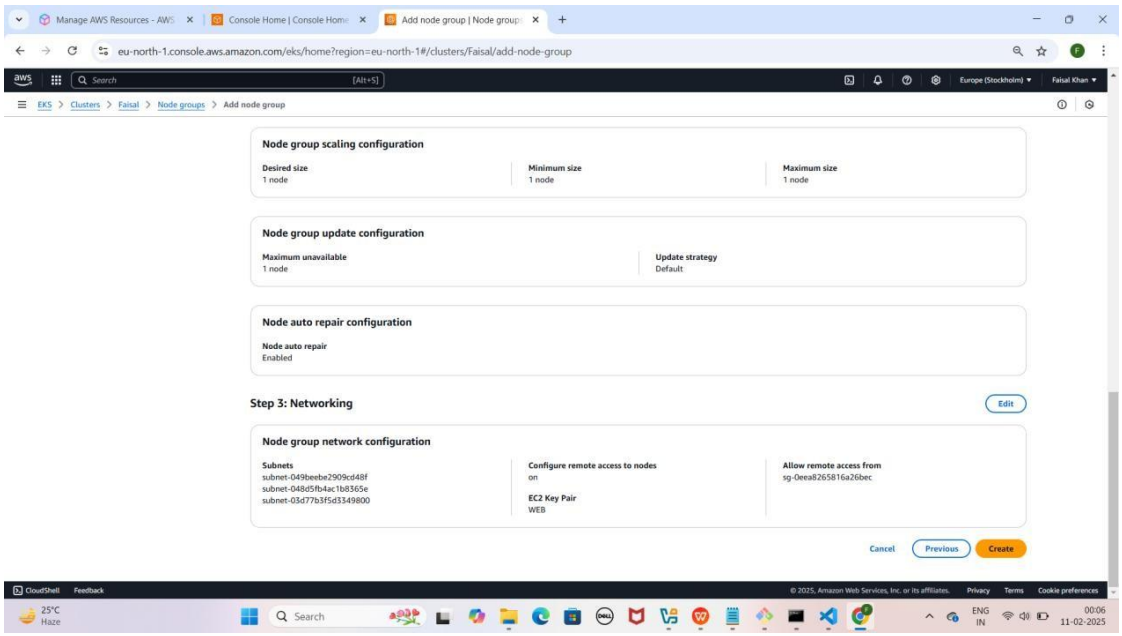


Step 9: Node Group Review and Create Karna

1. **"Review** and **Create**" **section** mein jao
2. **Scroll Down** karo aur "**Create**" pe **click** karo

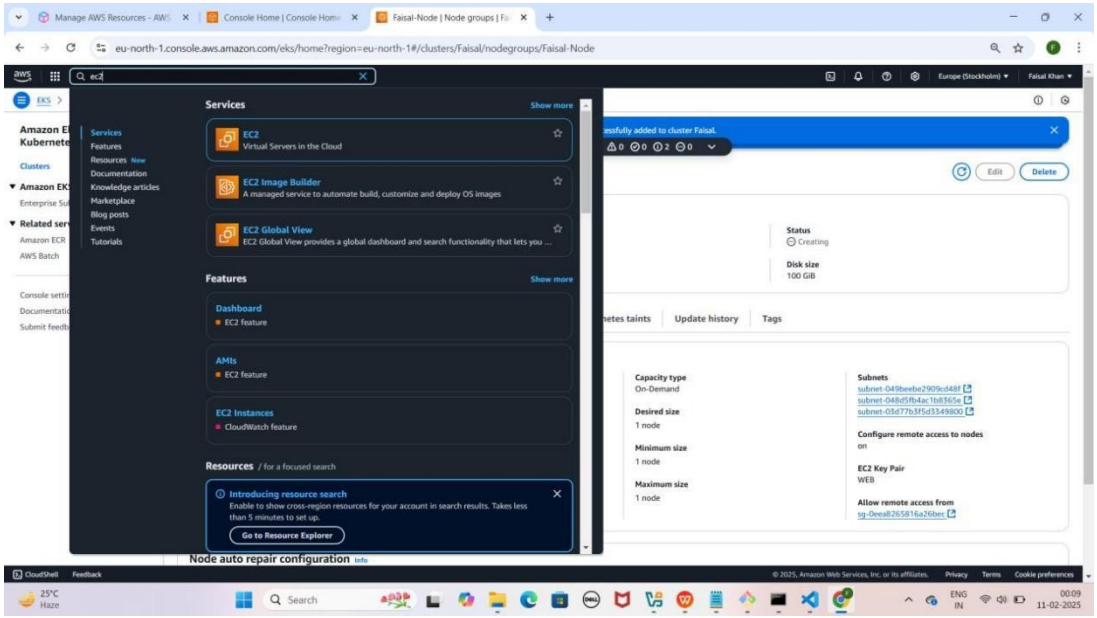
YE KUCH ISTARHA LAGEGA

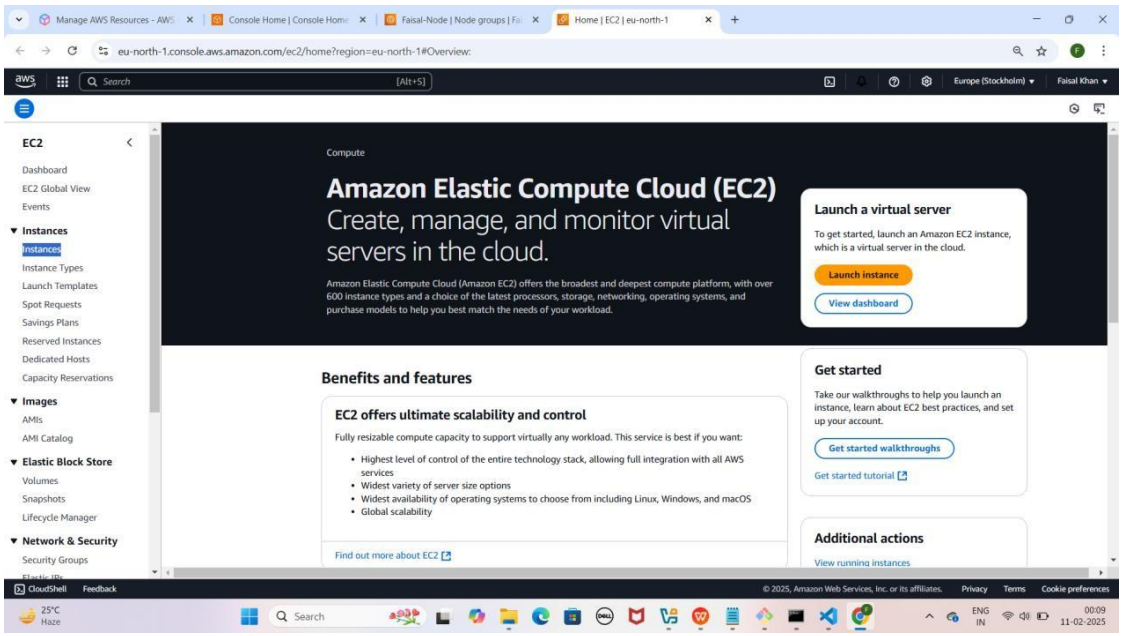




AWS Console open karo, search bar mein "**EC2**" likho, **Instances section** mein ek **running instance** nazar aayega, uska name "**Faisal-Node**" karo. ---> (Aapka Name Likho)

YE KUCH ISTARHA LAGEGA




Manage AWS Resources - AWS
Console Home | Console Home
Faisal-Node | Node groups | Fa
Home | EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Overview:
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EC2
Dashboard
EC2 Global View
Events
Instances
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
Network & Security
Security Groups
Compute
Amazon Elastic Compute Cloud (EC2)
Create, manage, and monitor virtual servers in the cloud.
Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 600 instance types and a choice of the latest processors, storage, networking, operating systems, and purchase models to help you best match the needs of your workload.
Launch a virtual server
To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.
Launch instance
View dashboard
Benefits and features
EC2 offers ultimate scalability and control
Fully resizable compute capacity to support virtually any workload. This service is best if you want:
Highest level of control of the entire technology stack, allowing full integration with all AWS services
Widest variety of server size options
Widest availability of operating systems to choose from including Linux, Windows, and macOS
Global scalability
Find out more about EC2
Get started
Take our walkthroughs to help you launch an instance, learn about EC2 best practices, and set up your account.
Get started walkthroughs
Get started tutorial
Additional actions
View running instances
CloudShell
Feedback
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Privacy
Terms
Cookie preferences
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Search
ENG
IN
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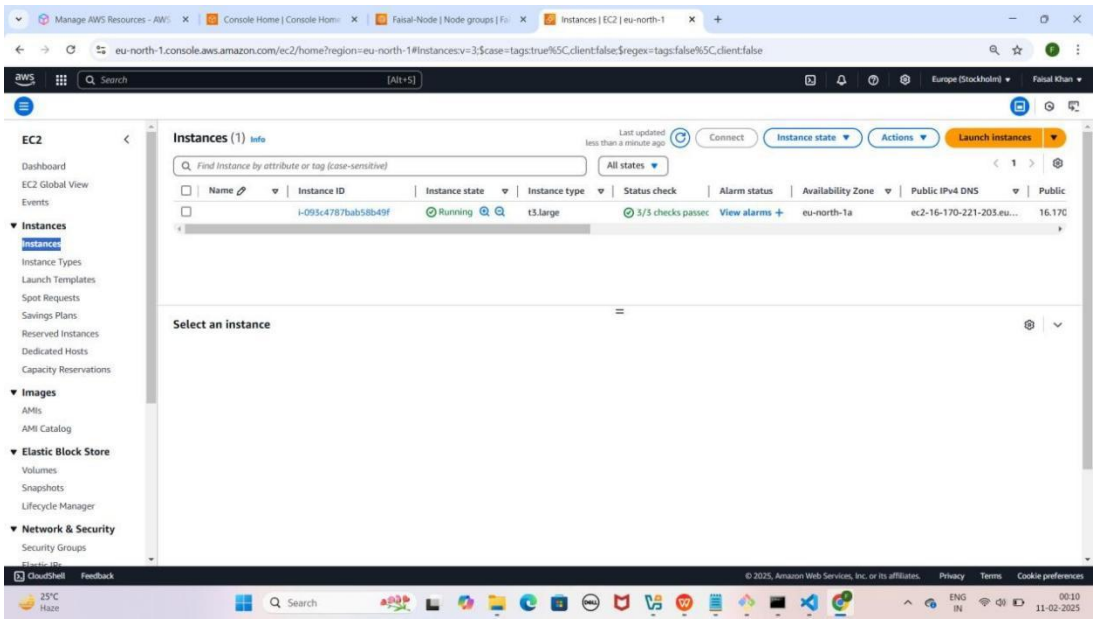
11-02-2025


Manage AWS Resources - AWS
Console Home | Console Home
Faisal-Node | Node groups | Fa
Instances | EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:v=3;$case=tags:true%5C,client:false;$regex=tags:false%5C,client:false
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EC2
Dashboard
EC2 Global View
Events
Instances
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
Network & Security
Security Groups
Instances (1) Info
Last updated less than a minute ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Public
i-093c4787bab58b49f
Running
t3.large
3/3 checks passed
View alarms
eu-north-1a
ec2-16-170-221-203.eu...
16.170
Select an instance
CloudShell
Feedback
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Privacy
Terms
Cookie preferences
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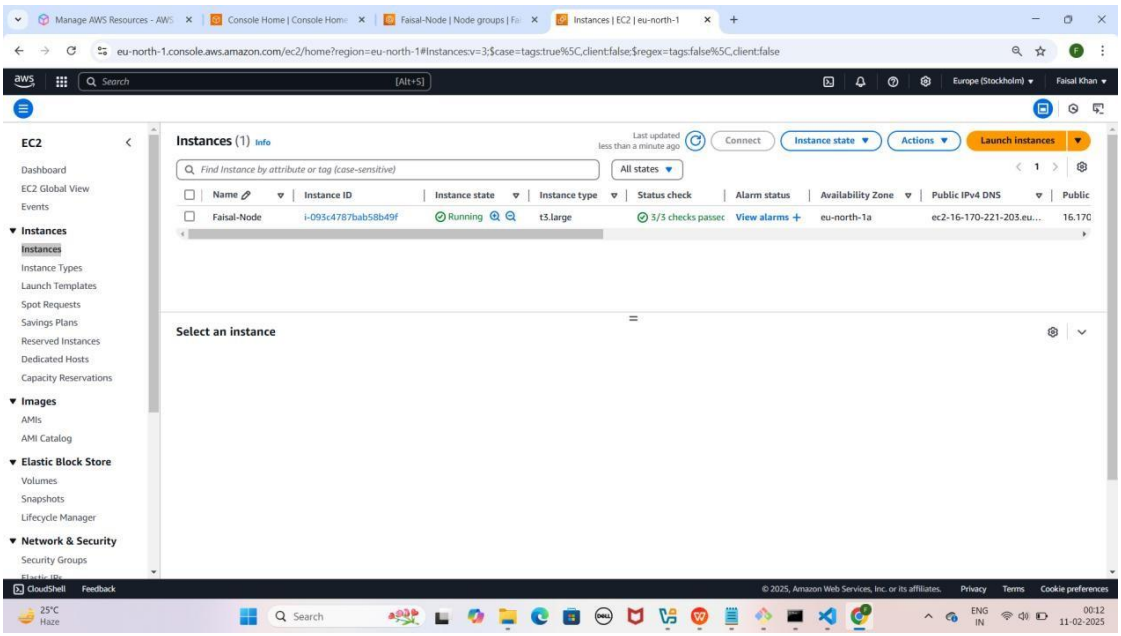
Haze
Search
ENG
IN
00:10
11-02-2025

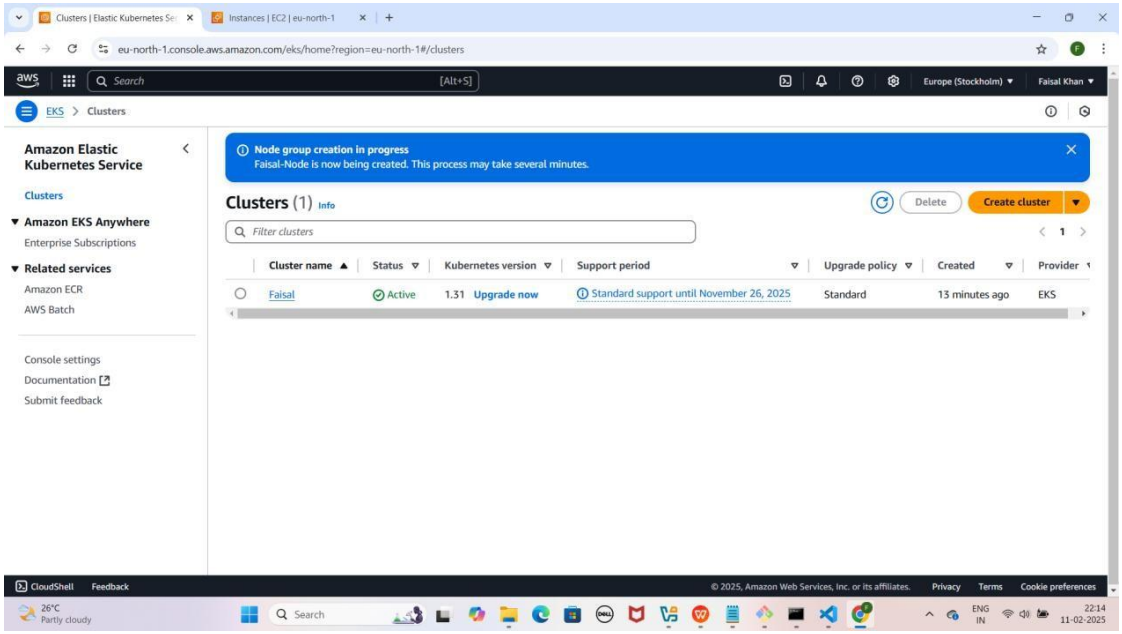


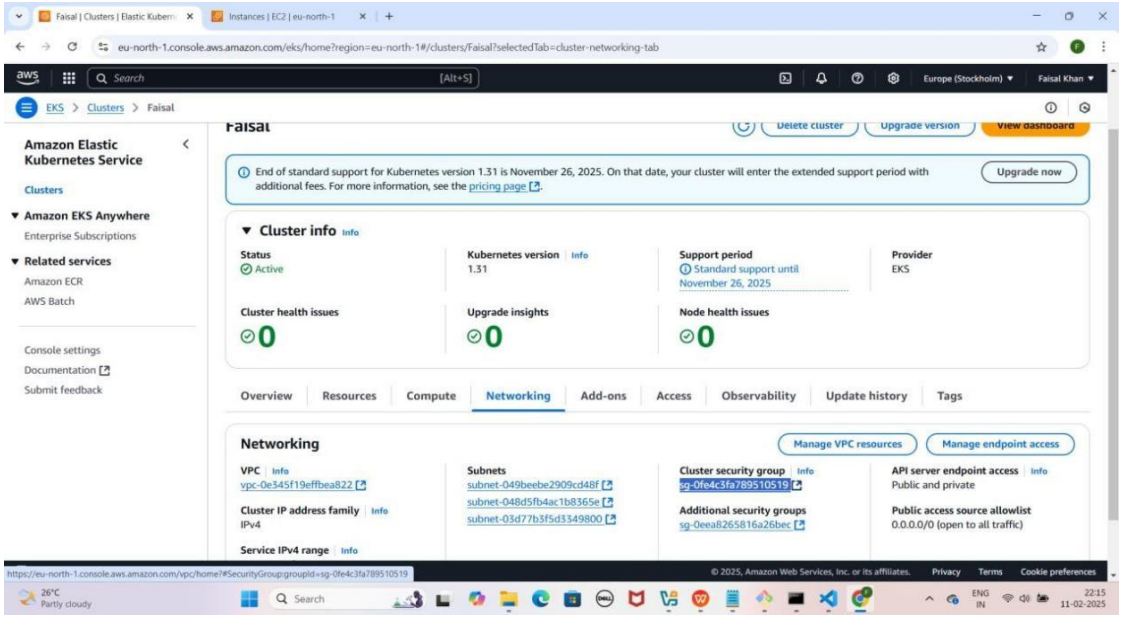
Step 10: Security Groups Configure Karna EKS Cluster Ke liye

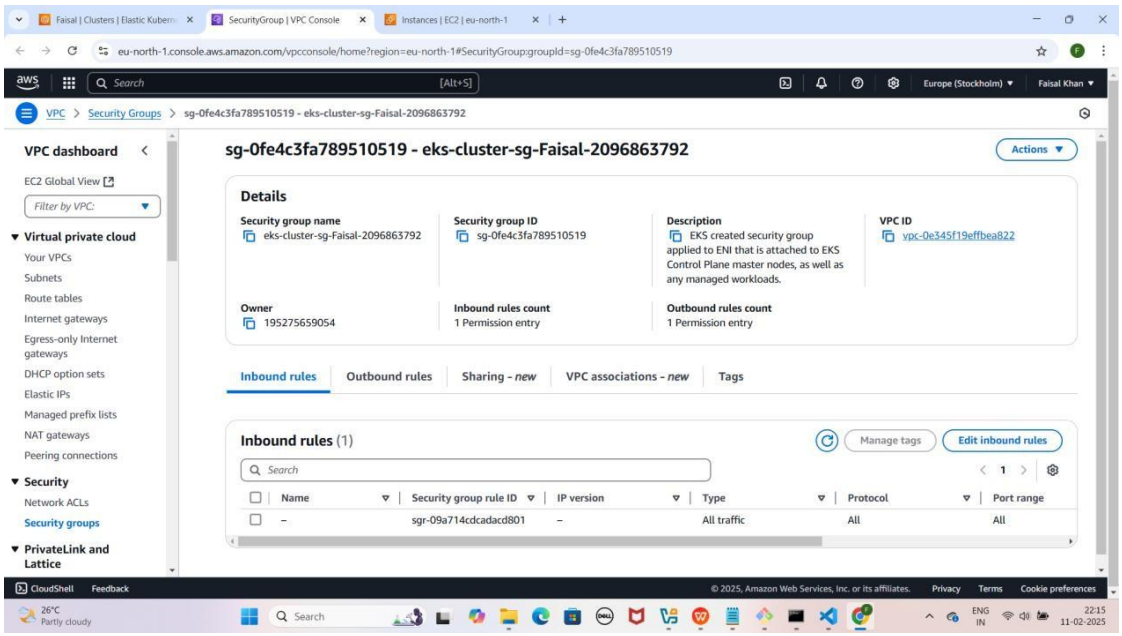
1. **EKS Cluster Security Group**
   - **EKS Cluster** pe jao.
   - **Networking** section mein jao aur **Cluster Security Group** select
   - **Edit Inbound Rules** pe click karo.
   - **Default rule** delete karo aur naya rule add karo:
     - **Type:** All Traffic
     - **Source:** Anywhere IPv4

2. **Save Rules** pe **click** karo.

YE KUCH ISTARHA LAGEGA






eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#SecurityGroup:groupId=sg-0fe4c3fa789510519
VPC > Security Groups > sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792
VPC dashboard
EC2 Global View
Filter by VPC:
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only Internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Security
Network ACLs
Security groups
PrivateLink and Lattice
sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792
Actions
Details
Security group name
eks-cluster-sg-Faisal-2096863792
Security group ID
sg-0fe4c3fa789510519
Description
EKS created security group applied to ENI that is attached to EKS Control Plane master nodes, as well as any managed workloads.
VPC ID
vpc-0e345f19effbea822
Owner
195275659054
Inbound rules count
1 Permission entry
Outbound rules count
1 Permission entry
Inbound rules
Outbound rules
Sharing - new
VPC associations - new
Tags
Inbound rules (1)
Manage tags
Edit inbound rules
Search
Name
Security group rule ID
IP version
Type
Protocol
Port range
sgr-09a714cdcadacd801
All traffic
All
All
CloudShell
Feedback
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Privacy
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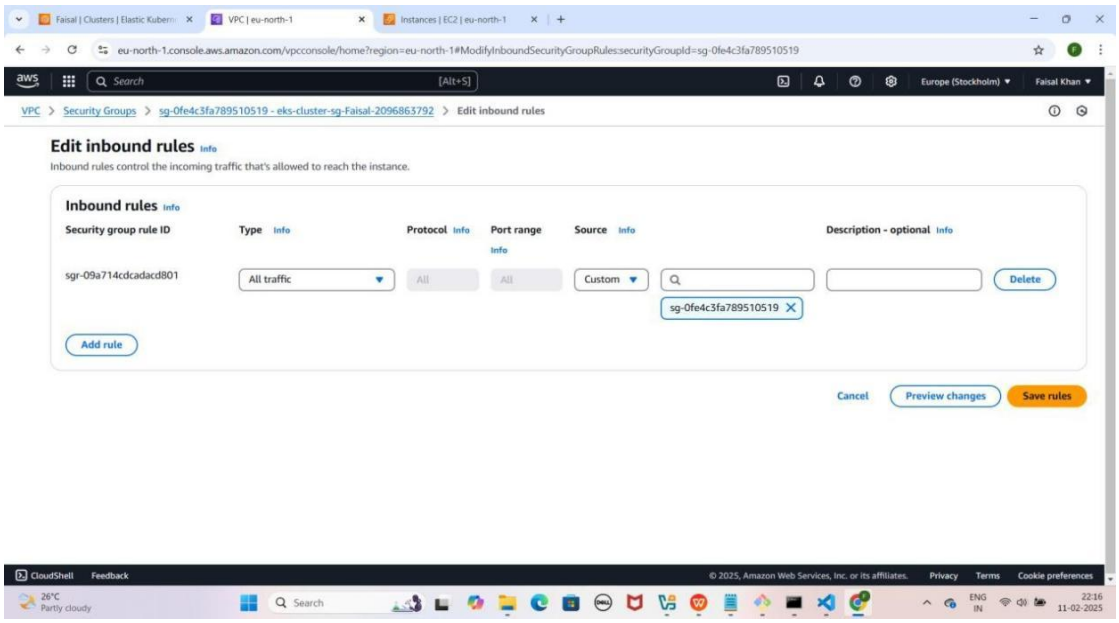
eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0fe4c3fa789510519
VPC > Security Groups > sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792 > Edit inbound rules
Edit inbound rules
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules
Security group rule ID
Type
Protocol
Port range
Source
Description - optional
sgr-09a714cdcadacd801
All traffic
All
All
Custom
sg-0fe4c3fa789510519
Delete
Add rule
Cancel
Preview changes
Save rules
CloudShell
Feedback
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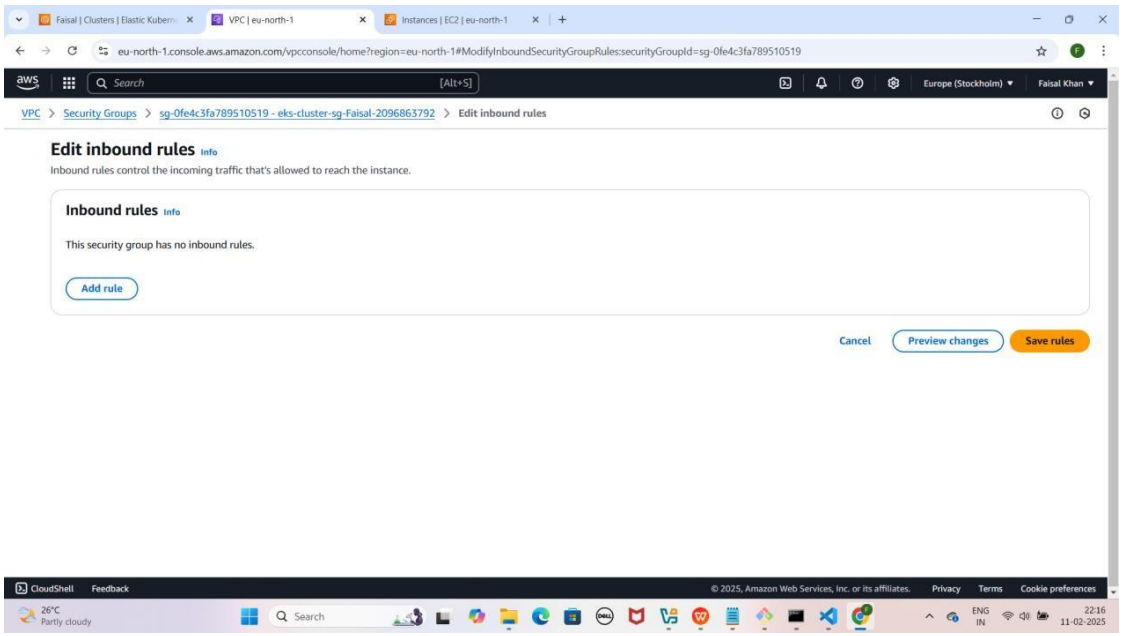
Faisal | Clusters | Elastic Kubern
VPC | eu-north-1
Instances | EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0fe4c3fa789510519
aws
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
VPC > Security Groups > sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792 > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
This security group has no inbound rules.
Add rule
Cancel
Preview changes
Save rules
CloudShell
Feedback
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Cookie preferences
26°C
Partly cloudy
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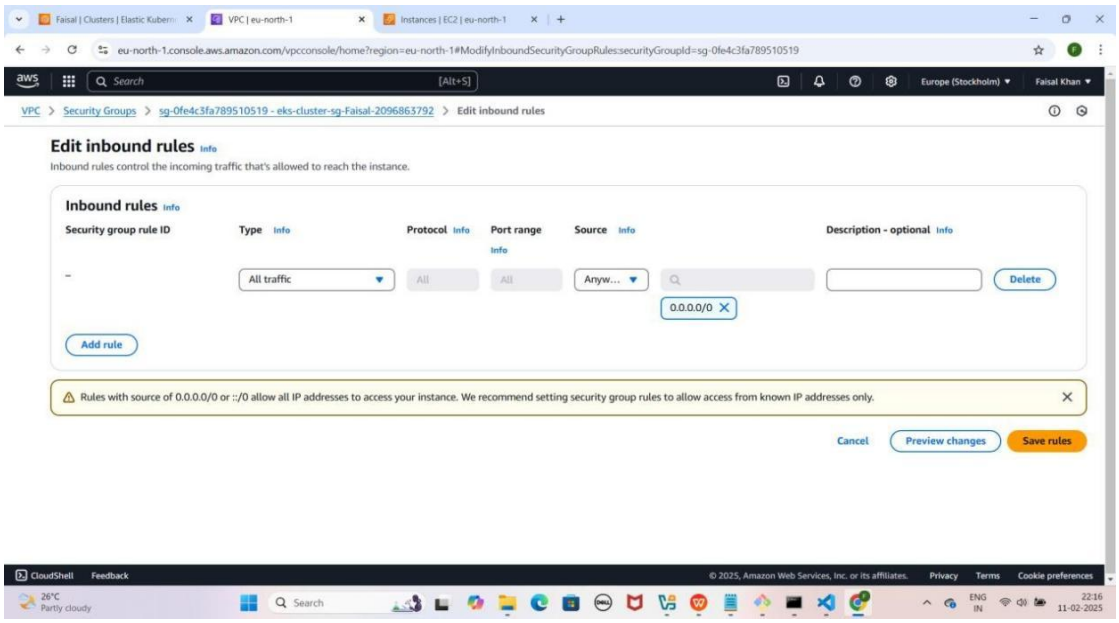
11-02-2025


Faisal | Clusters | Elastic Kubern
VPC | eu-north-1
Instances | EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0fe4c3fa789510519
aws
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
VPC > Security Groups > sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792 > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
Security group rule ID
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
-
All traffic
All
All
Anyw...
0.0.0.0/0
Delete
Add rule
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Cancel
Preview changes
Save rules
CloudShell
Feedback
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Search
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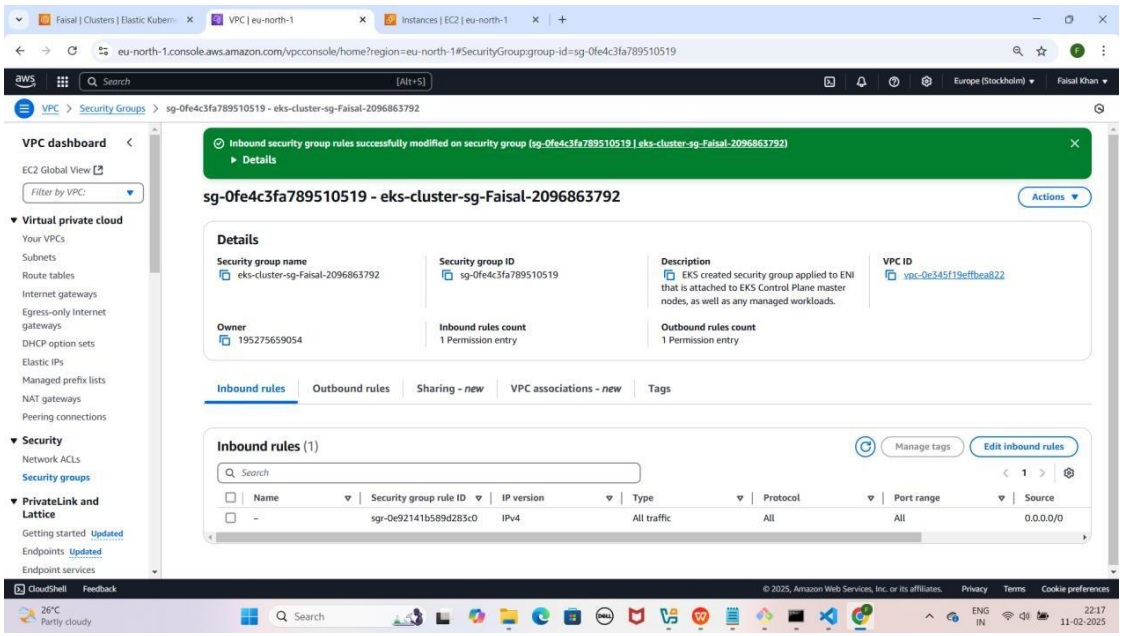


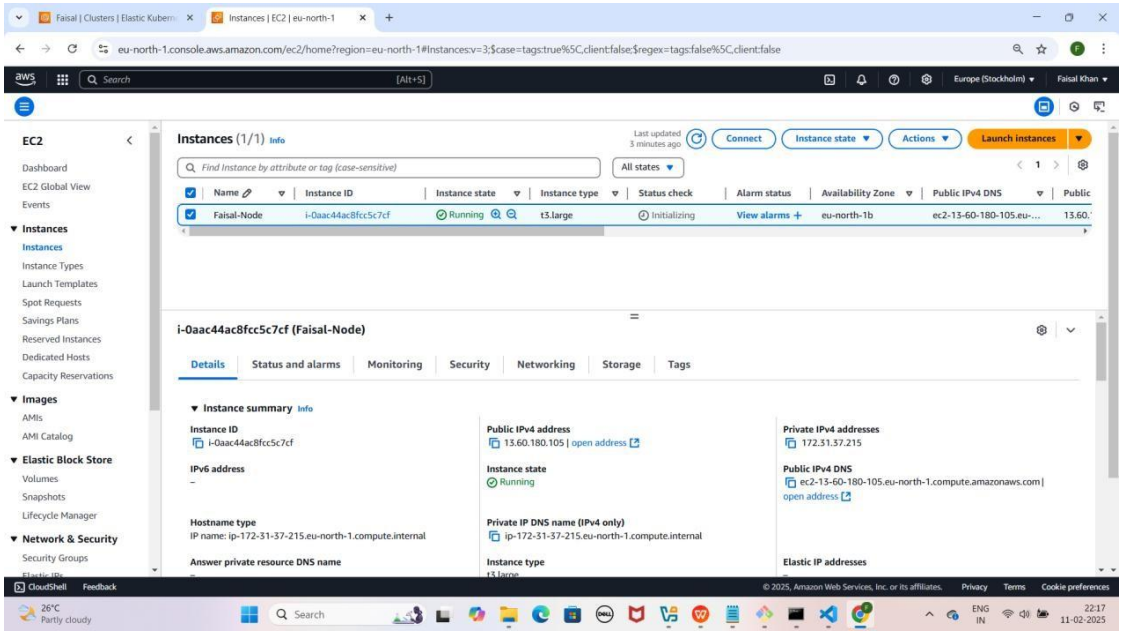
Step 11: Security Groups Configure Karna EKS Cluster Node Ke liye

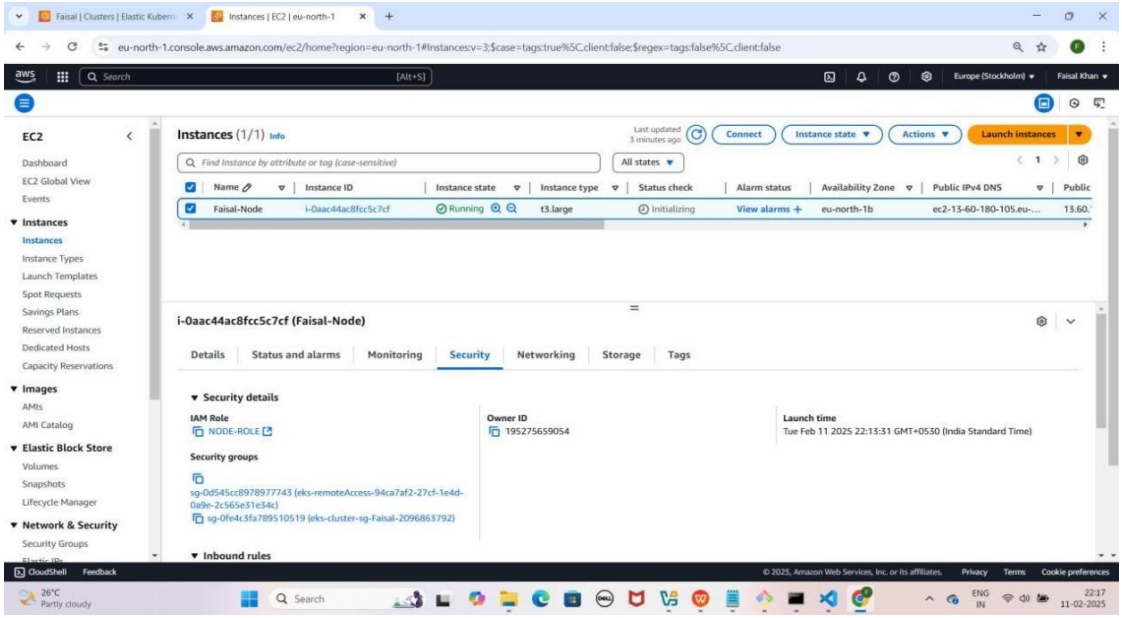
1. **EKS Cluster Node Security Group**

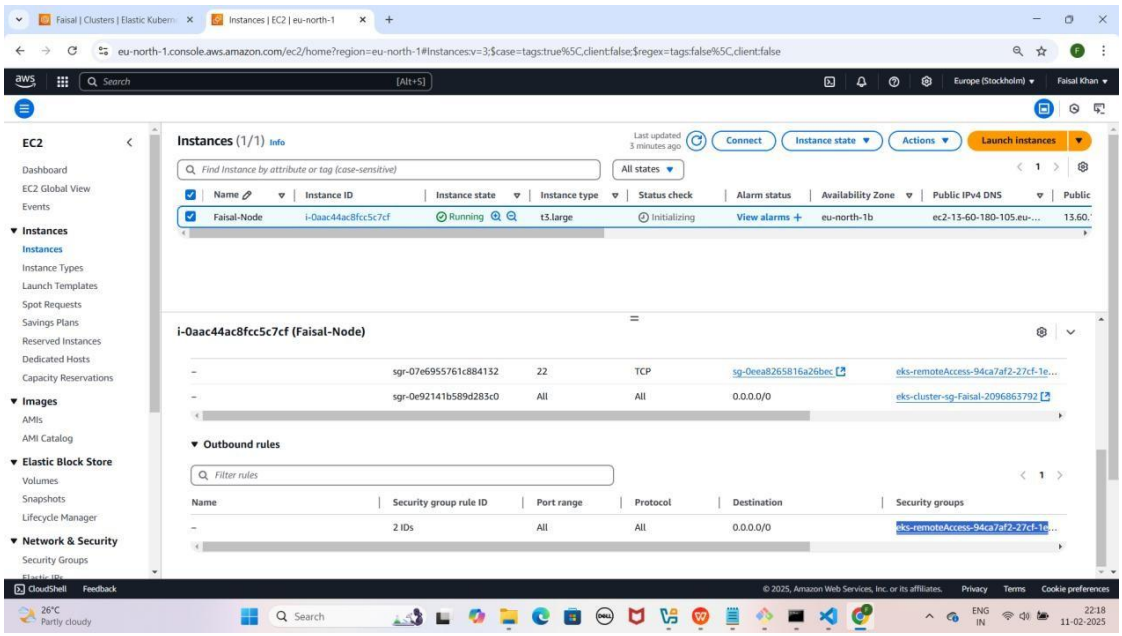
- **EC2 Instances** section mein jao.
- **"Faisal-Node" instance** select karo.
- **Security section mein scroll down karo aur Outbound Rules pe click karo.**
- **Security Group ID** pe click karo.
- **Edit Inbound Rules** pe click karo.
- **Default rule** delete karo aur naya rule add karo:
    - **Type:** All Traffic
    - **Source:** Anywhere IPv4

2. **Save Rules** pe click karo.

YE KUCH ISTARHA LAGEGA






Faisal | Clusters | Elastic Kubern
Instances | EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:v=3;$case=tags:true%5C,client:false;$regex=tags:false%5C,client:false
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EC2
Dashboard
EC2 Global View
Events
Instances
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
Network & Security
Security Groups
Instances (1/1) Info
Last updated 3 minutes ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Public
Faisal-Node
i-0aac44ac8fcc5c7cf
Running
t3.large
Initializing
View alarms +
eu-north-1b
ec2-13-60-180-105.eu-...
13.60.
i-0aac44ac8fcc5c7cf (Faisal-Node)
sgr-07e6955761c884132
22
TCP
sg-0eea8265816a26bec
eks-remoteAccess-94ca7af2-27cf-1e...
sgr-0e92141b589d283c0
All
All
0.0.0.0/0
eks-cluster-sg-Faisal-2096863792
Outbound rules
Filter rules
Name
Security group rule ID
Port range
Protocol
Destination
Security groups
2 IDs
All
All
0.0.0.0/0
eks-remoteAccess-94ca7af2-27cf-1e...
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Search
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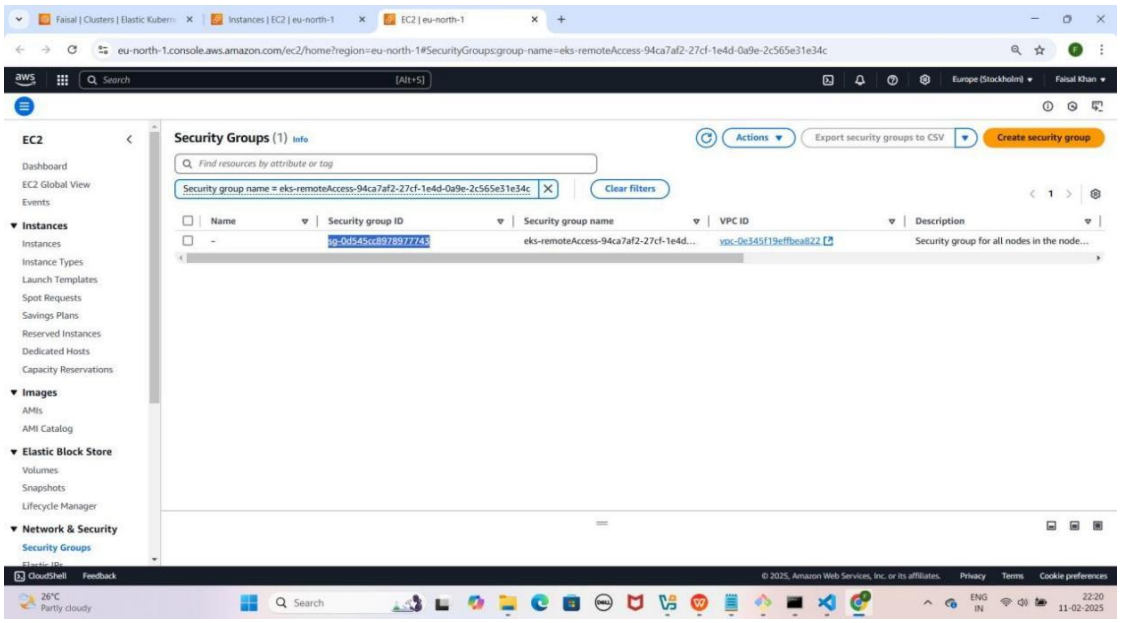
Faisal | Clusters | Elastic Kubern
Instances | EC2 | eu-north-1
EC2 | eu-north-1
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#SecurityGroups:group-name=eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
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Instances
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Savings Plans
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Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Security Groups (1) Info
Actions
Export security groups to CSV
Create security group
Find resources by attribute or tag
Security group name = eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c
Clear filters
Name
Security group ID
Security group name
VPC ID
Description
-
sg-0d545cc8978977743
eks-remoteAccess-94ca7af2-27cf-1e4d...
vpc-0e345f19effbea822
Security group for all nodes in the node...
CloudShell
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Cookie preferences
26°C
Partly cloudy
Search
ENG
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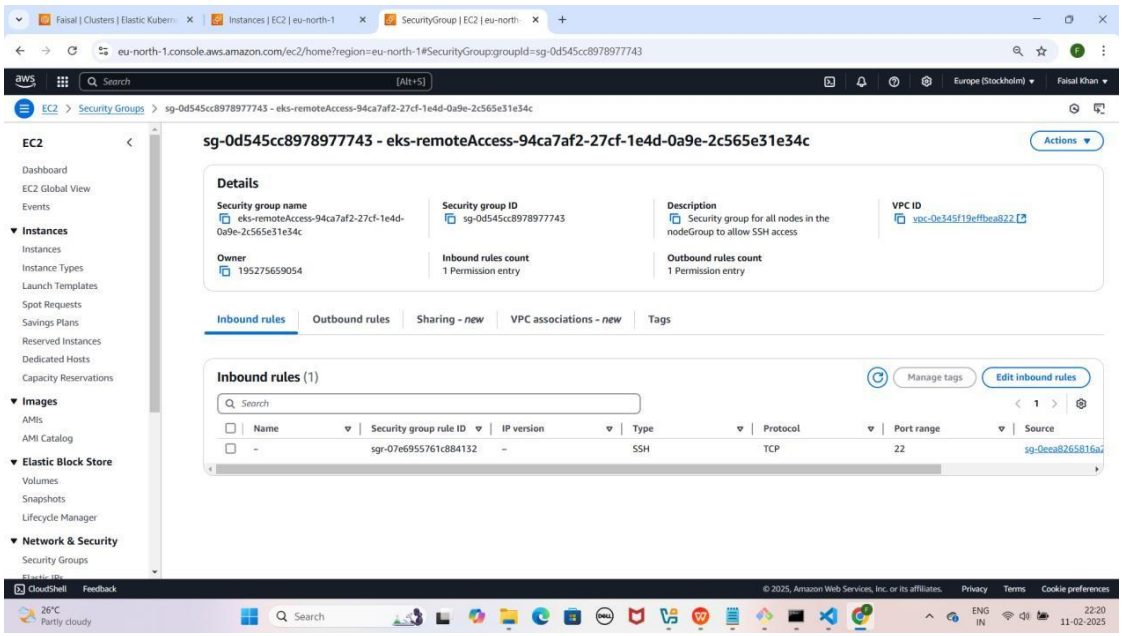
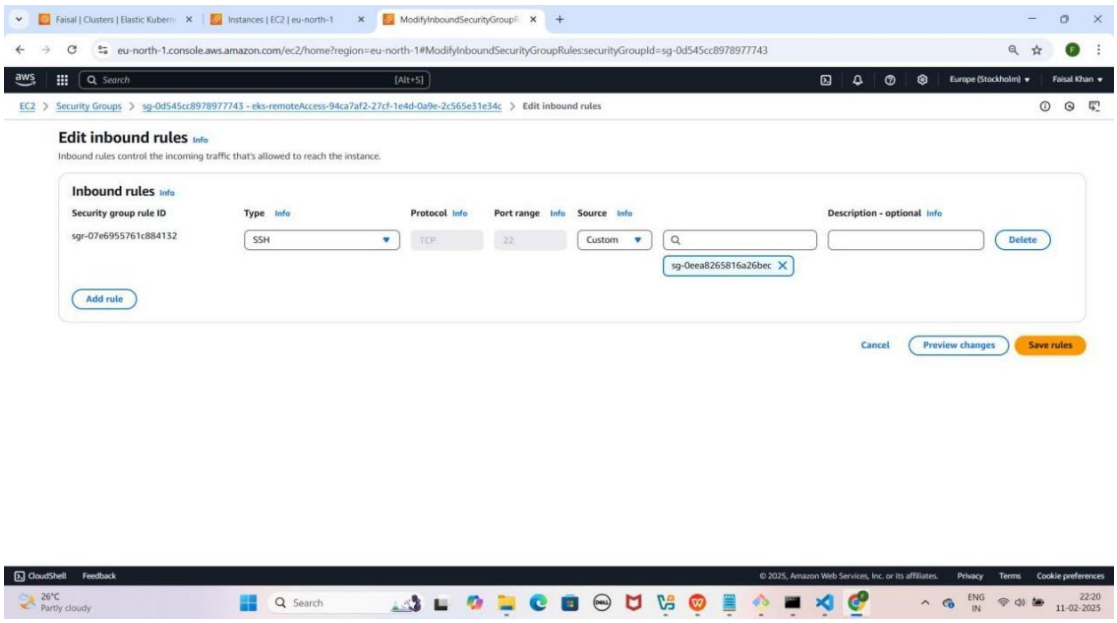
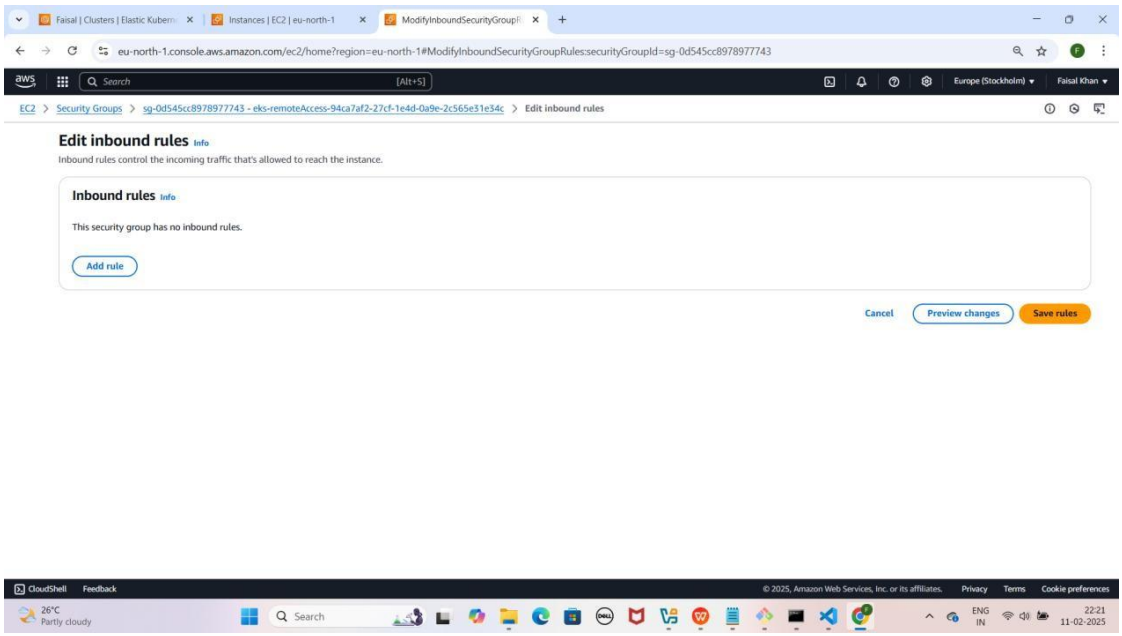
22:20
11-02-2025


sg-0d545cc8978977743 - eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c
Actions
Details
Security group name
eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c
Security group ID
sg-0d545cc8978977743
Description
Security group for all nodes in the nodeGroup to allow SSH access
VPC ID
vpc-0e345f19effbea822
Owner
195275659054
Inbound rules count
1 Permission entry
Outbound rules count
1 Permission entry
Inbound rules
Outbound rules
Sharing - new
VPC associations - new
Tags
Inbound rules (1)
Manage tags
Edit inbound rules
Name
Security group rule ID
IP version
Type
Protocol
Port range
Source
sgr-07e6955761c884132
SSH
TCP
22


Edit inbound rules
Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules
Security group rule ID
Type
Protocol
Port range
Source
Description - optional
sgr-07e6955761c884132
SSH
TCP
22
Custom
sg-0eea8265816a26bec
Delete
Add rule
Cancel
Preview changes
Save rules


Faisal | Clusters | Elastic Kubern
Instances | EC2 | eu-north-1
ModifyInboundSecurityGroupR
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0d545cc8978977743
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EC2 > Security Groups > sg-0d545cc8978977743 - eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
This security group has no inbound rules.
Add rule
Cancel
Preview changes
Save rules

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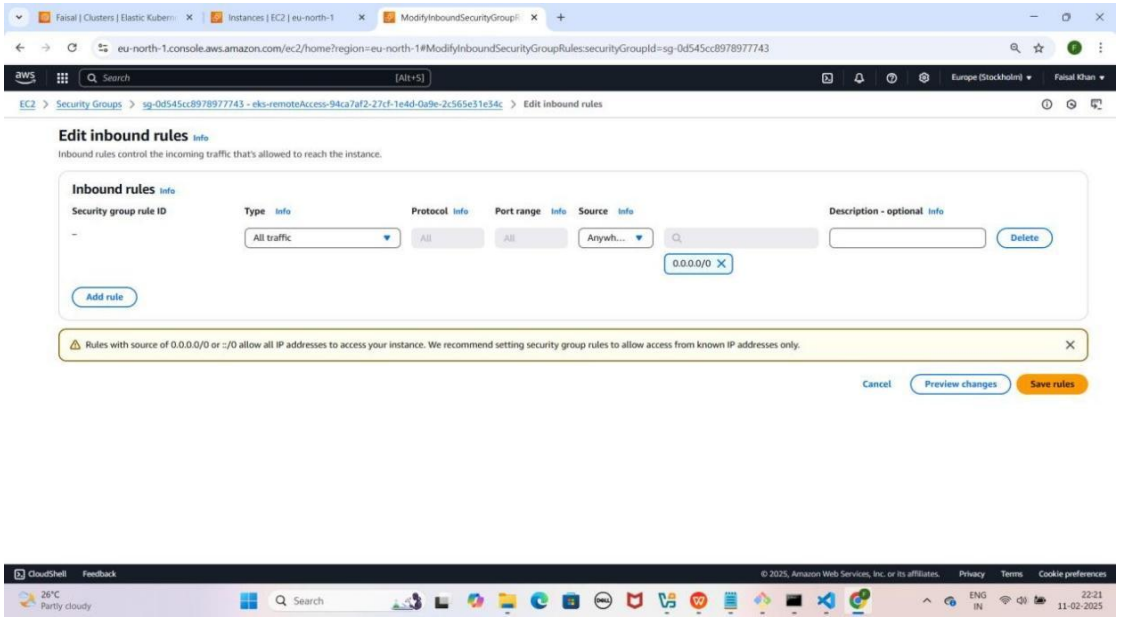
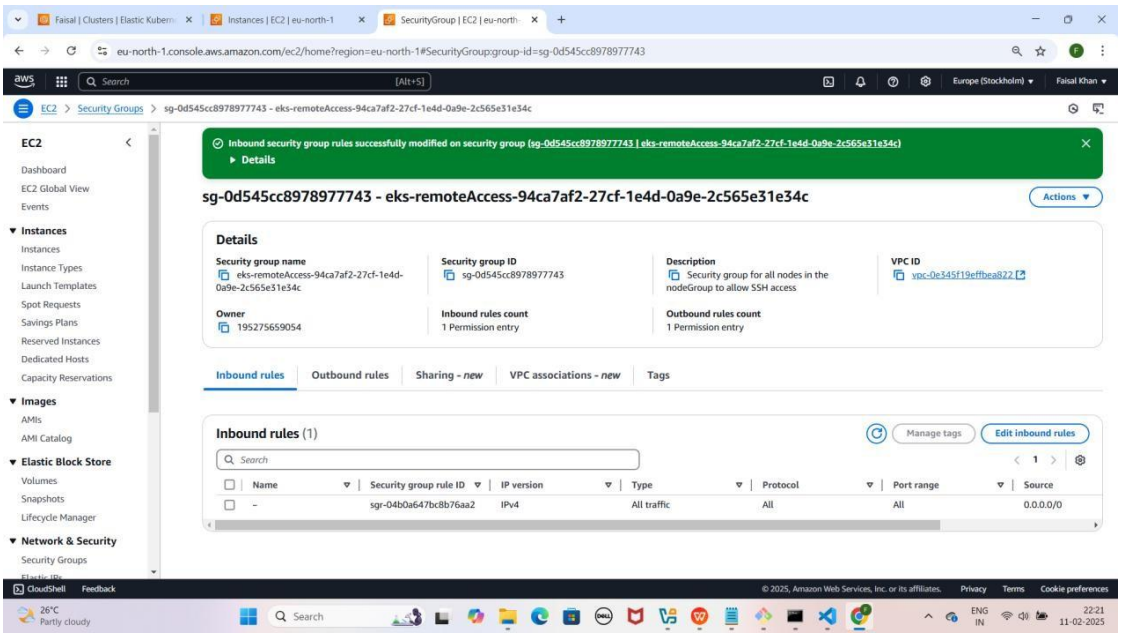
22:21
11-02-2025


Faisal | Clusters | Elastic Kubern
Instances | EC2 | eu-north-1
ModifyInboundSecurityGroupR
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0d545cc8978977743
Search
[Alt+S]
Europe (Stockholm)
Faisal Khan
EC2 > Security Groups > sg-0d545cc8978977743 - eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
Security group rule ID
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
All traffic
All
All
Anywh...
0.0.0.0/0
Delete
Add rule
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Cancel
Preview changes
Save rules

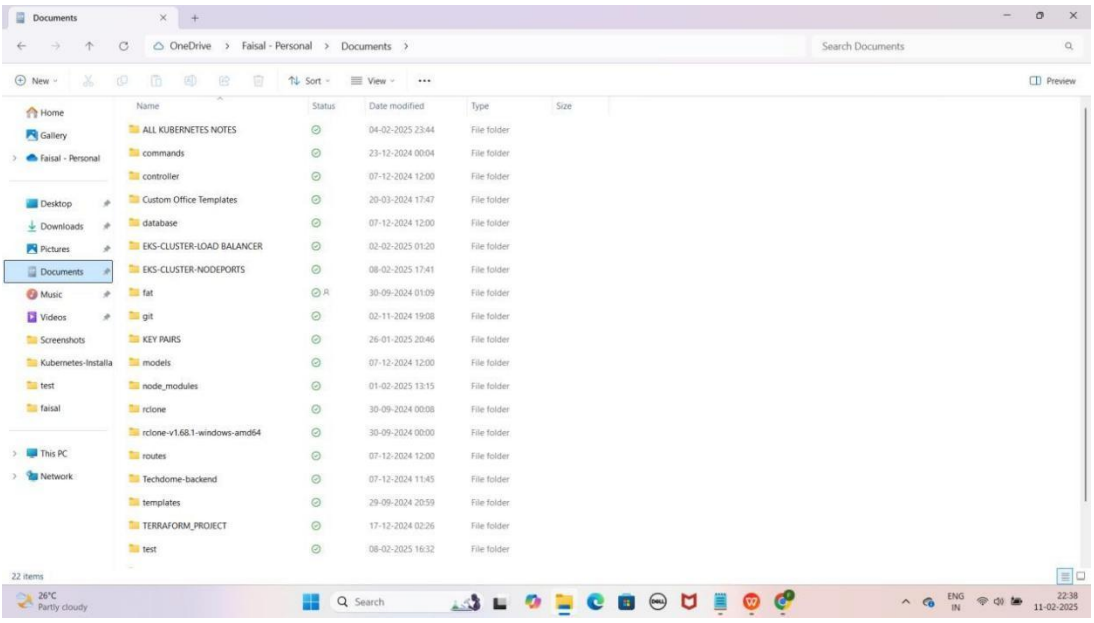
CloudShell
Feedback
© 2025, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
26°C
Partly cloudy
Search
ENG
IN
22:21
11-02-2025



Step 12: Project Ki GitHub Repository Clone Karein

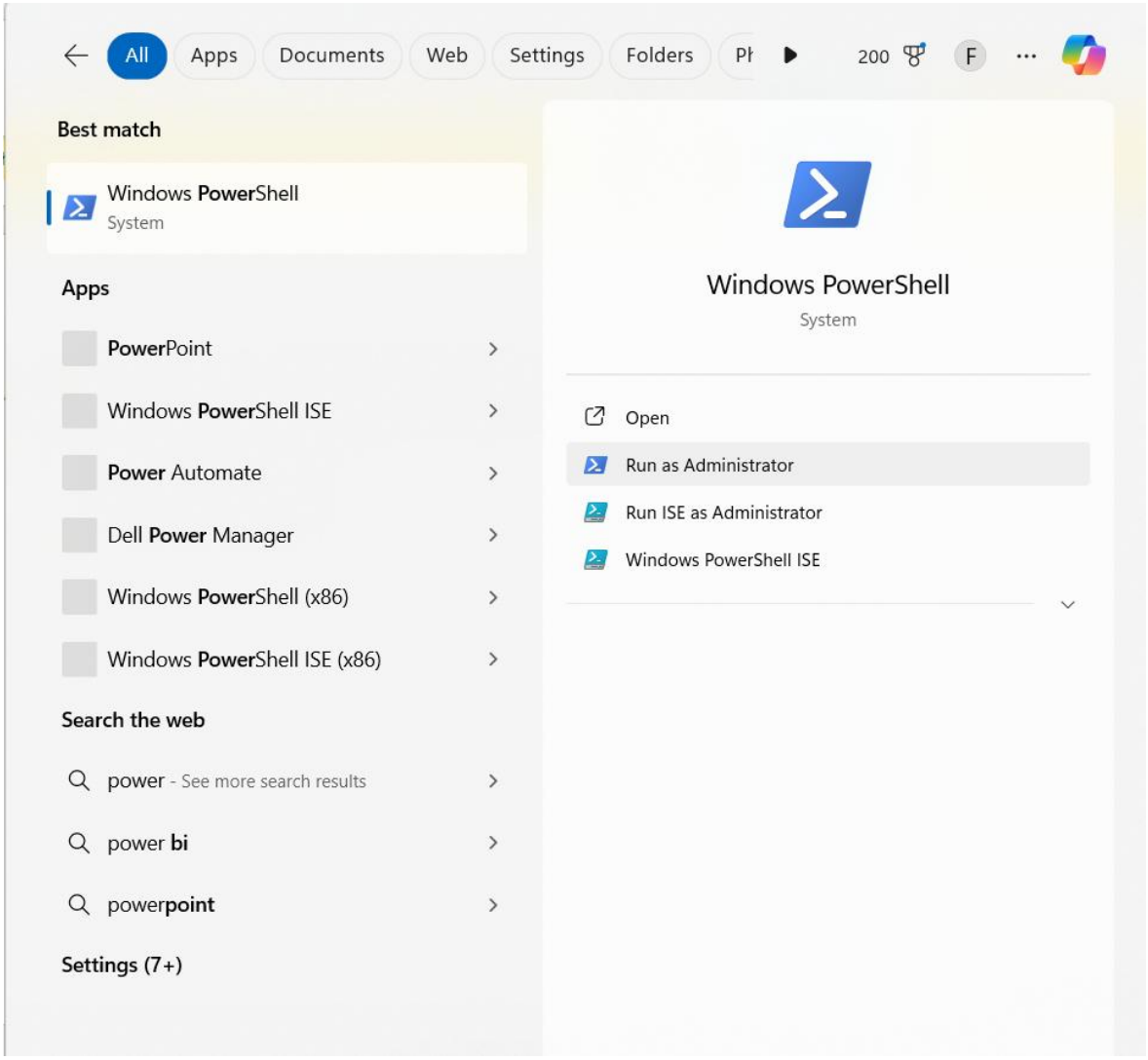
1. **Laptop Mein Documents Folder Mein Jao**

YE KUCH ISTARHA LEGAGA



2. **PowerShell Ko "Run as Administrator" Open Karo**

YE KUCH ISTARHA LAGEGA

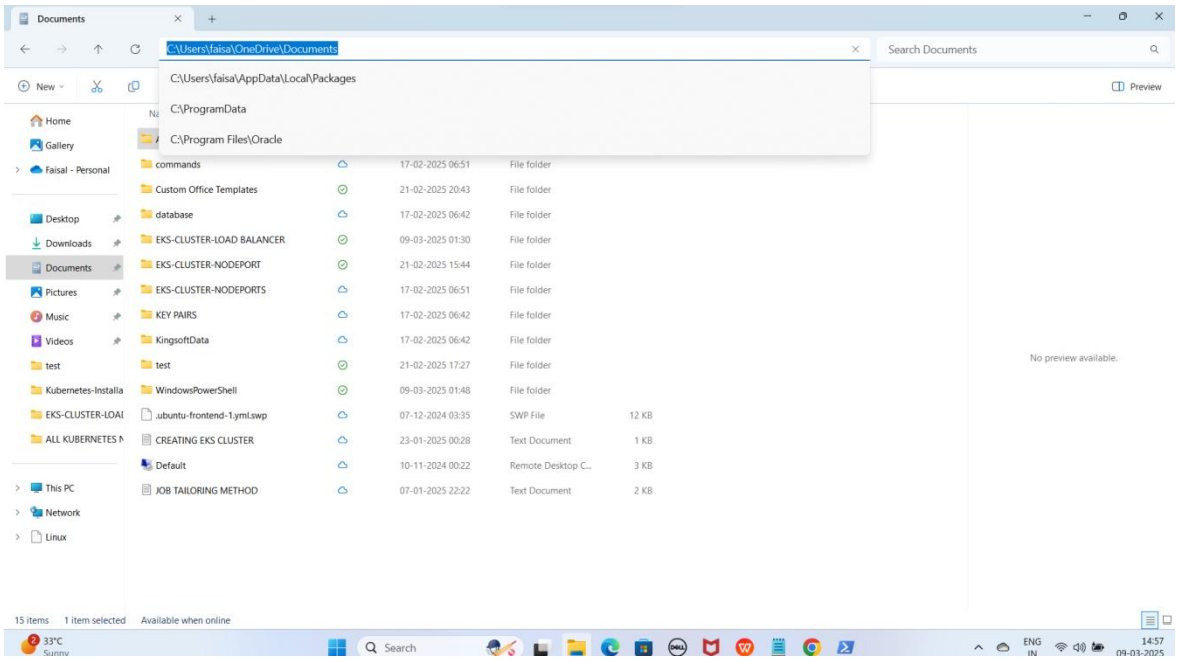


3. **PowerShell me cd command ka use karke Documents folder ka path paste karein.**

   Jaisa ki mere case me, path kuch aisa hai

   cd C:/Users/faisa/OneDrive/Documents

YE KUCH ISTARHA LAGEGA



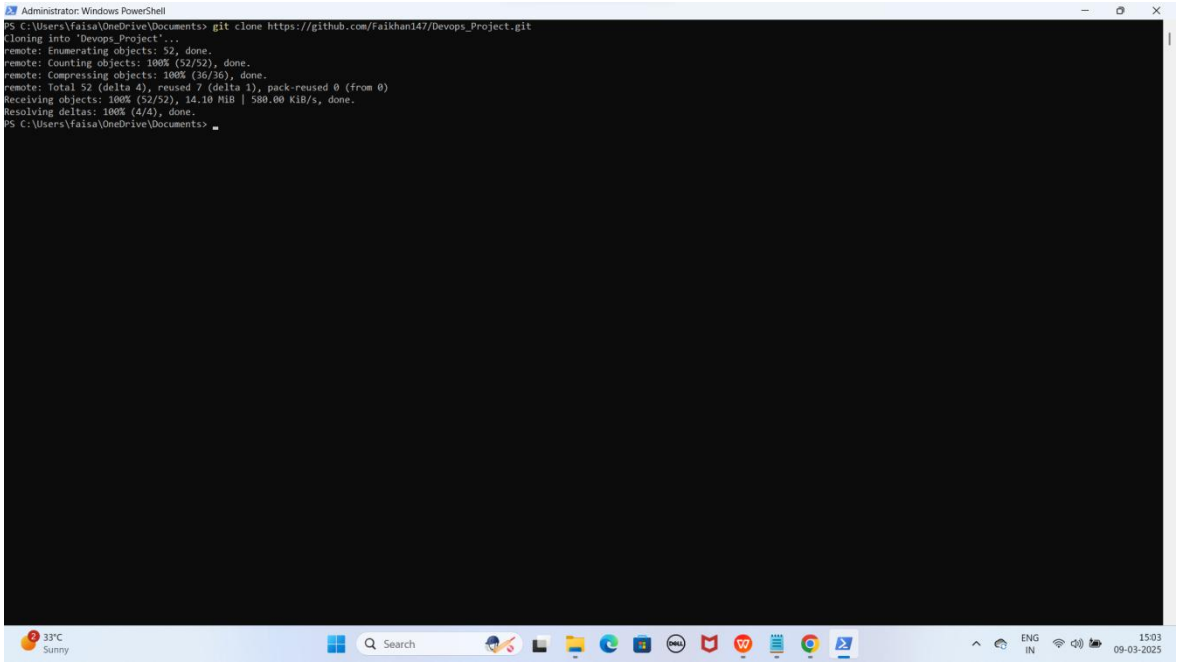
NOTE: Isse aap Documents folder me Navigate ho jaoge.

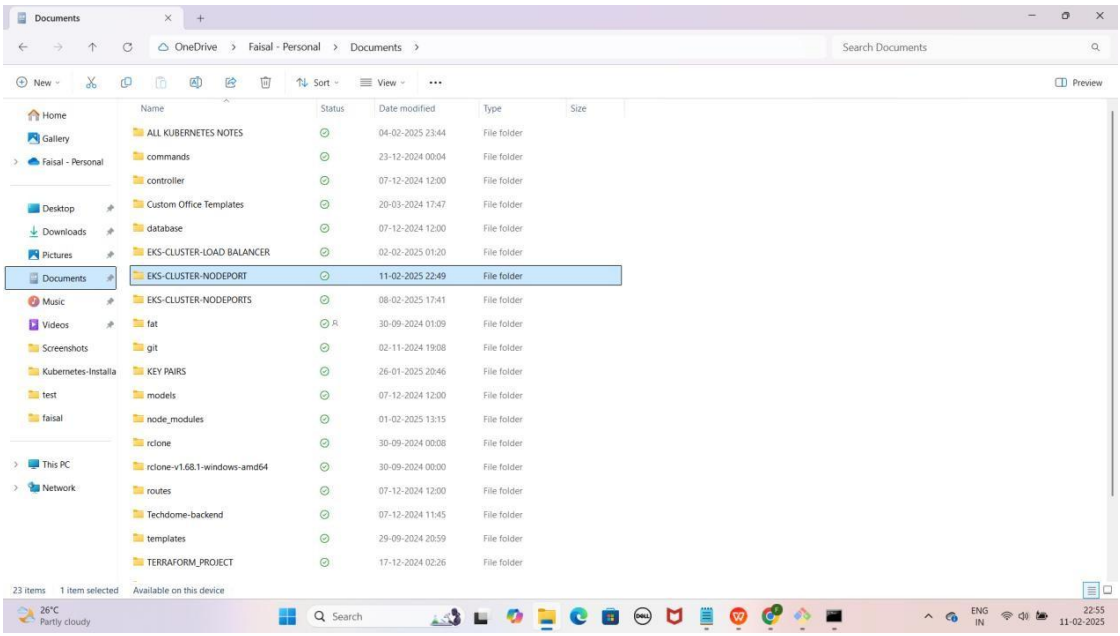
4. GitHub Repository Clone Karo

As it is niche diya gaya URL copy karo aur PowerShell me paste karo:

git clone https://github.com/Faisalkhan45/EKS-CLUSTER-NODEPORT.git

YE KUCH ISTARHA LAGEGA





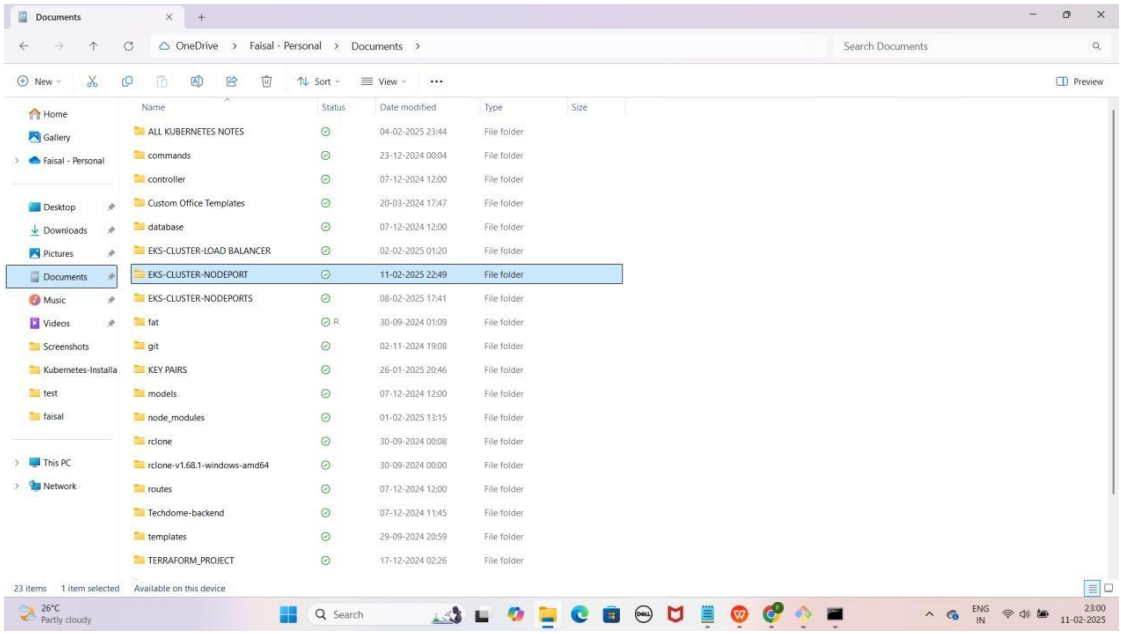
NOTE: Repository clone hone ke baad, aapko "EKS-CLUSTER-NODEPORT" naam ka folder Documents me dikhega

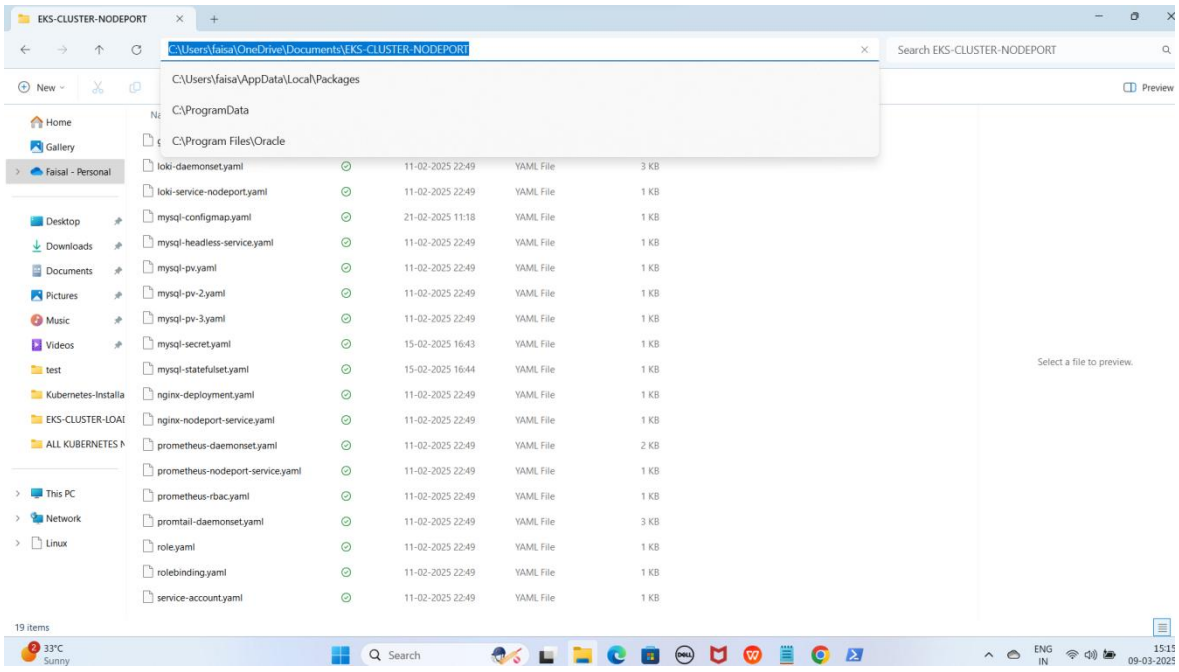
5. **EKS-CLUSTER-NODEPORT Folder Me Jao PowerShell me cd command ka use karo aur apna path paste karo**

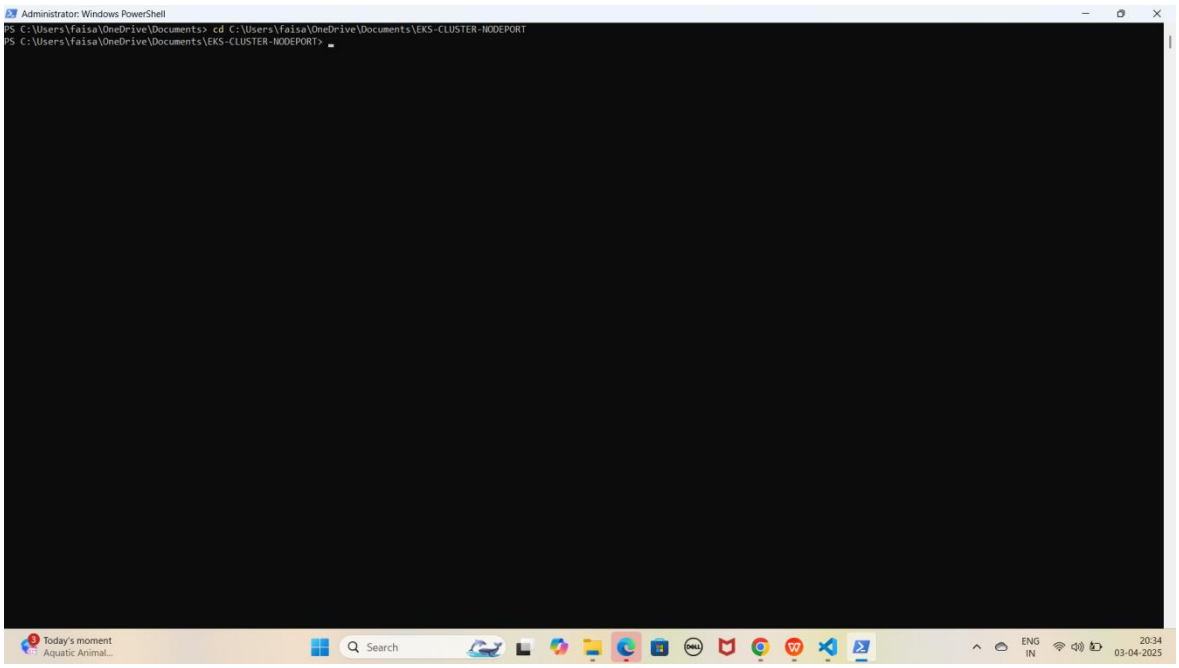
Jaise ki mere case me path kuch aisa hoga

cd C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT

YE KUCH ISTARHA LAGEGA







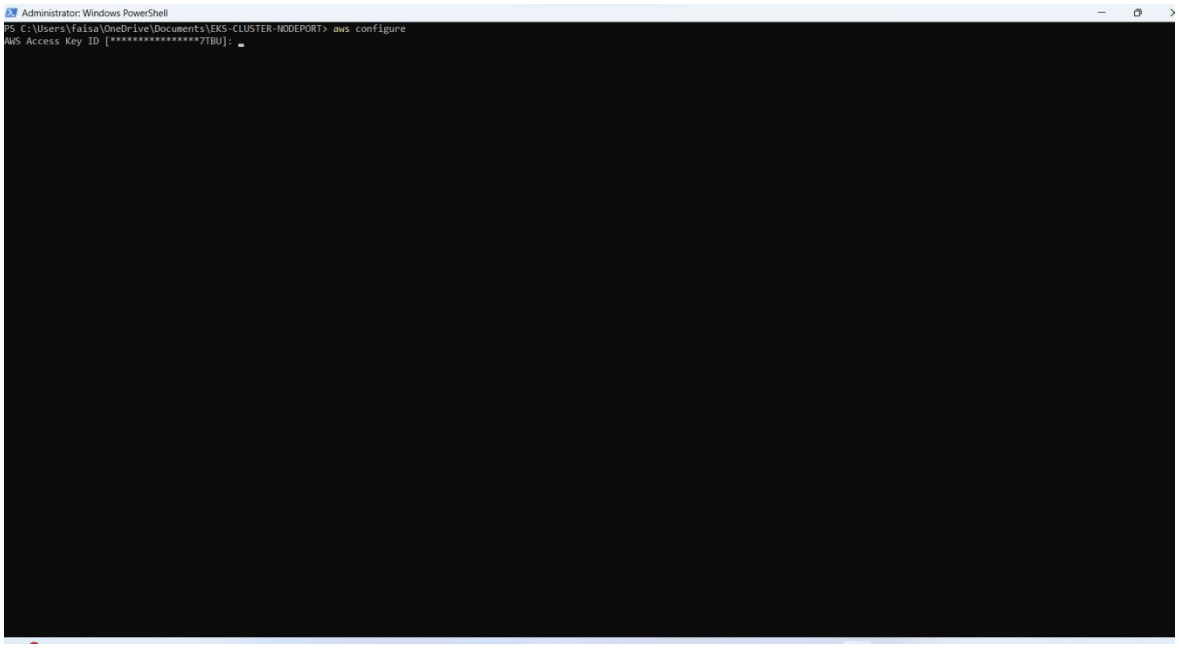
NOTE: Is command se aap PowerShell me EKS-CLUSTER-NODEPORT folder me Navigate ho jaoge.

Step 13: AWS CLI Configure Karo

1. Configure karne ke liye ye command run karo

aws configure

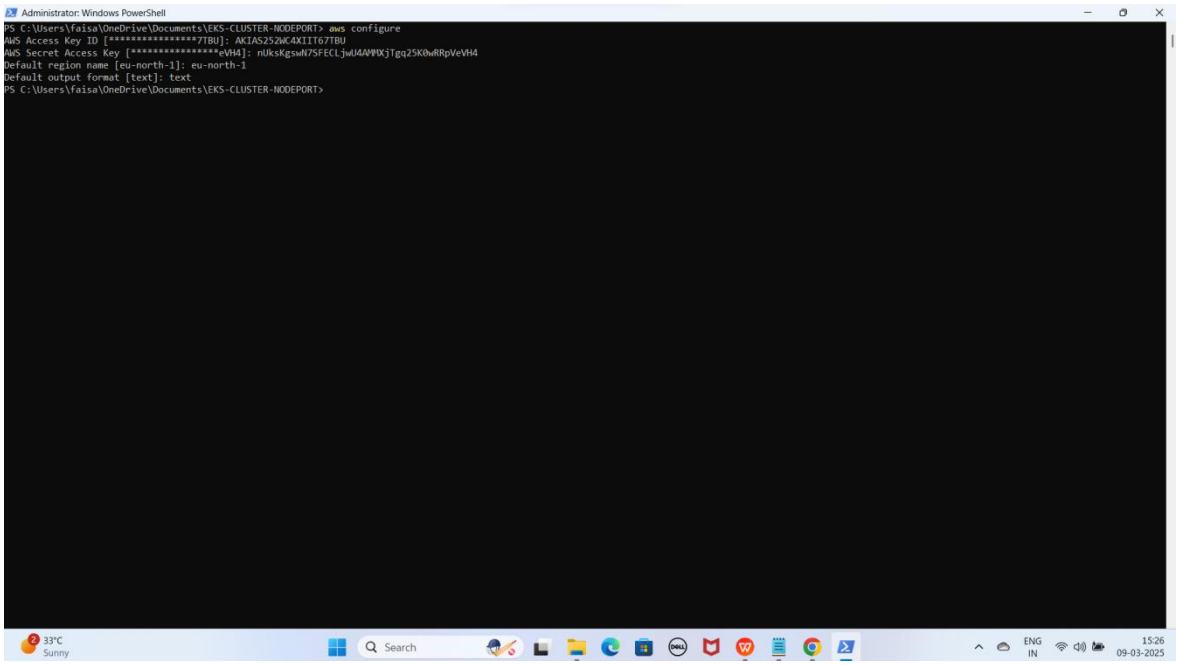
YE KUCH ISTARHA LAGEGA



2. Details Enter Karo

- **AWS Access Key ID**: XXXXXXXXXXXXXXX
- **AWS Secret Access Key**: XXXXXXXXXXXXXXXXXXXXX
- **Default Region**: eu-north-1
- **Output Format**: text

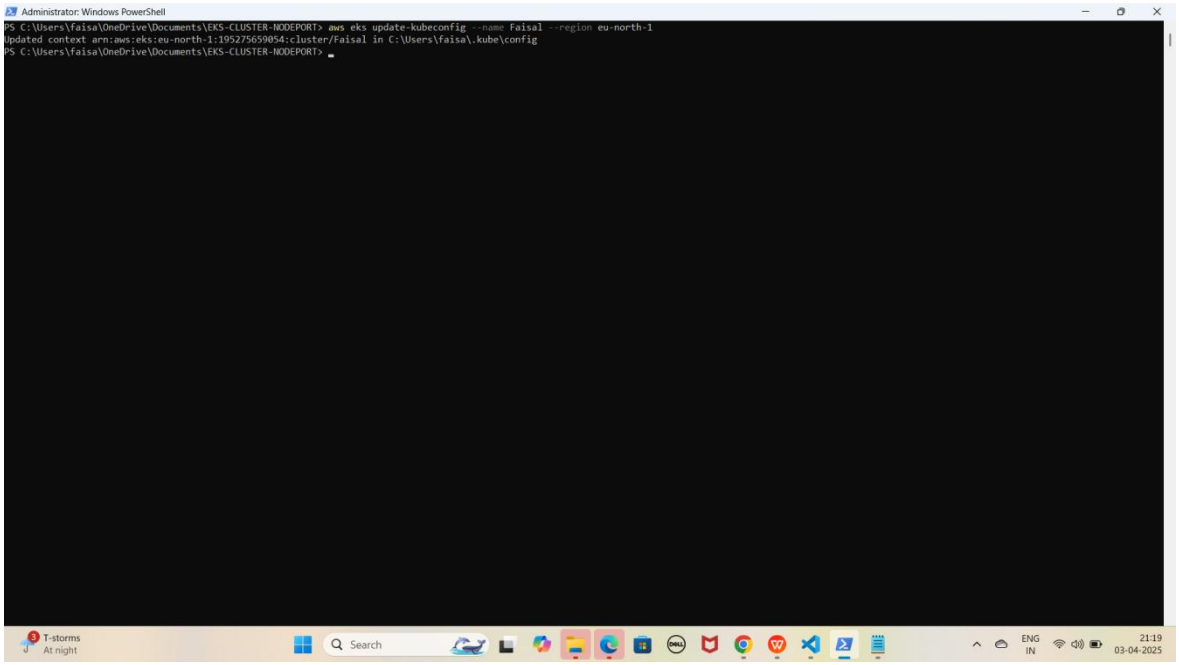
YE KUCH ISTARHA LAGEGA



3. EKS Clsuter se Connect karne ke liye ye command run kariye

aws eks update-kubeconfig --name Faisal --region eu-north-1

YE KUCH ISTARHA LAGEGA



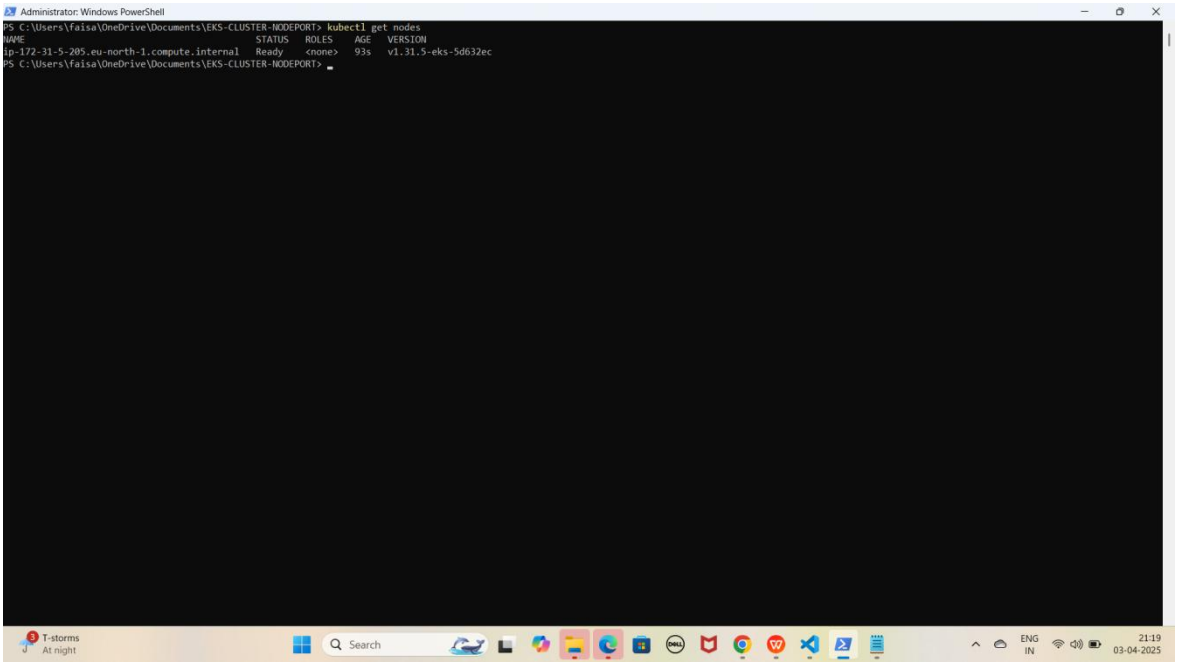
NOTE: Yaha par Faisal mere cluster ka name hai aap ke case me cluster ka name alag hosakta hai to according to your cluster name command aapke cluster name se Replace karo or ye hum Stockholm region me karrahe hai

Step 14: Nodes Check Karna

1. **Check Karo Ke Node Sahi Se Ready Hai Ya Nahi**

   kubectl get nodes

YE KUCH ISTARHA LAGEGA



NOTE: Agar Output Mein Node "Ready" STATUS Mein Hai To Setup Complete Hai.

Part 2: Nginx pods and Service Deployment

Step 1: nginx-deployment.yaml File Ka Kaam

Yeh **file NGINX ke 3 replicas create** karne ke liye use hoti hai. Isko **Kubernetes Deployment** ke andar likha jata hai.

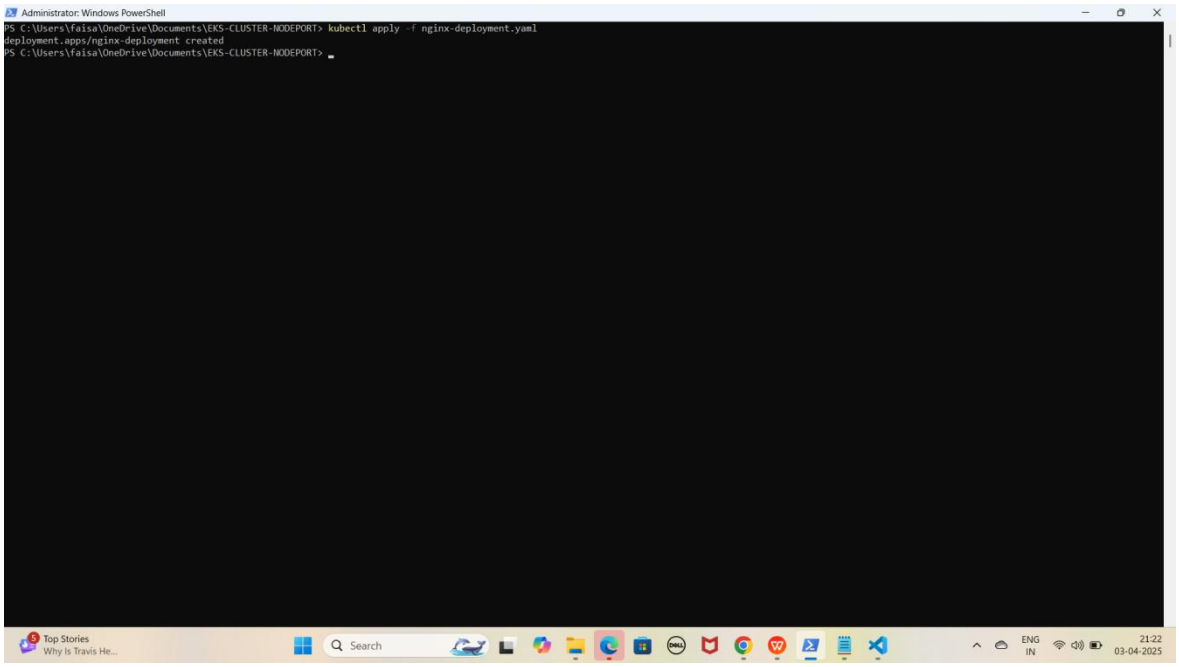
JAISE KI:-

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  replicas: 3  # 3 replicas for high availability
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:latest  # Latest Nginx image
          ports:
            - containerPort: 80  # Expose port 80 in the container
```

Deployment Apply Karo

kubectl apply -f nginx-deployment.yaml

YE KUCH ISTARHA LAGEGA



Step 2: nginx-nodeport-service.yaml File Ka Kaam

Yeh **file NGINX pods** ko **expose** karne ke liye use hoti hai. Isme **NodePort service** define ki jati hai jo **NGINX pods** ko port **30007** par **access** karne ki ijazat deti hai.

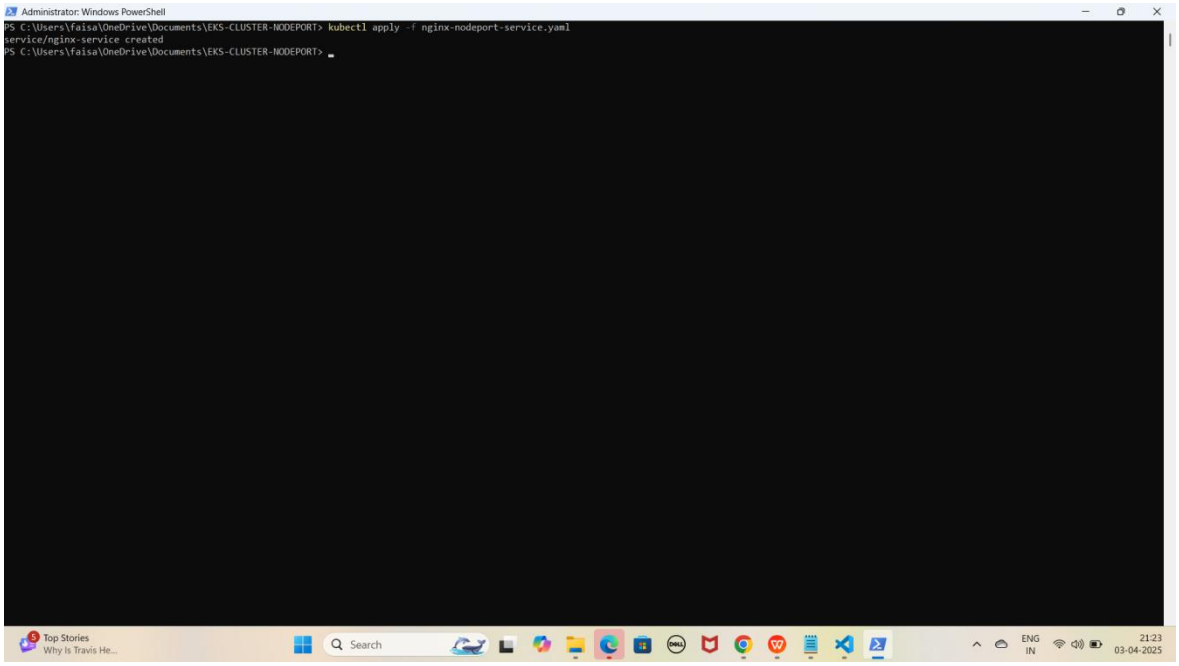
JAISE KI:-

```yaml
apiVersion: v1
kind: Service
metadata:
  name: nginx-service
spec:
  selector:
    app: nginx
  ports:
    - port: 80  # Port inside the cluster
      targetPort: 80  # Port to forward traffic to in the container
      nodePort: 30007  # External port on which the service will be accessible
  type: NodePort  # Type set to NodePort to expose externally
```

Nginx Service Apply Karo

kubectl apply -f nginx-nodeport-service.yaml

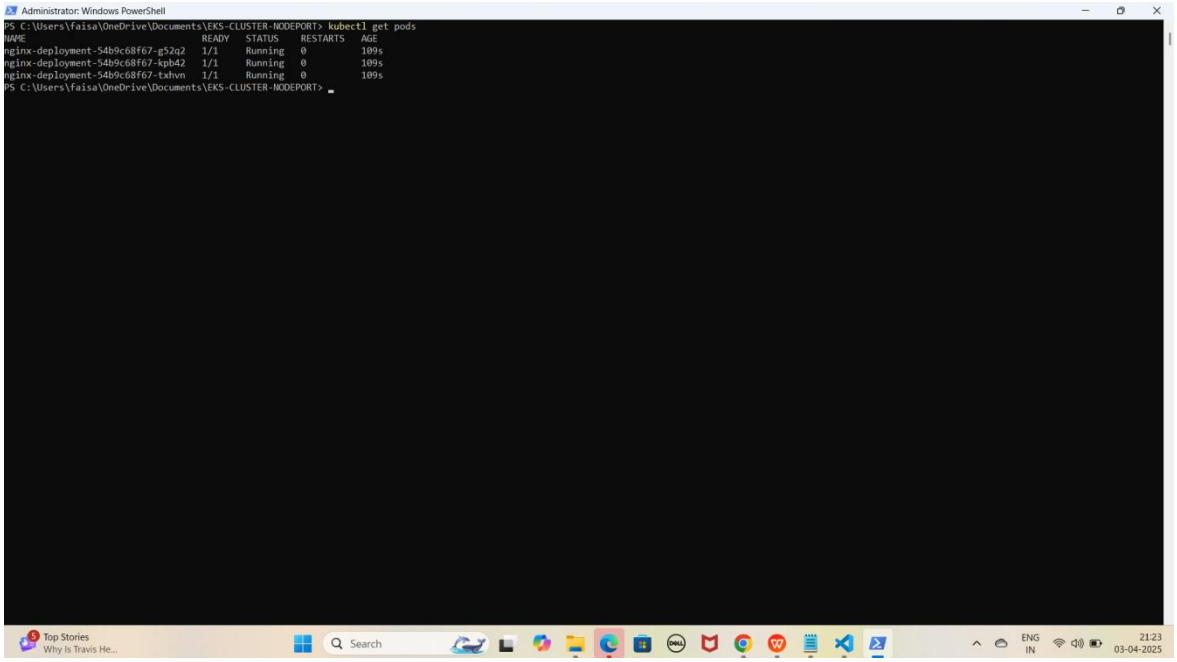
YE KUCH ISTARHA LAGEGA



1. Pods check karne ke liye ye command run kariye

kubectl get pods

YE KUCH ISTARHA LAGEGA

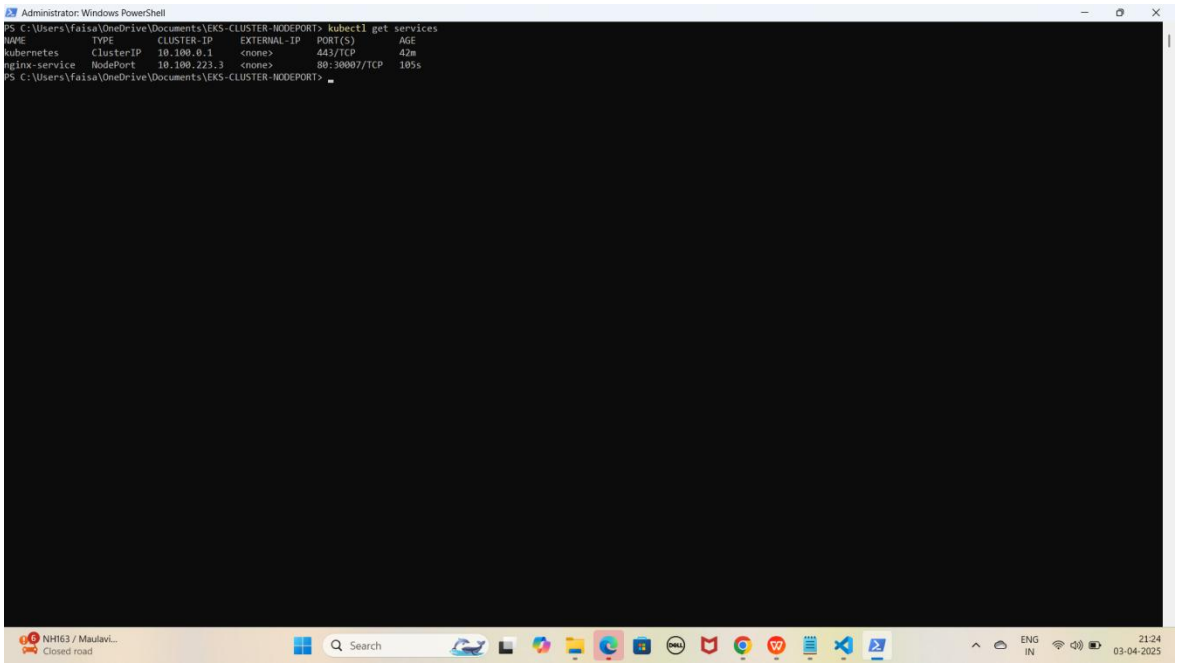


NOTE: Agar STATUS Running show karraha hai to sab kuch sahi hai

2. Serives check karne ke liye ye commad run kariye

kubectl get services

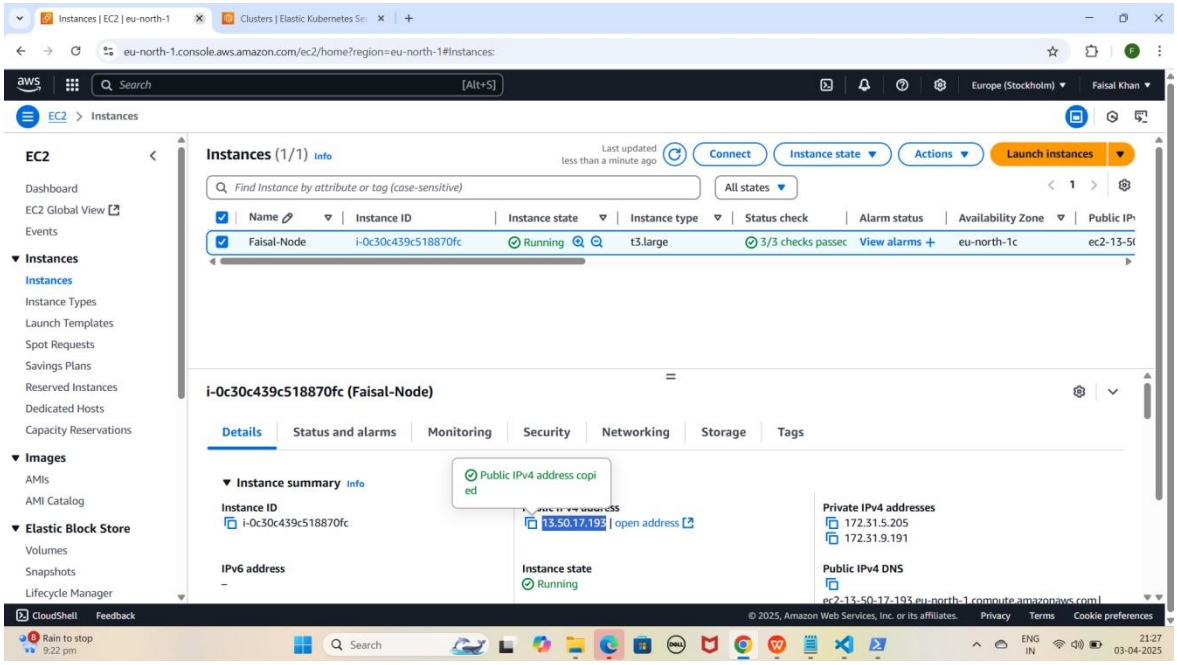
YE KUCH ISTARHA LAGEGA

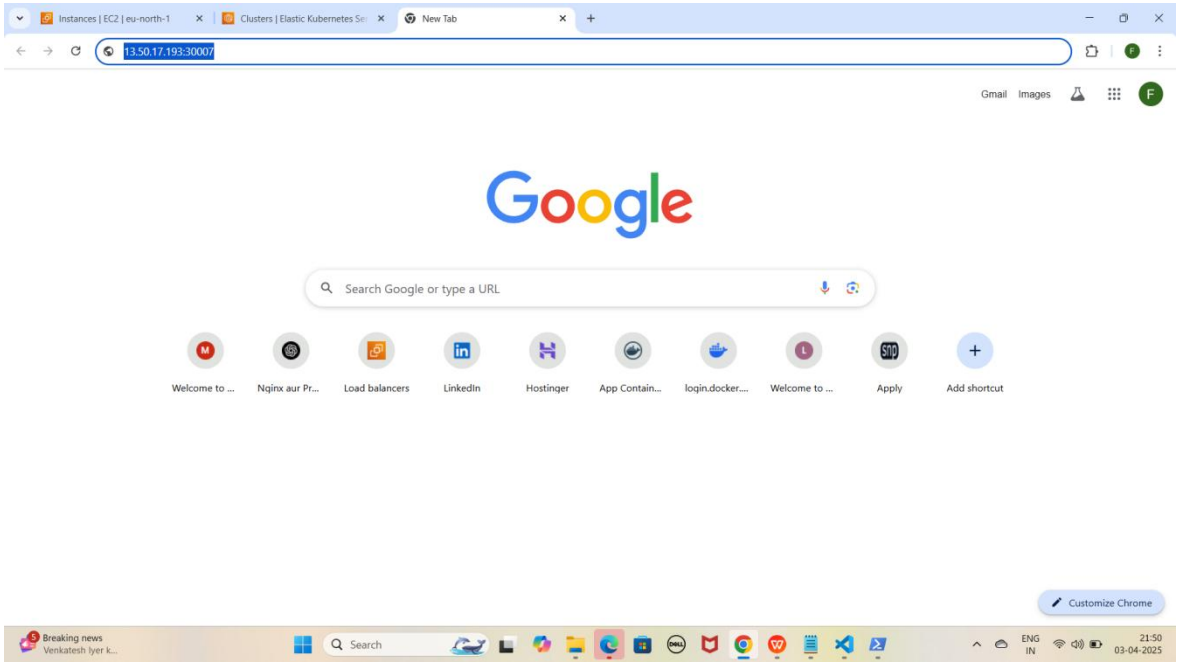


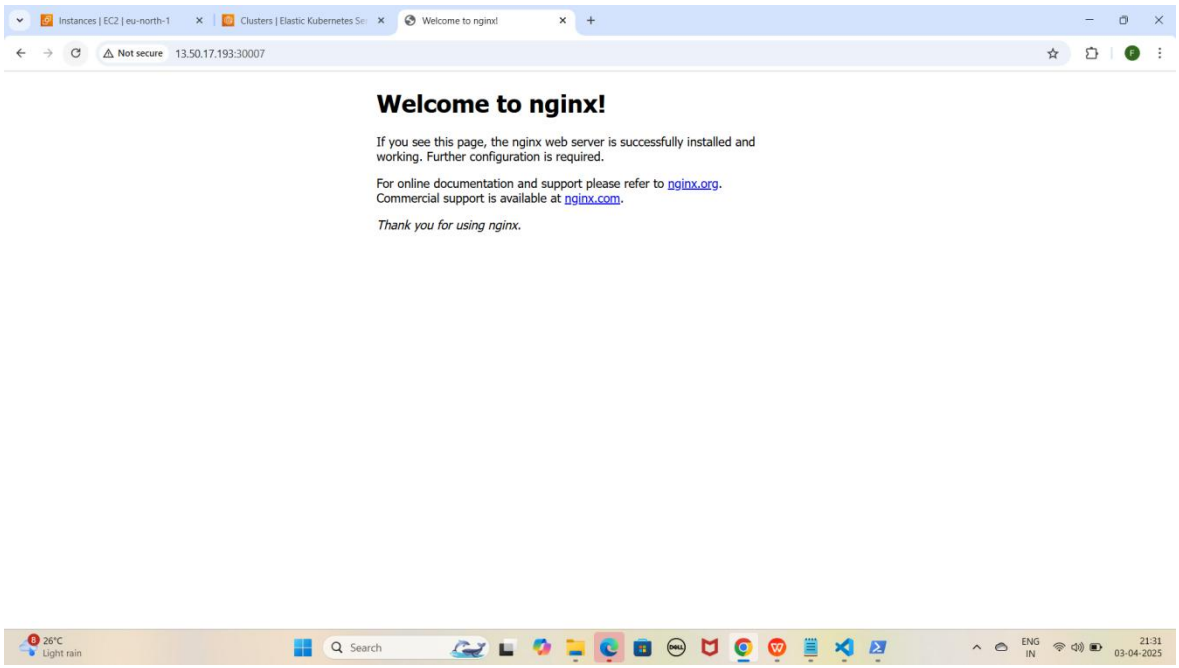
NOTE: Ab aapka Nginx expose ho chuka hai aapke EKS Node ka Public IP Address lekar with Nodeport browser me run kariye. Jaise ki mere case me kuch aisa hoga

NGINX NodePort Address :
http://EKS-Node-Public IP:30007

YE KUCH ISTARHA LAGEGA






Instances | EC2 | eu-north-1
Clusters | Elastic Kubernetes Se
Welcome to nginx!
Not secure
13.50.17.193:30007
Welcome to nginx!
If you see this page, the nginx web server is successfully installed and working. Further configuration is required.
For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.
Thank you for using nginx.
26°C
Light rain
Search
ENG
IN
21:31
03-04-2025

Part 3: Registering a Domain Name on Hostinger (From Sign-Up to Purchase)

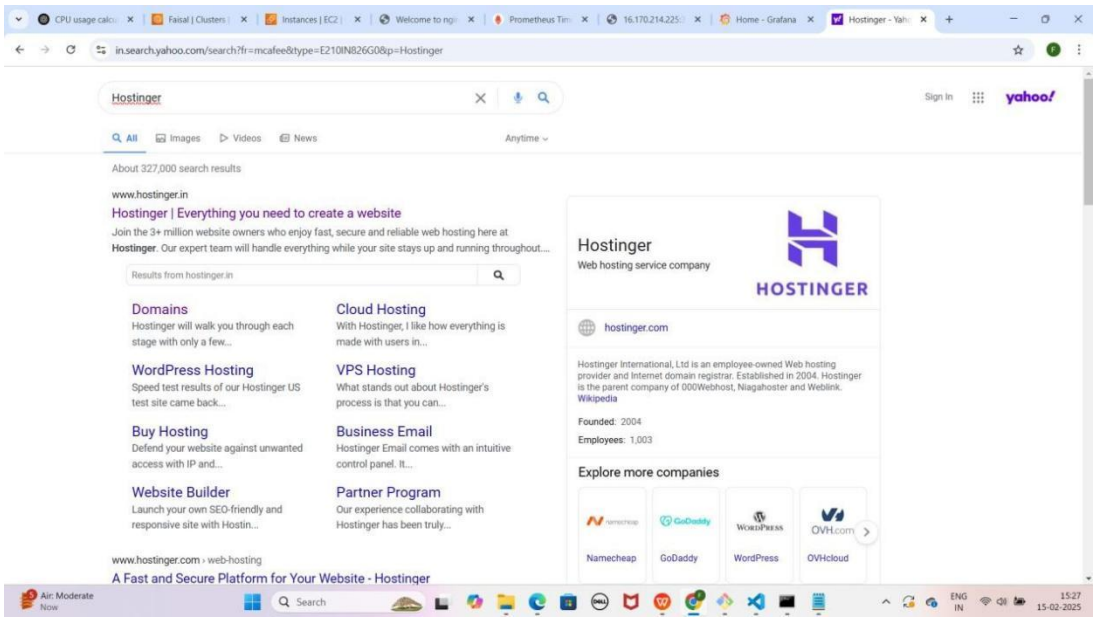
Step 1: Domain Name Provider Choose Karo

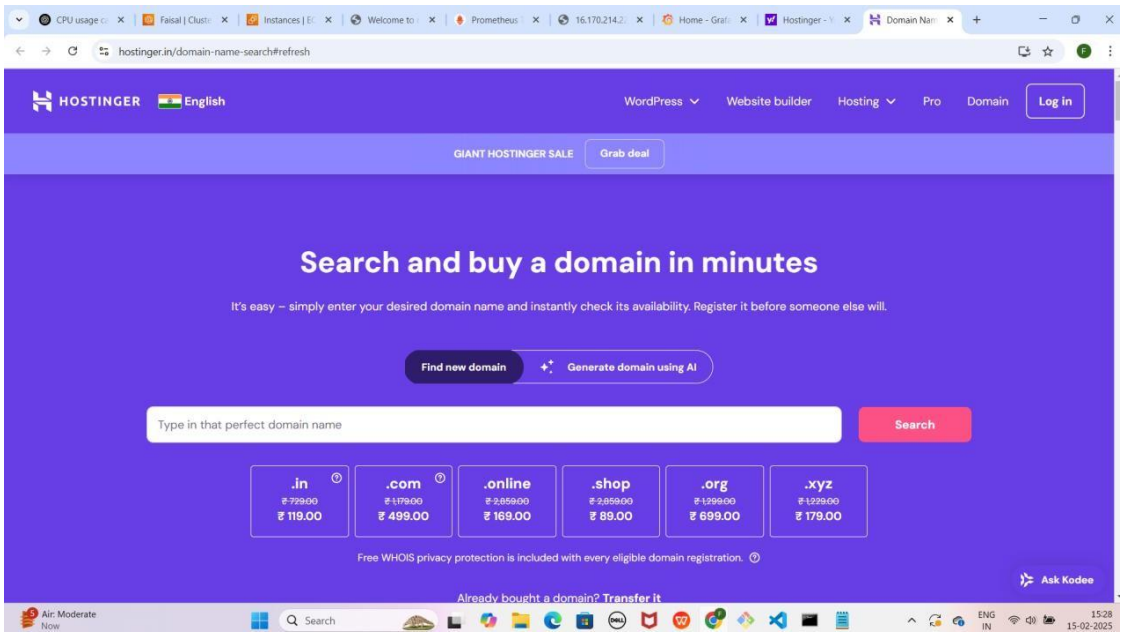
- Tumhe **GoDaddy, AWS (Route 53), ya Hostinger** jaisa **domain** provider chahiye
- Main yahan **Hostinger** use kar raha hoon

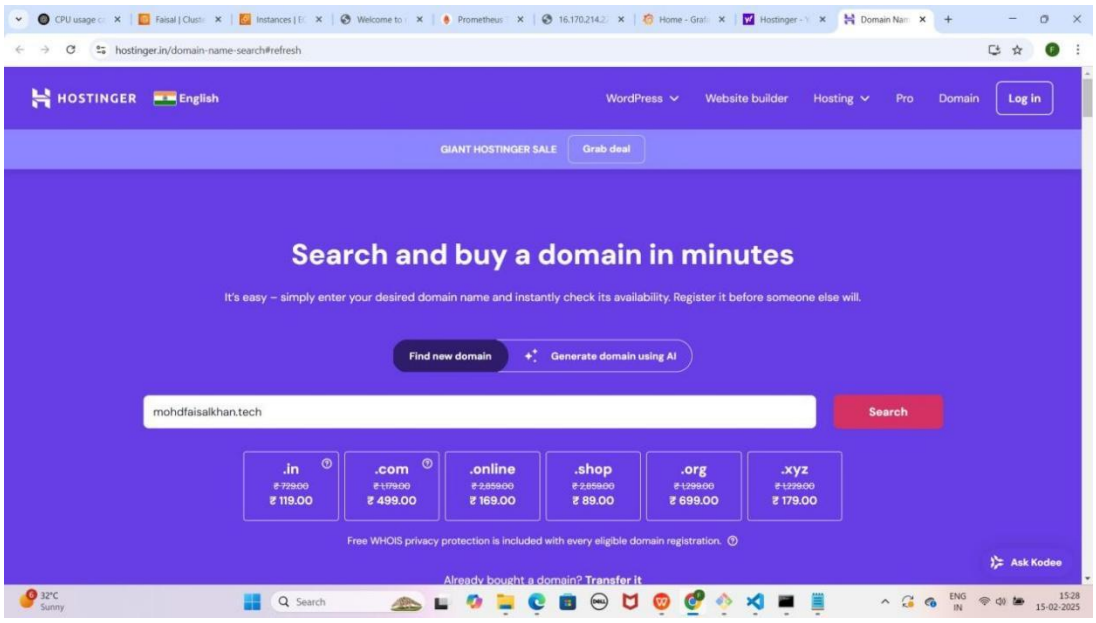
Step 2: Hostinger Pe Domain Search Karo

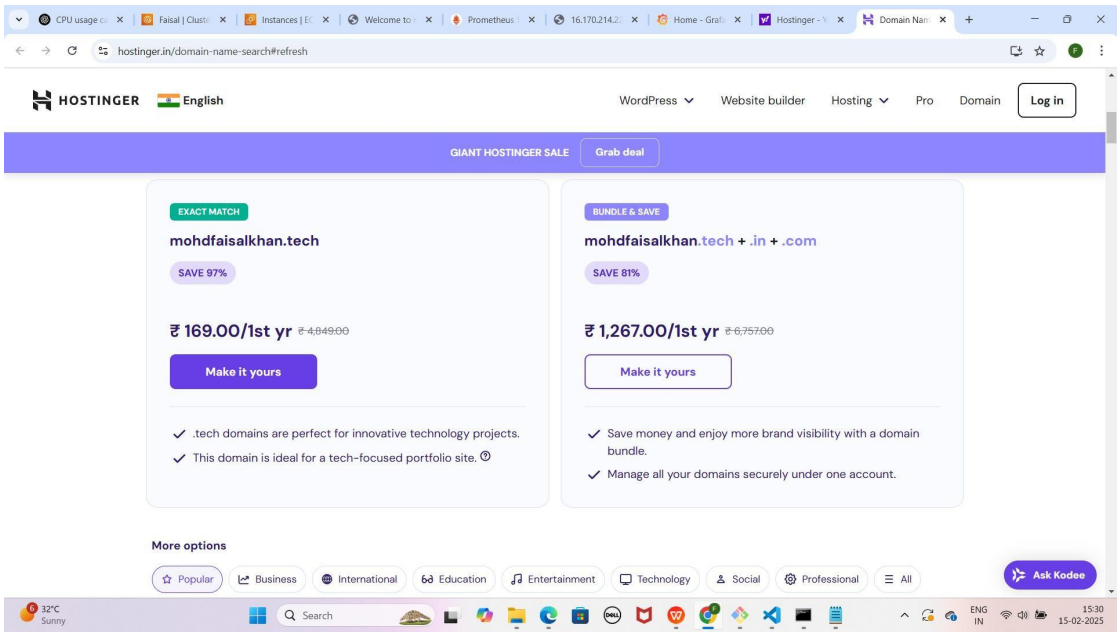
- **Google** pe jao aur **"Hostinger"** search karo
- **"Domains"** pe click karo
- Search bar me apna desired **domain** likho (Jaise: **mohdfaisalkhan.tech**)
- (Aapke Name se Search Karo)
- **Search button** pe **click** karo

YE KUCH ISTARHA LAGEGA




hostinger.in/domain-name-search#refresh
HOSTINGER
English
WordPress
Website builder
Hosting
Pro
Domain
Log in
GIANT HOSTINGER SALE
Grab deal
Search and buy a domain in minutes
It's easy – simply enter your desired domain name and instantly check its availability. Register it before someone else will.
Find new domain
Generate domain using AI
Type in that perfect domain name
Search
.in
₹ 729.00
₹ 119.00
.com
₹ 1,179.00
₹ 499.00
.online
₹ 2,859.00
₹ 169.00
.shop
₹ 2,859.00
₹ 89.00
.org
₹ 1,299.00
₹ 699.00
.xyz
₹ 1,229.00
₹ 179.00
Free WHOIS privacy protection is included with every eligible domain registration.
Ask Kodee
Already bought a domain? Transfer it
Air: Moderate
Now
Search
ENG
IN
15:28
15-02-2025

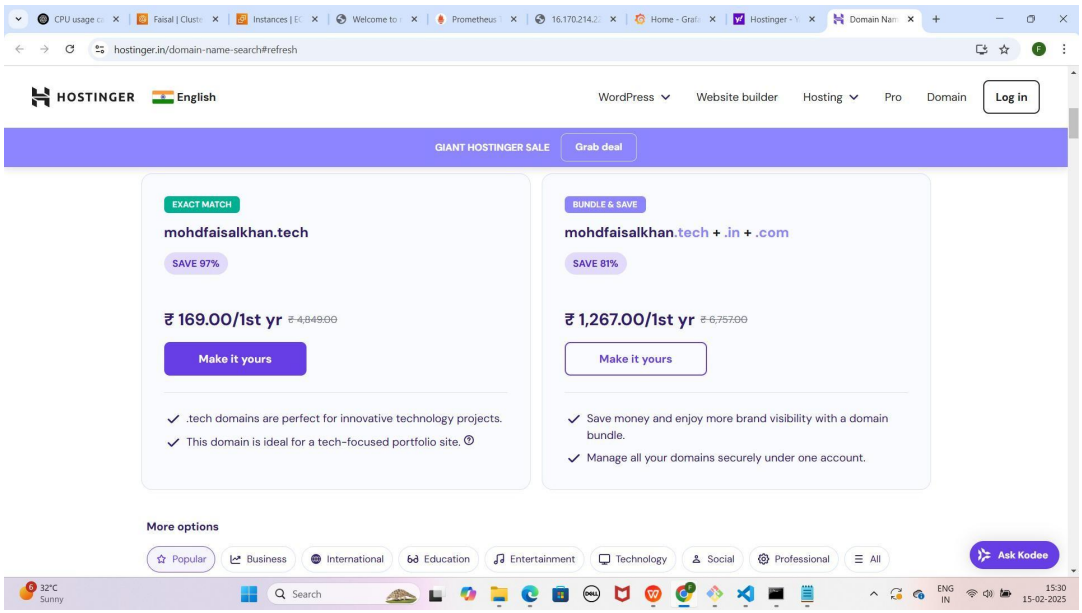

hostinger.in/domain-name-search#refresh
HOSTINGER
English
WordPress
Website builder
Hosting
Pro
Domain
Log in
GIANT HOSTINGER SALE
Grab deal
Search and buy a domain in minutes
It's easy – simply enter your desired domain name and instantly check its availability. Register it before someone else will.
Find new domain
Generate domain using AI
mohdfaisalkhan.tech
Search
.in
₹ 729.00
₹ 119.00
.com
₹ 1,179.00
₹ 499.00
.online
₹ 2,859.00
₹ 169.00
.shop
₹ 2,859.00
₹ 89.00
.org
₹ 1,299.00
₹ 699.00
.xyz
₹ 1,229.00
₹ 179.00
Free WHOIS privacy protection is included with every eligible domain registration.
Ask Kodee
Already bought a domain? Transfer it
32°C
Sunny
Search
ENG
IN
15:28
15-02-2025

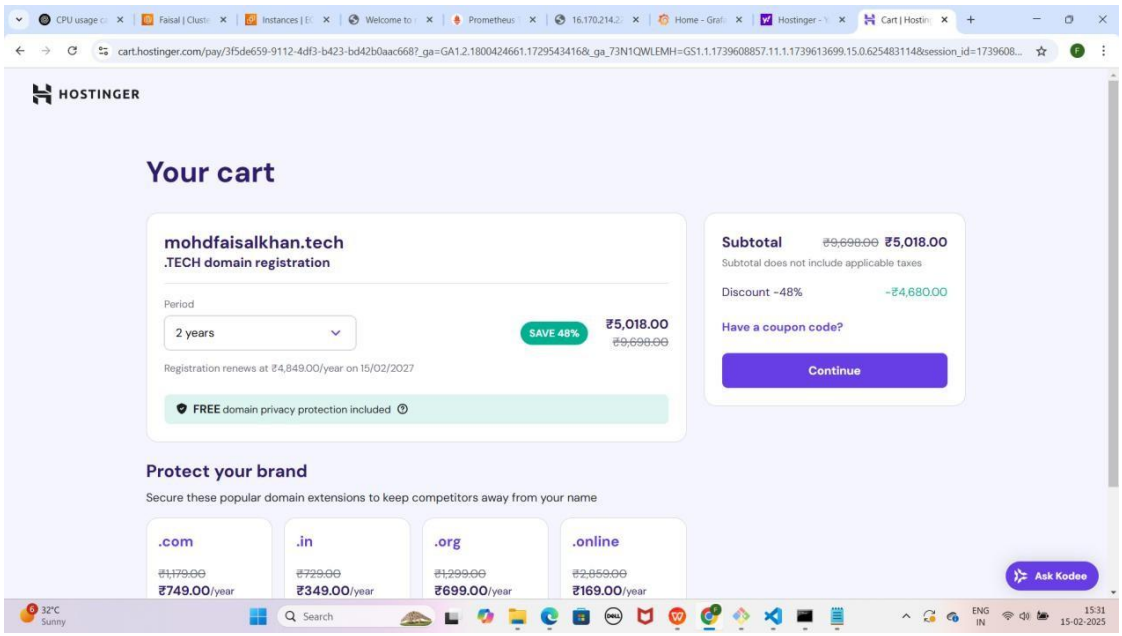


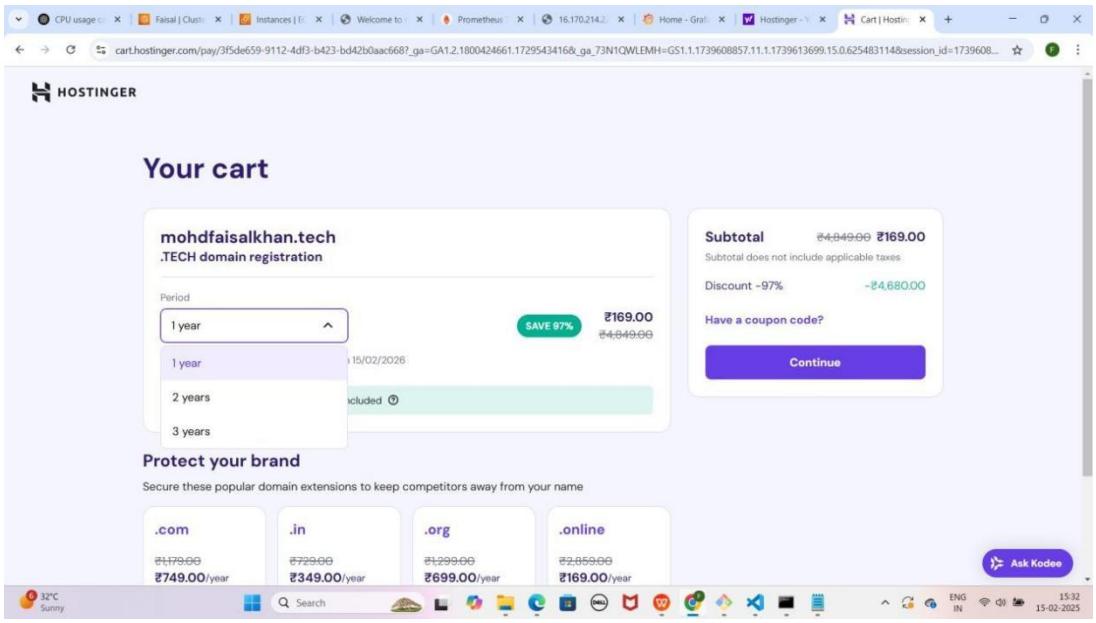
Step 3: Domain Select Karo

- **"Make it Yours"** pe click karo
- 1-year period select karo
- **Continue** button pe click karo

YE KUCH ISTARHA LAGEGA




HOSTINGER
Your cart
mohdfaisalkhan.tech
.TECH domain registration
Period
2 years
SAVE 48%
₹5,018.00
₹9,698.00
Registration renews at ₹4,849.00/year on 15/02/2027
FREE domain privacy protection included
Subtotal
₹9,698.00 ₹5,018.00
Subtotal does not include applicable taxes
Discount -48%
-₹4,680.00
Have a coupon code?
Continue
Protect your brand
Secure these popular domain extensions to keep competitors away from your name
.com
₹1,179.00
₹749.00/year
.in
₹729.00
₹349.00/year
.org
₹1,299.00
₹699.00/year
.online
₹2,859.00
₹169.00/year
Ask Kodee


HOSTINGER
Your cart
mohdfaisalkhan.tech
.TECH domain registration
Period
1 year
1 year
2 years
3 years
SAVE 97%
₹169.00
₹4,849.00
Subtotal
₹4,849.00 ₹169.00
Subtotal does not include applicable taxes
Discount -97%
-₹4,680.00
Have a coupon code?
Continue
Protect your brand
Secure these popular domain extensions to keep competitors away from your name
.com
₹1,179.00
₹749.00/year
.in
₹729.00
₹349.00/year
.org
₹1,299.00
₹699.00/year
.online
₹2,859.00
₹169.00/year
Ask Kodee

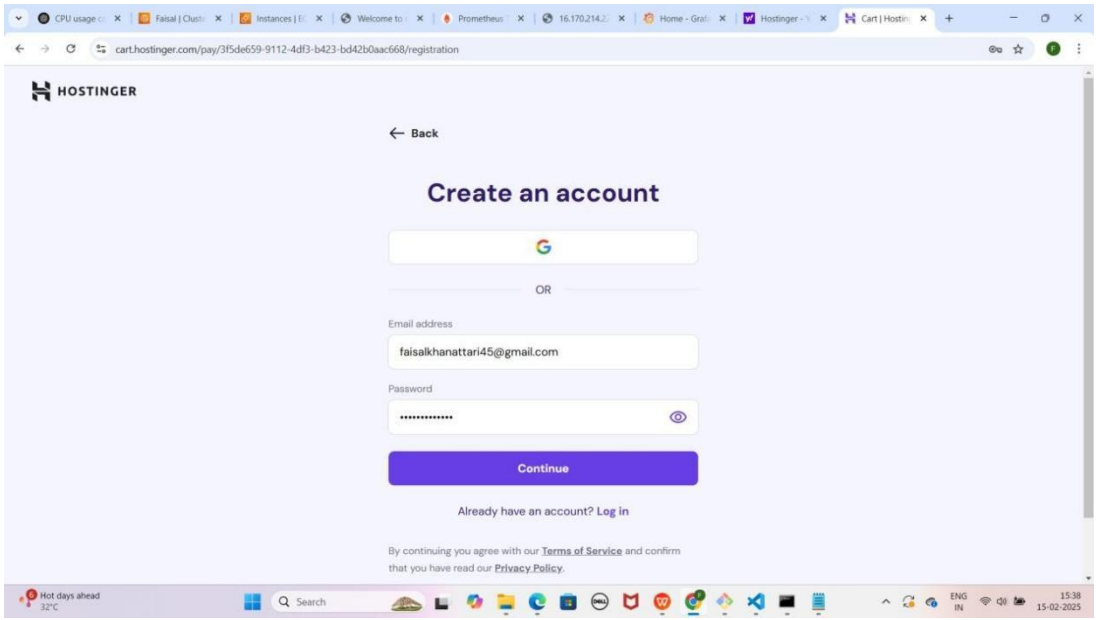
Step 4: Account Create Karo

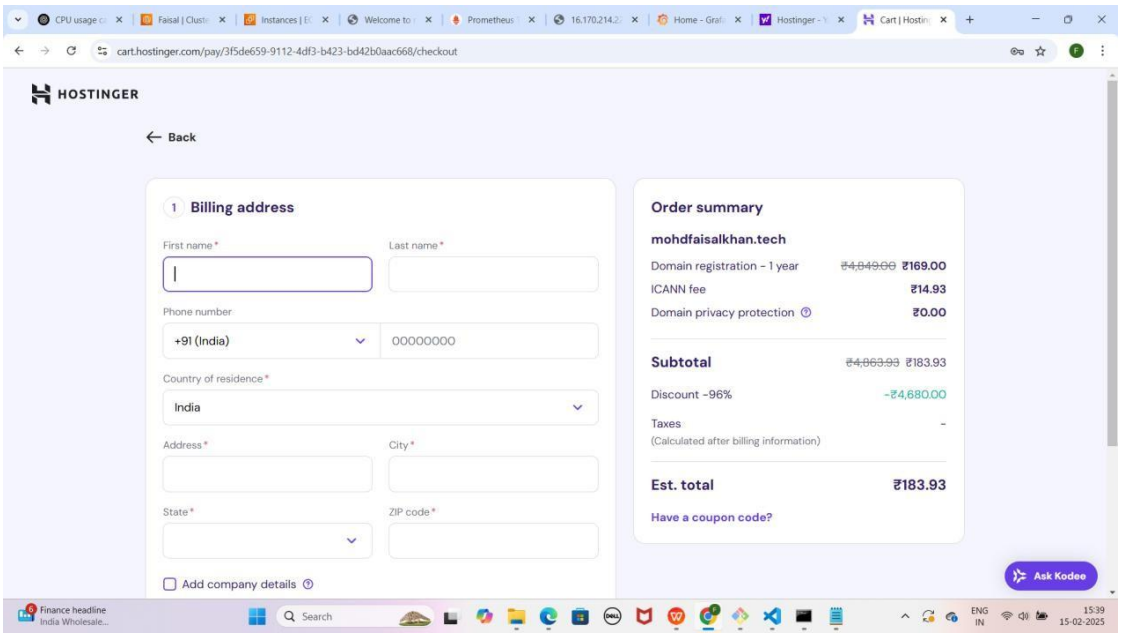
- **Create an Account Page** pe **Email** aur **Password** enter karo then continue pe click karo
- **Billing Address** details fill karo
- **Continue** button pe click karo

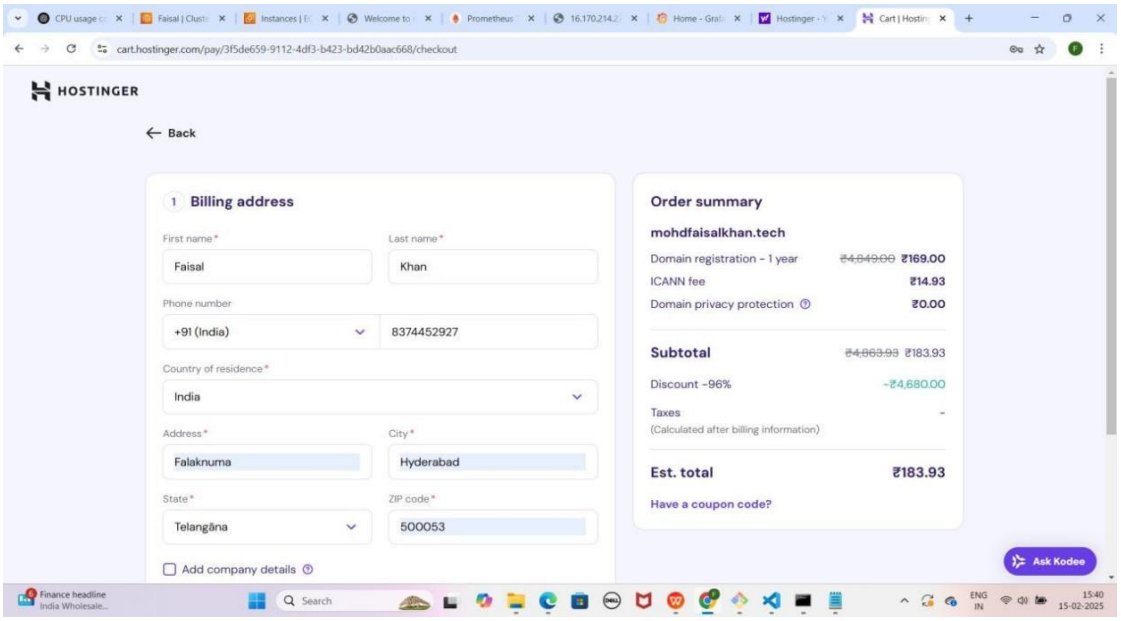
Step 5: Payment Complete Karo Or Login Karke Domain Registration Complete Karo

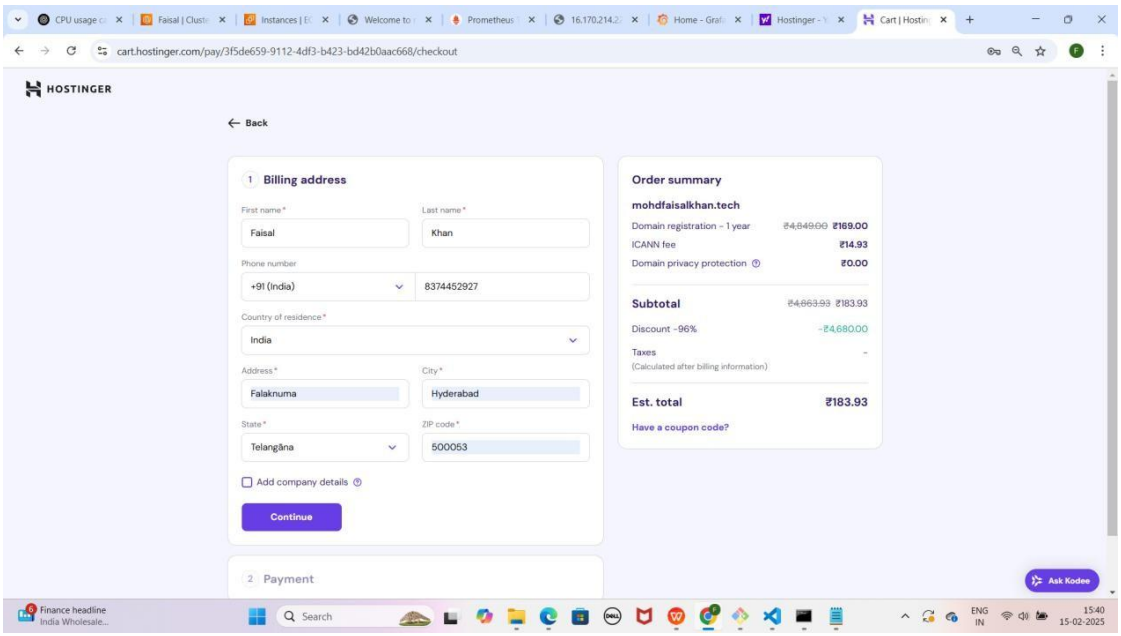
- **UPI** option select karo Submit payment pe click karo or upi payment complete karo
- **Order Summary** dekho, phir **Continue** pe click karo
- **QR Code** scan karo aur **PhonePe, Paytm,** ya **Google Pay** se payment complete karo

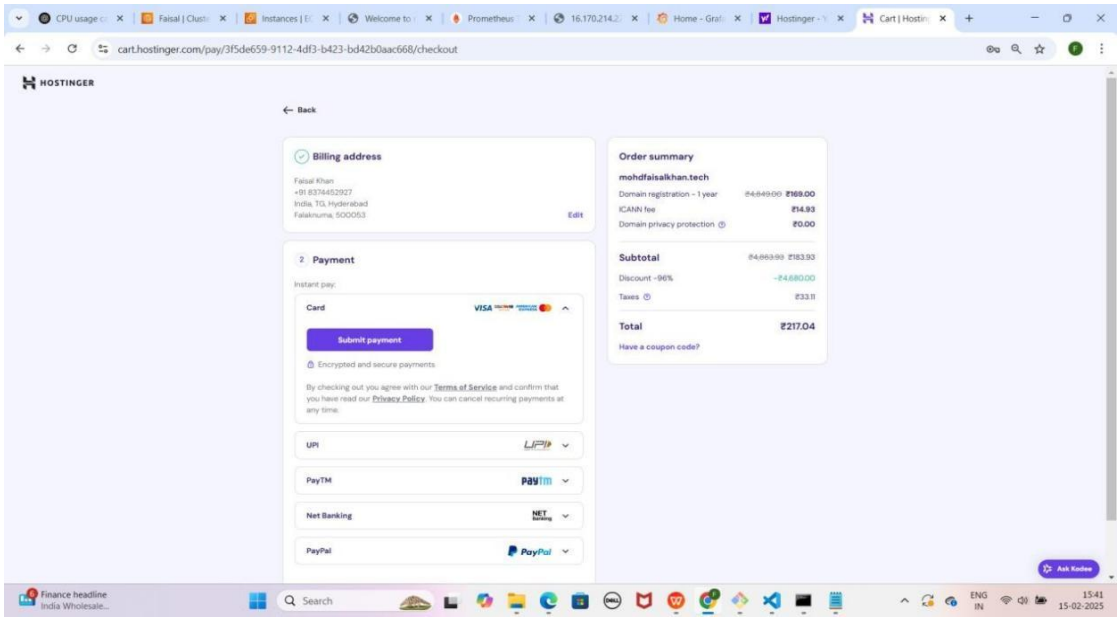
YE KUCH ISTARHA LAGEGA

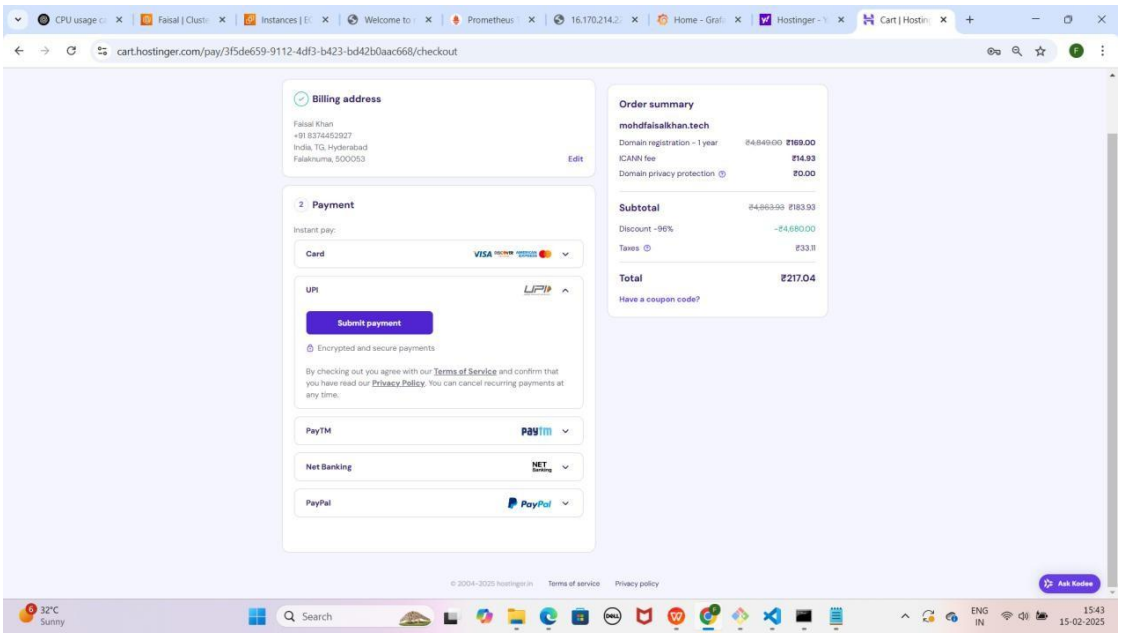


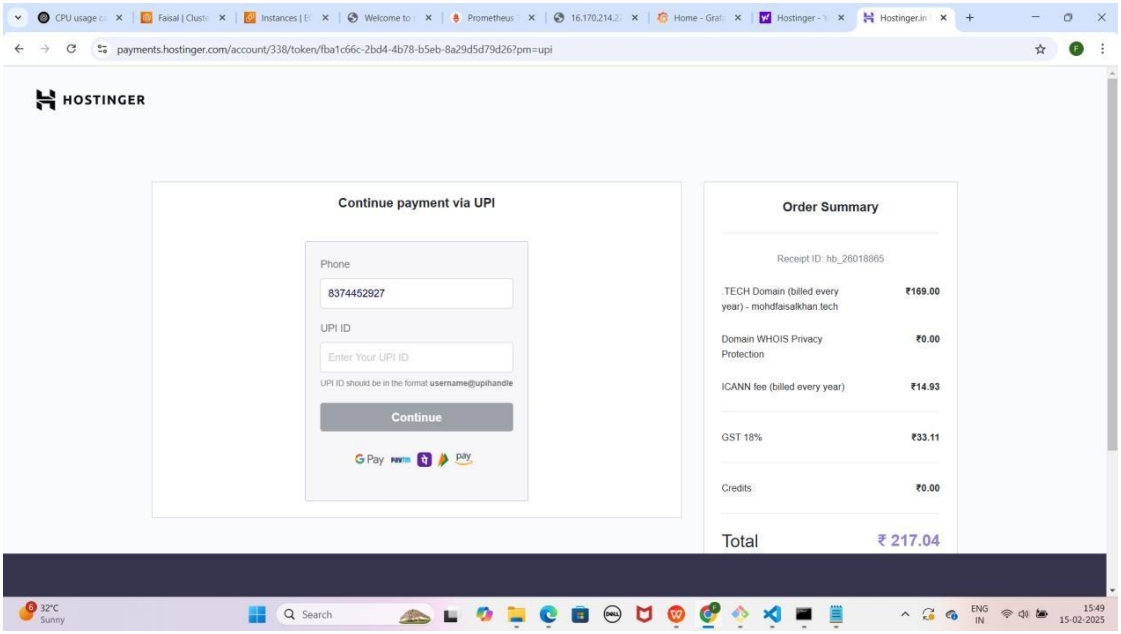

cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout
HOSTINGER
Back
1 Billing address
First name *
Last name *
Phone number
+91 (India)
00000000
Country of residence *
India
Address *
City *
State *
ZIP code *
Add company details
Order summary
mohdfaisalkhan.tech
Domain registration - 1 year
₹4,849.00 ₹169.00
ICANN fee
₹14.93
Domain privacy protection
₹0.00
Subtotal
₹4,863.93 ₹183.93
Discount -96%
-₹4,680.00
Taxes
(Calculated after billing information)
Est. total
₹183.93
Have a coupon code?
Ask Kodee
Search
ENG
IN
15:39
15-02-2025


cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout
HOSTINGER
Back
1 Billing address
First name *
Faisal
Last name *
Khan
Phone number
+91 (India)
8374452927
Country of residence *
India
Address *
Falaknuma
City *
Hyderabad
State *
Telangāna
ZIP code *
500053
Add company details
Order summary
mohdfaisalkhan.tech
Domain registration - 1 year
₹4,849.00 ₹169.00
ICANN fee
₹14.93
Domain privacy protection
₹0.00
Subtotal
₹4,863.93 ₹183.93
Discount -96%
-₹4,680.00
Taxes
(Calculated after billing information)
Est. total
₹183.93
Have a coupon code?
Ask Kodee
Search
ENG
IN
15:40
15-02-2025


cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout
HOSTINGER
Back
1 Billing address
First name *
Faisal
Last name *
Khan
Phone number
+91 (India)
8374452927
Country of residence *
India
Address *
Falaknuma
City *
Hyderabad
State *
Telangāna
ZIP code *
500053
Add company details
Continue
2 Payment
Order summary
mohdfaisalkhan.tech
Domain registration - 1 year ₹4,849.00 ₹169.00
ICANN fee ₹14.93
Domain privacy protection ₹0.00
Subtotal ₹4,863.93 ₹183.93
Discount -96% -₹4,680.00
Taxes
(Calculated after billing information)
Est. total ₹183.93
Have a coupon code?
Ask Kodee
Finance headline
India Wholesale...
Search
ENG
IN
15:40
15-02-2025


cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout
HOSTINGER
Back
Billing address
Faisal Khan
+91 8374452927
India, TG, Hyderabad
Falaknuma, 500053
Edit
2 Payment
Instant pay
Card
Submit payment
Encrypted and secure payments
By checking out you agree with our Terms of Service and confirm that you have read our Privacy Policy. You can cancel recurring payments at any time.
UPI
PayTM
Net Banking
PayPal
Order summary
mohdfaisalkhan.tech
Domain registration - 1 year ₹4,849.00 ₹169.00
ICANN fee ₹14.93
Domain privacy protection ₹0.00
Subtotal ₹4,863.93 ₹183.93
Discount -96% -₹4,680.00
Taxes ₹33.11
Total ₹217.04
Have a coupon code?
Ask Kodee
Finance headline
India Wholesale...
Search
ENG
IN
15:41
15-02-2025





Note: Aapko neeche wala pop-up milega, tension mat lo, aap bas "Auto Pay" kar do, lekin baad mein aap isey PhonePe ke settings se cancel kar sakte ho. Abhi ke liye "Continue" pe click karo.

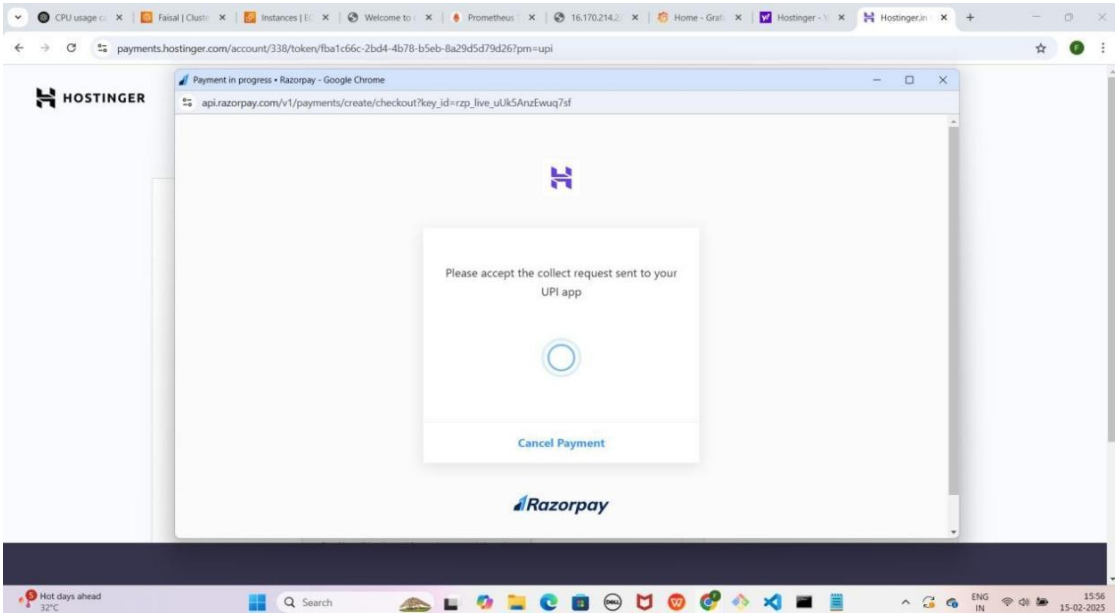
YE KUCH ISTARHA LAGEGA

This is a UPI AutoPay payment

You'll be charged ₹ 217.04 today.

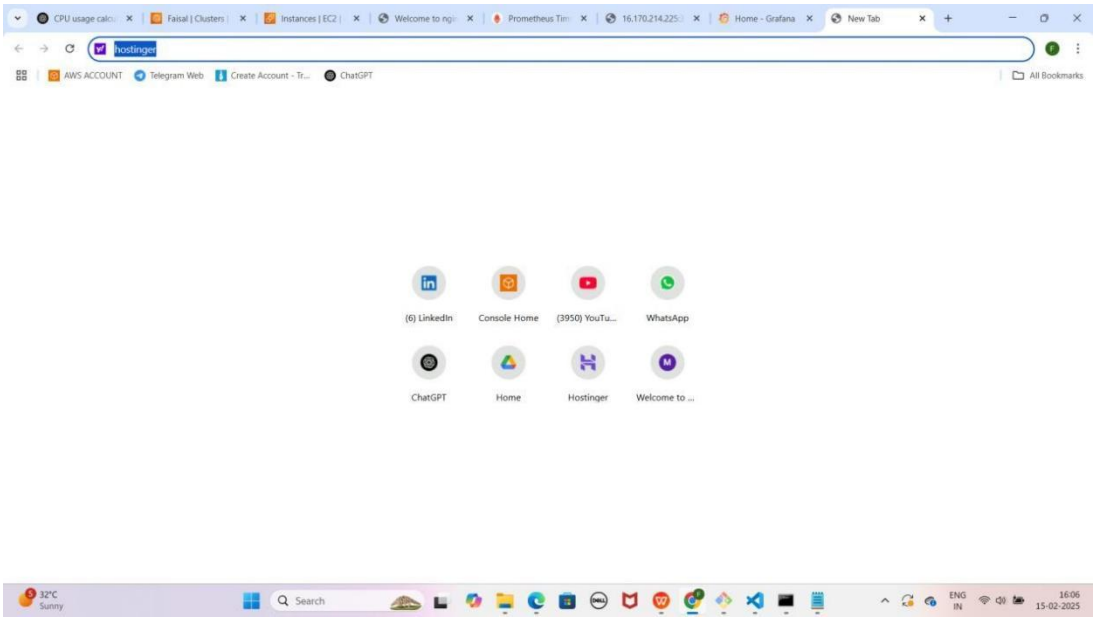
When you go to approve your payment, you will see the transaction limit of ₹ 7,500.00. **You won't be charged this amount.** The limit is set to automate your future payments (if any) and set up UPI AutoPay. Cancel AutoPay anytime.

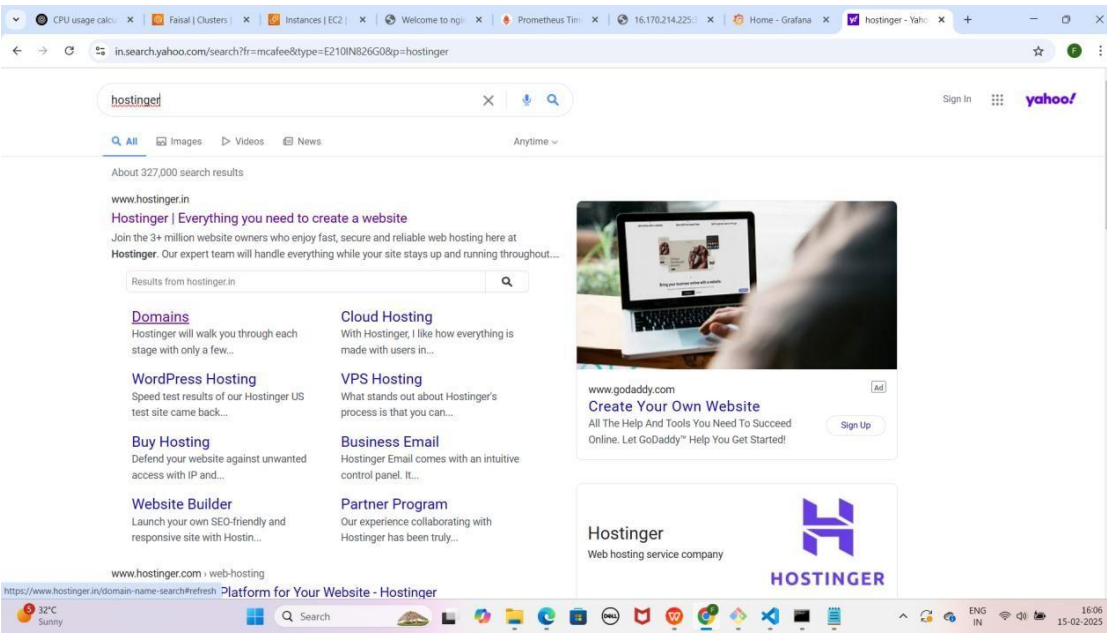
Continue

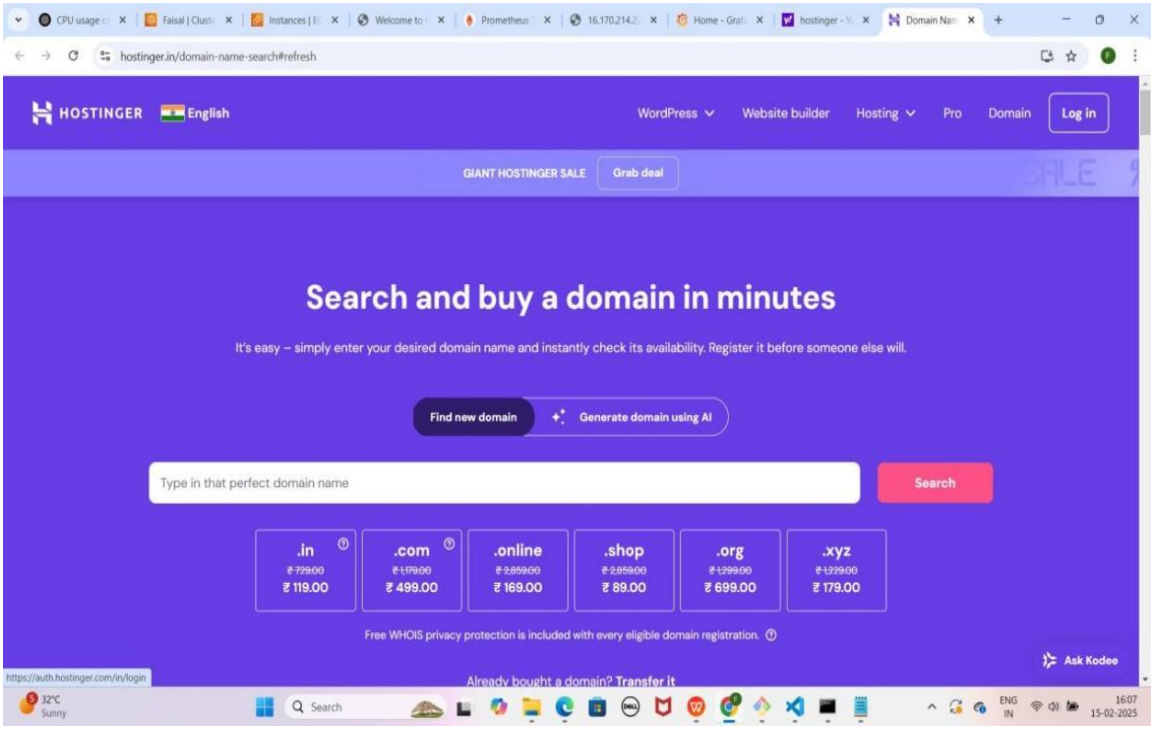


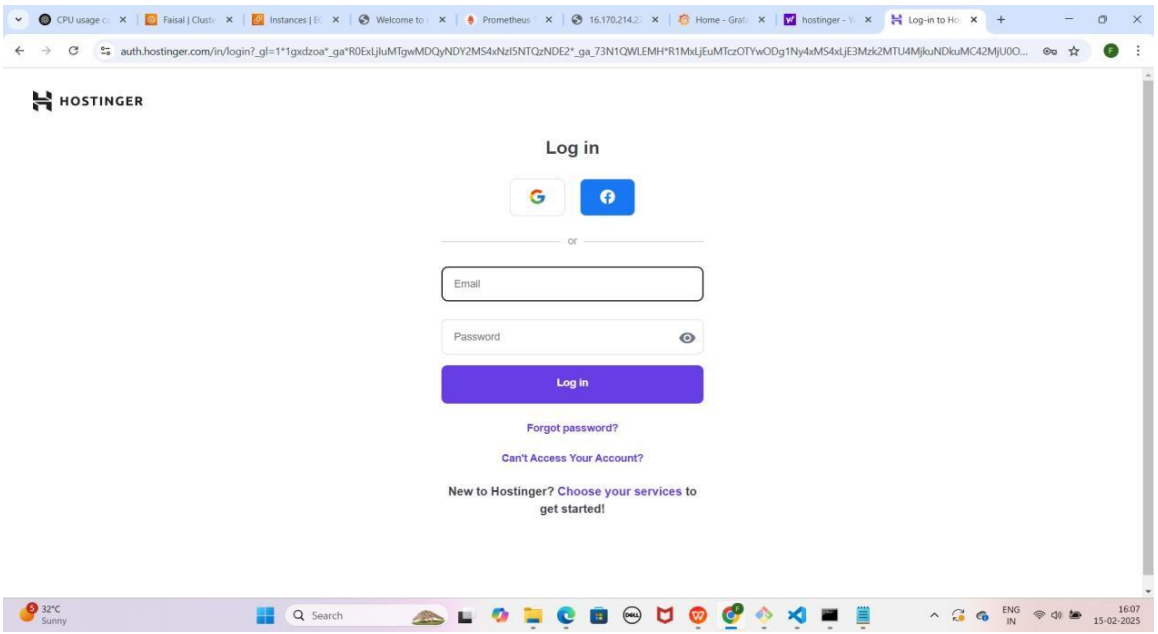
- **PhonePe** open karo aur **payment** complete karo
- **Browser** me new tab open karo aur **Google** me **Hostinger** search karo
- **Hostinger website** pe jao aur "**Domains**" pe **click** karo
- **Top right** corner pe "**Log in**" pe **click** karo
- **Email aur password enter** karo jo tumne pehle set kiya tha

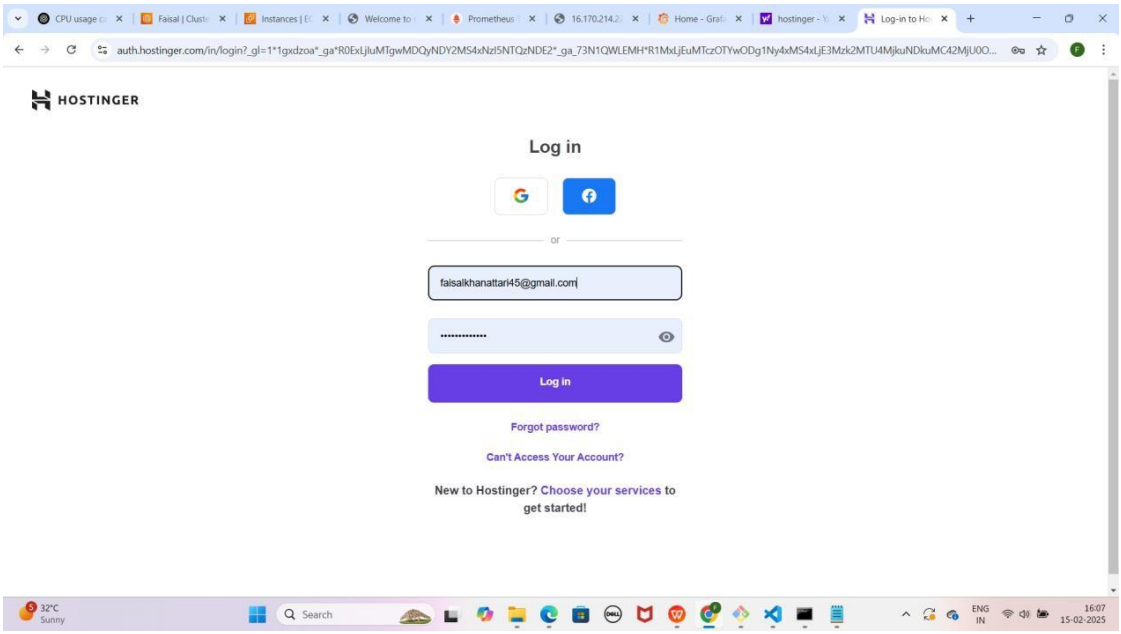
YE KUCH ISTARHA LAGEGA





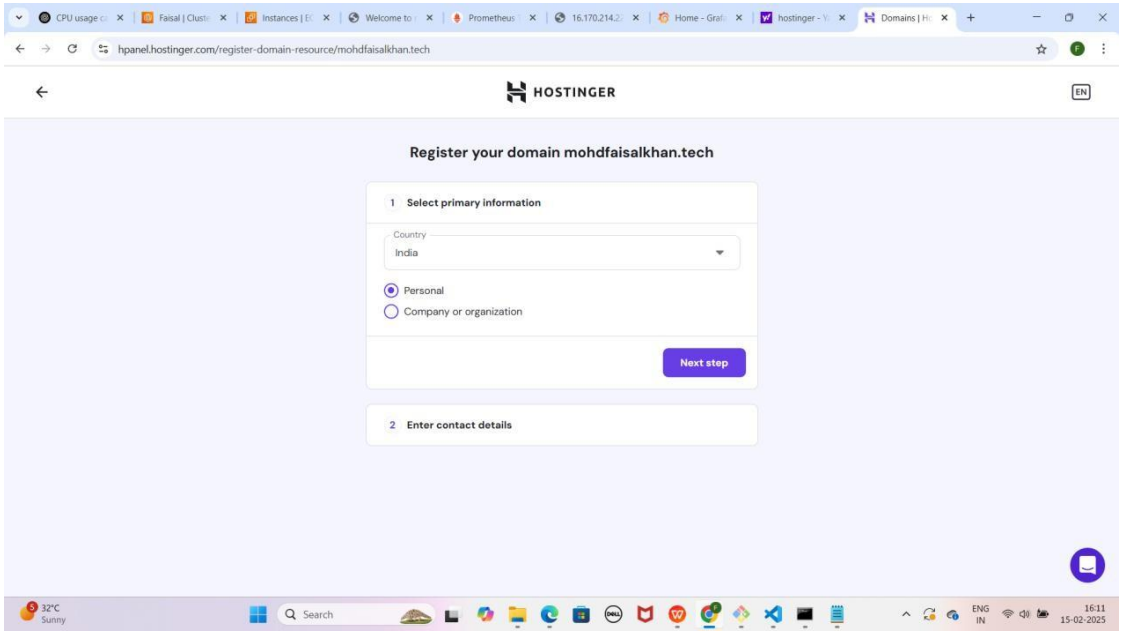

hostinger.in/domain-name-search#refresh
HOSTINGER
English
WordPress
Website builder
Hosting
Pro
Domain
Log in
GIANT HOSTINGER SALE
Grab deal
Search and buy a domain in minutes
It's easy – simply enter your desired domain name and instantly check its availability. Register it before someone else will.
Find new domain
Generate domain using AI
Type in that perfect domain name
Search
.in ₹ 729.00 ₹ 119.00
.com ₹ 1,179.00 ₹ 499.00
.online ₹ 2,859.00 ₹ 169.00
.shop ₹ 2,859.00 ₹ 89.00
.org ₹ 1,299.00 ₹ 699.00
.xyz ₹ 1,229.00 ₹ 179.00
Free WHOIS privacy protection is included with every eligible domain registration.
Ask Kodee
Already bought a domain? Transfer it
https://auth.hostinger.com/in/login
32°C Sunny
Search
ENG IN
16:07 15-02-2025

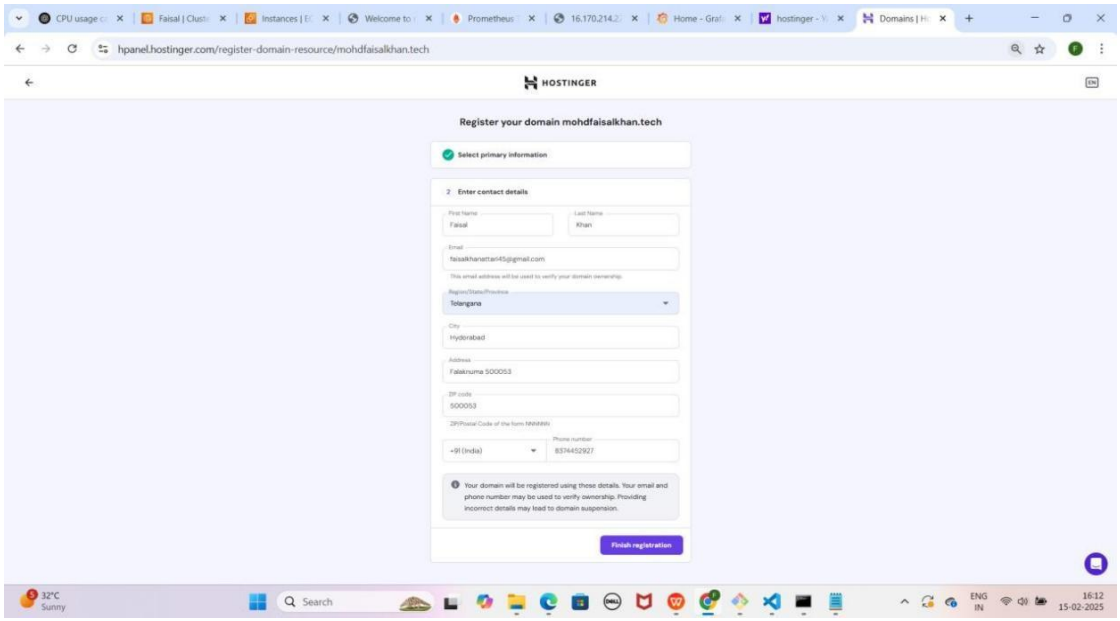

auth.hostinger.com/in/login?_gl=1*1gxdzoa*_ga*R0ExLjIuMTgwMDQyNDY2MS4xNzI5NTQzNDE2*_ga_73N1QWLEMH*R1MxLjEuMTczOTYwODg1Ny4xMS4xLjE3Mzk2MTU4MjkuNDkuMC42MjU0O...
HOSTINGER
Log in
or
Email
Password
Log in
Forgot password?
Can't Access Your Account?
New to Hostinger? Choose your services to get started!
32°C Sunny
Search
ENG IN
16:07 15-02-2025

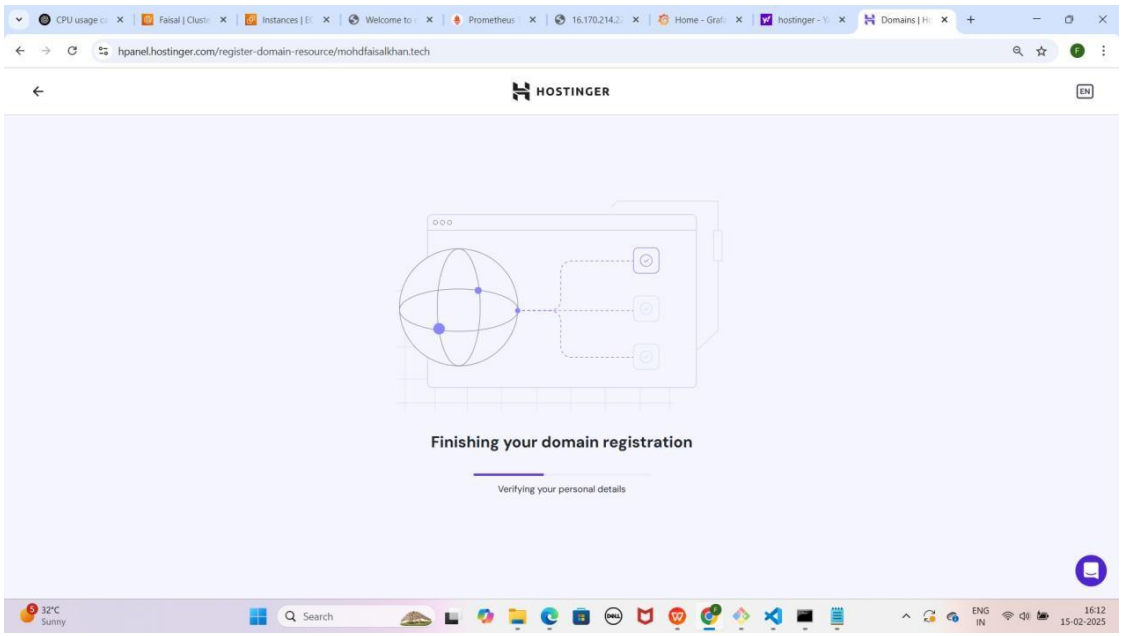


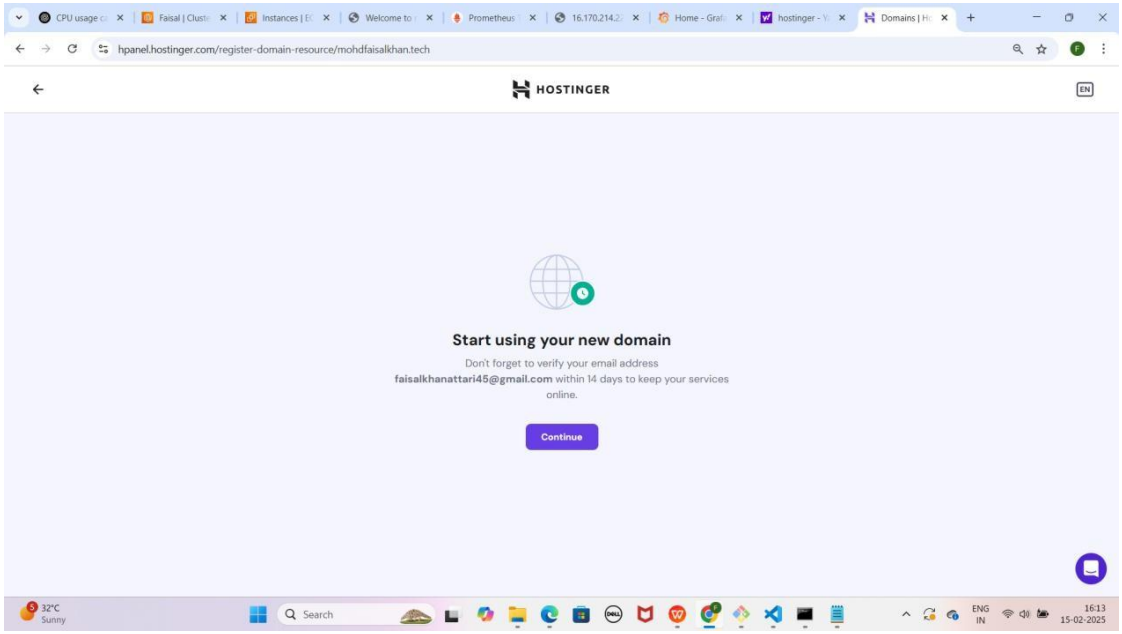
- **Login** karne ke baad tumhe **"Register your domain mohdfaisalkhan.tech"** ka option milega
- "**Next Step"** pe click karo
- **"Finish Registration"** pe click karo
- Tumhara **domain registration complete ho jayega**

YE KUCH ISTARHA LAGEGA



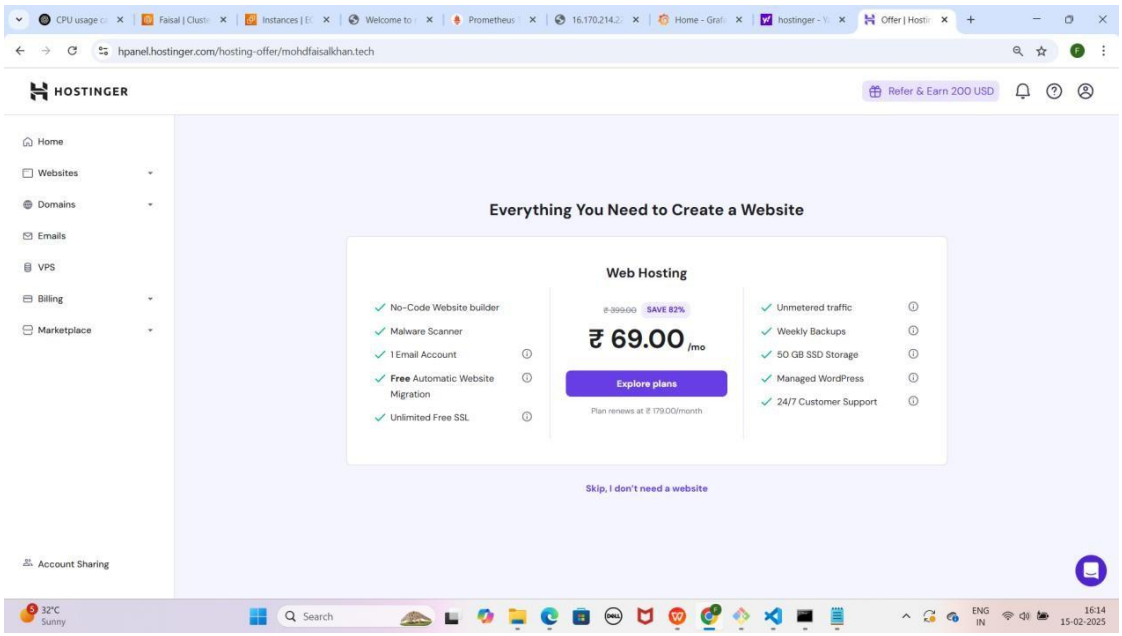






NOTE: Continue pe click karo

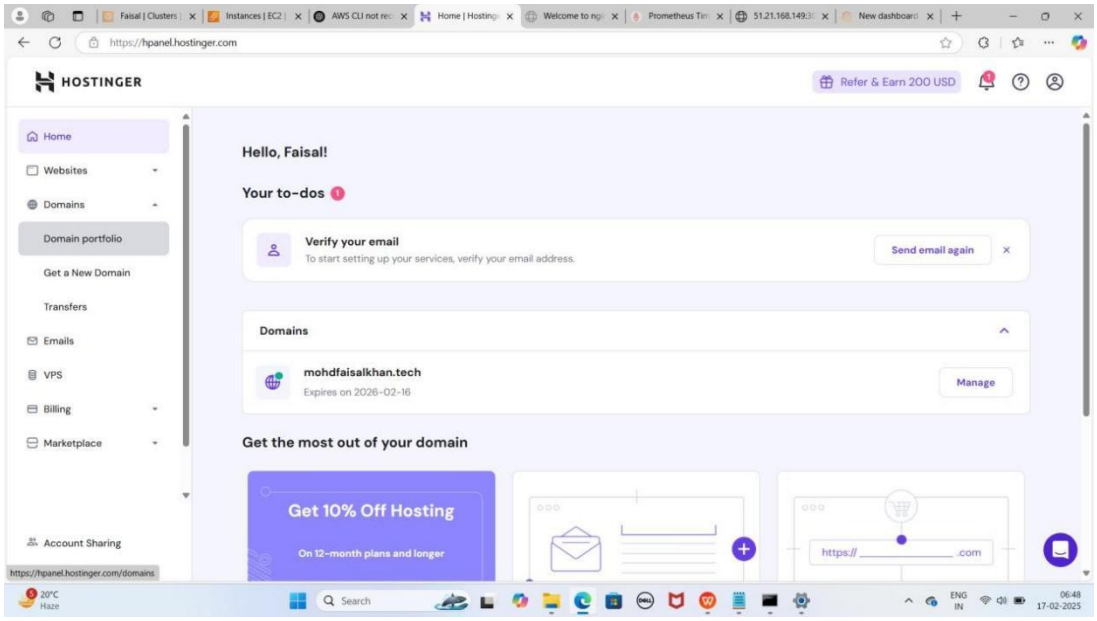
YE KUCH ISTARHA LAGEGA

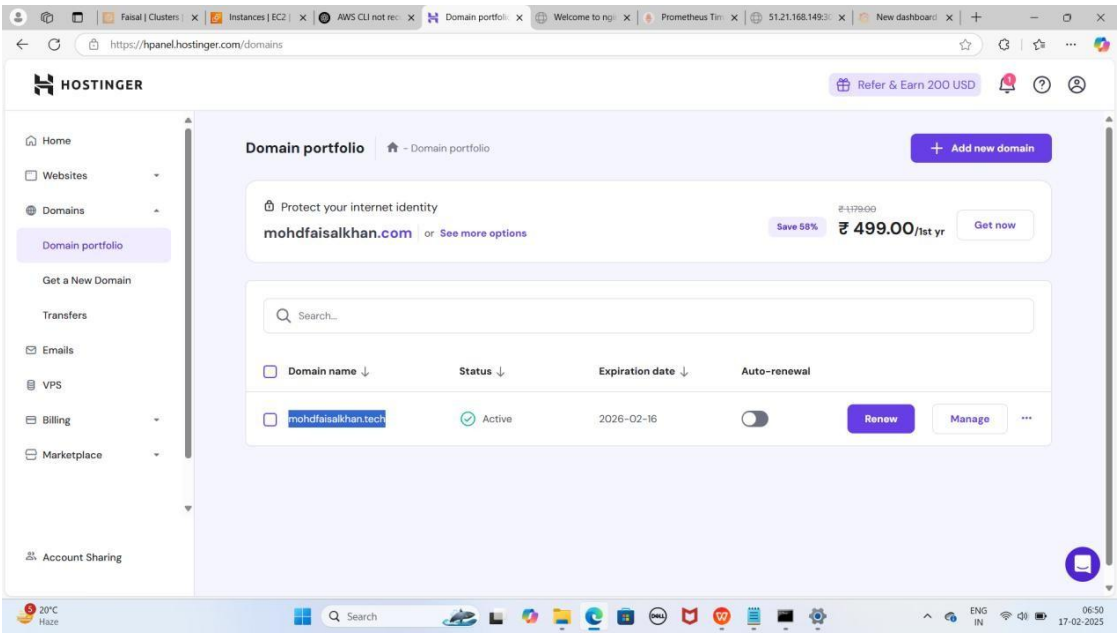


Step 6: Hostinger Me Domains Section Me Navigate Karo

- **Hostinger** mein Dashboard page dikhega
- Phir **Domains** pe click karo.
- **Domain Portfolio** mein apni domain **mohdfaisalkhan.tech** ko select karo.

YE KUCH ISTARHA LAGEGA

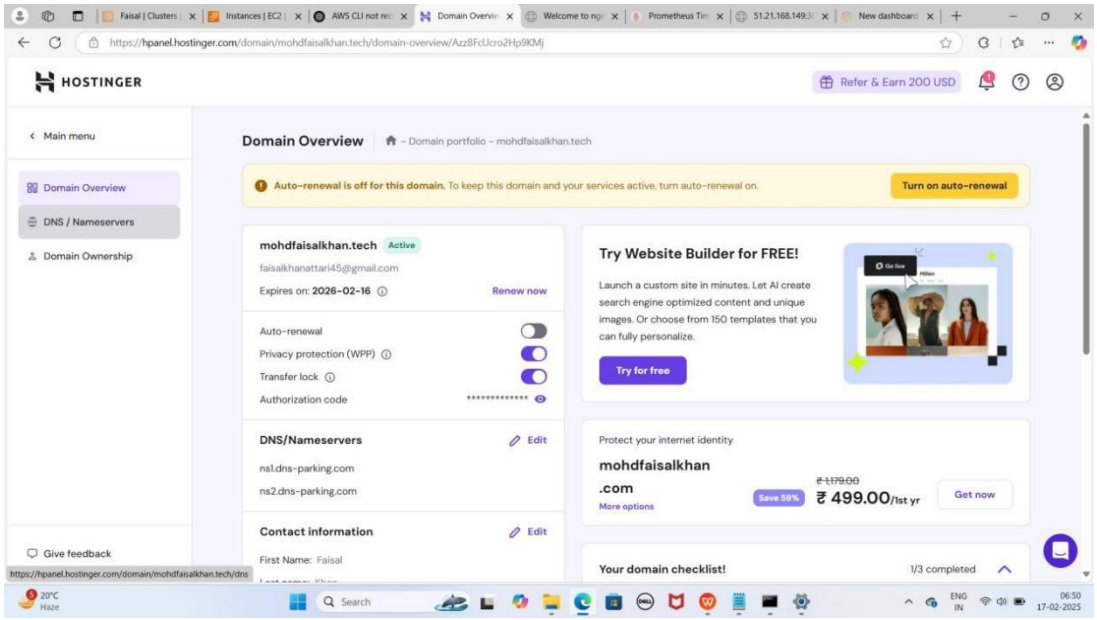


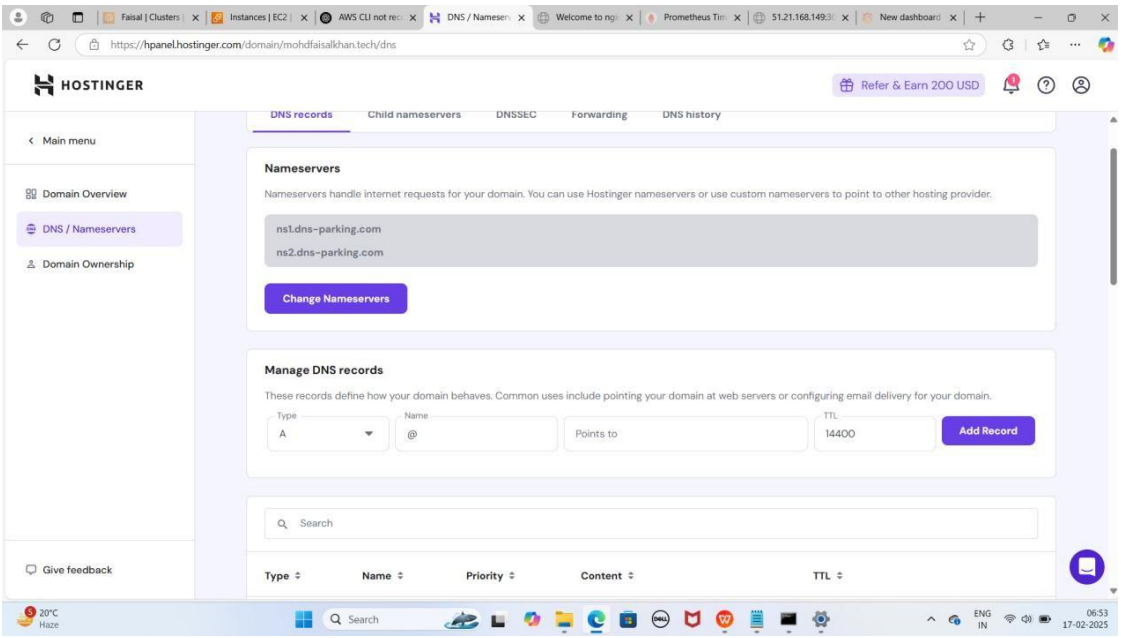


Step 7: Hostinger Me DNS/Nameservers Section Me Navigate Karo

- Apni **domain** ko select karne ke baad, **DNS/Nameservers** pe **click** karo.
- Yahan ek **page** khul jayega jahan tumhe **DNS records add** karna hoga.

YE KUCH ISTARHA LAGEGA




HOSTINGER
Refer & Earn 200 USD
https://hpanel.hostinger.com/domain/mohdfaisalkhan.tech/dns
Main menu
Domain Overview
DNS / Nameservers
Domain Ownership
Give feedback
DNS records
Child nameservers
DNSSEC
Forwarding
DNS history
Nameservers
Nameservers handle internet requests for your domain. You can use Hostinger nameservers or use custom nameservers to point to other hosting provider.
ns1.dns-parking.com
ns2.dns-parking.com
Change Nameservers
Manage DNS records
These records define how your domain behaves. Common uses include pointing your domain at web servers or configuring email delivery for your domain.
Type
A
Name
@
Points to
TTL
14400
Add Record
Search
Type
Name
Priority
Content
TTL
20°C
Haze
Search
ENG
IN
06:53
17-02-2025

Part 4: Configuring DNS on Hostinger for NodePort

Step 1: A Record Add Karna (EKS Cluster Node Se Connect Karne Ke Liye)

1. Pehle EKS Node Ka IP Address Copy Karo.
2. Naya A Record Add Karo:

- **Type:** A
- **Name:** @
- **Points to:** Tumhara EKS Node ka IP Address
- **TTL:** 14400

3. Add Record pe Click Karo.

NOTE : Add Record karne ke baad DNS Record created successfully karke Pop-up ayega

Step 2: A Record Add Karna (WWW ke liye)

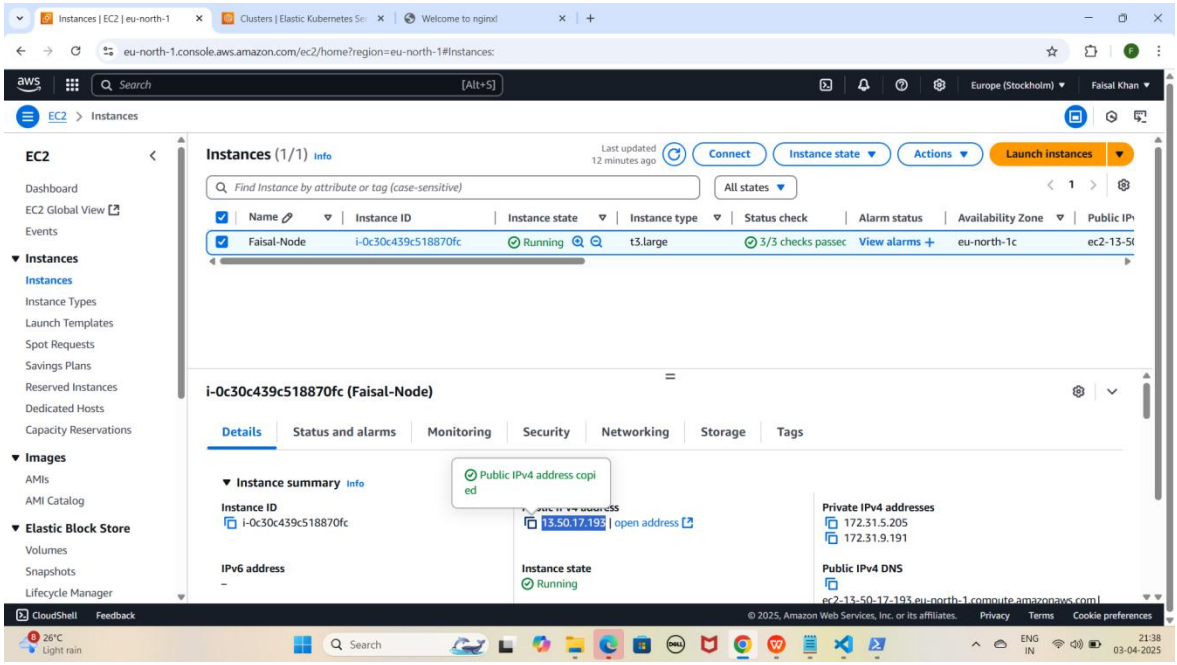
1. Pehle EKS Node Ka IP Address Copy Karo.
2. Naya A Record Add Karo:

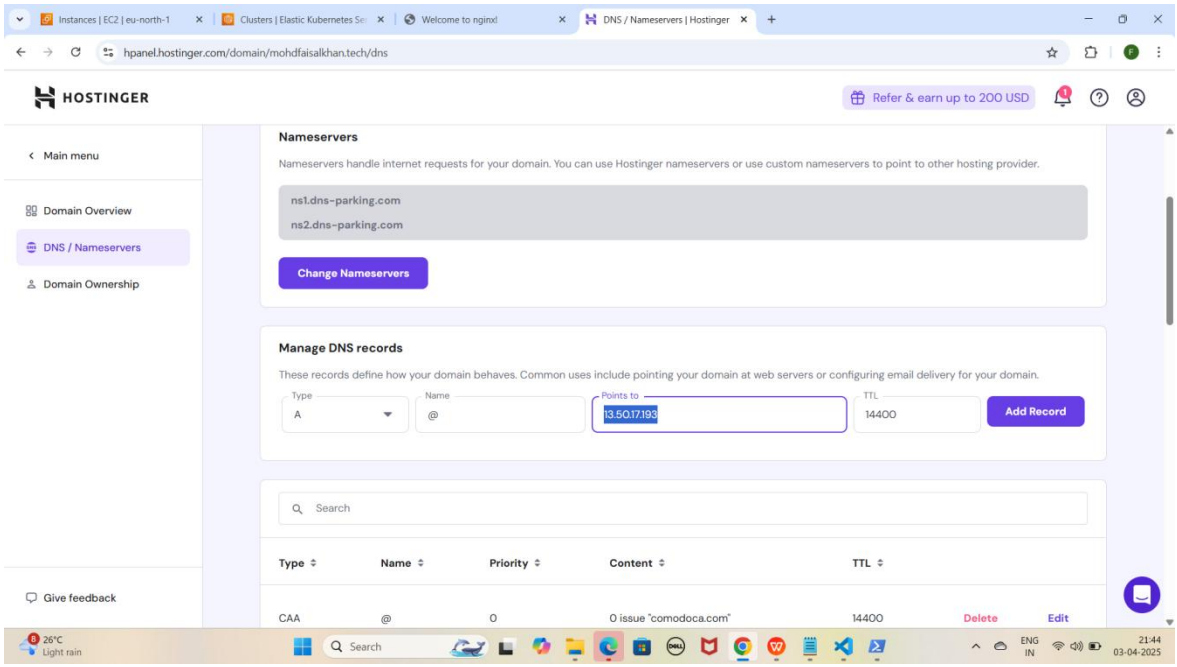
- **Type:** A
- **Name:** www
- **Points to:** Tumhara EKS Node ka IP Address
- **TTL:** 14400

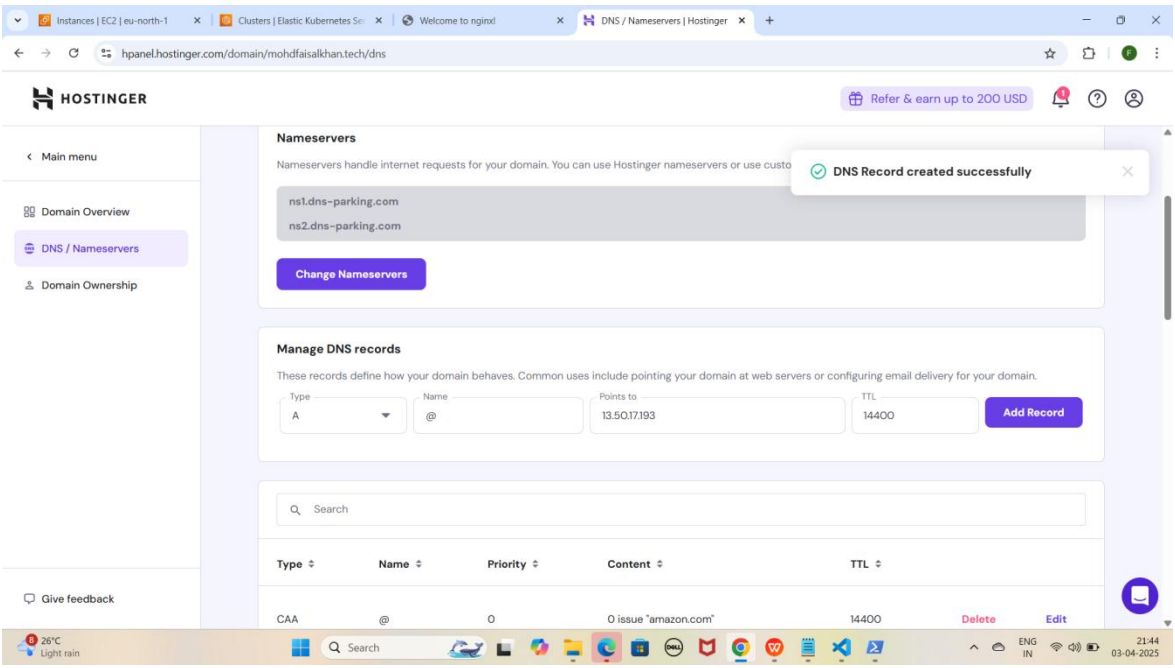
3. Add Record pe Click Karo aur Confirm Karo.

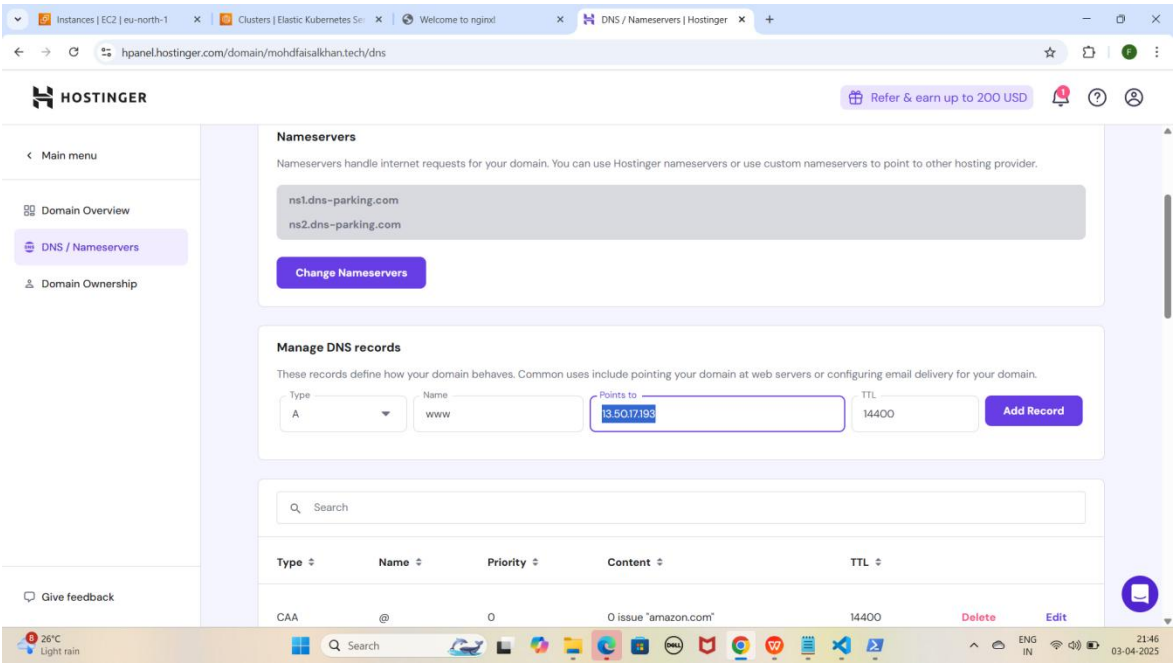
NOTE : Add Record karne ke baad Confirm pe click karne ke baad DNS Record created successfully karke Pop-up ayega

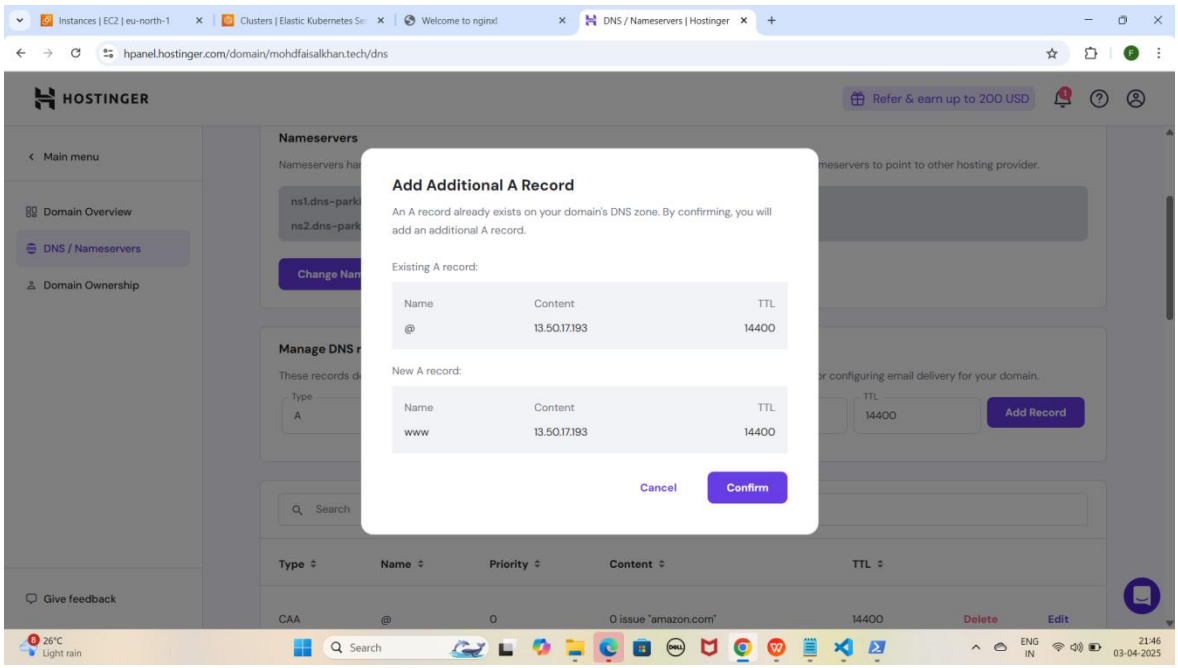
YE KUCH ISTRAHA LAGEGA



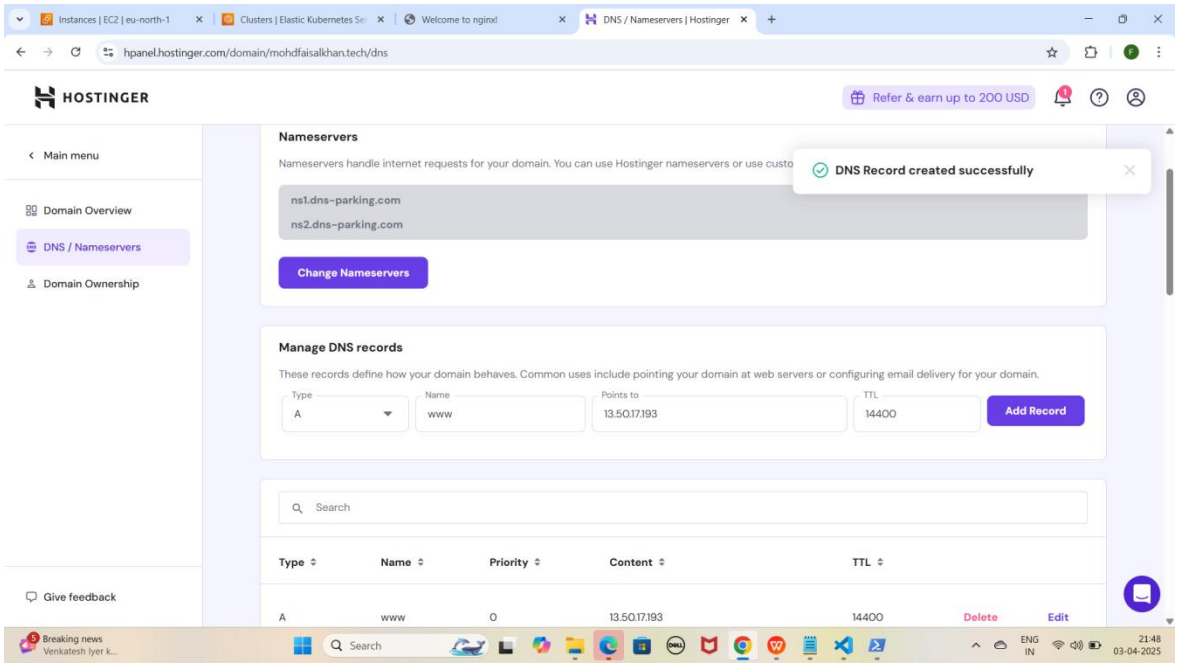



Instances | EC2 | eu-north-1
Clusters | Elastic Kubernetes Se
Welcome to nginx!
DNS / Nameservers | Hostinger
hpanel.hostinger.com/domain/mohdfaisalkhan.tech/dns
HOSTINGER
Refer & earn up to 200 USD
Main menu
Domain Overview
DNS / Nameservers
Domain Ownership
Give feedback
Nameservers
Nameservers handle internet requests for your domain. You can use Hostinger nameservers or use custo
DNS Record created successfully
ns1.dns-parking.com
ns2.dns-parking.com
Change Nameservers
Manage DNS records
These records define how your domain behaves. Common uses include pointing your domain at web servers or configuring email delivery for your domain.
Type
A
Name
@
Points to
13.50.17.193
TTL
14400
Add Record
Search
Type
Name
Priority
Content
TTL
CAA
@
0
0 issue "amazon.com"
14400
Delete
Edit
26°C
Light rain
Search
ENG
IN
21:44
03-04-2025


Instances | EC2 | eu-north-1
Clusters | Elastic Kubernetes Se
Welcome to nginx!
DNS / Nameservers | Hostinger
hpanel.hostinger.com/domain/mohdfaisalkhan.tech/dns
HOSTINGER
Refer & earn up to 200 USD
Main menu
Domain Overview
DNS / Nameservers
Domain Ownership
Give feedback
Nameservers
Nameservers handle internet requests for your domain. You can use Hostinger nameservers or use custom nameservers to point to other hosting provider.
ns1.dns-parking.com
ns2.dns-parking.com
Change Nameservers
Manage DNS records
These records define how your domain behaves. Common uses include pointing your domain at web servers or configuring email delivery for your domain.
Type
A
Name
www
Points to
13.50.17.193
TTL
14400
Add Record
Search
Type
Name
Priority
Content
TTL
CAA
@
0
0 issue "amazon.com"
14400
Delete
Edit
26°C
Light rain
Search
ENG
IN
21:46
03-04-2025



NOTE : Add Additional A Record karke Pop-up ayega Confirm pe click karo.



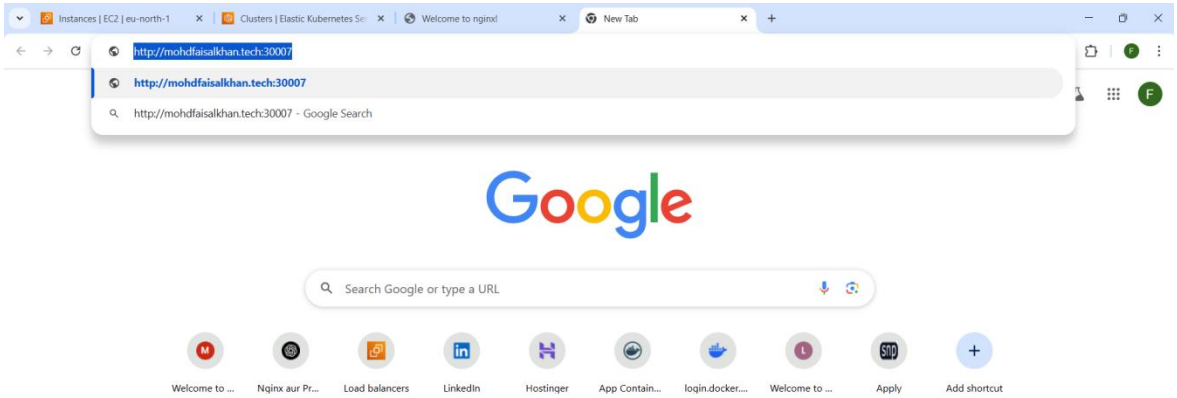
NOTE: Jab tum EKS Node ke liye records add kar loge, toh kuch der baad apni application ko in URLs par access kar paoge. Ye process 15-20 minutes ya usse zyada bhi le sakta hai

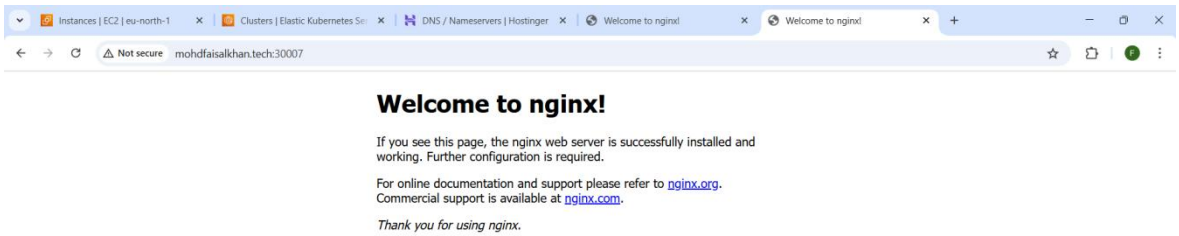
Step 3: Records Add Karne Ke Baad Website Ko Domain Name Ke Through NodePort Se Access Karna

1. Apni NGINX application ko Domain Name Ke Through NodePort Se Access Karo

- **Nginx:** http://mohdfaisalkhan.tech:30007

YE KUCH ISTARHA LAGEGA

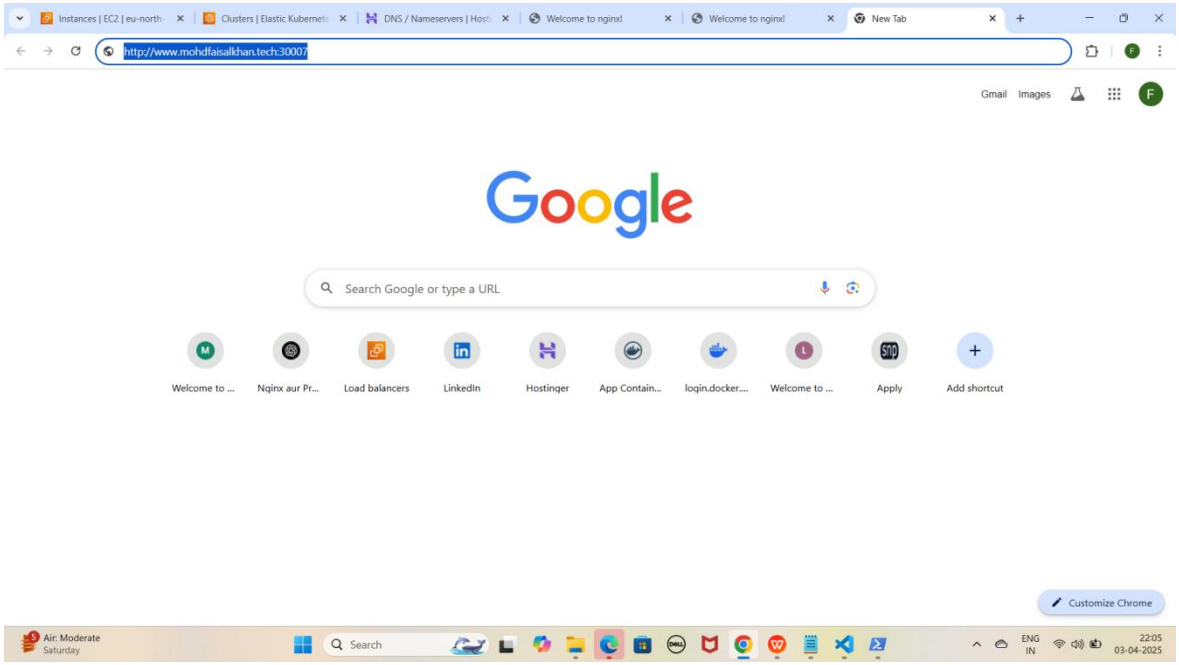


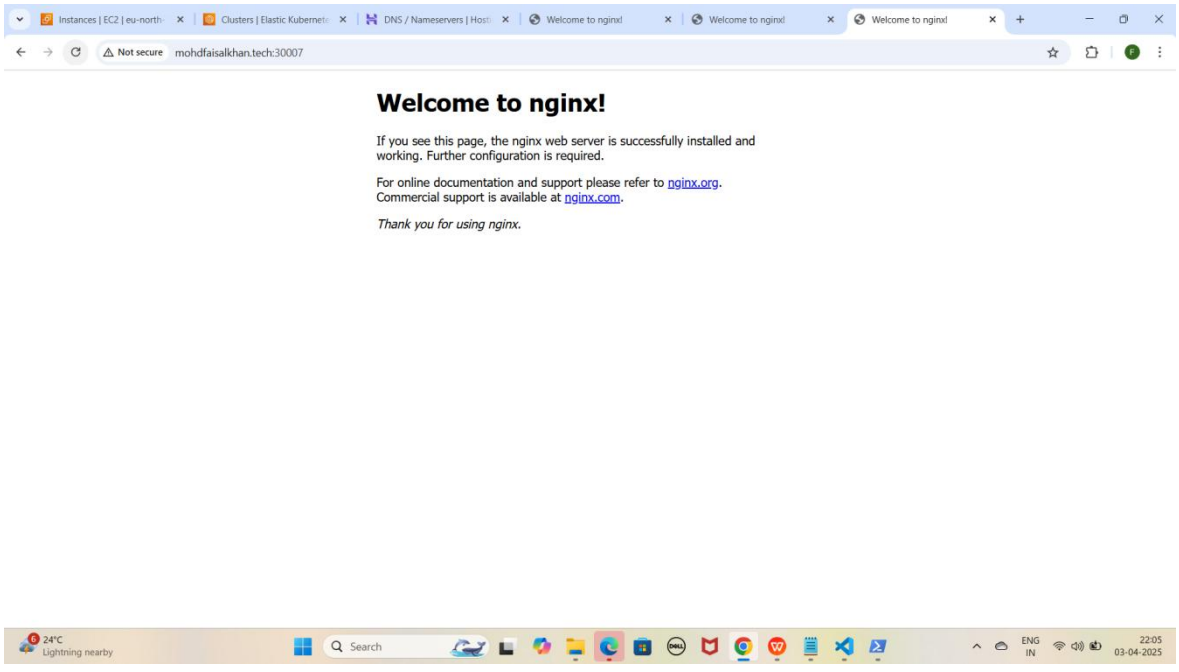


2. Apni NGINX application ko www wale Domain Name Ke Through NodePort Se Access Karo

- **Nginx:** http://www.mohdfaisalkhan.tech:30007

YE KUCH ISTARHA LAGEGA





Part 5: MySQL Secrets and ConfigMap Configuration

Step 1: mysql-secrets.yaml File Ka Kaam

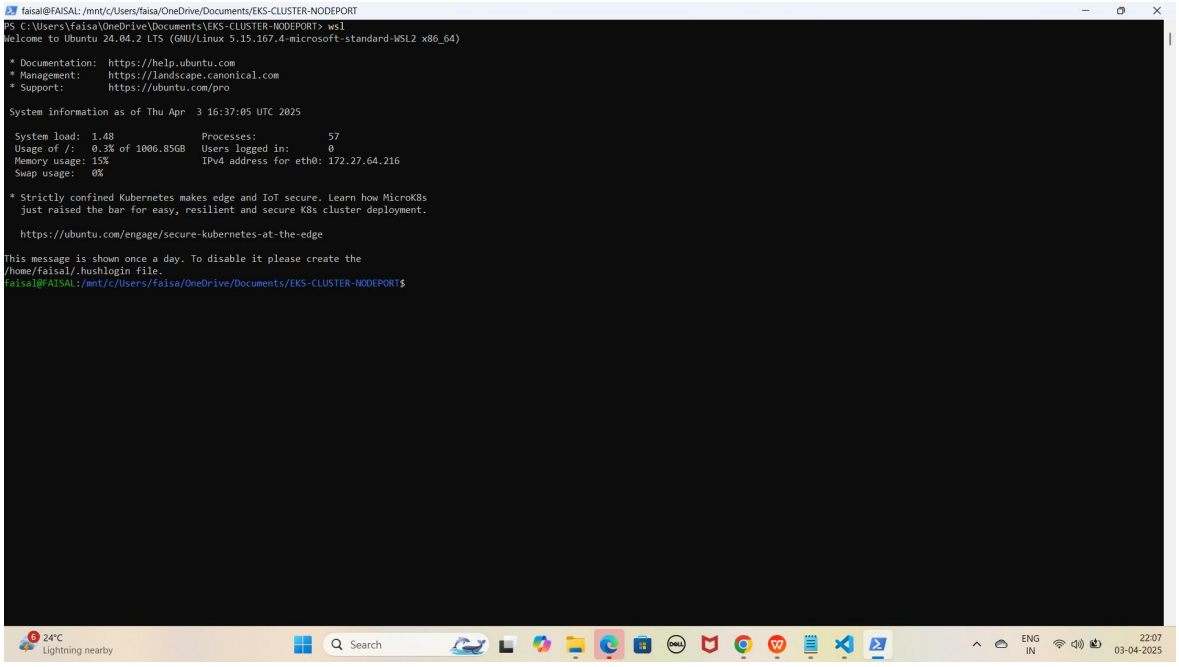
Ye **file username aur password ko securely store** karne ke liye use hoti hai. Kyunki **Secrets secure hoti hain**, is wajah se hum **Base64 encoding** ka use karke **username aur password** ko **encrypt** kar dete hain.

MYSQL ka username aur password encode karna:-

1. Windows ke WSL (Windows Subsystem for Linux) ka use kar ke hum Base64 encoding kar sakte hain. wsl type karein aur yeh commands run karein

wsl

YE KUCH ISTARHA LAGEGA



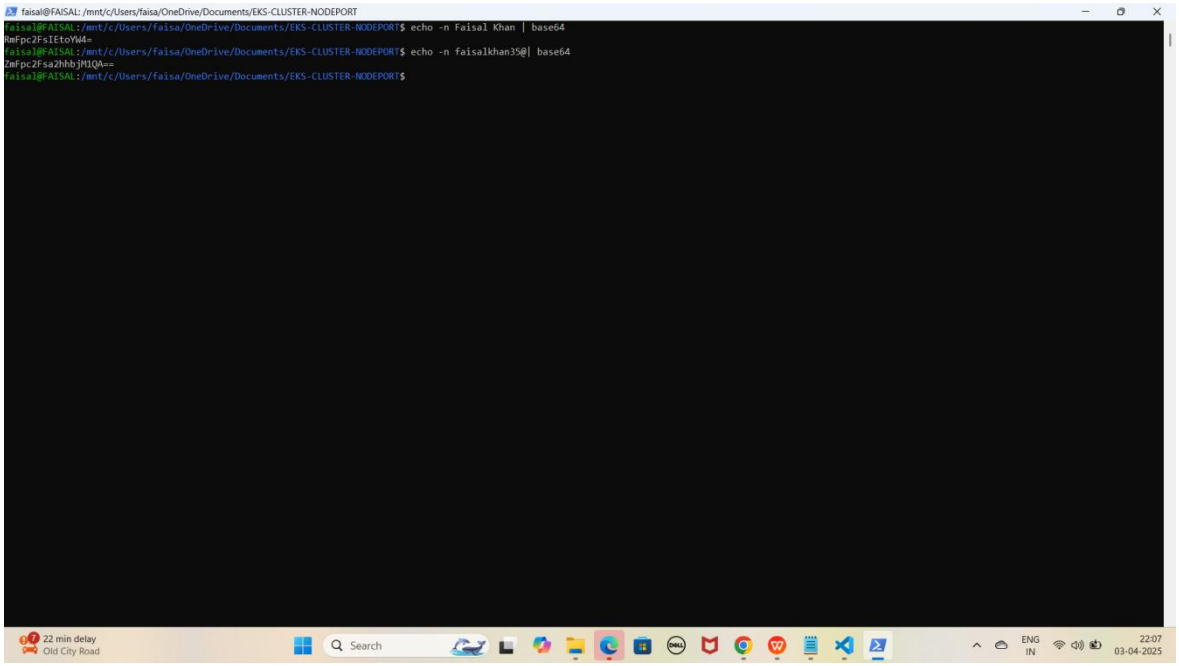
2. Username encode karein

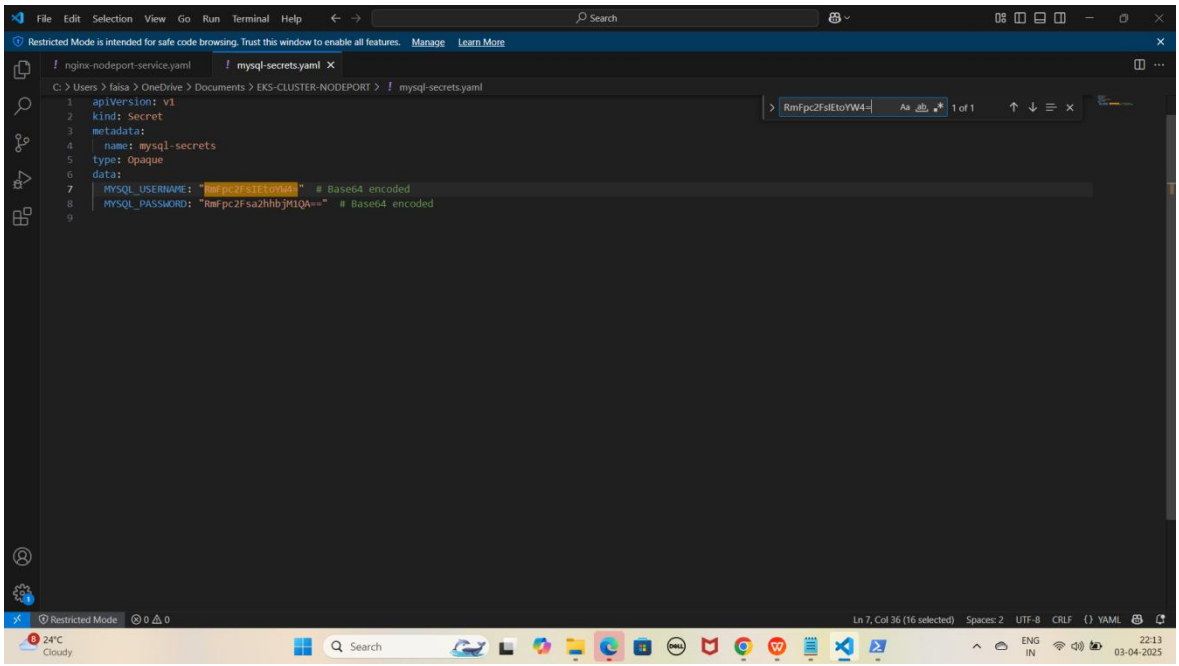
- echo -n Faisal Khan | base64

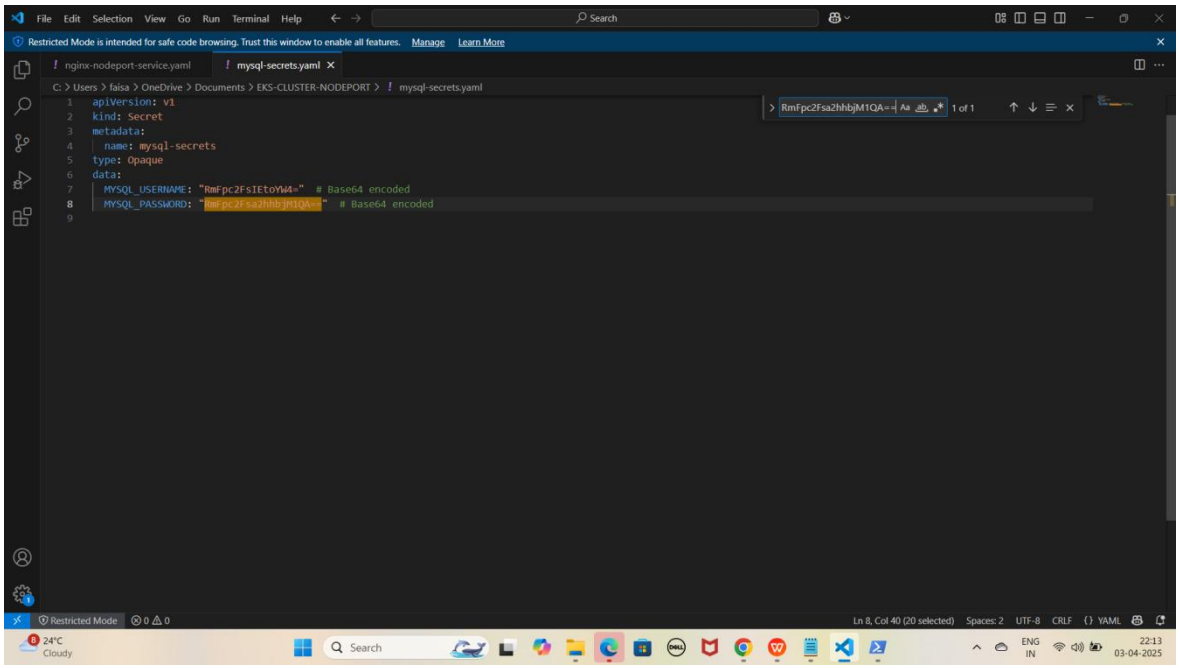
3. Password encode karein

- echo -n Faisalkhan35@| base64

YE KUCH ISTARHA LAGEGA







NOTE: Ye command aapko Base64 encoded values degi, jo hum mysql-secrets.yaml file me store karenge. Lekin aapko apne Username aur Password ke hisaab se mysql-secrets.yaml file update karni hogi.

JAISE KI:-

```yaml
apiVersion: v1
kind: Secret
metadata:
  name: mysql-secrets
type: Opaque
data:
  MYSQL_USERNAME: "RmFpc2FsIEtoYW4="  # Base64 encoded
  MYSQL_PASSWORD: "RmFpc2Fsa2hhbjM1QA=="  # Base64 encoded
```

Agar aap encoded username aur password ko wapas original form me laana chahte hain, toh WSL me yeh commands run karein

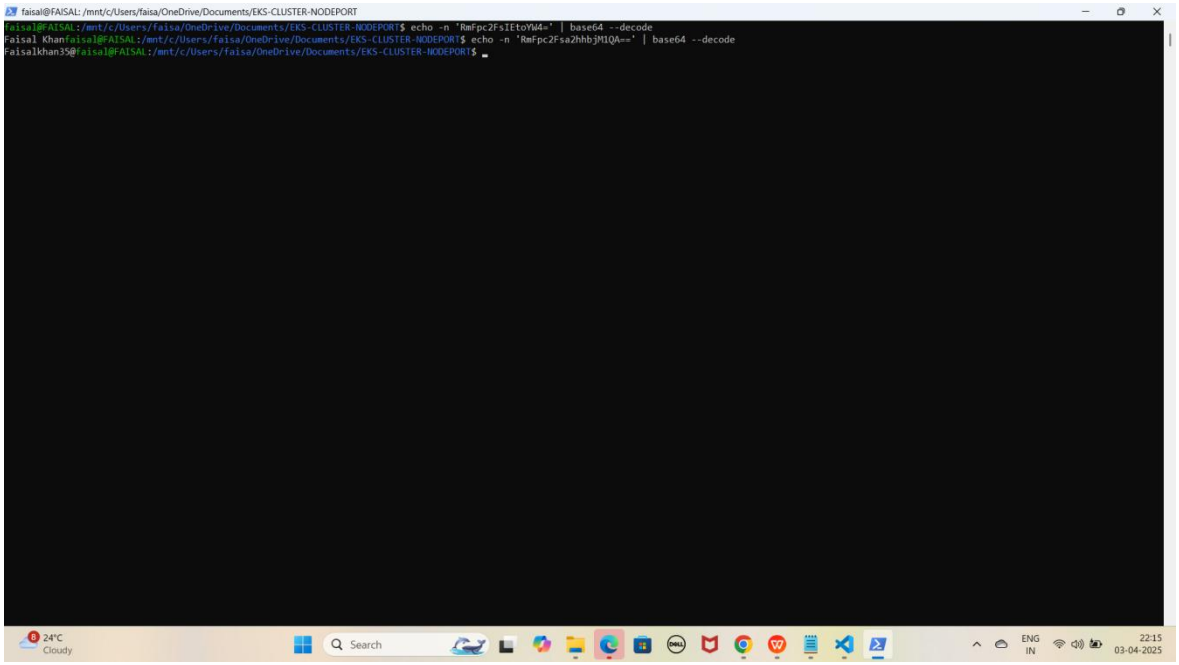
4. Username decode karein

- echo -n 'RmFpc2FsIEtoYW4=' | base64 --decode

5. Password decode karein

- echo -n 'RmFpc2Fsa2hhbjM1QA==' | base64 --decode

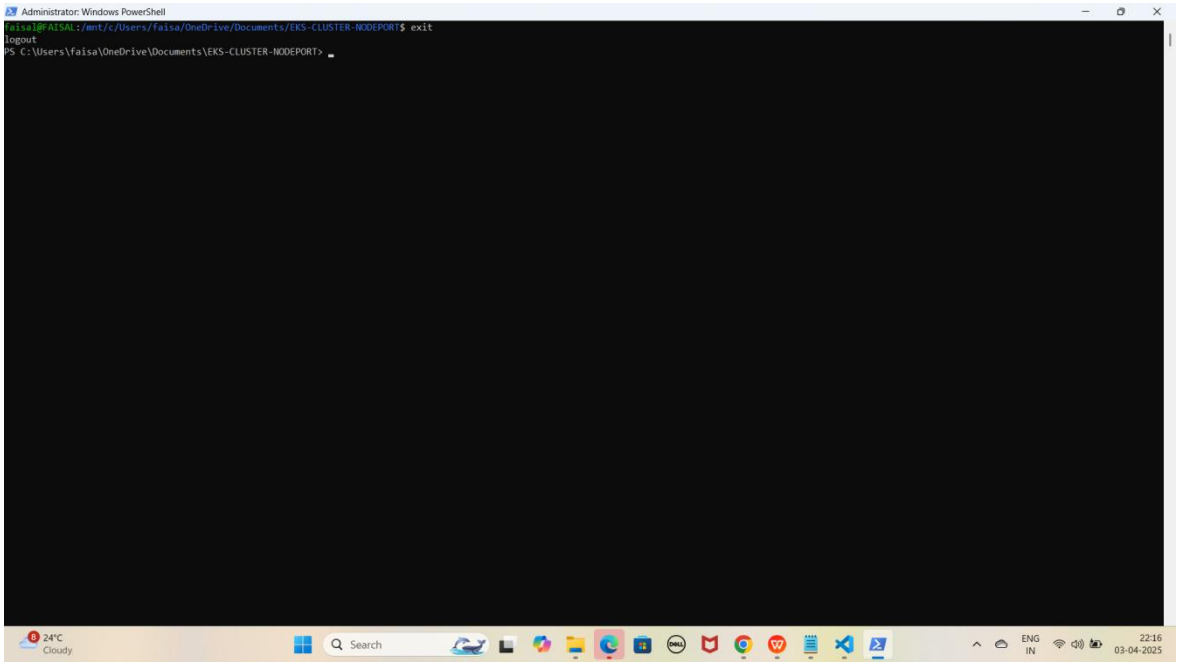
YE KUCH ISTARHA LAGEGA



6. Ab WSL se exit hogao exit hone ke liye exit type karo

exit

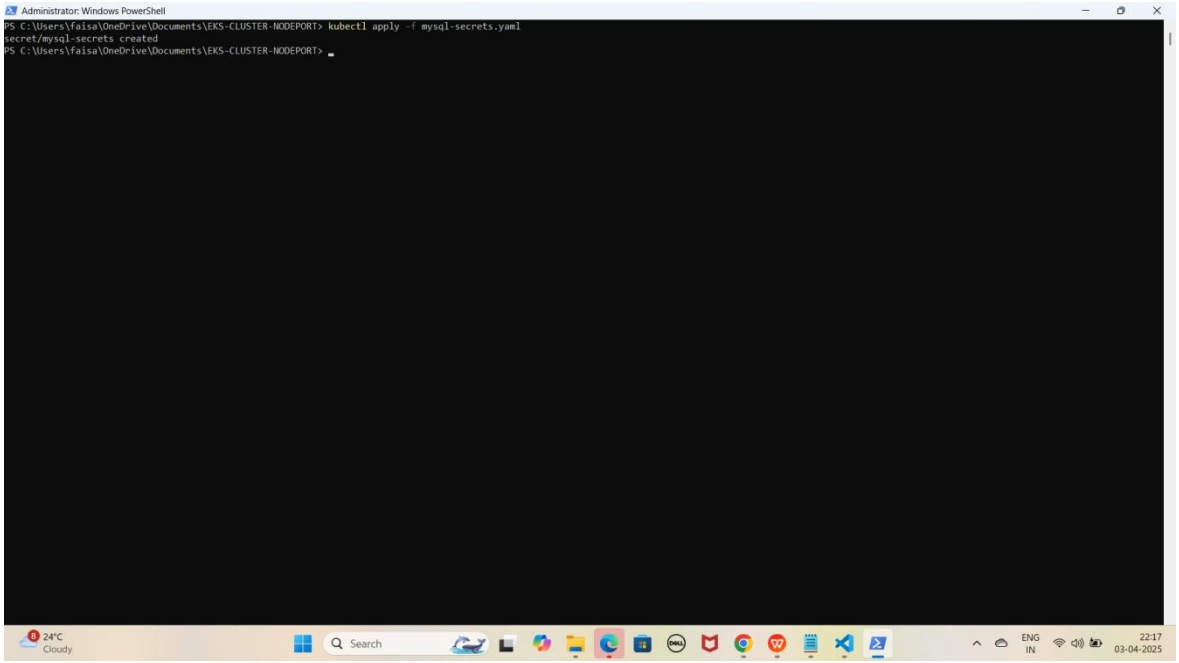
YE KUCH ISTARHA LAGEGA



Secret Apply Karo

kubectl apply -f mysql-secrets.yaml

YE KUCH ISTARHA LAGEGA



Step 2: mysql-configmap.yaml File Ka Kaam

Yeh file **non-sensitive data** store karne ke liye use hoti hai, jaise

- **Database ka naam**
- **Host ka naam (hostname)**
- **Port number**

Isko **Kubernetes ConfigMap** ke andar likha jata hai.

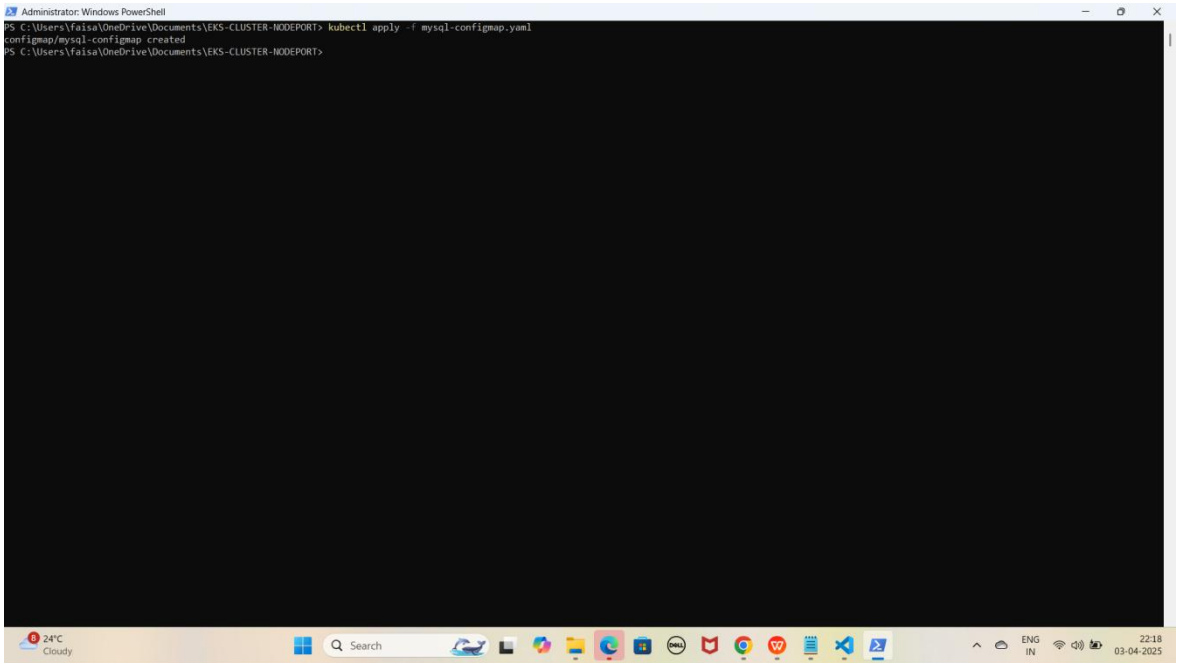
JAISE KI:-

```yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: mysql-configmap
data:
  MYSQL_DATABASE: "faisal-db"
  MYSQL_HOST: "mysql-headless-service"
  MYSQL_PORT: "3306"
```

ConfigMap Apply Karo

kubectl apply -f mysql-configmap.yaml

YE KUCH ISTARHA LAGEGA



Step 3: service-account.yaml File Ka Kaam

Yeh **file Secrets aur ConfigMaps** ko access karne ke liye **permissions** dene ke liye use hoti hai. Isko **Kubernetes Service Account** banane ke liye likha jata hai.

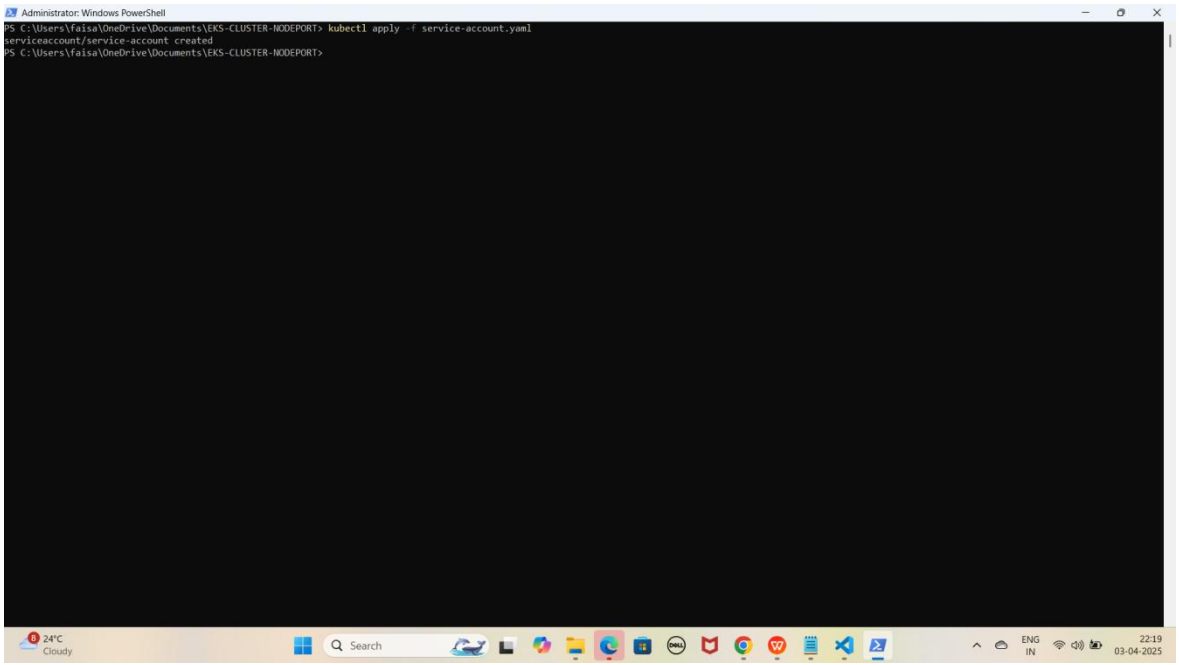
JAISE KI:-

```yaml
apiVersion: v1
kind: ServiceAccount
metadata:
  name: service-account
```

Service Account Apply Karo

kubectl apply -f service-account.yaml

YE KUCH ISTARHA LAGEGA



Step 4: role.yaml File Ka Kaam

Yeh **file Secrets aur ConfigMaps** ke liye **read-only permissions** define karne ke liye use hoti hai. Isko **Kubernetes Role** banane ke liye likha jata hai.

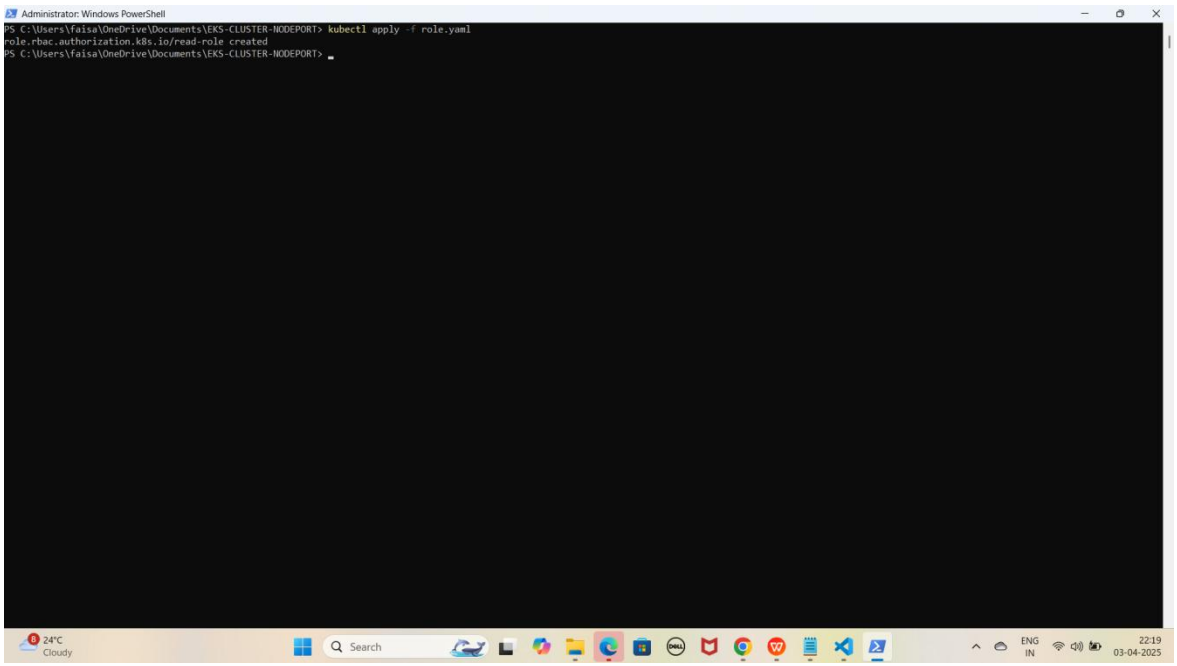
JAISE KI:-

```yaml
apiVersion: rbac.authorization.k8s.io/v1
kind: Role
metadata:
  name: read-role
rules:
  - apiGroups: [""]
    resources: ["secrets", "configmaps"]
    verbs: ["get", "list"]
  - apiGroups: [""]
    resources: ["pods"]
    verbs: ["get", "list"]
  - apiGroups: [""]
    resources: ["events"]
    verbs: ["get", "list"]
  - apiGroups: [""]
    resources: ["endpoints"]
    verbs: ["get", "list"]
```

Role Apply Karo

kubectl apply -f role.yaml

YE KUCH ISTARHA LAGEGA



Step 5: rolebinding.yaml File Ka Kaam

Yeh file **Service Account** ko **Secrets aur ConfigMaps** ke liye **read-only permissions assign** karne ke liye use hoti hai. Isko **Kubernetes RoleBinding** banane ke liye likha jata hai.

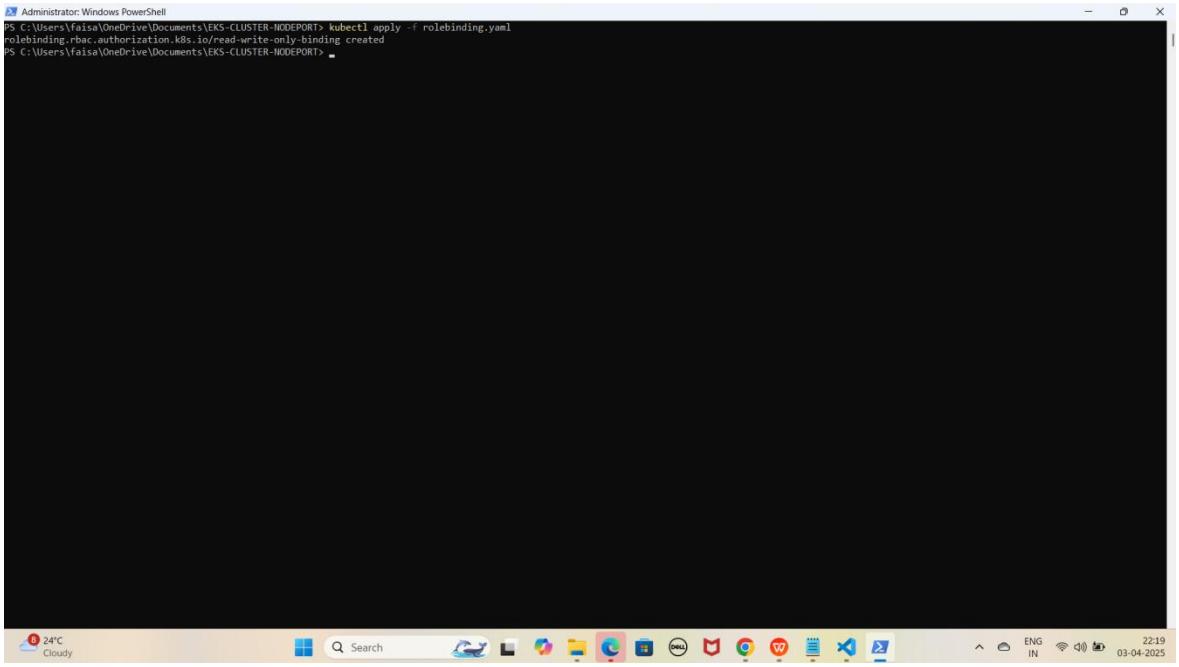
JAISE KI:-

```yaml
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: read-write-only-binding
subjects:
  - kind: ServiceAccount
    name: service-account
    namespace: default
roleRef:
  kind: Role
  name: read-role
  apiGroup: rbac.authorization.k8s.io
```

RoleBinding Apply Karo

kubectl apply -f rolebinding.yaml

YE KUCH ISTARHA LAGEGA



Part 6: MYSQL Database Pods and Services Deployment

Step 1: mysql-headless-service.yaml File Ka Kaam

Yeh **file MySQL pods** ke beech **data synchronization** aur **sharing** ke liye use hoti hai. Isko **Kubernetes Headless Service** ke taur par define kiya jata hai.

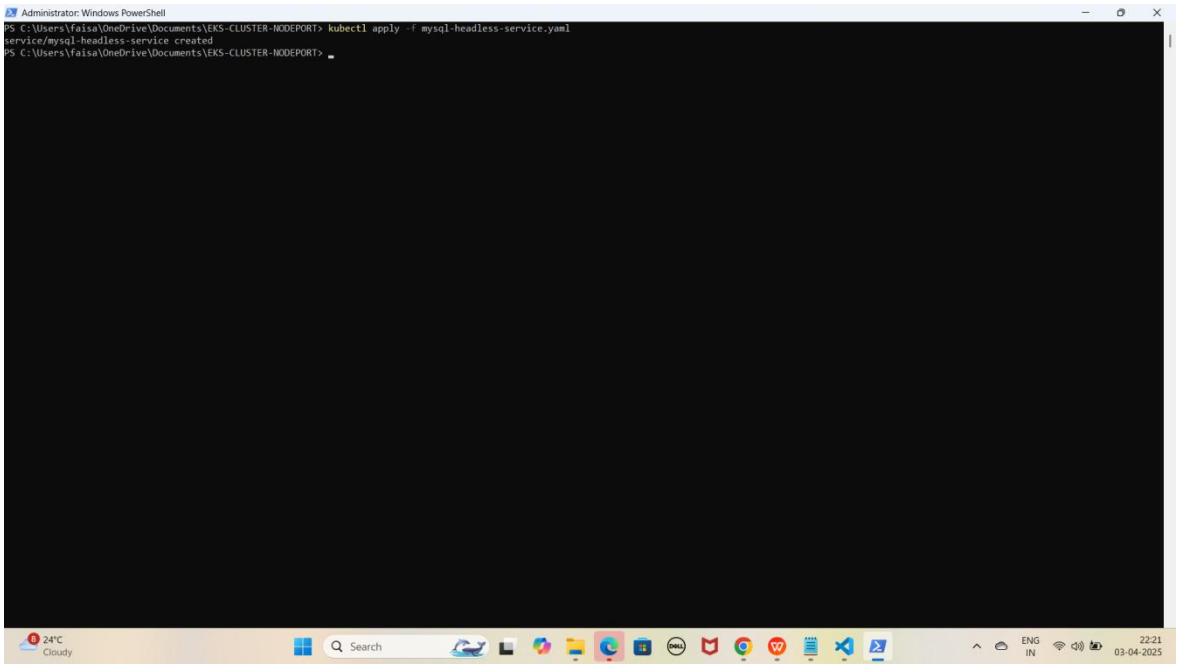
JAISE KI:-

```yaml
apiVersion: v1
kind: Service
metadata:
  name: mysql-headless-service
spec:
  clusterIP: None  # Makes it a headless service
  selector:
    app: mysql
  ports:
    - name: mysql
      port: 3306
      targetPort: 3306
```

Headless Service Apply Karo

kubectl apply -f mysql-headless-service.yaml

YE KUCH ISTARHA LAGEGA



Step 2: mysql-pv.yaml File Ka Kaam

Yeh **file cluster** mein ek **static volume** banane ke liye use hoti hai. Isko **Kubernetes** Persistent Volume (PV) create karne ke liye likha jata hai. Hum **3 PV** create karenge kyunki next step mein **StatefulSet 3 database pods** banayega, jinko **storage** ki zaroorat hogi.

JAISE KI:-

```yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: mysql-pv
spec:
  capacity:
    storage: 5Gi
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  hostPath:
    path: "/mnt/mysql-data"
```

```yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: mysql-pv-2
```

```yaml
spec:
  capacity:
    storage: 5Gi
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  hostPath:
    path: /mnt/data/mysql2
```

```yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: mysql-pv-3
spec:
  capacity:
    storage: 5Gi
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  hostPath:
    path: /mnt/data/mysql-3
```

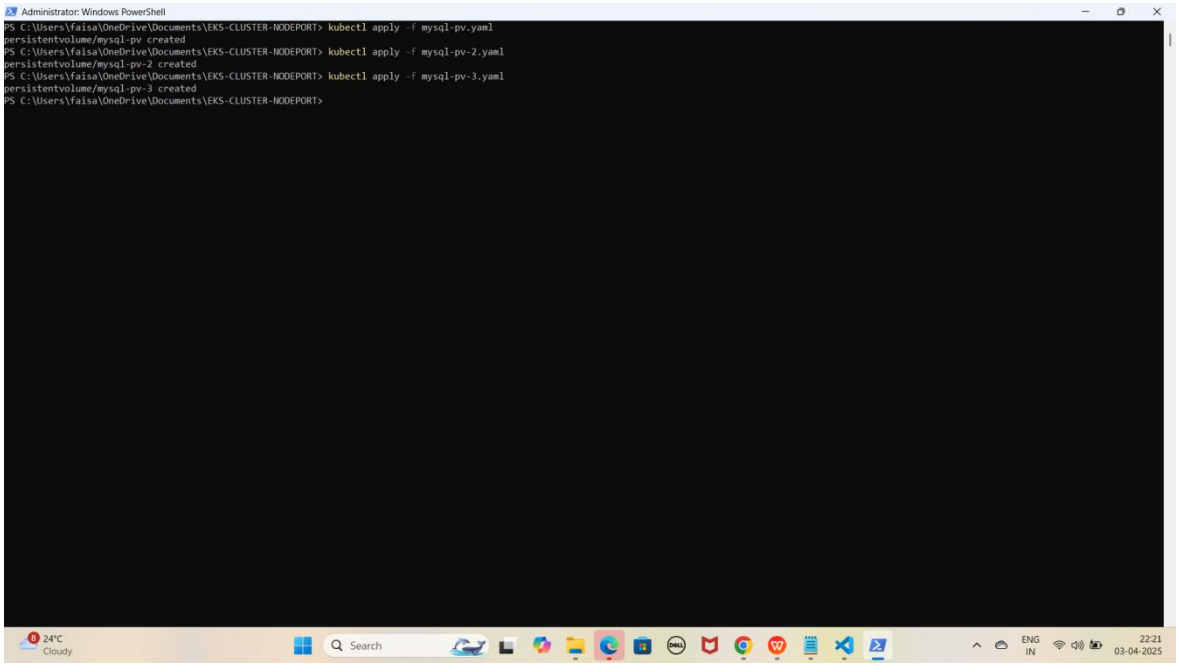
Persistent Volumes Apply Karo

kubectl apply -f mysql-pv.yaml

kubectl apply -f mysql-pv-2.yaml

kubectl apply -f mysql-pv-3.yaml

YE KUCH ISTARHA LAGEGA



Step 3: mysql-statefulset.yaml File Ka Kaam

Yeh **file database** ke liye use hoti hai jisme hum **MySQL ke 3 replicas** define karte hain. Isme **Persistent Volume Claim (PVC)** use hoti hai jo **StatefulSet** ke **deployments** ko **Persistent Volume (PV)** se connect karti hai.

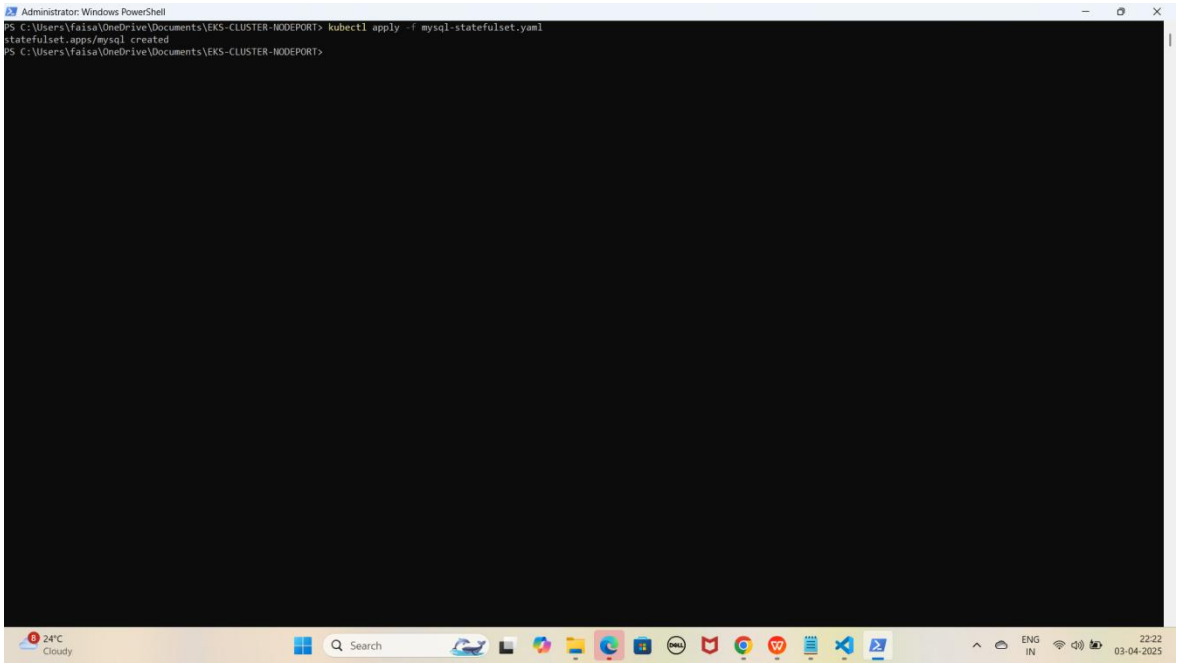
JAISE KI:-

```yaml
apiVersion: apps/v1
kind: StatefulSet
metadata:
  name: mysql
spec:
  serviceName: "mysql-headless-service"  # Links to the headless service
  replicas: 3 # Number of MySQL replicas
  selector:
    matchLabels:
      app: mysql
  template:
    metadata:
      labels:
        app: mysql
    spec:
      containers:
        - name: mysql
          image: mysql:8.0 # MySQL 8.0 image
          ports:
            - containerPort: 3306
          env:
            - name: MYSQL_ROOT_PASSWORD
              valueFrom:
                secretKeyRef:
                  name: mysql-secrets
                  key: MYSQL_PASSWORD
          volumeMounts:
            - name: mysql-data
              mountPath: /var/lib/mysql
  volumeClaimTemplates:
  - metadata:
      name: mysql-data
    spec:
      accessModes:
        - ReadWriteOnce
      resources:
        requests:
          storage: 5Gi
```

StatefulSet Apply Karo

kubectl apply -f mysql-statefulset.yaml

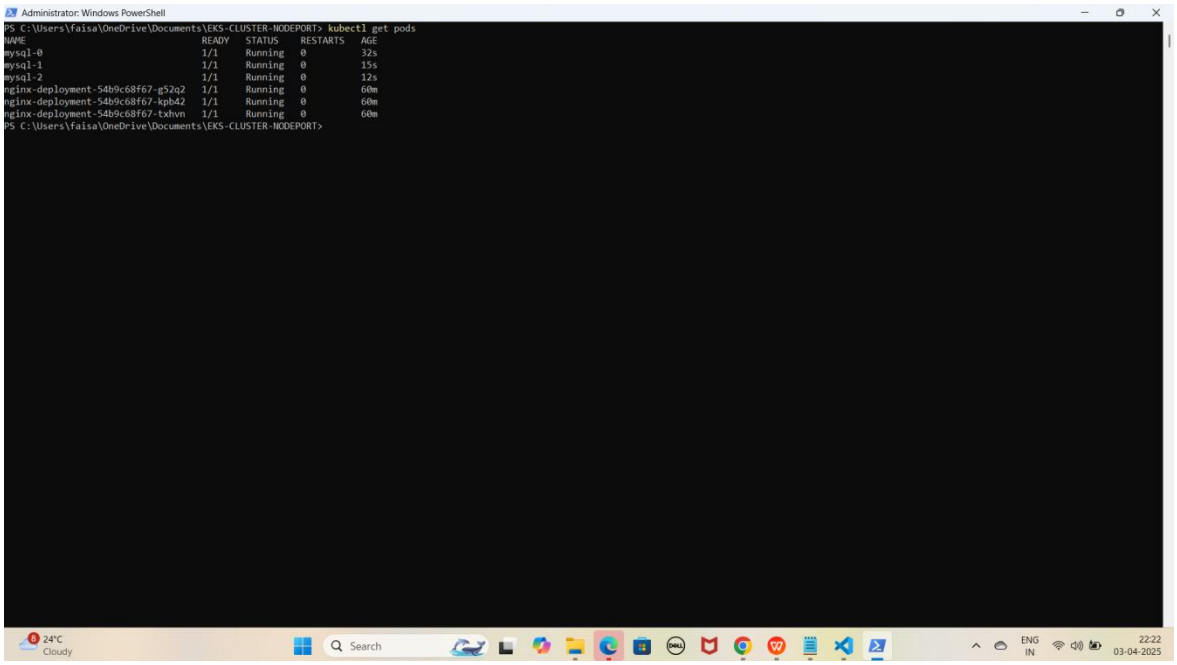
YE KUCH ISTARHA LAGEGA



1. Pods check karne ke liye ye command run kariye

kubectl get pods

YE KUCH ISTARHA LAGEGA

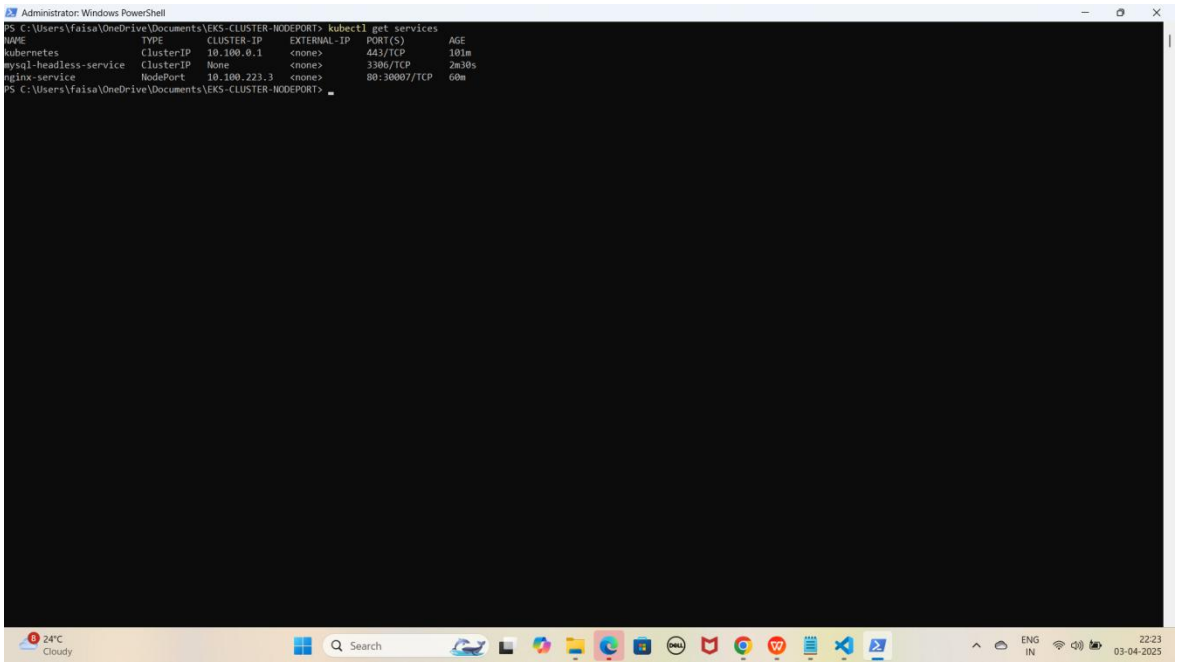


NOTE: Agar sabhi Pods ka STATUS Running show karraha hai to sab kuch sahi hai

2. Serives check karne ke liye ye commad run kariye

kubectl get services

YE KUCH ISTARHA LAGEGA



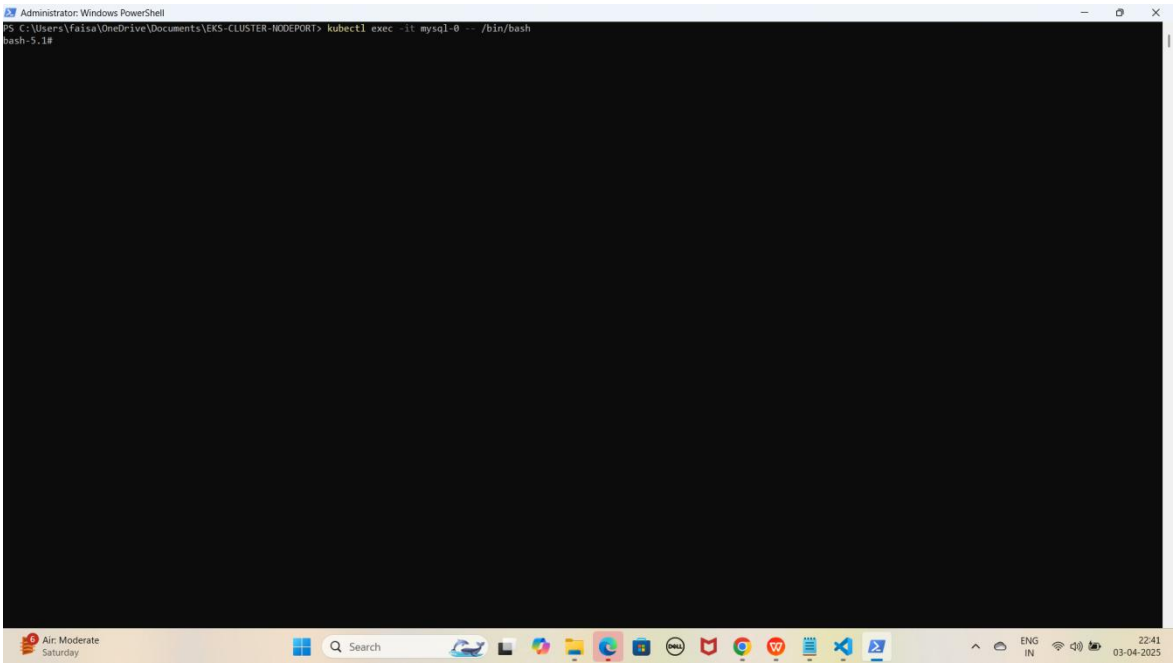
Part 7: Accessing MySQL Database in EKS Cluster

Step 1: MySQL Database Access Karo

1. Pod ke andar jane ke liye ye command run karo

kubectl exec -it mysql-0 -- /bin/bash

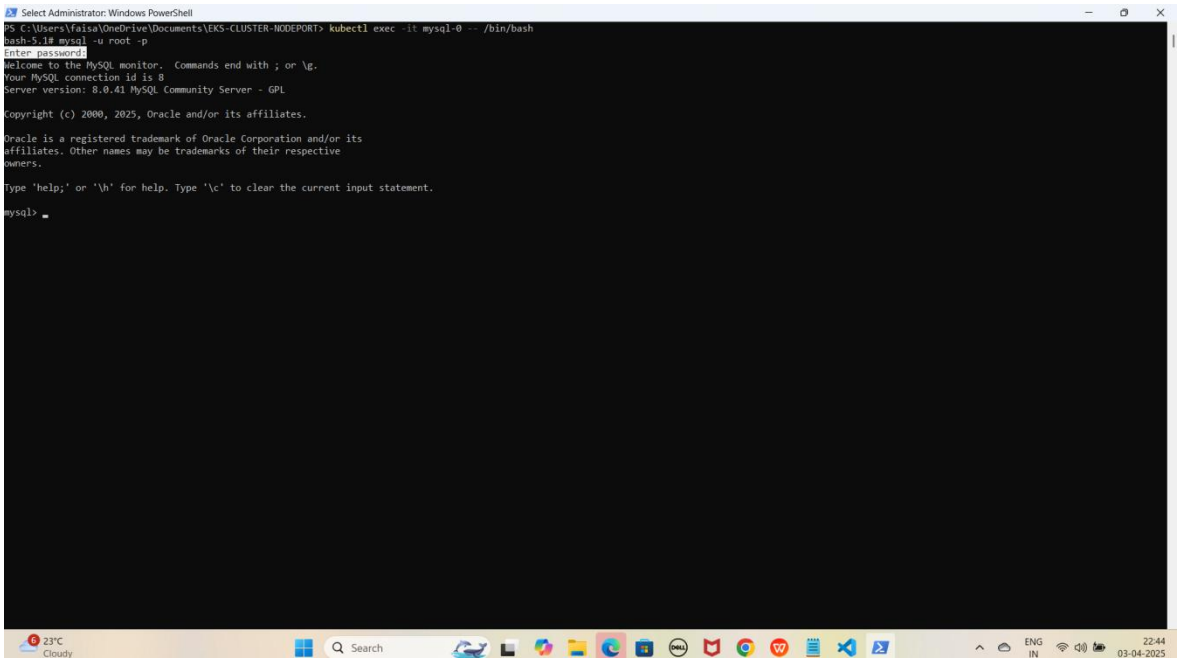
YE KUCH ISTARHA LAGEGA



2. MySQL database se connect karne ke liye ye command kuch istarha hogi

mysql -u root -p

YE KUCH ISTARHA LAGEGA

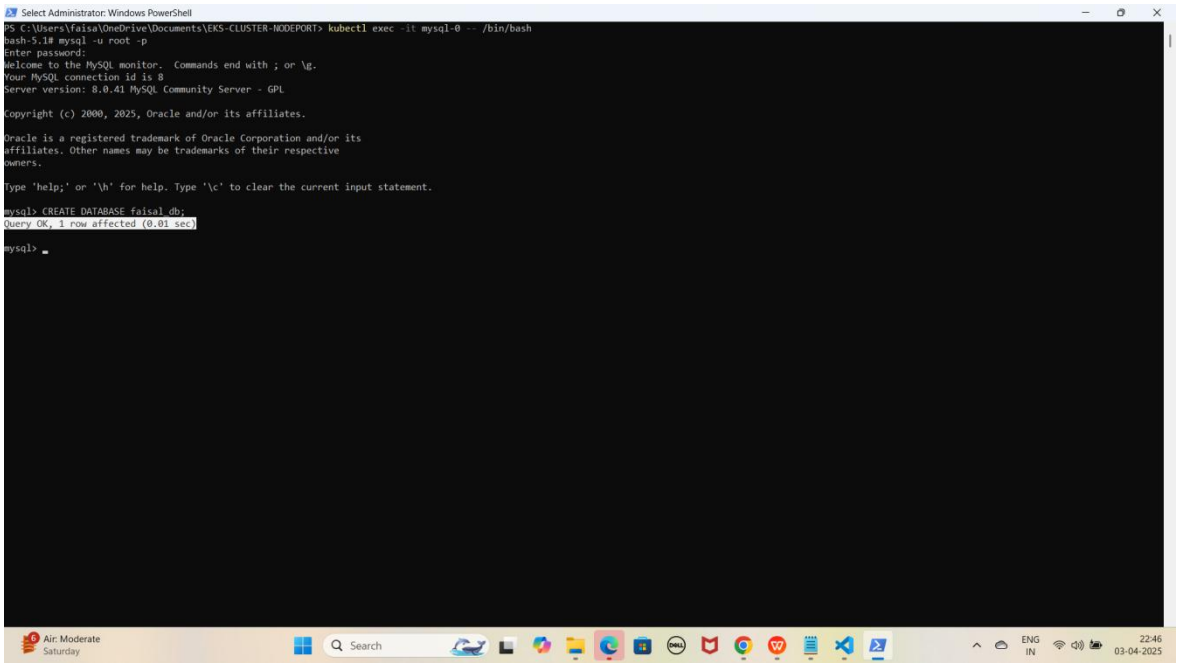


Note: Jab aap se password maanga jaaye, to wahi password use karein jo pehle Base64 encode karke mysql-secrets.yaml file me store kiya gaya tha. Maine 'Faisalkhan35@' diya tha, lekin password enter karte waqt yeh screen par show nahi hoga.

3. Database create karne keliye ye command run karo

CREATE DATABASE faisal_db;

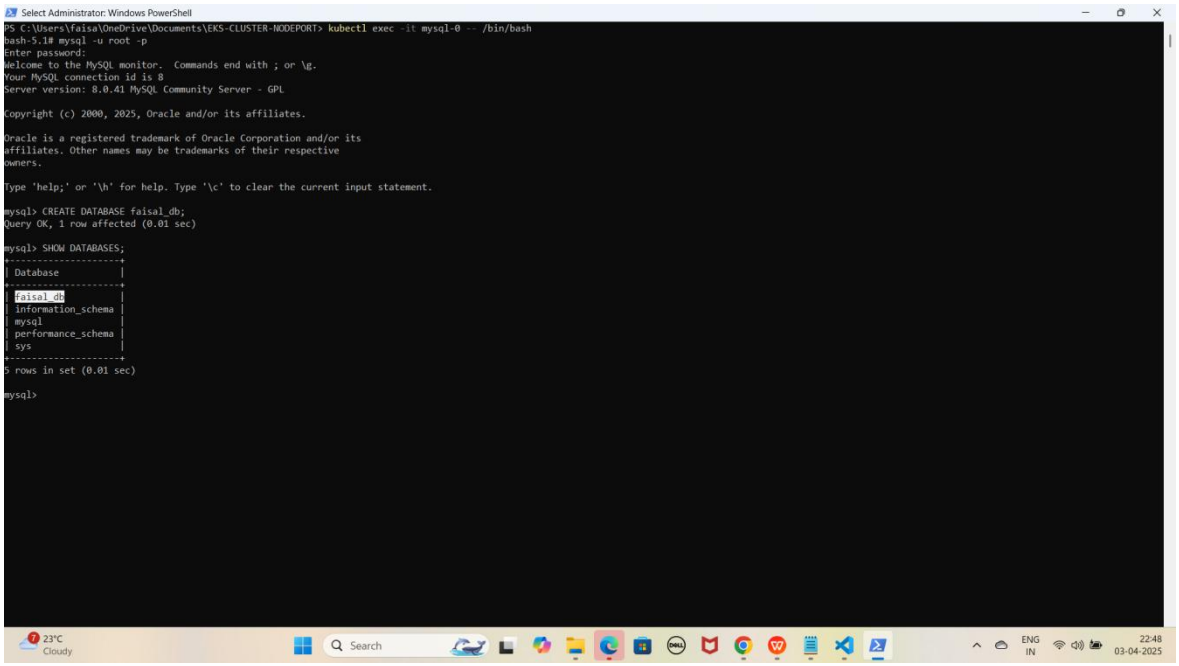
YE KUCH ISTARHA LAGEGA



4. Databases check karne ke liye ye command run kariye

SHOW DATABASES;

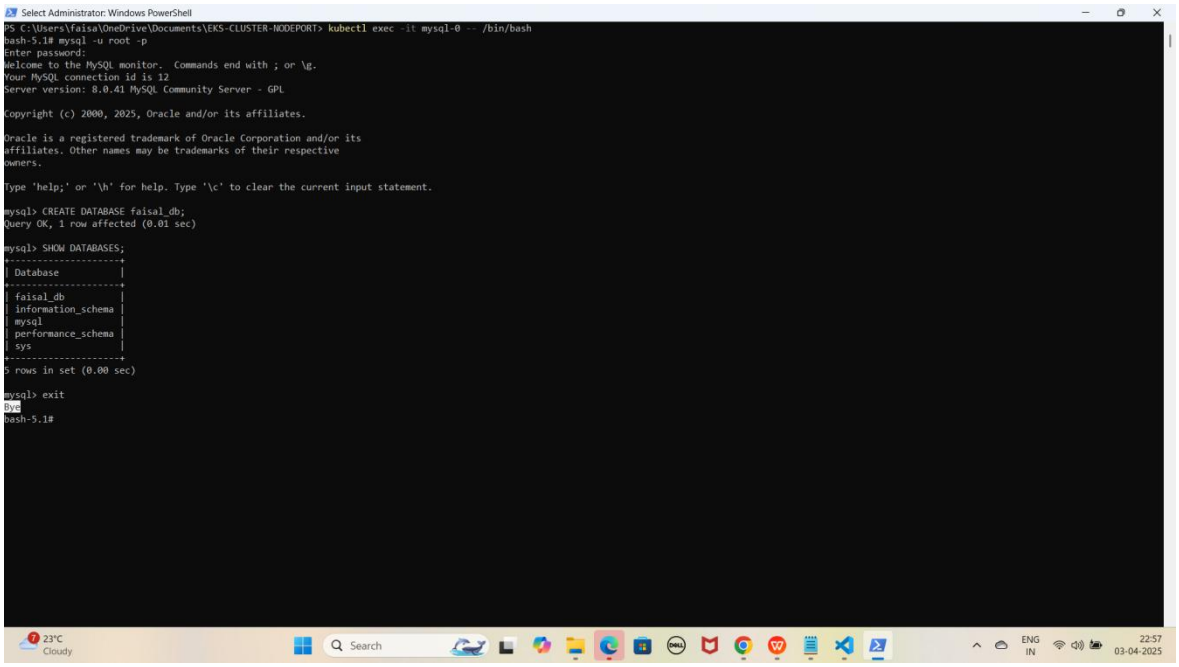
YE KUCH ISTARHA LAGEGA



5. Ab MYSQL database se exit hoagaye exit hone ke liye exit type kariye

exit

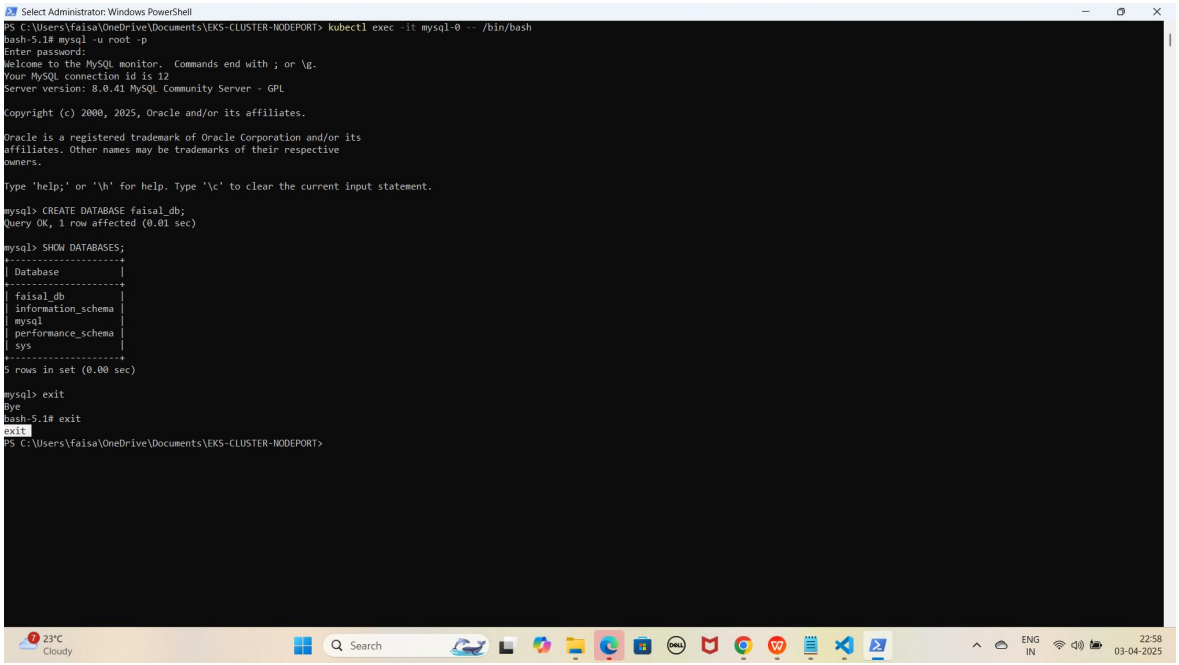
YE KUCH ISTARHA LAGEGA



6. Ab MYSQL database Pod se bhi exit hoagaye exit hone ke liye exit type kariye

exit

YE KUCH ISTARHA LAGEGA



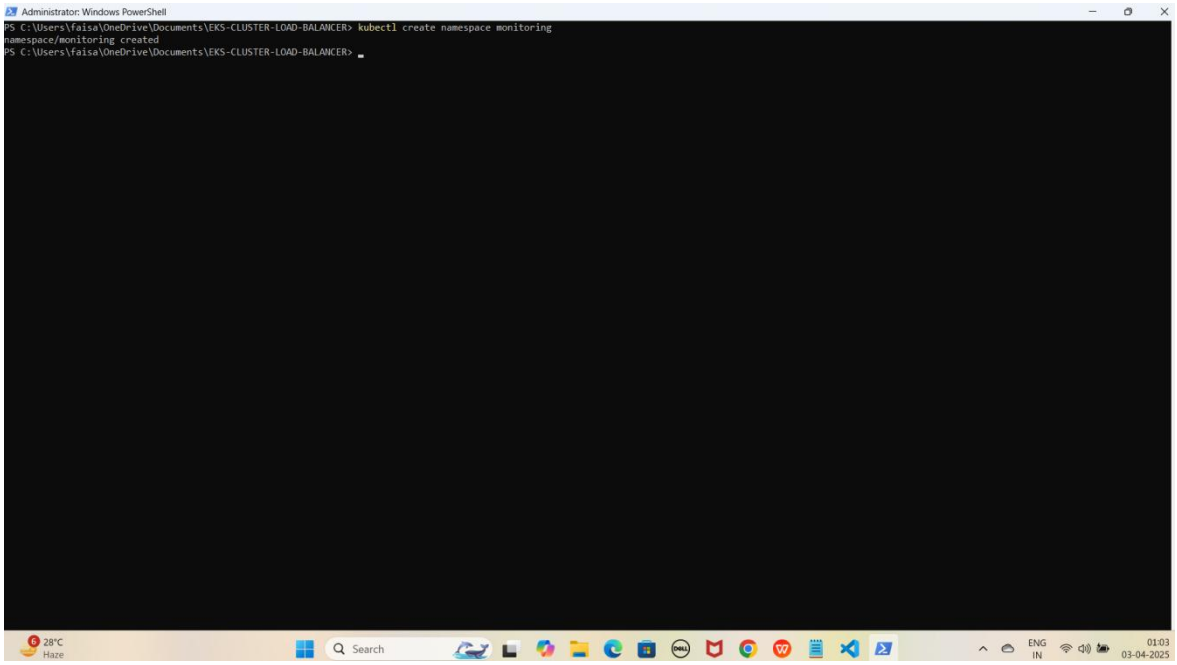
NOTE : Aapko faisal_db naam ka database dikhega, aur isi tarah aap mysql-1 aur mysql-2 ke liye bhi access kar sakte hain.

Part 8: Monitoring Using Prometheus and Loki With Grafana

Kubernetes me ek naya namespace 'monitoring' create karna hoga. Namespace create karne ke liye ye command run kariye

kubectl create namespace monitoring

YE KUCH ISTARHA LAGEGA



Step 1: prometheus-daemonset.yaml File Ka Kaam

Yeh **file Prometheus monitoring tool deploy** karne ke liye use hoti hai. Isko **cluster ka CPU usage, memory, aur network monitor** karne ke liye **Kubernetes DaemonSet** ke andar likha jata hai.

JAISE KI:-

```yaml
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: prometheus
  namespace: monitoring
spec:
  selector:
    matchLabels:
      app: prometheus
  template:
    metadata:
      labels:
        app: prometheus
    spec:
      containers:
        - name: prometheus
          image: prom/prometheus:v2.31.1
          args:
            - "--config.file=/etc/prometheus/prometheus.yml"
            - "--storage.tsdb.path=/prometheus"
            - "--web.enable-lifecycle"
          volumeMounts:
            - name: prometheus-config
              mountPath: /etc/prometheus
            - name: prometheus-storage
              mountPath: /prometheus
      volumes:
        - name: prometheus-config
          configMap:
            name: prometheus-config
        - name: prometheus-storage
          emptyDir: {}

---
apiVersion: v1
kind: ConfigMap
metadata:
  name: prometheus-config
  namespace: monitoring
data:
  prometheus.yml: |
    global:
      scrape_interval: 15s  # Default scrape interval for all jobs
```

```yaml
    scrape_configs:
      # Kubernetes Nodes Service Discovery for Node Exporters
      - job_name: 'kubernetes-nodes'
        kubernetes_sd_configs:
          - role: node  # Specify the role as 'node'
        relabel_configs:
          - source_labels: [__meta_kubernetes_node_name]  # Scrape metrics from nodes
            target_label: kubernetes_node
          - source_labels: [__meta_kubernetes_node_label_kubernetes_io_hostname]  # Include the
node hostname as a label
```

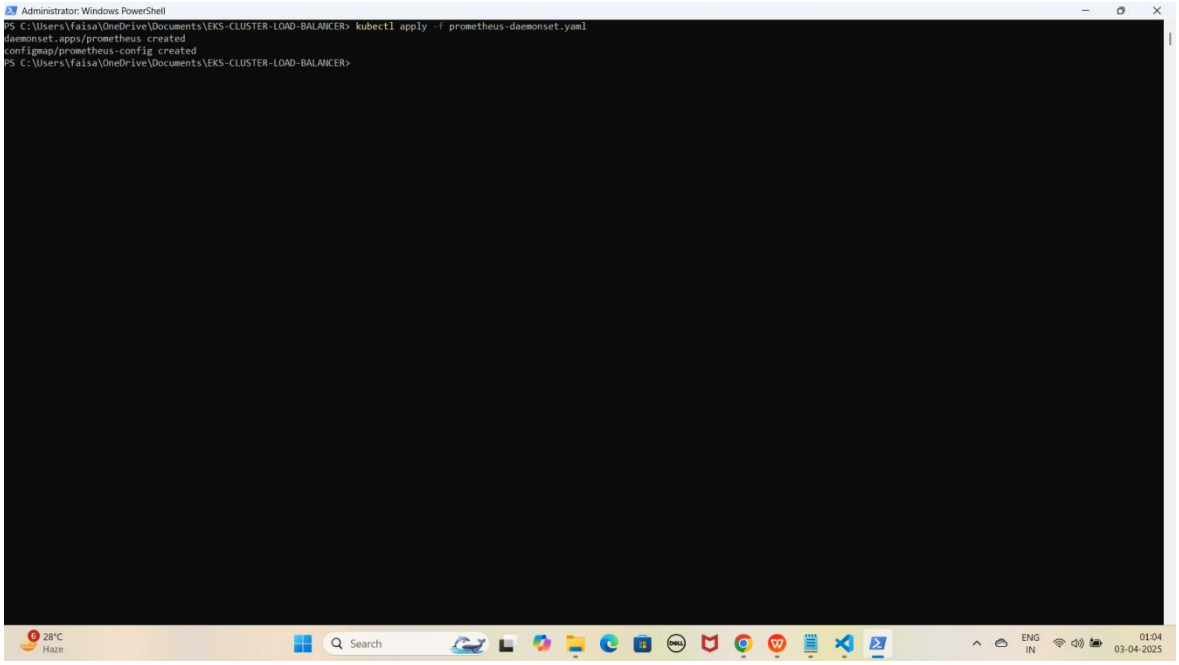
```
            target_label: kubernetes_hostname
```

```
      # Kubernetes Pods Service Discovery (for scraping Kubernetes pods)
      - job_name: 'kubernetes-pods'
        kubernetes_sd_configs:
          - role: pod  # Scrape all pods (can be further refined with relabeling)
        relabel_configs:
          - source_labels: [__meta_kubernetes_pod_label_app]  # Use pod labels for further
filtering
            target_label: app
```

Prometheus DaemonSet Apply Karo

kubectl apply -f prometheus-daemonset.yaml

YE KUCH ISTARHA LAGEGA



Step 2: prometheus-rbac.yaml File Ka Kaam

Yeh **file Prometheus** ko required **permissions** dene ke liye use hoti hai, taake woh **cluster** ke **resources** ko **access** kar sake.

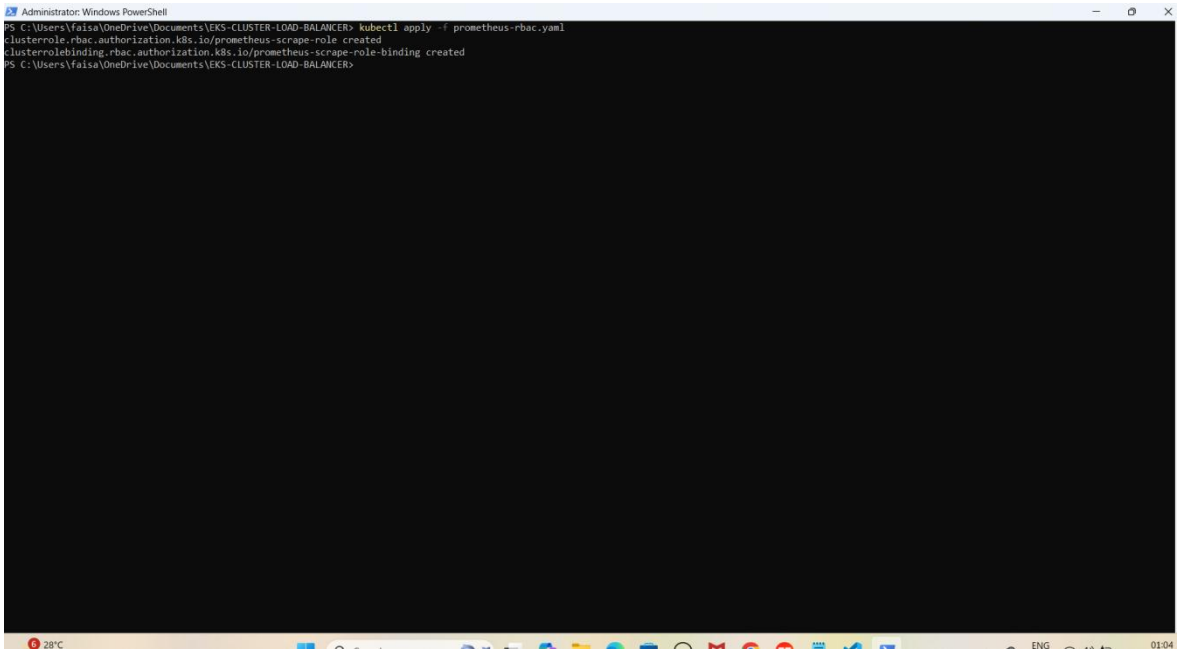
JAISE KI:-

```yaml
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRole
metadata:
  name: prometheus-scrape-role
rules:
  - apiGroups: [""]
    resources: ["pods", "nodes"]
    verbs: ["get", "list", "watch"]
  - apiGroups: ["metrics.k8s.io"]
    resources: ["nodes", "pods"]
    verbs: ["get", "list", "watch"]
  - apiGroups: ["apps"]
    resources: ["deployments", "replicasets", "daemonsets"]
    verbs: ["get", "list", "watch"]
  - apiGroups: ["extensions"]
    resources:  ["ingresses"]
    verbs: ["get", "list", "watch"]
  - apiGroups: [""]
    resources: ["services", "endpoints"]
    verbs: ["get", "list", "watch"]
---
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRoleBinding
metadata:
  name: prometheus-scrape-role-binding
subjects:
  - kind: ServiceAccount
    name: default
    namespace: monitoring
roleRef:
  kind: ClusterRole
  name: prometheus-scrape-role
  apiGroup: rbac.authorization.k8s.io
```

Prometheus RBAC Apply Karo

kubectl apply -f prometheus-rbac.yaml

YE KUCH ISTARHA LAGEGA



Step 3: prometheus-nodeport-service.yaml File Ka Kaam

Yeh **file Prometheus** ko port **30090** par **NodePort service** ke zariye **expose** karne ke liye use hoti hai, taake hum usko **browser** me **access** kar sakein.

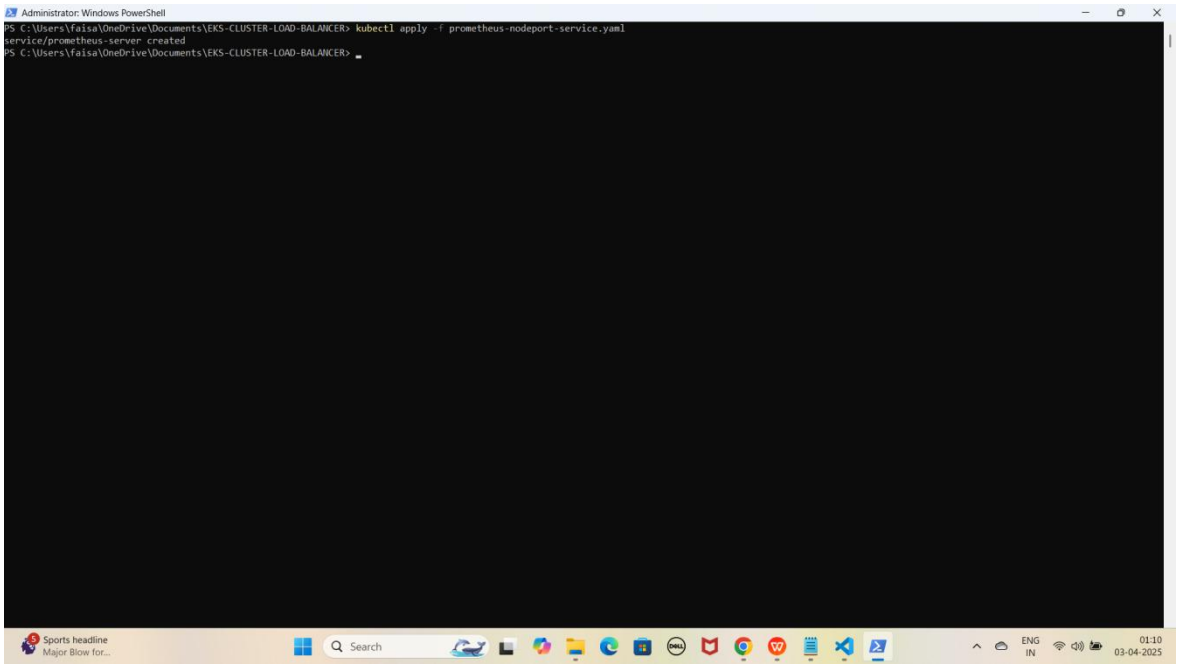
JAISE KI:-

```yaml
apiVersion: v1
kind: Service
metadata:
  name: prometheus-server
  namespace: monitoring
spec:
  ports:
    - port: 80
      targetPort: 9090
      nodePort: 30090
  selector:
    app: prometheus
  type: NodePort
```

Prometheus Service Apply Karo

kubectl apply -f prometheus-nodeport-service.yaml

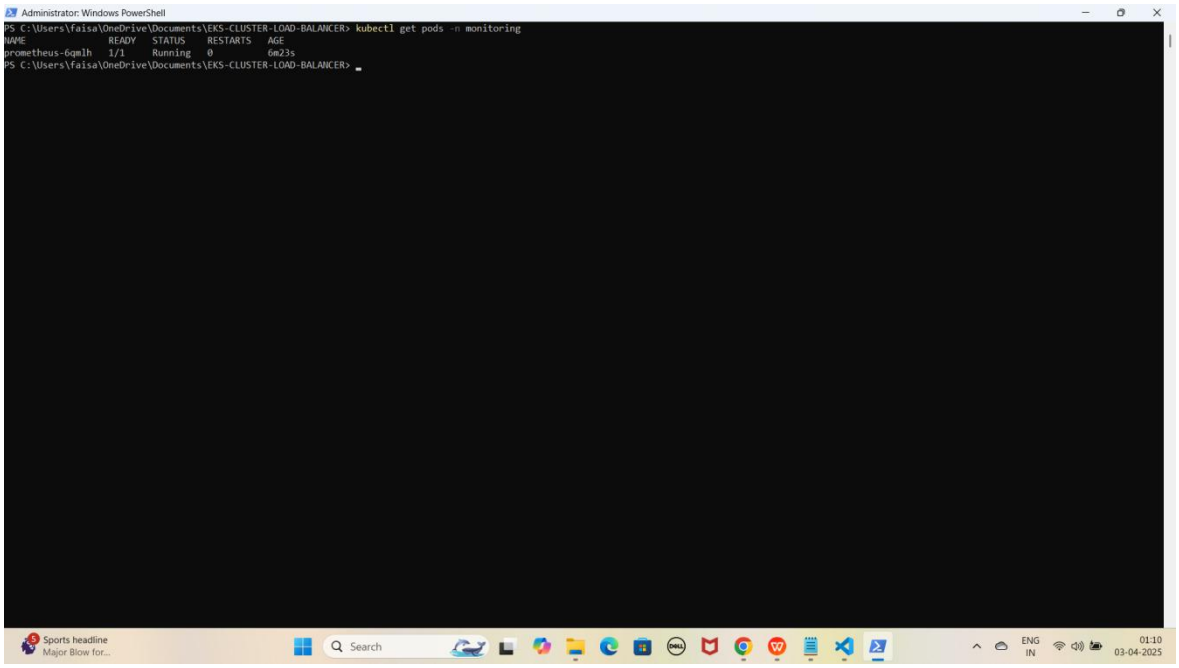
YE KUCH ISTARHA LAGEGA



1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA

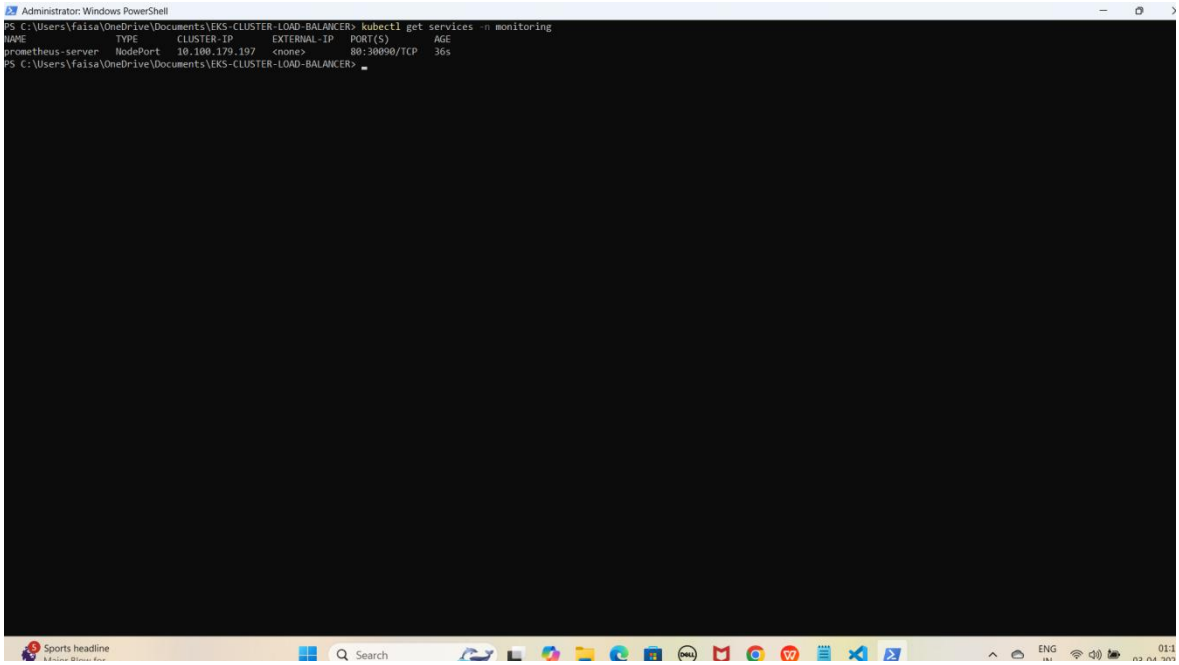


NOTE: Agar STATUS Running show karraha hai to sab kuch sahi hai

2. Serives check karne ke liye ye commad run kariye

kubectl get services -n monitoring

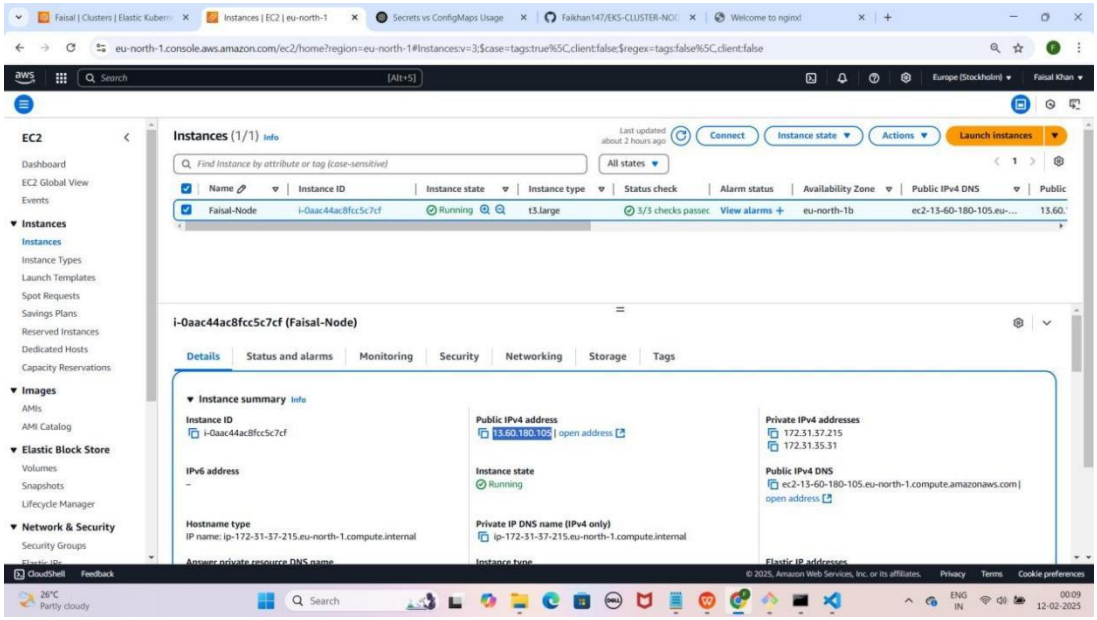
YE KUCH ISTARHA LAGEGA

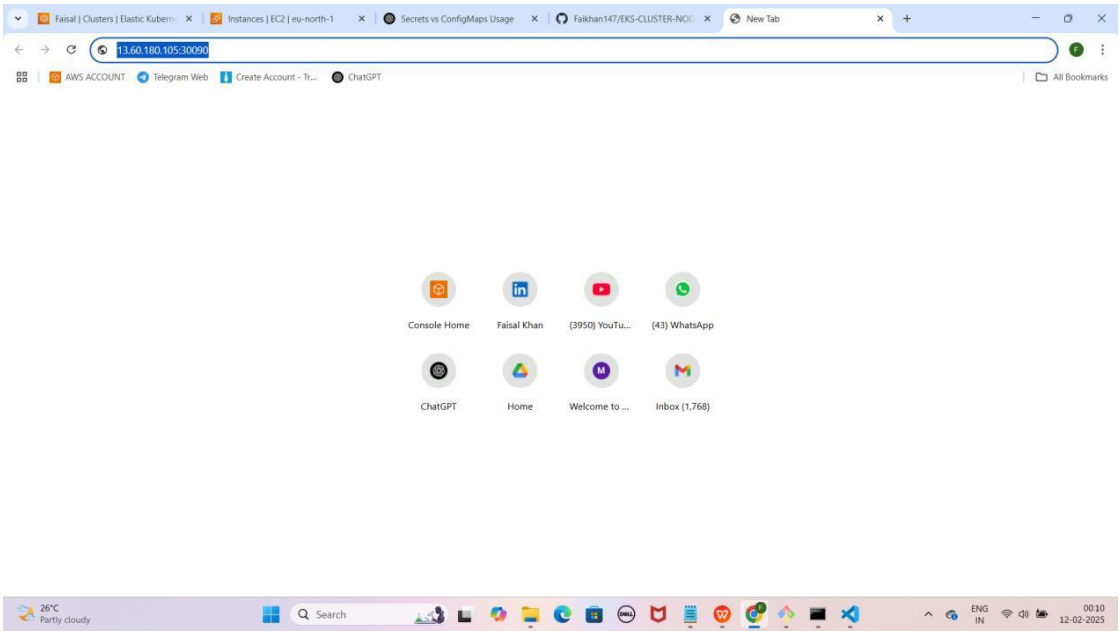


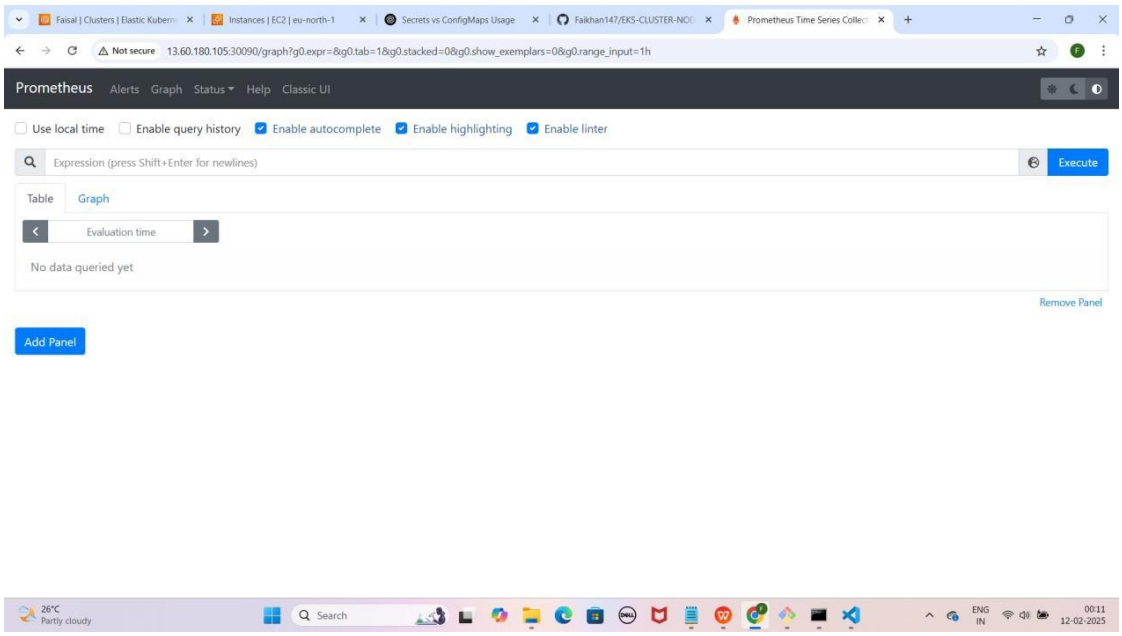
NOTE: Ab aapka Prometheus 30090 port par expose ho chuka hai. Browser me EKS Node ki Public IP ke saath check kariye jaise ki mere case me kuch aisa hoga

Prometheus: http://EKS-Node-Public IP:30090

YE KUCH ISTARHA LAGEGA





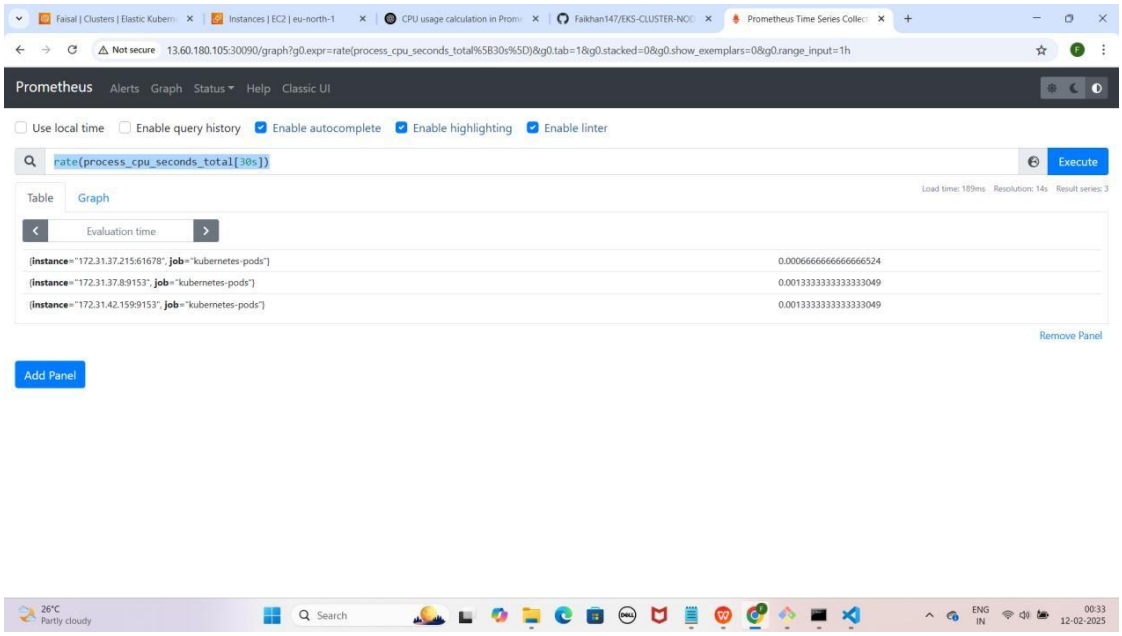


3. CPU usage check karne ke liye Prometheus me ye command run karein

rate(process_cpu_seconds_total[30s])

Note: Command Prometheus me paste karne ke baad Execute pe click karein.

YE KUCH ISTARHA LAGEGA

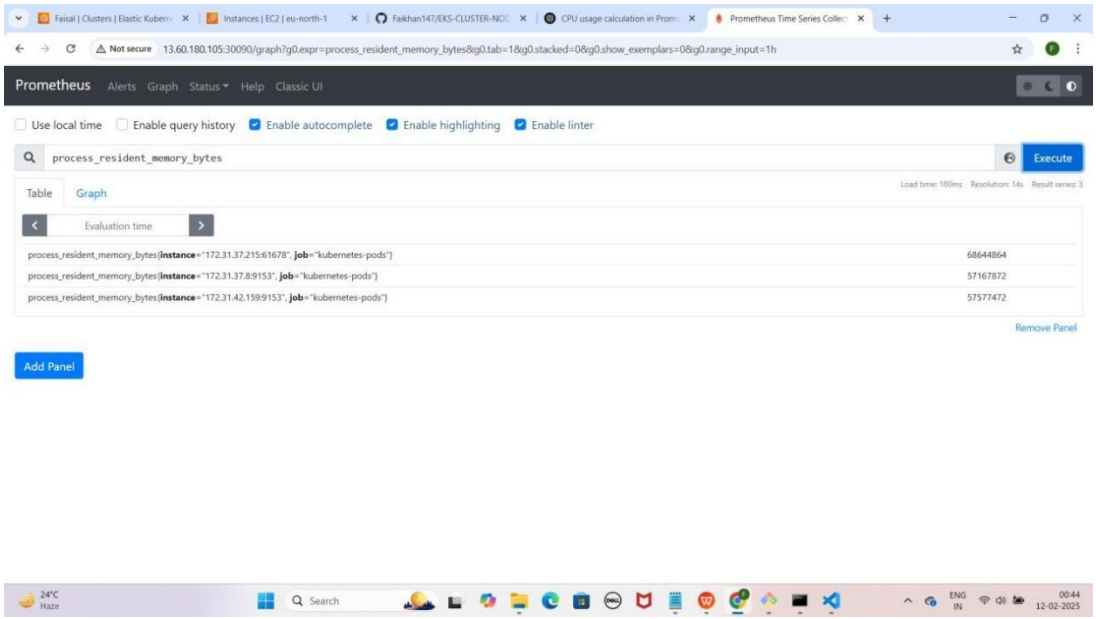


4. Memory usage check karne ke liye Prometheus me ye command run karein

process_resident_memory_bytes

Note: Command Prometheus me paste karne ke baad Execute pe click karein.

YE KUCH ISTARHA LAGEGA

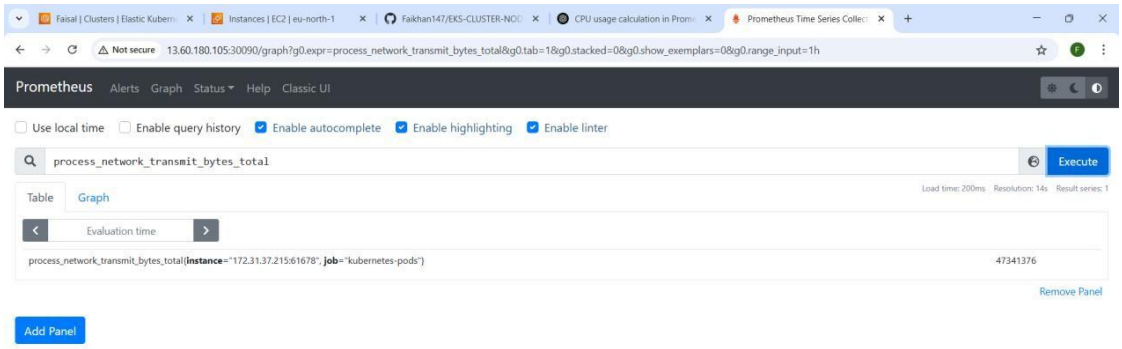


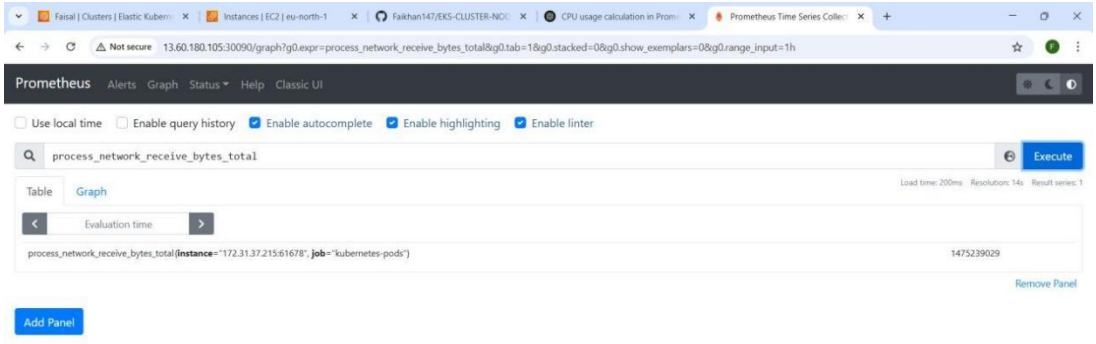
5. Network Transmit aur Receive Bytes me dekhne ke liye Prometheus me ye commands run karein

- **Transmit Bytes:** process_network_transmit_bytes_total
- **Receive Bytes:** process_network_receive_bytes_total

Note: Command Prometheus me paste karne ke baad Execute pe click karein.

YE KUCH ISTARHA LAGEGA





Step 4: promtail-daemonset.yaml File Ka Kaam

Yeh **file cluster** se **logs collect** karne aur unhe **Loki** par bhejne ke liye use hoti hai.

JAISE KI:-

```yaml
---
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: promtail
  namespace: monitoring
spec:
  selector:
    matchLabels:
      app: promtail
  template:
    metadata:
      labels:
        app: promtail
    spec:
      containers:
        - name: promtail
          image: grafana/promtail:2.3.0
          args:
            - "-config.file=/etc/promtail/promtail-config.yaml"
          volumeMounts:
            - name: promtail-config
              mountPath: /etc/promtail
            - name: varlogs
              mountPath: /var/log
            - name: positions
              mountPath: /run/promtail
          resources:
            requests:
              memory: "128Mi"
              cpu: "100m"
            limits:
              memory: "256Mi"
              cpu: "500m"
          readinessProbe:
            httpGet:
              path: /ready
              port: 9080
            initialDelaySeconds: 5
            periodSeconds: 10
          livenessProbe:
            httpGet:
              path: /ready
              port: 9080
            initialDelaySeconds: 10
            periodSeconds: 20
          securityContext:
            runAsUser: 0  # Run as root to allow access to restricted files
            runAsGroup: 0 # Run as root group
            privileged: true # Optional: Uncomment if needed to run in privileged mode
      volumes:
        - name: promtail-config
          configMap:
            name: promtail-config
        - name: varlogs
          hostPath:
            path: /var/log
```

```
            type: DirectoryOrCreate
        - name: positions
          emptyDir: {}
---
apiVersion: v1
kind: ConfigMap
metadata:
  name: promtail-config
  namespace: monitoring
data:
  promtail-config.yaml: |
    server:
      http_listen_port: 9080
      grpc_listen_port: 0

    positions:
      filename: /run/promtail/positions.yaml
```

```
    clients:
      - url: http://loki.monitoring.svc.cluster.local:3100/loki/api/v1/push
```

```
    scrape_configs:
      - job_name: system
        static_configs:
          - targets:
              - localhost
            labels:
              job: varlogs
              __path__: /var/log/*.log
```

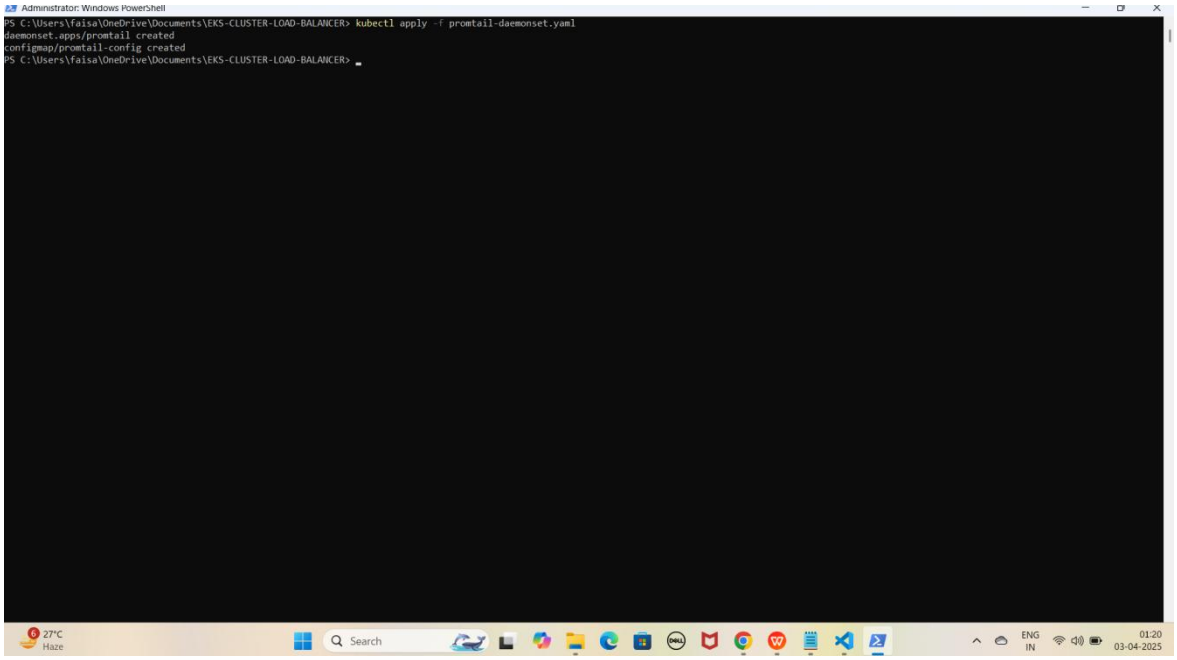
```
      - job_name: kubernetes-pods
        static_configs:
          - targets:
              - localhost
            labels:
              job: podlogs
              __path__: /var/log/pods/**/*.log
```

```
      # Additional configurations can be added here if needed
```

Promtail DaemonSet Apply Karo

kubectl apply -f promtail-daemonset.yaml

YE KUCH ISTARHA LAGEGA



Step 5: loki-daemonset.yaml File Ka Kaam

Yeh **file Loki** ko ek **logs database** ke taur par **setup** karne ke liye use hoti hai, jo **Promtail** se **logs collect** karke **store** karta hai.

JAISE KI:-

```yaml
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name:  loki
  namespace: monitoring
spec:
  selector:
    matchLabels:
      app: loki
  template:
    metadata:
      labels:
        app: loki
    spec:
      serviceAccountName: loki
      containers:
        - name: loki
          image: grafana/loki:2.3.0
          args:
            - "-config.file=/etc/loki/loki-config.yaml"
          ports:
            - containerPort: 3100
              name: http
          resources:
```

```
          requests:
            cpu: "500m"
            memory: "512Mi"
          limits:
            cpu: "1"
            memory: "1Gi"
        volumeMounts:
          - name: loki-config
            mountPath: /etc/loki/loki-config.yaml
            subPath: loki-config.yaml
    volumes:
      - name: loki-config
        configMap:
          name: loki-config
          items:
            - key: loki-config.yaml
              path: loki-config.yaml

---
```

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: loki-config
  namespace: monitoring
data:
  loki-config.yaml: |
    auth_enabled: false  # Disable authentication explicitly
```

```
    server:
      http_listen_port: 3100
```

```
    distributor:
      ring:
        kvstore:
          store: inmemory
```

```
    ingester:
      lifecycler:
        ring:
          kvstore:
            store: inmemory
          replication_factor: 1
      chunk_idle_period: 5m
      chunk_retain_period: 30s
      max_transfer_retries: 0
```

```
    schema_config:
      configs:
        - from: 2020-10-24
          store: boltdb-shipper
          object_store: filesystem
          schema: v11
          index:
            prefix: index_
            period: 24h
```

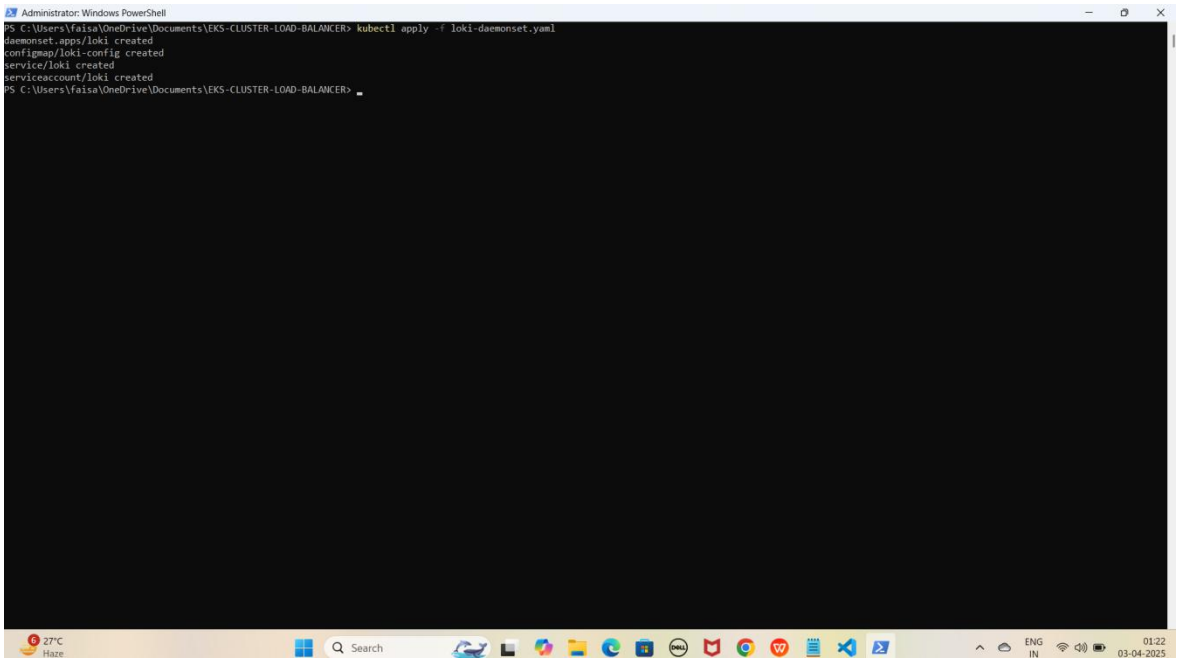
```
    storage_config:
      boltdb_shipper:
        active_index_directory: /loki/index
```

```
        cache_location: /loki/cache
        shared_store: filesystem
      filesystem:
        directory: /loki/chunks

    compactor:
      working_directory: /loki/compactor
      shared_store: filesystem
      compaction_interval: 5m

    limits_config:
      enforce_metric_name: false
      reject_old_samples: true
      reject_old_samples_max_age: 168h

    chunk_store_config:
      max_look_back_period: 0s

    table_manager:
      retention_deletes_enabled: true
      retention_period: 168h

---

apiVersion: v1
kind: Service
metadata:
  name:  loki
  namespace: monitoring
spec:
  type: ClusterIP
  ports:
    - port: 3100
      targetPort: 3100
  selector:
    app: loki

---

apiVersion: v1
kind: ServiceAccount
metadata:
  name: loki
  namespace: monitoring
```

Loki DaemonSet Apply Karo

kubectl apply -f loki-daemonset.yaml

YE KUCH ISTARHA LAGEGA



Step 6: loki-nodeport-service.yaml File Ka Kaam

Yeh **file Loki** ko **expose** karne ke liye use hoti hai, taake hum **port 30091** ke zariye usko **access** kar sakein. Isko **Kubernetes NodePort Service** ke andar likha jata hai.

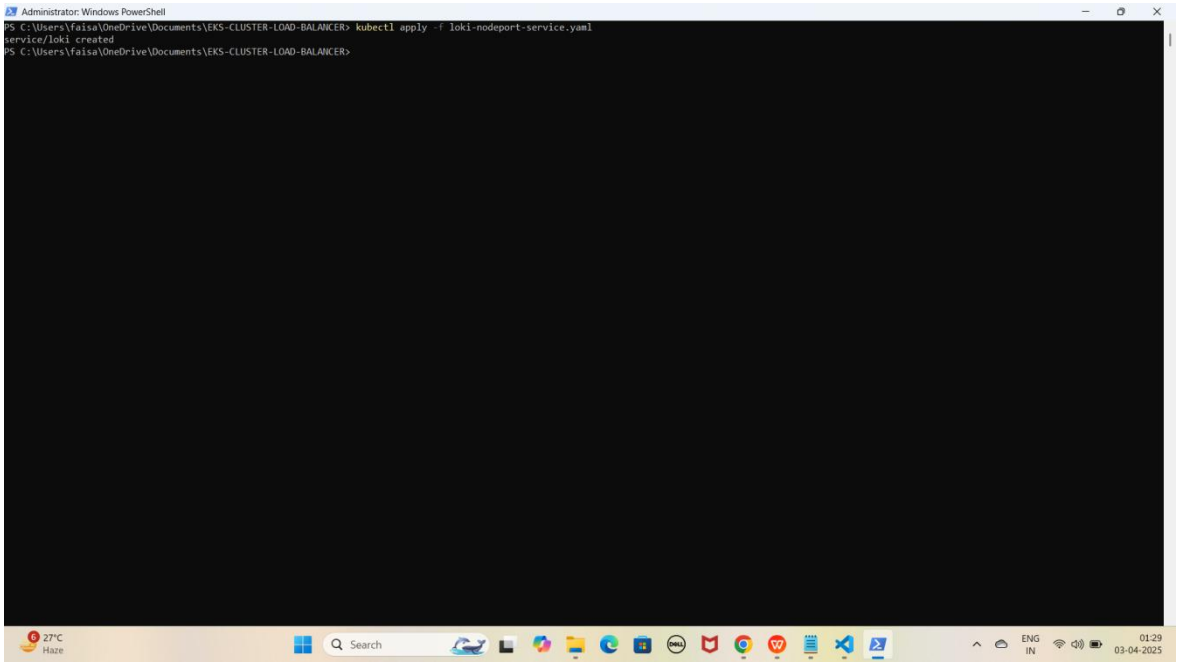
JAISE KI:-

```yaml
apiVersion: v1
kind: Service
metadata:
  name:  loki
  namespace: monitoring
spec:
  ports:
    - port: 3100
      targetPort: 3100
      nodePort: 30091  # This exposes Loki on port 30091
  selector:
    app: loki
  type: NodePort
```

Loki Service Apply Karo

kubectl apply -f loki-nodeport-service.yaml

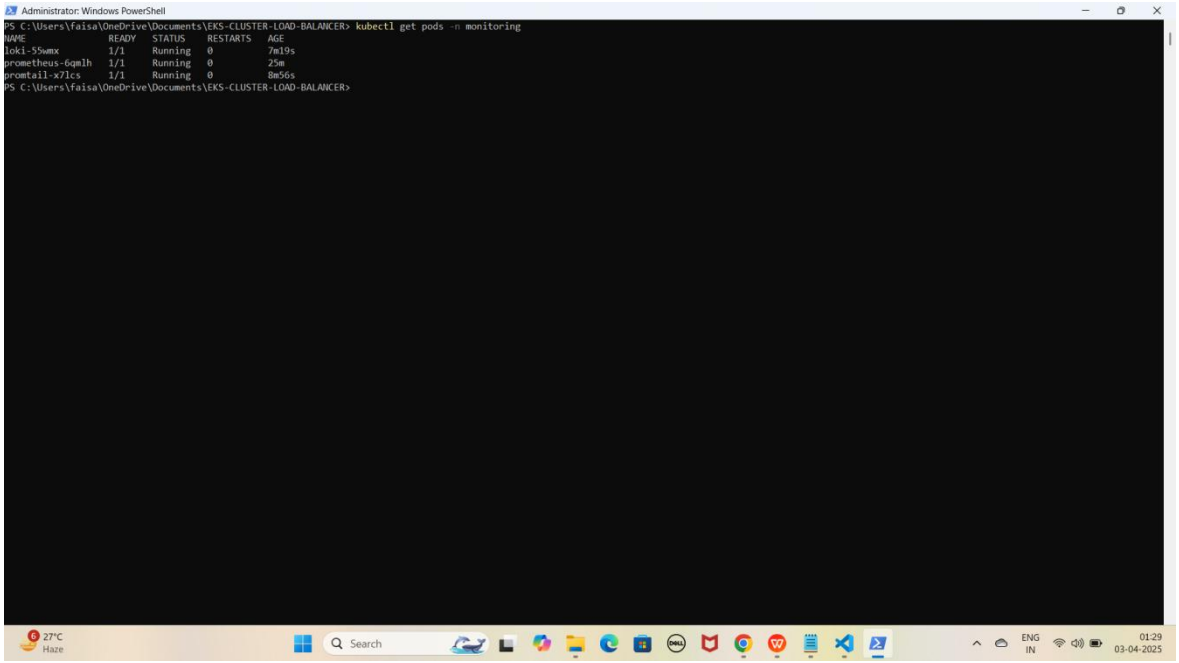
YE KUCH ISTARHA LAGEGA



1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA

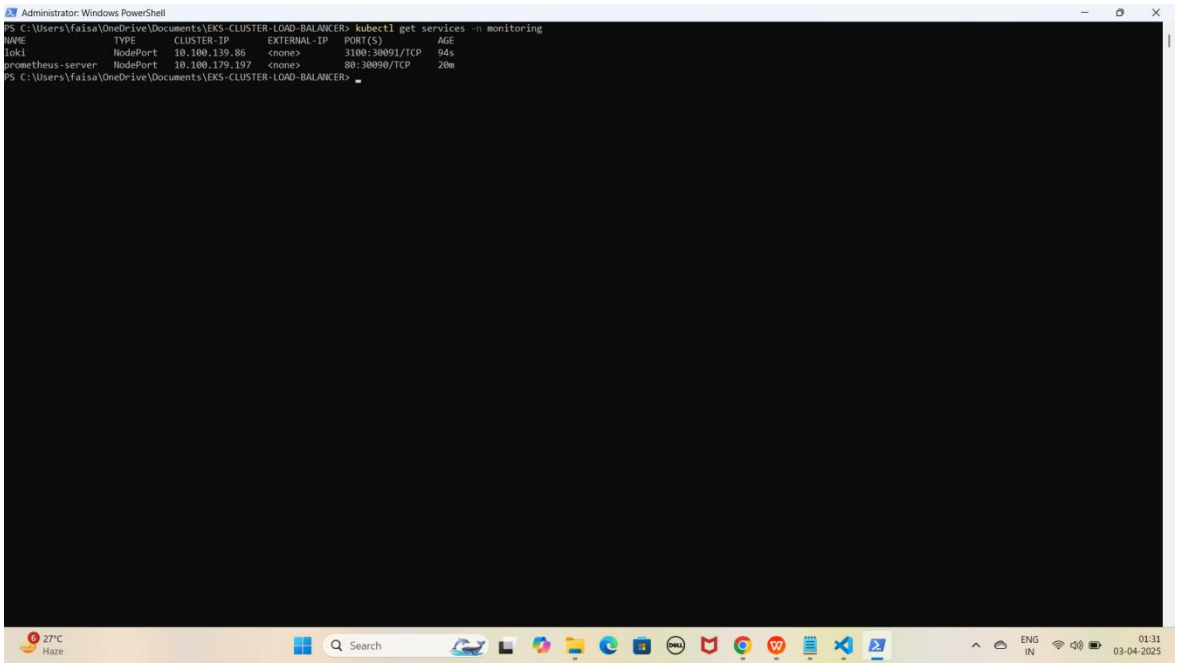


NOTE: Agar STATE Running show karraha hai to sab kuch sahi hai

2. Serives check karne ke liye ye commad run kariye

kubectl get services -n monitoring

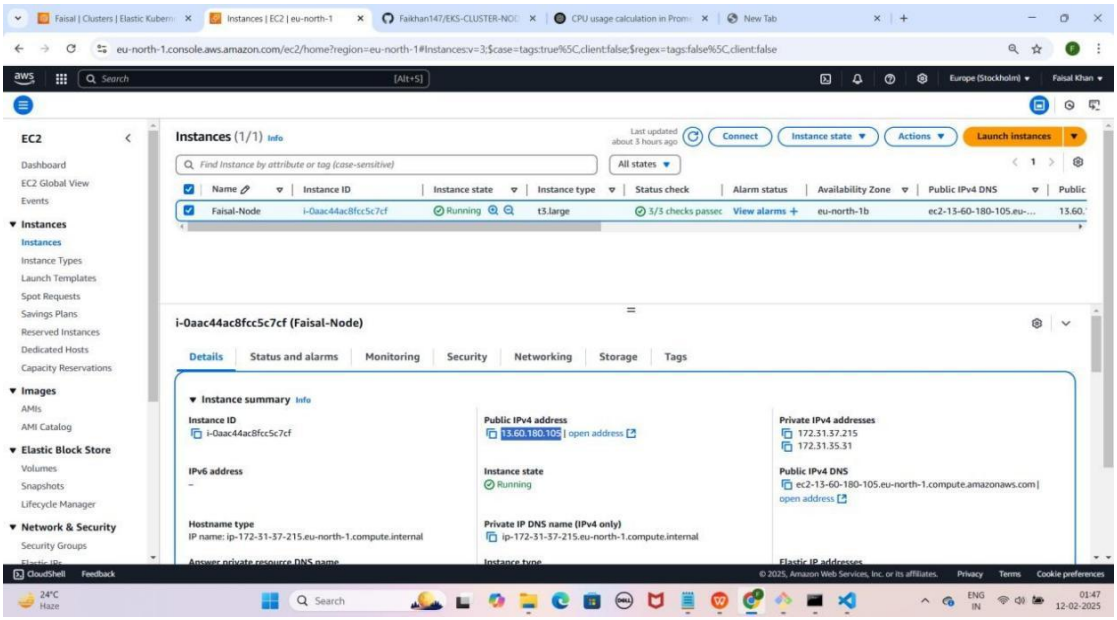
YE KUCH ISTARHA LAGEGA

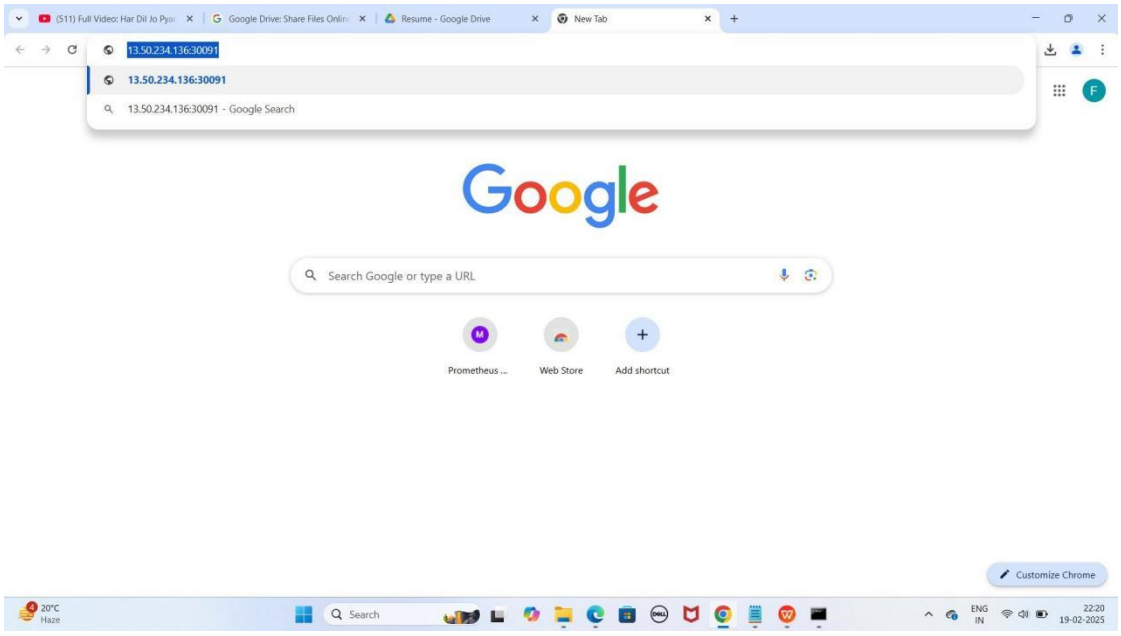


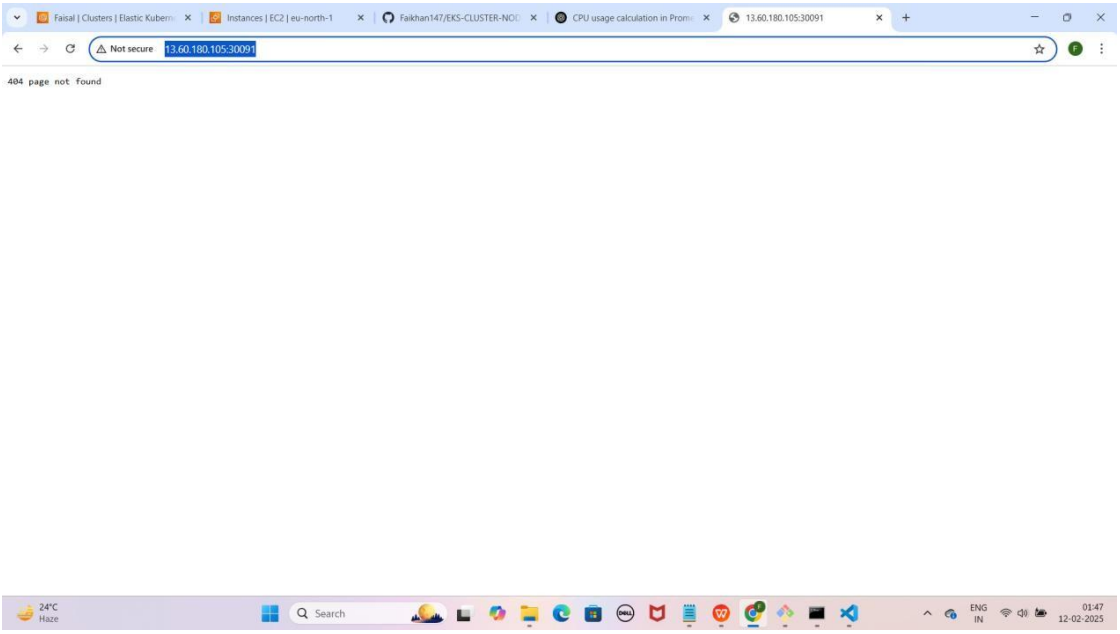
NOTE: Ab aapka Loki 30091 port par expose ho chuka hai. Browser me Cluster Node ki Public IP ke saath check karein jaise ki mere case me kuch aisa hoga.

Loki: http://EKS-Node-Public IP:30091

YE KUCH ISTARHA LAGEGA



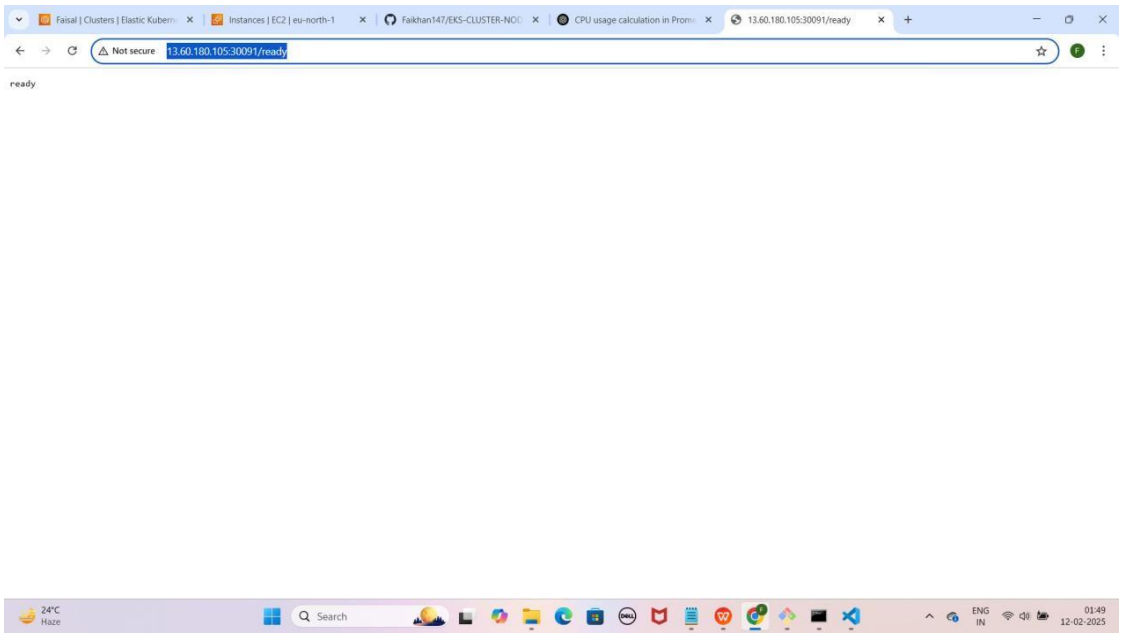




3. Lekin aapko **404 page** not found dikhayga to **/ready** se **check** kariye **loki** ko jaise ki mere case kuch asisa hoga.

http://EKS-Node-Public IP:30091/ready

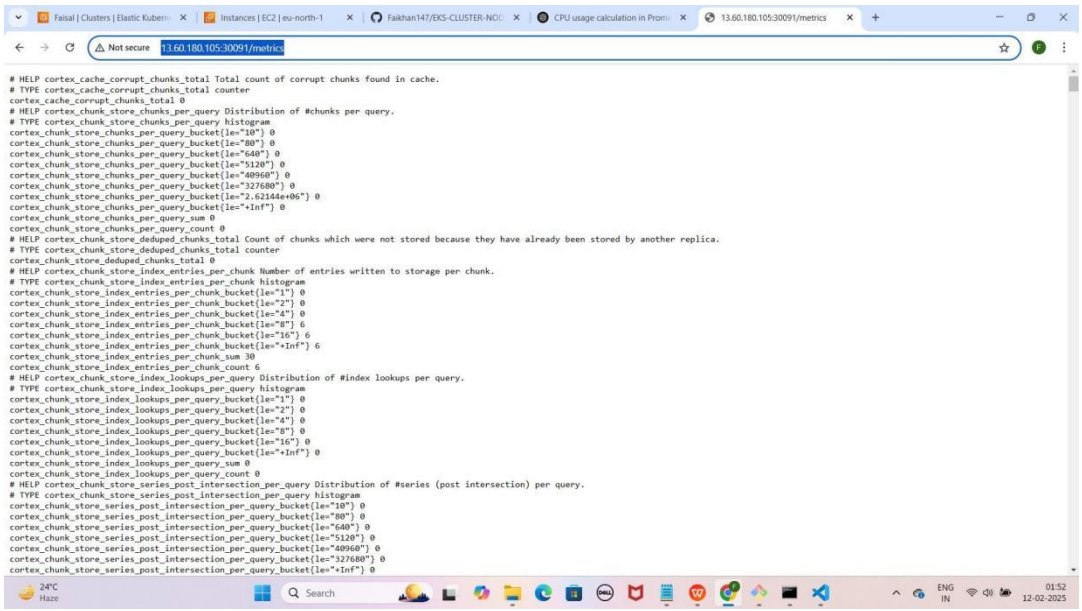
YE KUCH ISTARHA LAGEGA



4. Agar aapko **ready show** karraha hai to iska matlab **loki successfully** run horaha hai ab **loki metrics loggs collect** karraha hai **check** karne ke liye **/metrics** run kariye jaise ki mere case me kuch aisa hoga.

http://EKS-Node-Public IP:30091/metrics

YE KUCH ISTARHA LAGEGA



Step 7: grafana-deployment.yaml File Ka Kaam

Yeh **file Grafana** ko **deploy** karne ke liye use hoti hai, taake hum **Prometheus metrics** aur **Loki logs** ko **visualize** kar sakein. Isme **NodePort Service** bhi use ki gayi hai, jisse **Grafana port 30080** par **expose** hoga.

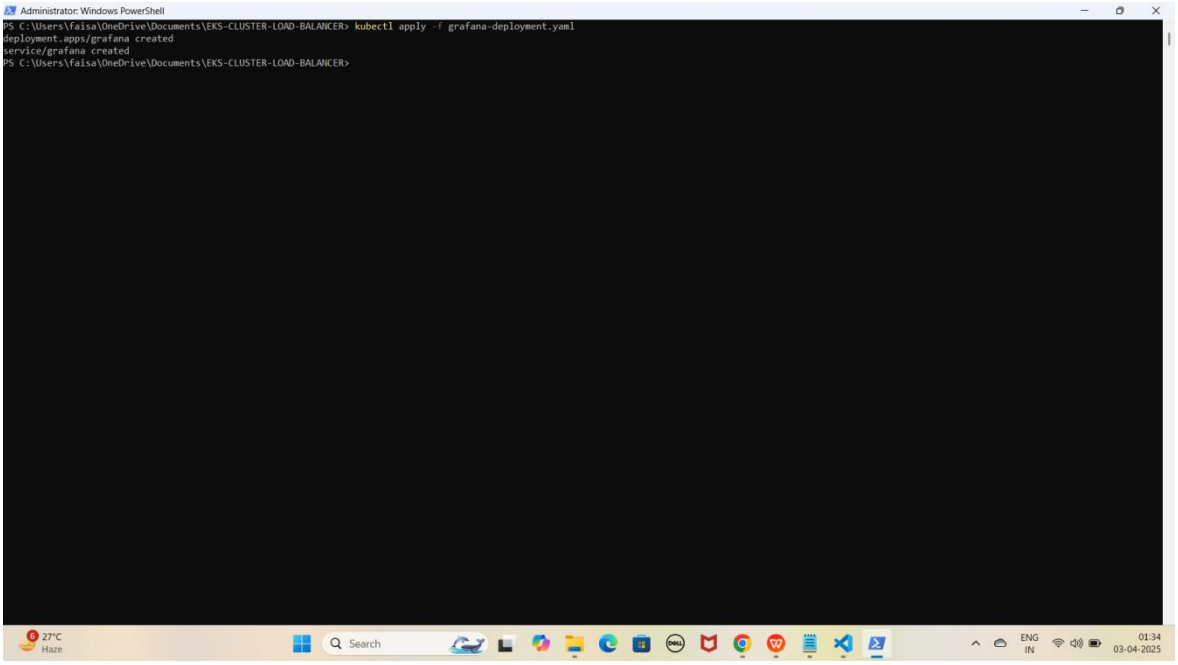
JAISE KI:-

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: grafana
  namespace: monitoring
spec:
  replicas: 1
  selector:
    matchLabels:
      app: grafana
  template:
    metadata:
      labels:
        app: grafana
    spec:
      containers:
        - name: grafana
          image: grafana/grafana:8.3.0
          ports:
            - containerPort: 3000
          env:
            - name: GF_SECURITY_ADMIN_PASSWORD
              value: "admin"
---
apiVersion: v1
kind: Service
metadata:
  name: grafana
  namespace: monitoring
spec:
  type: NodePort   # Change the type from ClusterIP to NodePort
  ports:
    - port: 80
      targetPort: 3000
      nodePort: 30080   # Specify the NodePort (e.g., 30080, any unused port in the range
30000-32767)
  selector:
    app: grafana
```

Grafana Deployment Apply Karo

kubectl apply -f grafana-deployment.yaml

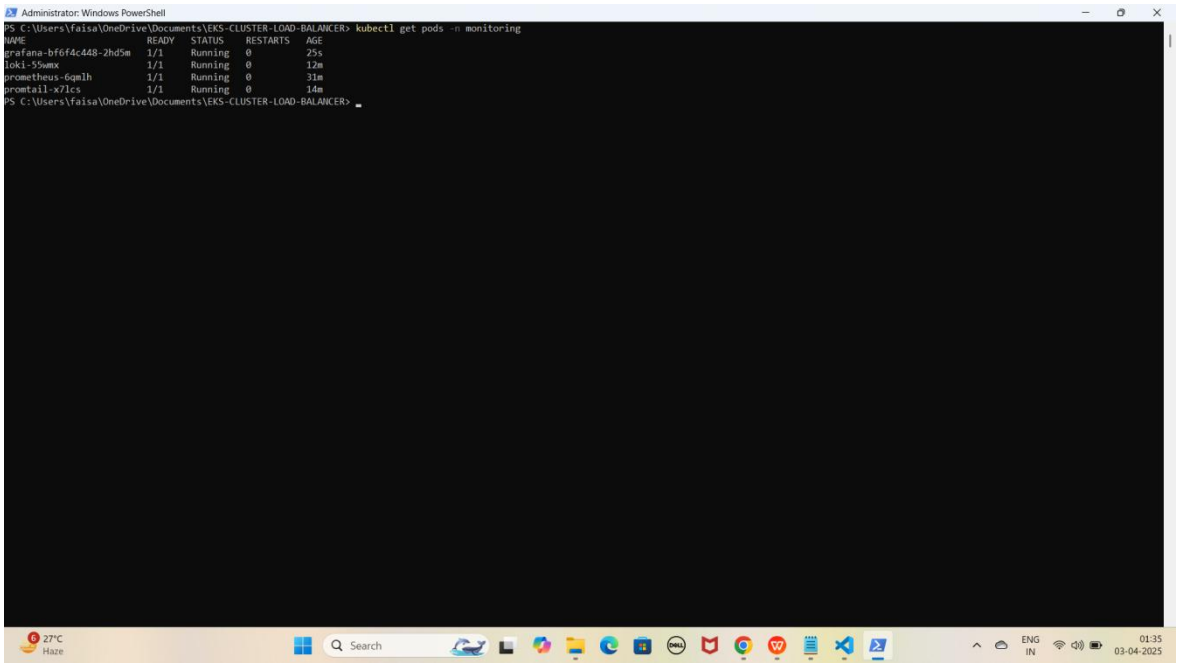
YE KUCH ISTARHA LAGEGA



1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA

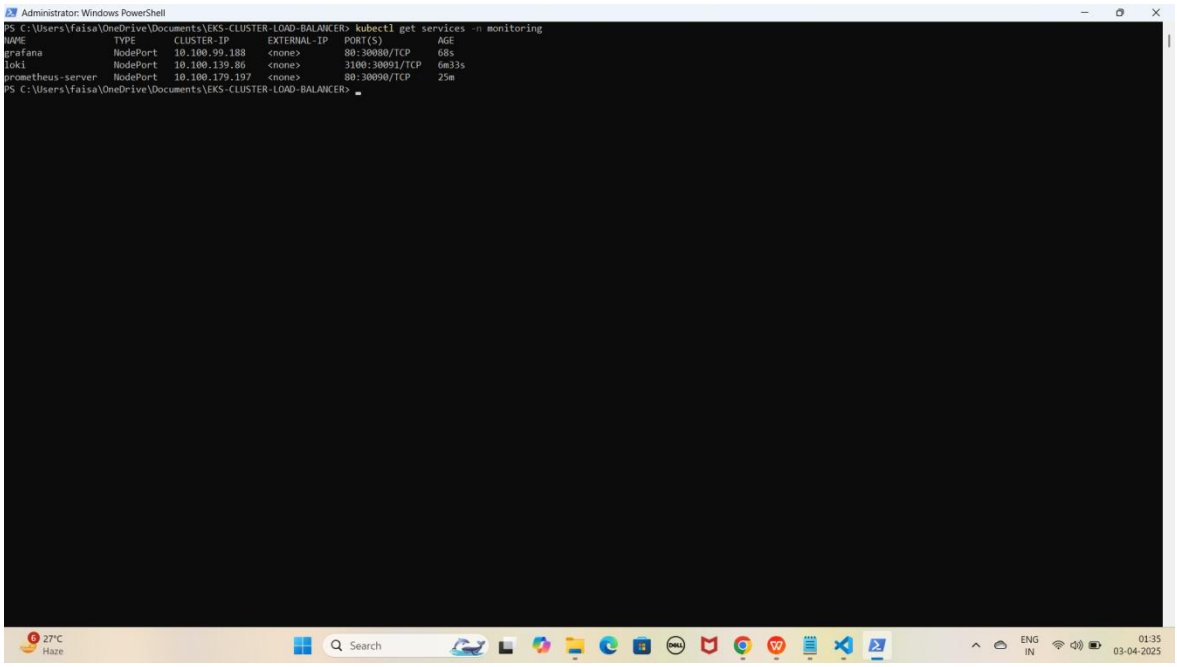


NOTE: Agar STATE Running show karraha hai to sab kuch sahi hai

2. Serives check karne ke liye ye commad run kariye

kubectl get services -n monitoring

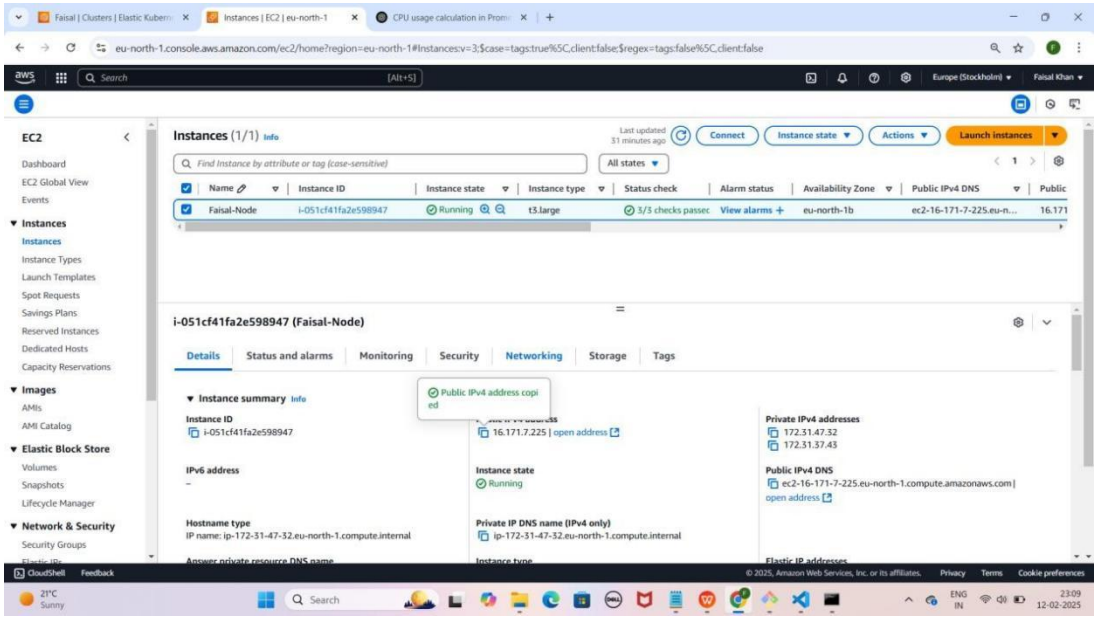
YE KUCH ISTARHA LAGEGA

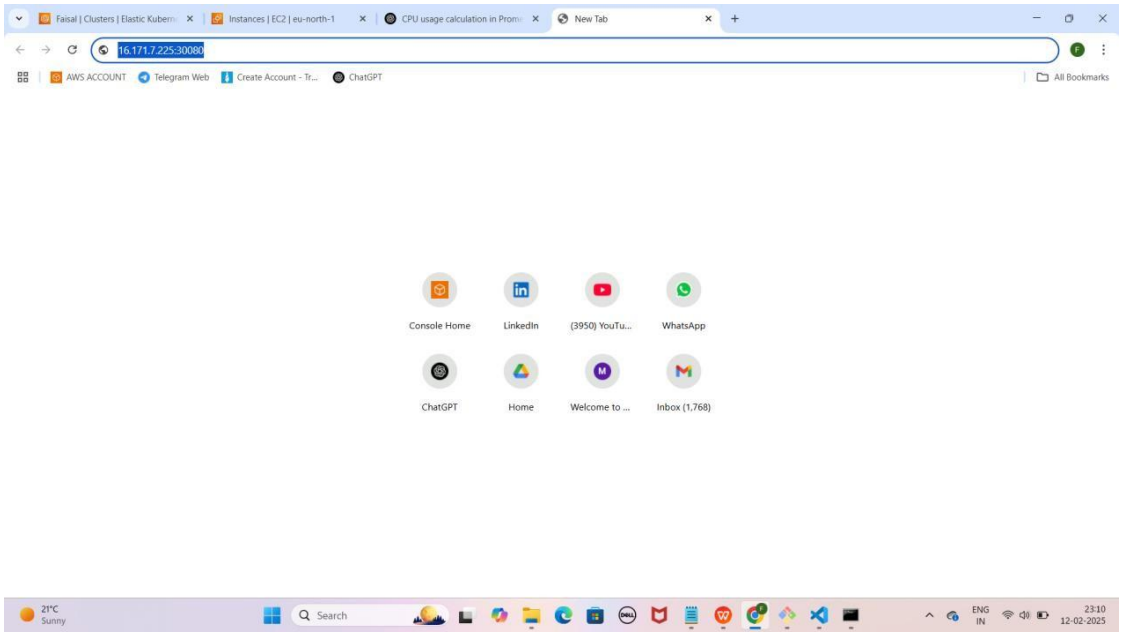


NOTE: Ab aapka Grafana 30080 port par expose ho chuka hai. Browser me Cluster Node ki Public IP ke saath check karein jaise ki mere case me kuch aisa hoga.

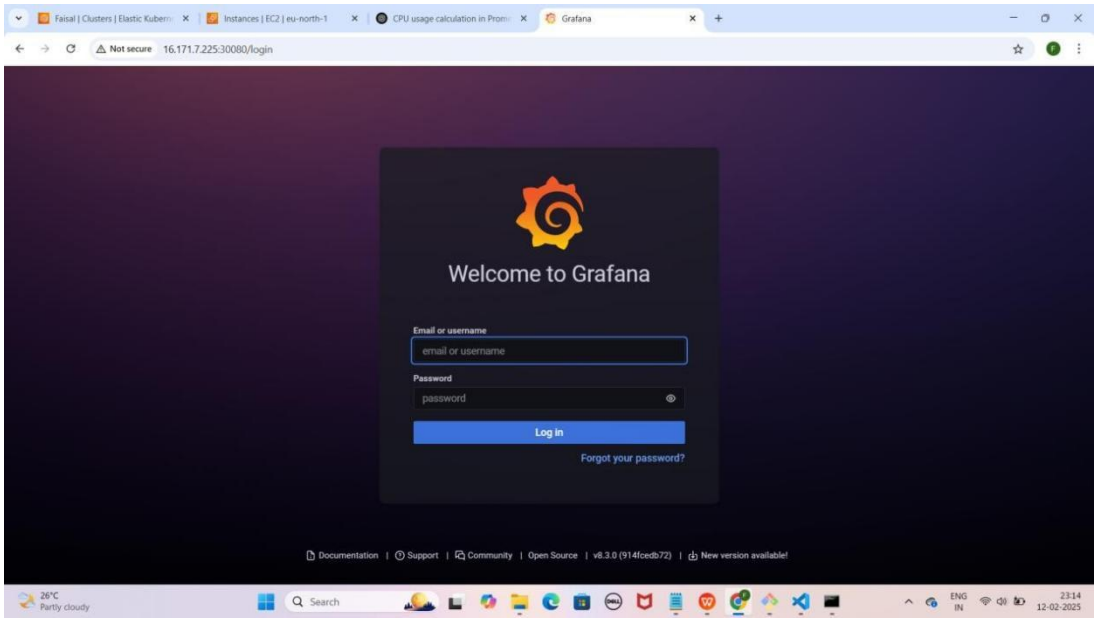
Grafana: http://EKS-Node-Public IP:30080

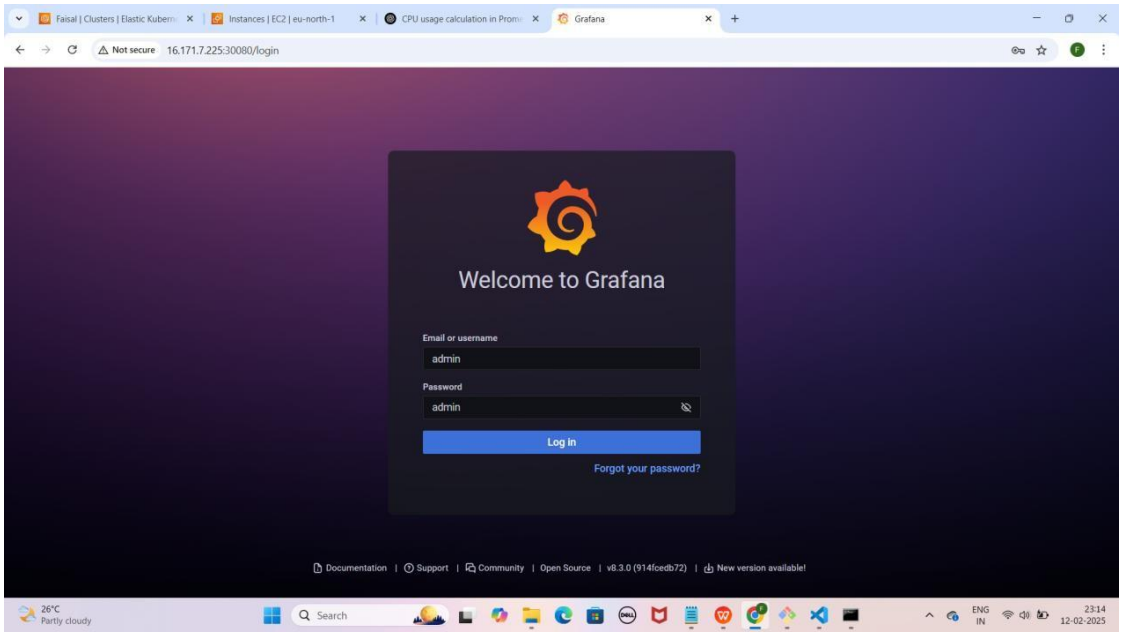
YE KUCH ISTARHA LAGEGA



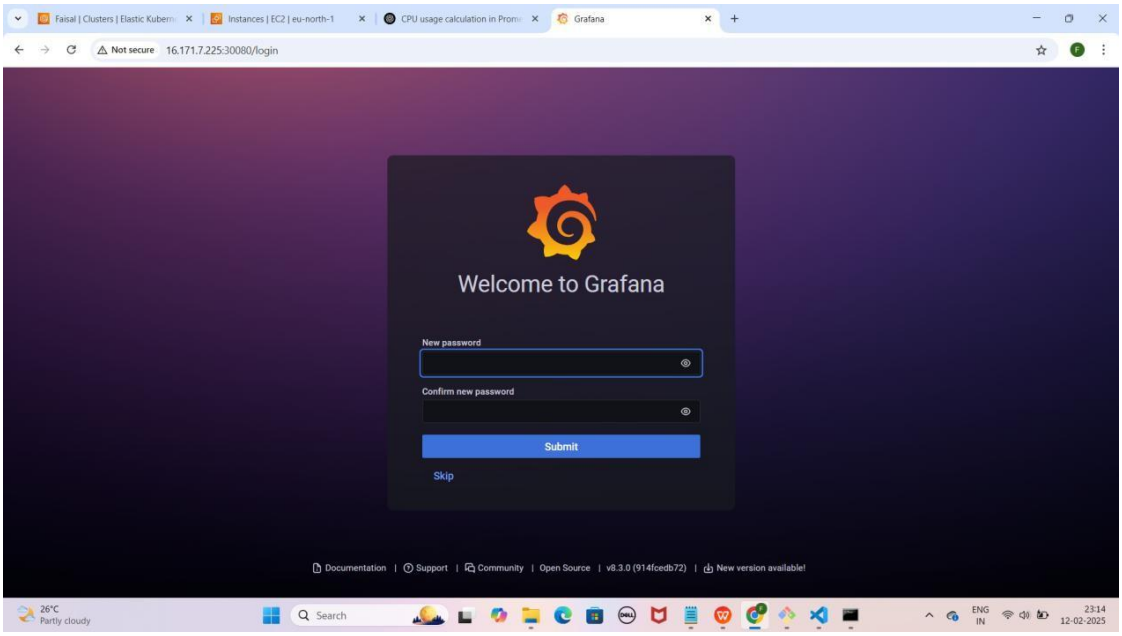


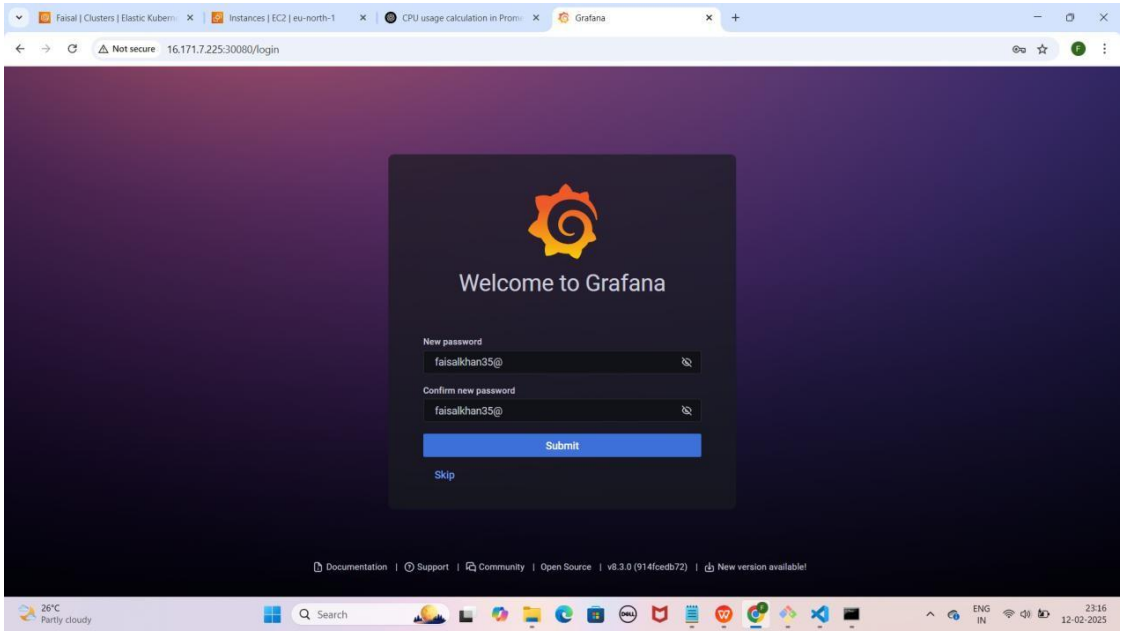
YE KUCH ISTARHA LAGEGA



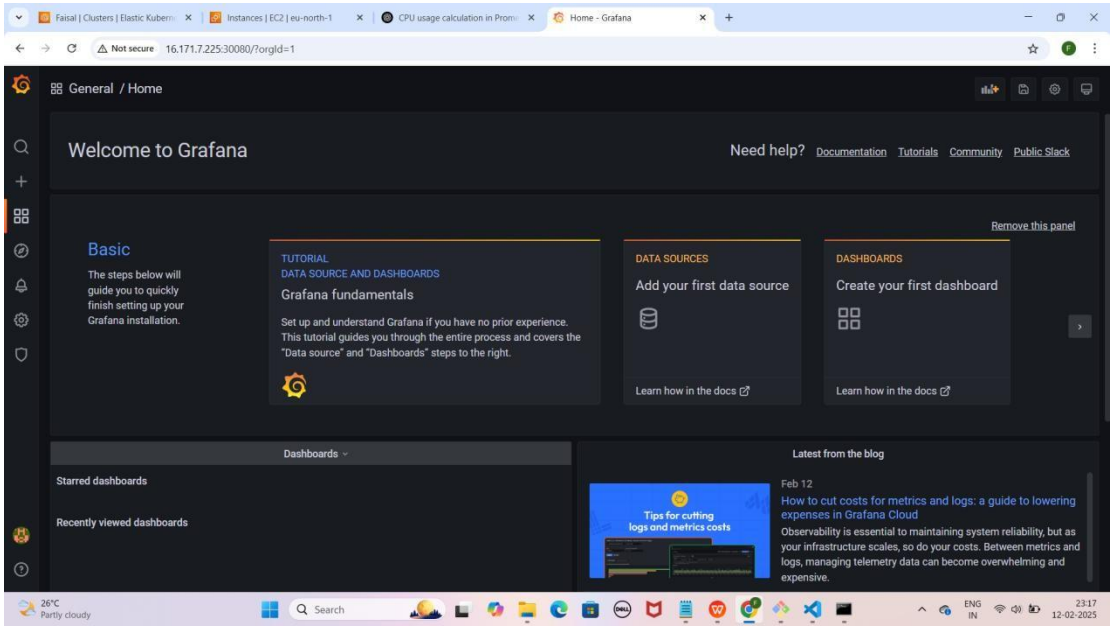


NOTE : Grafana browser me run hone ke baad aapse login ke liye username aur password maangega. Default username aur password admin hota hai. Login ke baad aap apna password change kar sakte hain





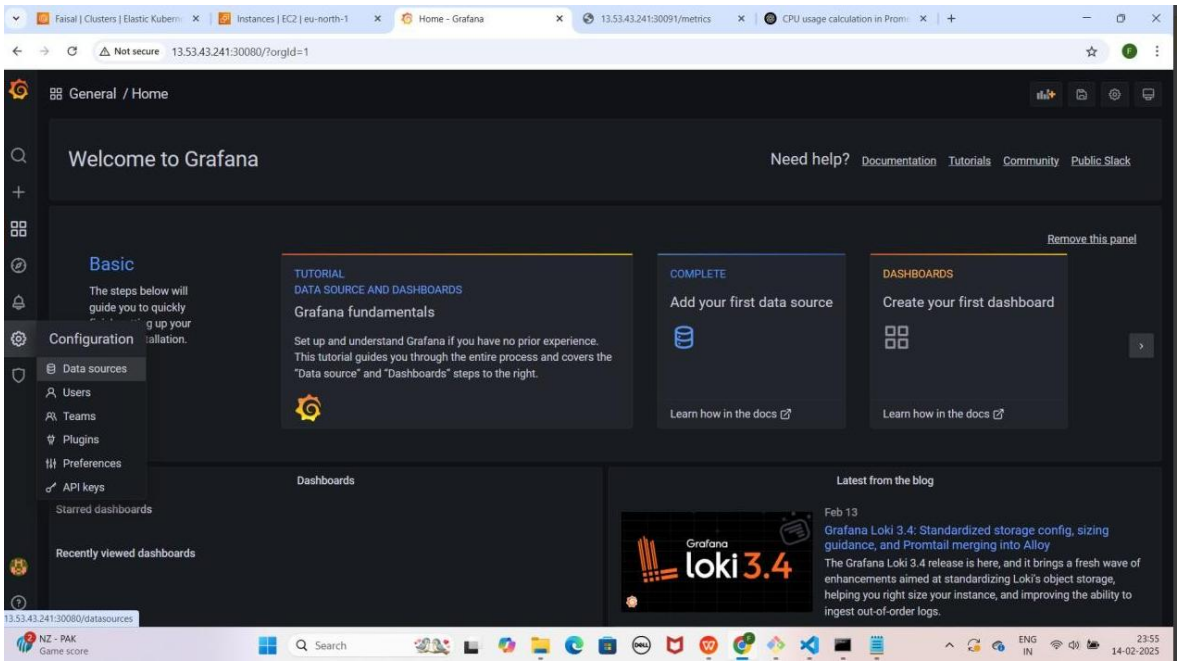
NOTE : Is step par aapko apne pasand ka naya password set karsakte hai. Yaha mai faisalkhan35@ password set kar raha hoon.Password type karne ke baad Submit par click kariye

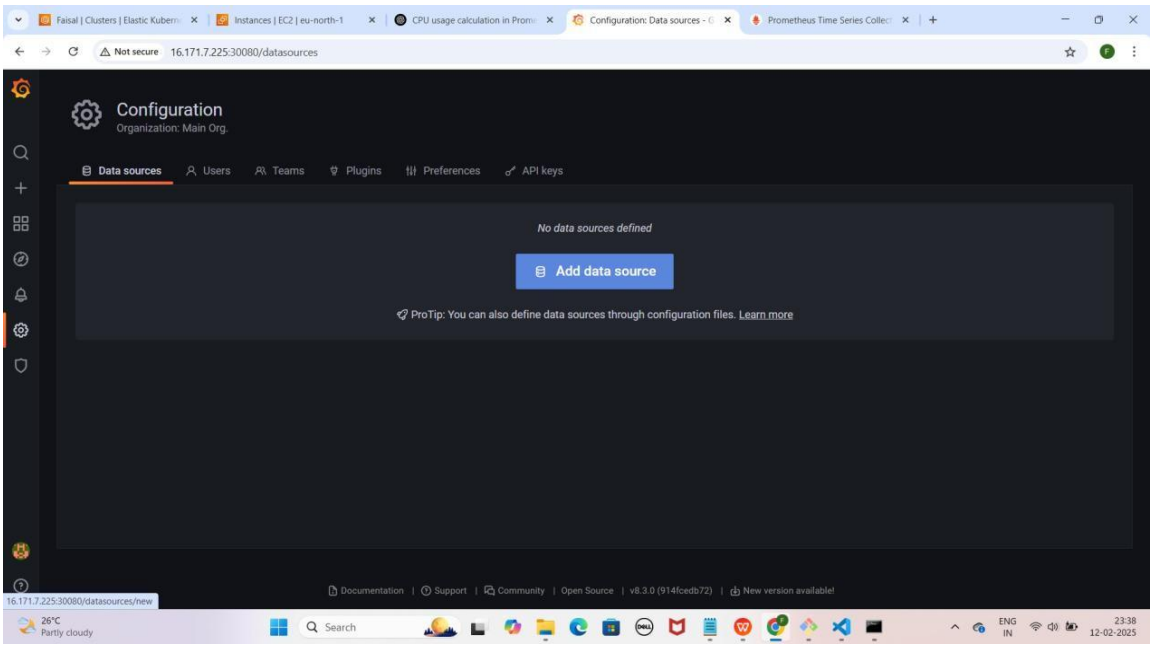

Faisal | Clusters | Elastic Kuberne
Instances | EC2 | eu-north-1
CPU usage calculation in Prome
Home - Grafana
Not secure
16.171.7.225:30080/?orgId=1
General / Home
Welcome to Grafana
Need help?
Documentation
Tutorials
Community
Public Slack
Remove this panel
Basic
The steps below will guide you to quickly finish setting up your Grafana installation.
TUTORIAL
DATA SOURCE AND DASHBOARDS
Grafana fundamentals
Set up and understand Grafana if you have no prior experience. This tutorial guides you through the entire process and covers the "Data source" and "Dashboards" steps to the right.
DATA SOURCES
Add your first data source
Learn how in the docs
DASHBOARDS
Create your first dashboard
Learn how in the docs
Dashboards
Starred dashboards
Recently viewed dashboards
Latest from the blog
Tips for cutting logs and metrics costs
Feb 12
How to cut costs for metrics and logs: a guide to lowering expenses in Grafana Cloud
Observability is essential to maintaining system reliability, but as your infrastructure scales, so do your costs. Between metrics and logs, managing telemetry data can become overwhelming and expensive.
26°C
Partly cloudy
Search
ENG
IN
23:17
12-02-2025

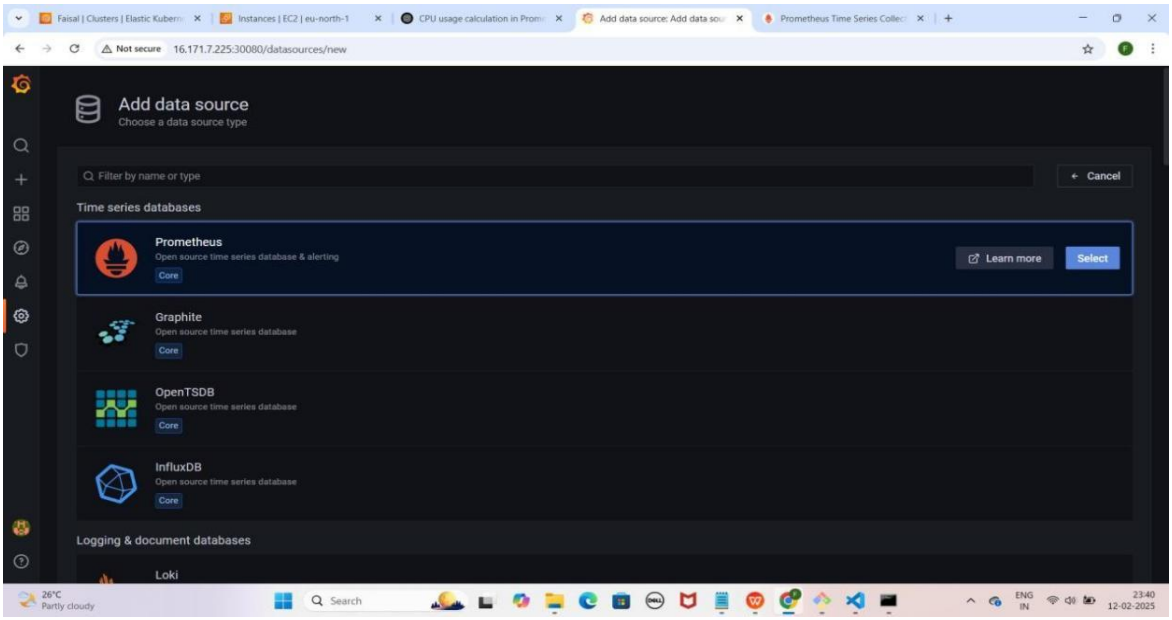
Step 8: Grafana Mein Prometheus Data Source Add Karna, Queries Add Karna Aur Dashboard Create Karna

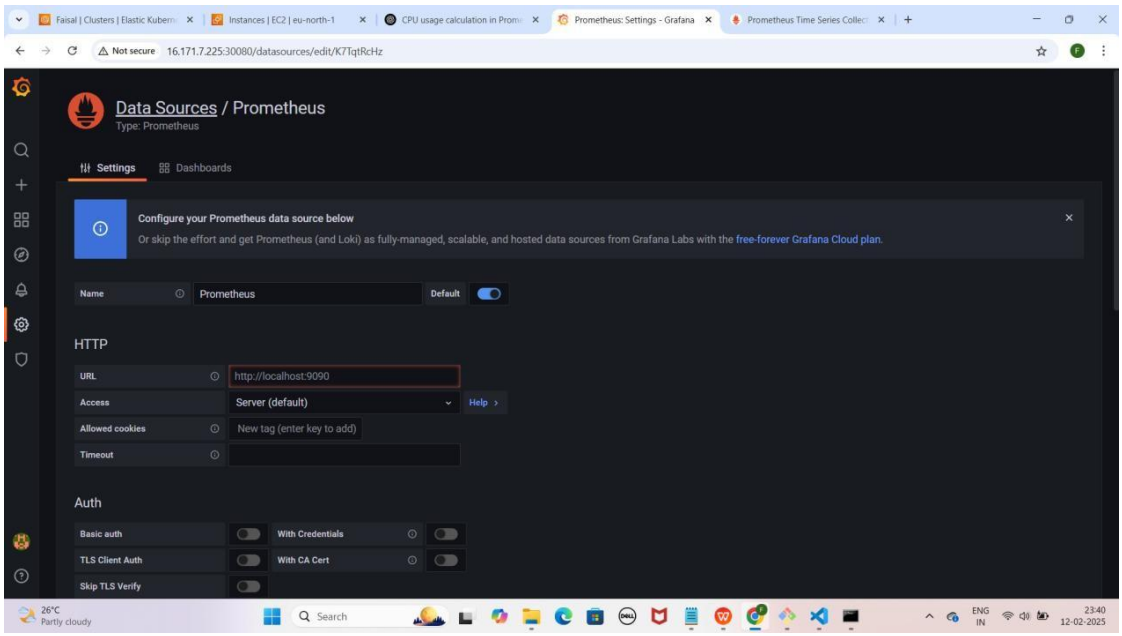
- **Grafana dashboard** open karo.
- **Configuration** pe **click** karo, phir **Data Sources select** karo.
- **Add data source** pe **click** karo.
- **Prometheus select** karo.
- **Browser open karo** aur yeh **URL copy** karo:
    - **Mere case me yeh kuch is tarah hogi: http://EKS-Node-Public IP:30090/**
    - **Aapke case me Public IP different ho sakti hai.**
- **HTTPS section** me **URL** box me **paste** karo.
- Neeche **scroll** karo aur **"Save & Test"** pe **click** karo.

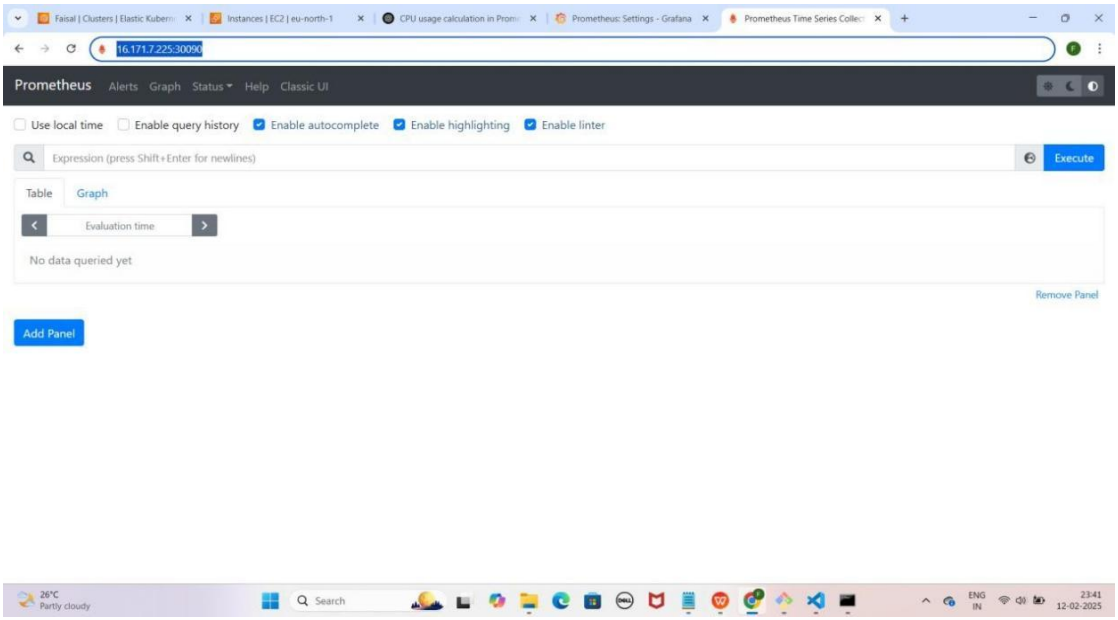
YE KUCH ISTARHA LAGEGA



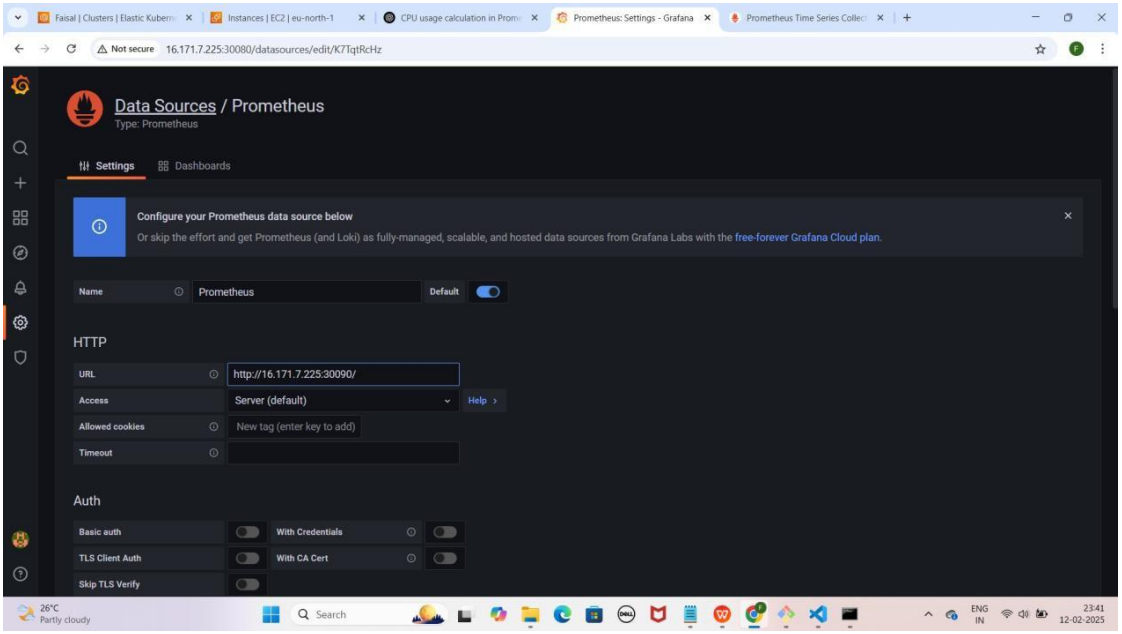

Not secure
16.171.7.225:30080/datasources
Configuration
Organization: Main Org.
Data sources
Users
Teams
Plugins
Preferences
API keys
No data sources defined
Add data source
ProTip: You can also define data sources through configuration files. Learn more
Documentation
Support
Community
Open Source
v8.3.0 (914fcedb72)
New version available!
16.171.7.225:30080/datasources/new
26°C
Partly cloudy
Search
ENG
IN
23:38
12-02-2025

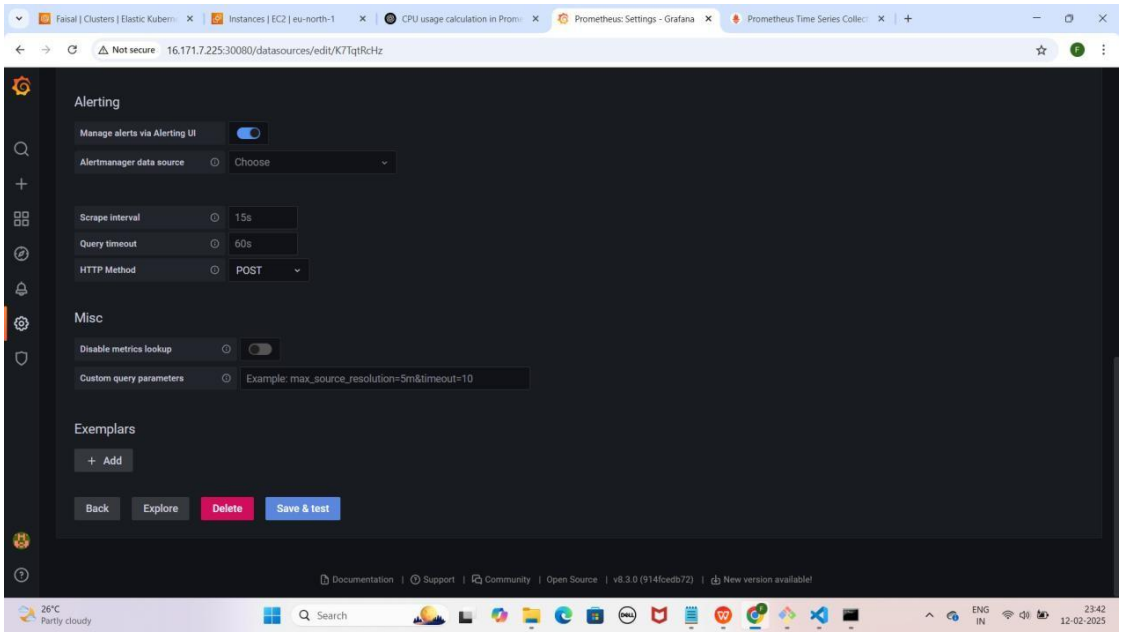

Not secure
16.171.7.225:30080/datasources/new
Add data source
Choose a data source type
Filter by name or type
Cancel
Time series databases
Prometheus
Open source time series database & alerting
Core
Learn more
Select
Graphite
Open source time series database
Core
OpenTSDB
Open source time series database
Core
InfluxDB
Open source time series database
Core
Logging & document databases
Loki
26°C
Partly cloudy
Search
ENG
IN
23:40
12-02-2025

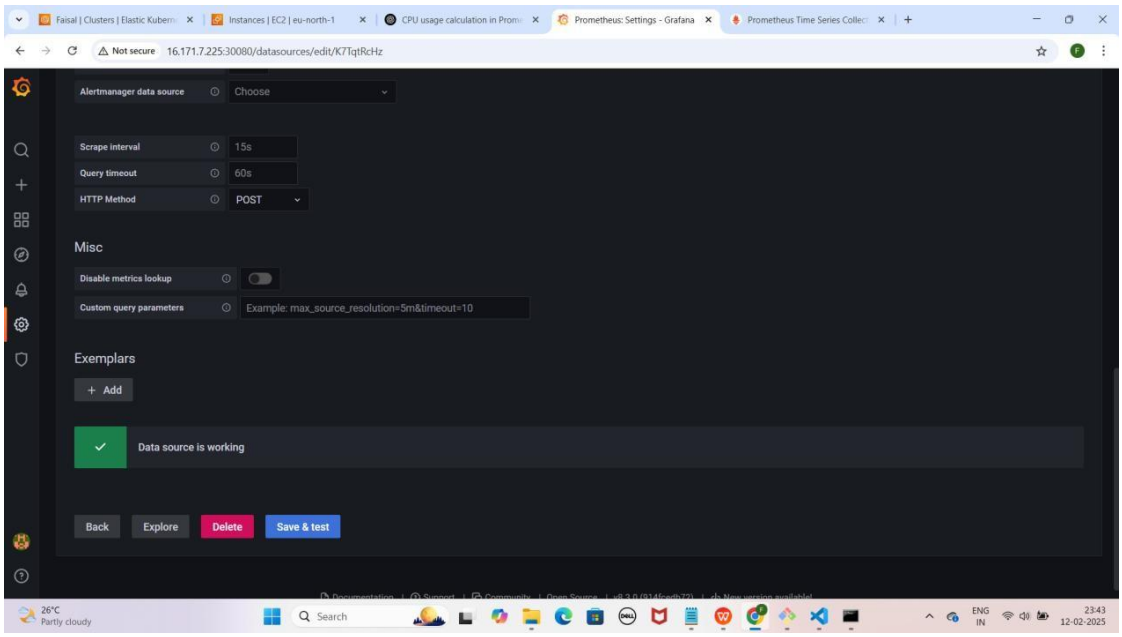

Not secure 16.171.7.225:30080/datasources/edit/K7TqtRcHz
Data Sources / Prometheus
Type: Prometheus
Settings
Dashboards
Configure your Prometheus data source below
Or skip the effort and get Prometheus (and Loki) as fully-managed, scalable, and hosted data sources from Grafana Labs with the free-forever Grafana Cloud plan.
Name
Prometheus
Default
HTTP
URL
http://localhost:9090
Access
Server (default)
Help
Allowed cookies
New tag (enter key to add)
Timeout
Auth
Basic auth
With Credentials
TLS Client Auth
With CA Cert
Skip TLS Verify
26°C
Partly cloudy
Search
ENG
IN
23:40
12-02-2025


16.171.7.225:30090
Prometheus
Alerts
Graph
Status
Help
Classic UI
Use local time
Enable query history
Enable autocomplete
Enable highlighting
Enable linter
Expression (press Shift+Enter for newlines)
Execute
Table
Graph
Evaluation time
No data queried yet
Remove Panel
Add Panel

26°C
Partly cloudy
Search
ENG
IN
23:41
12-02-2025


Not secure 16.171.7.225:30080/datasources/edit/K7TqtRcHz
Data Sources / Prometheus
Type: Prometheus
Settings
Dashboards
Configure your Prometheus data source below
Or skip the effort and get Prometheus (and Loki) as fully-managed, scalable, and hosted data sources from Grafana Labs with the free-forever Grafana Cloud plan.
Name
Prometheus
Default
HTTP
URL
http://16.171.7.225:30090/
Access
Server (default)
Help
Allowed cookies
New tag (enter key to add)
Timeout
Auth
Basic auth
With Credentials
TLS Client Auth
With CA Cert
Skip TLS Verify
26°C
Partly cloudy
Search
ENG
IN
23:41
12-02-2025

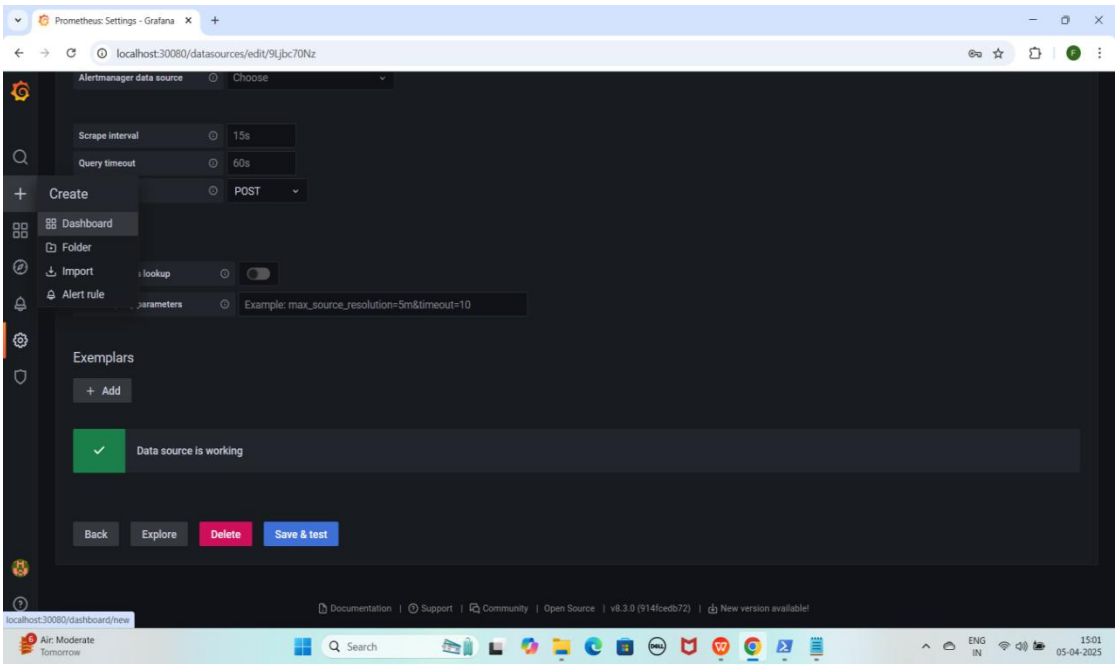

Not secure 16.171.7.225:30080/datasources/edit/K7TqtRcHz
Alerting
Manage alerts via Alerting UI
Alertmanager data source
Choose
Scrape interval
15s
Query timeout
60s
HTTP Method
POST
Misc
Disable metrics lookup
Custom query parameters
Example: max_source_resolution=5m&timeout=10
Exemplars
Add
Back
Explore
Delete
Save & test
Documentation
Support
Community
Open Source
v8.3.0 (914fcedb72)
New version available!
26°C
Partly cloudy
Search
ENG
IN
23:42
12-02-2025

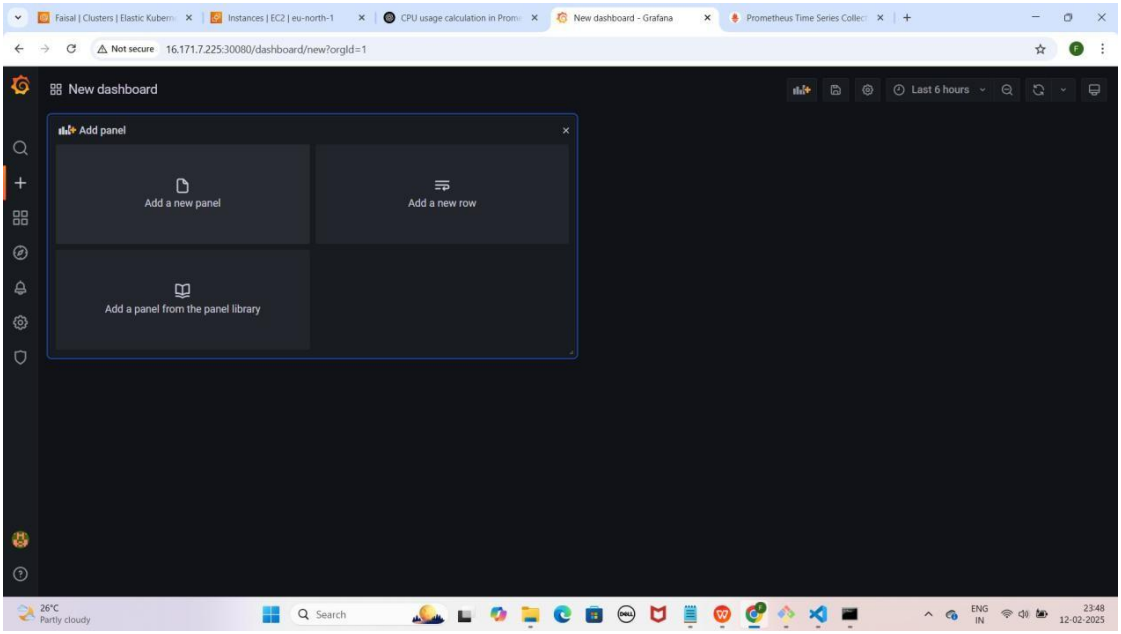


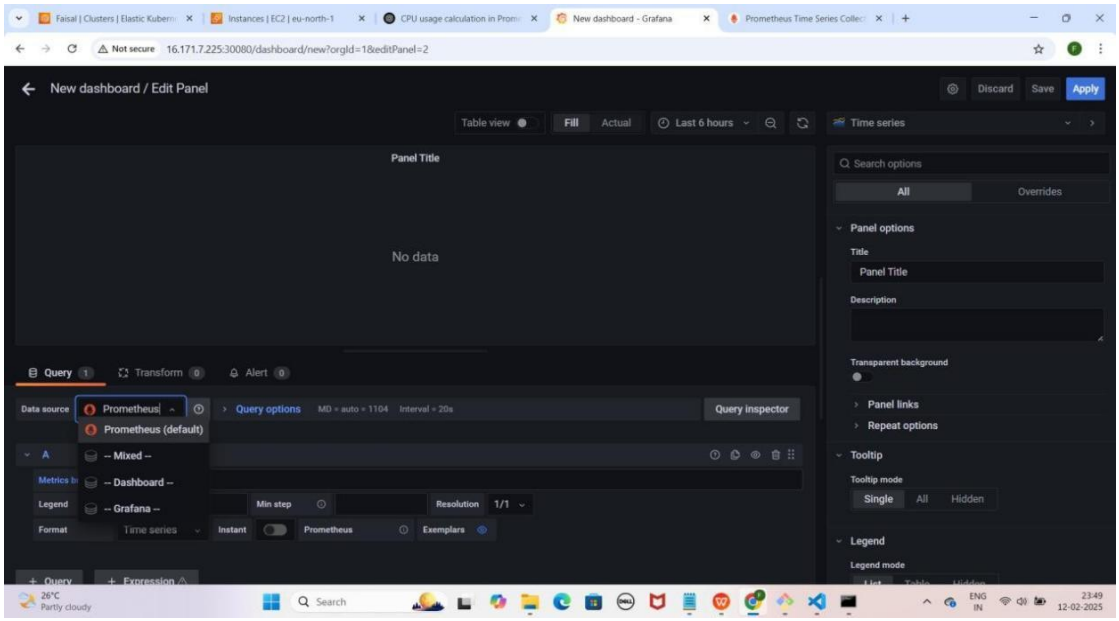
NOTE : Save & test pe click karne ke baad aapko Data source is working karke pop up aayega

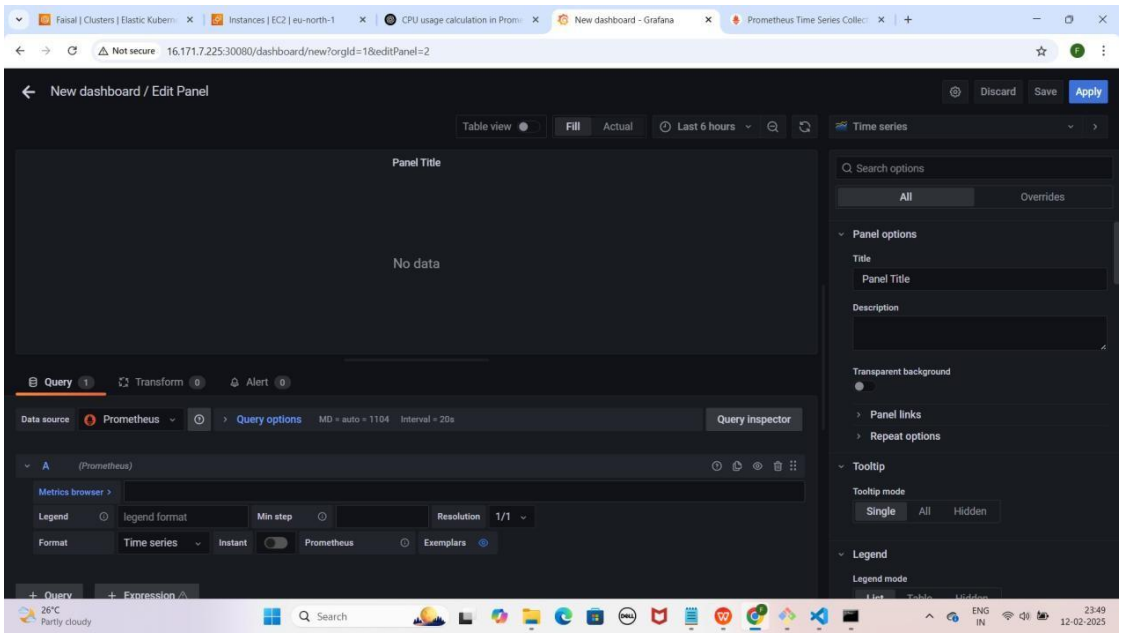
- **Prometheus ke Metrics visualize** karne ke liye **"+" (plus) icon** pe click karo.
- **Dashboard** select karo aur **"Add a new panel"** pe click karo.
- **Query section** me **Data Source ko "Prometheus"** select karo.

YE KUCH ISTARHA LAGEGA






New dashboard / Edit Panel
Discard
Save
Apply
Table view
Fill
Actual
Last 6 hours
Time series
Panel Title
No data
Search options
All
Overrides
Panel options
Title
Panel Title
Description
Transparent background
Panel links
Repeat options
Tooltip
Tooltip mode
Single
All
Hidden
Legend
Legend mode
Query
Transform
Alert
Data source
Prometheus
Query options
MD = auto = 1104
Interval = 20s
Query inspector
Prometheus (default)
-- Mixed --
-- Dashboard --
-- Grafana --
A
Legend
Min step
Resolution
1/1
Format
Time series
Instant
Prometheus
Exemplars
Query
Expression
26°C
Partly cloudy
Search
ENG
IN
23:49
12-02-2025

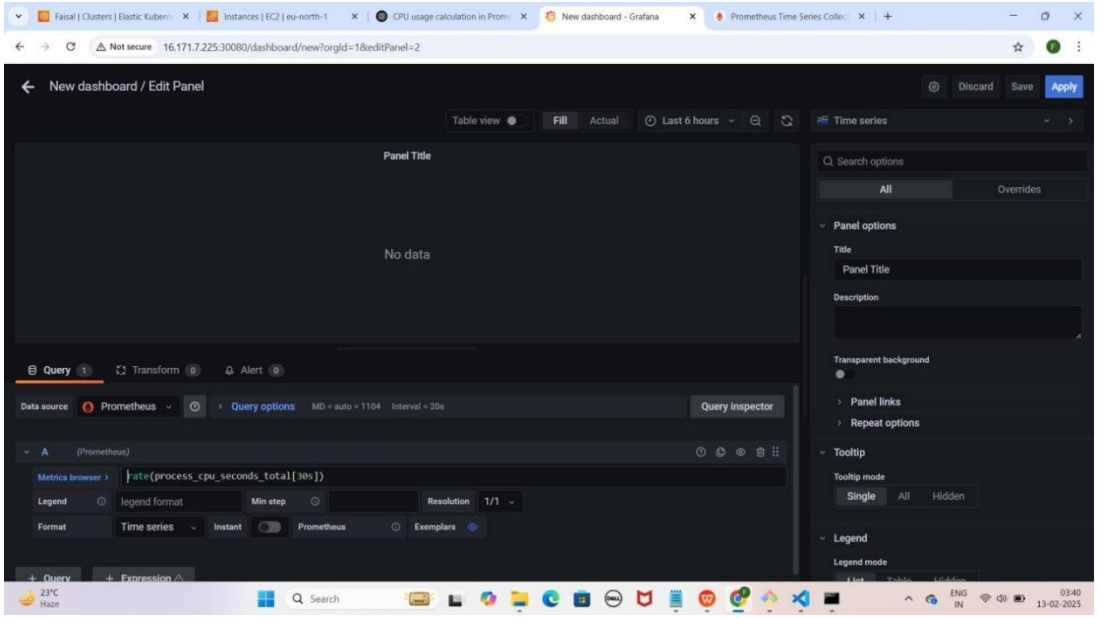


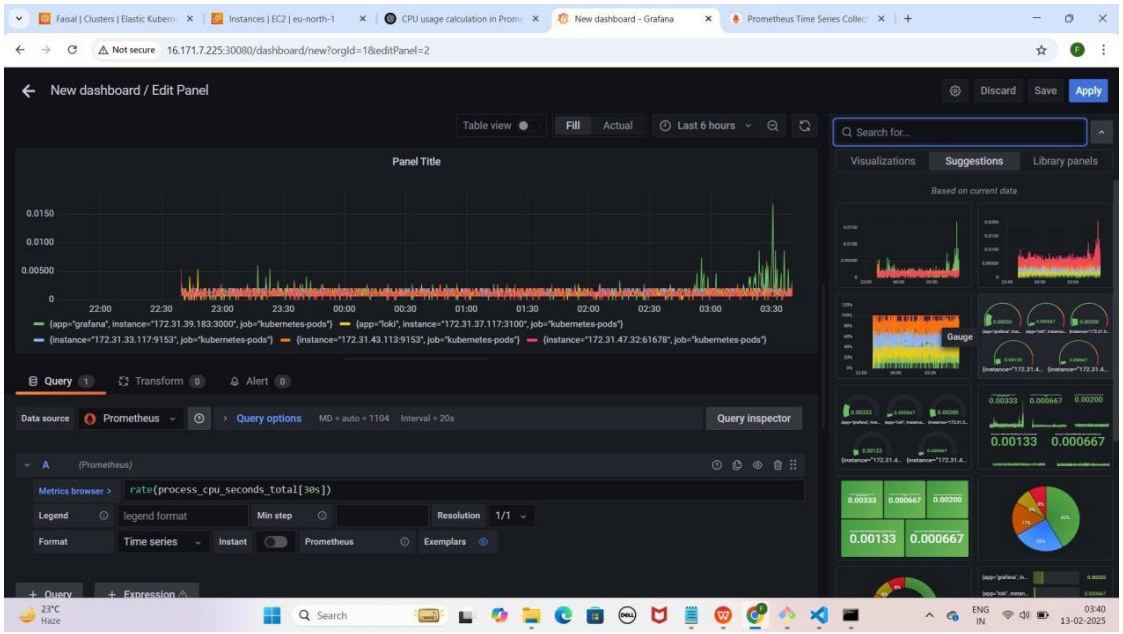
1. Prometheus ko data source select karne ke baad, CPU Usage dekhne ke liye Metric Browser me yeh query paste karein

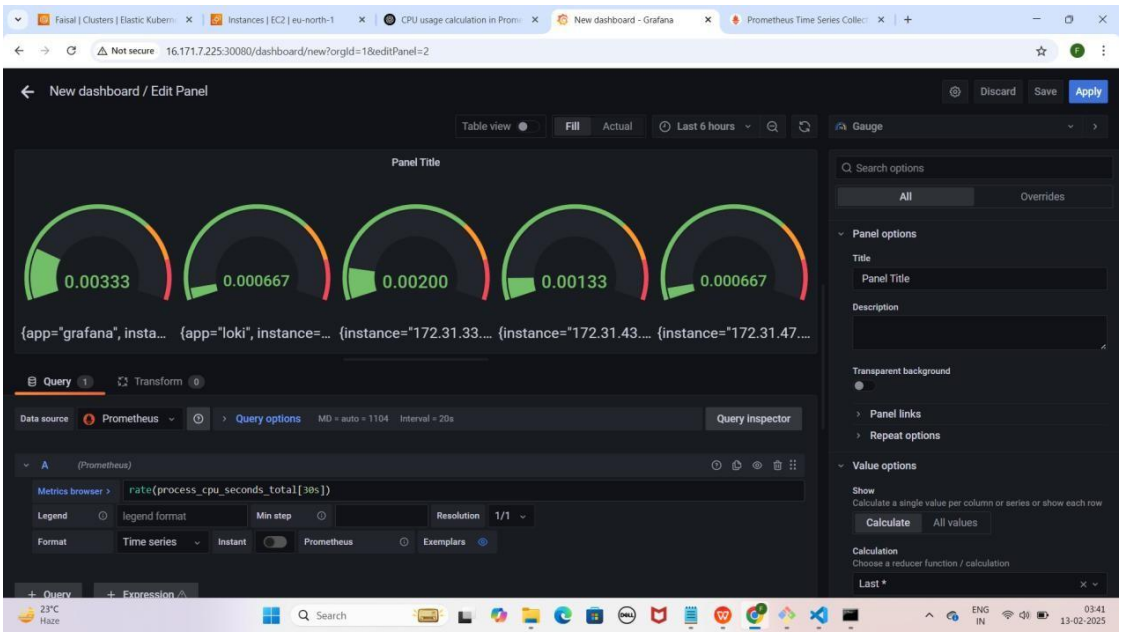
rate(process_cpu_seconds_total[30s])

- **"Time Series"** pe click karein.
- **Suggestions** me se **"Dashboard"** select karein jaise maine select kiya hai.

YE KUCH ISTARHA LAGEGA



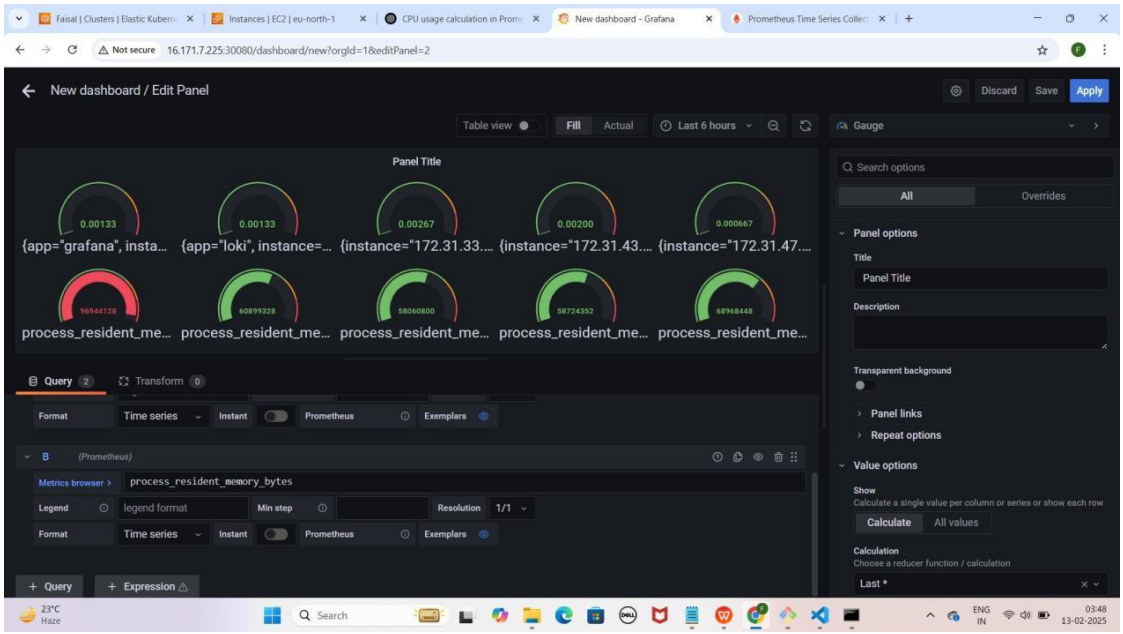

New dashboard / Edit Panel
Discard
Save
Apply
Table view
Fill
Actual
Last 6 hours
Search for...
Visualizations
Suggestions
Library panels
Based on current data
Panel Title
0.0150
0.0100
0.00500
0
22:00
22:30
23:00
23:30
00:00
00:30
01:00
01:30
02:00
02:30
03:00
03:30
{app="grafana", instance="172.31.39.183:3000", job="kubernetes-pods"}
{app="loki", instance="172.31.37.117:3100", job="kubernetes-pods"}
{instance="172.31.33.117:9153", job="kubernetes-pods"}
{instance="172.31.43.113:9153", job="kubernetes-pods"}
{instance="172.31.47.32:61678", job="kubernetes-pods"}
Gauge
Query 1
Transform 0
Alert 0
Data source
Prometheus
Query options
MD = auto = 1104
Interval = 20s
Query inspector
A
(Prometheus)
Metrics browser
rate(process_cpu_seconds_total[30s])
Legend
legend format
Min step
Resolution
1/1
Format
Time series
Instant
Prometheus
Exemplars
+ Query
+ Expression
0.00333
0.000667
0.00200
0.00133
0.000667
23°C
Haze
Search
ENG
IN
03:40
13-02-2025


New dashboard / Edit Panel
Discard
Save
Apply
Table view
Fill
Actual
Last 6 hours
Gauge
Panel Title
0.00333
0.000667
0.00200
0.00133
0.000667
{app="grafana", insta...
{app="loki", instance=...
{instance="172.31.33....
{instance="172.31.43....
{instance="172.31.47....
Search options
All
Overrides
Panel options
Title
Panel Title
Description
Transparent background
Panel links
Repeat options
Value options
Show
Calculate a single value per column or series or show each row
Calculate
All values
Calculation
Choose a reducer function / calculation
Last *
Query 1
Transform 0
Data source
Prometheus
Query options
MD = auto = 1104
Interval = 20s
Query inspector
A
(Prometheus)
Metrics browser
rate(process_cpu_seconds_total[30s])
Legend
legend format
Min step
Resolution
1/1
Format
Time series
Instant
Prometheus
Exemplars
+ Query
+ Expression
23°C
Haze
Search
ENG
IN
03:41
13-02-2025

2. Memory Usage dekhne ke liye "+ Query" par click karein.
Yeh query paste karein taake memory usage dekh sakein

process_resident_memory_bytes

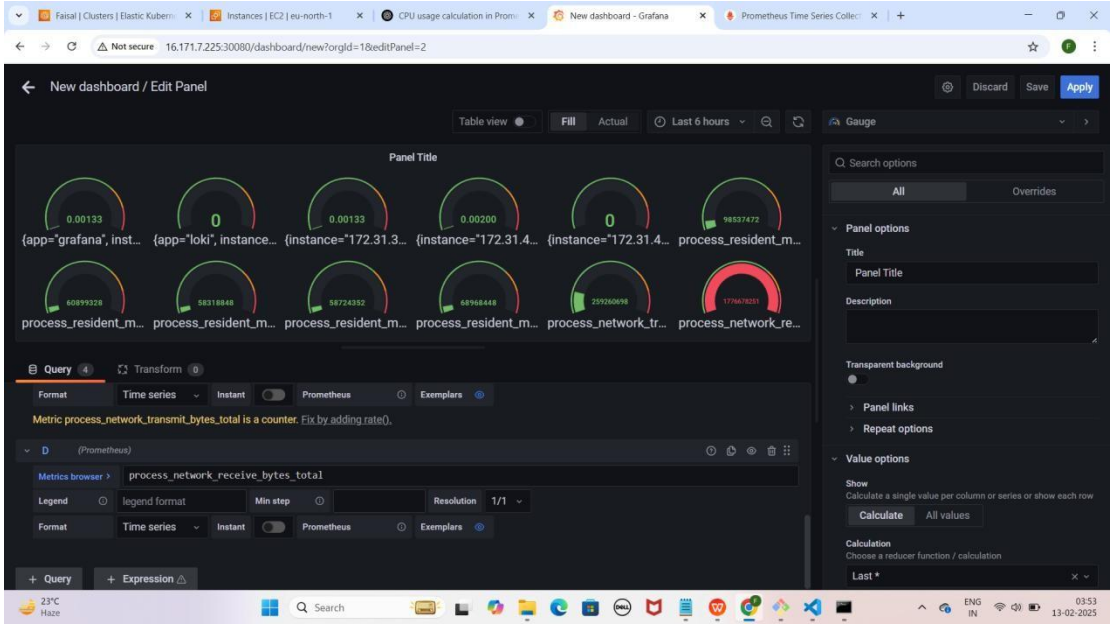
YE KUCH ISTARHA LAGEGA



3. Network Transmit dekhne ke liye "+ Query" par click karein.
Yeh query paste karein taake network transmit dekh sakein

process_network_transmit_bytes_total

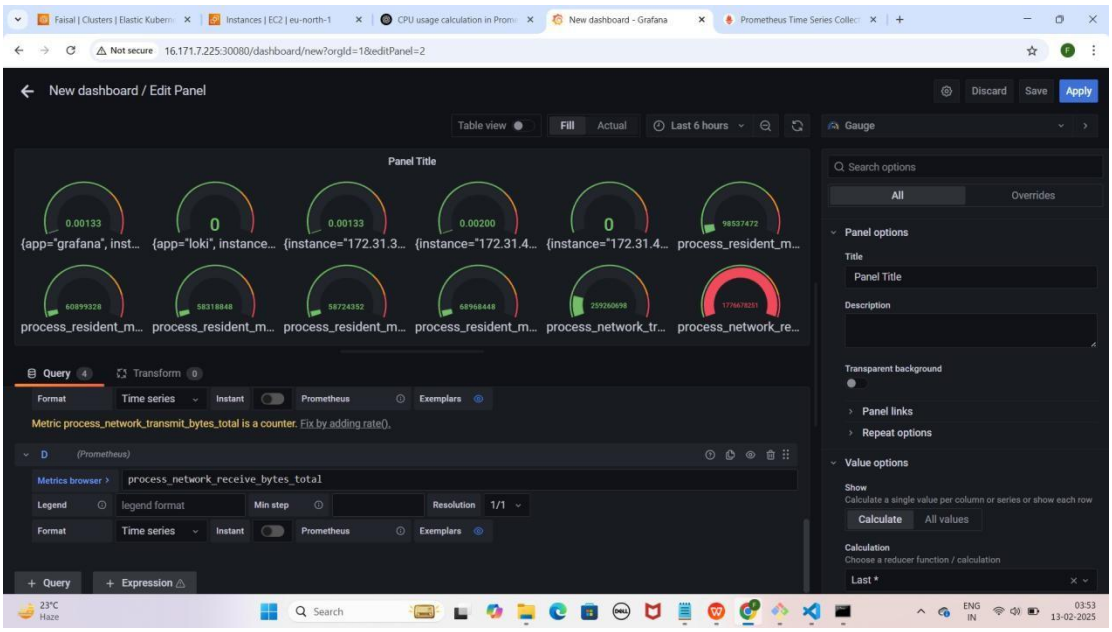
YE KUCH ISTARAH LAGEGA



4. Network Receive dekhne ke liye "+ Query" par click karein.
Yeh query paste karein taake network receive dekh sakein:

process_network_receive_bytes_total

YE KUCH ISTARHA LAGEGA

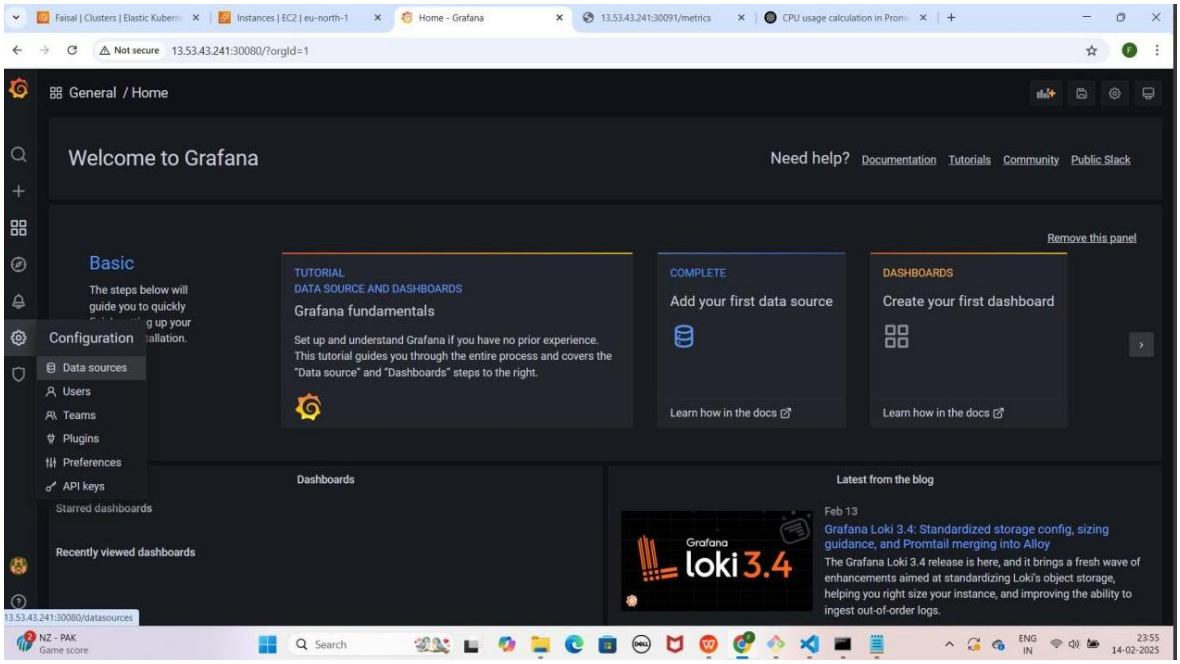


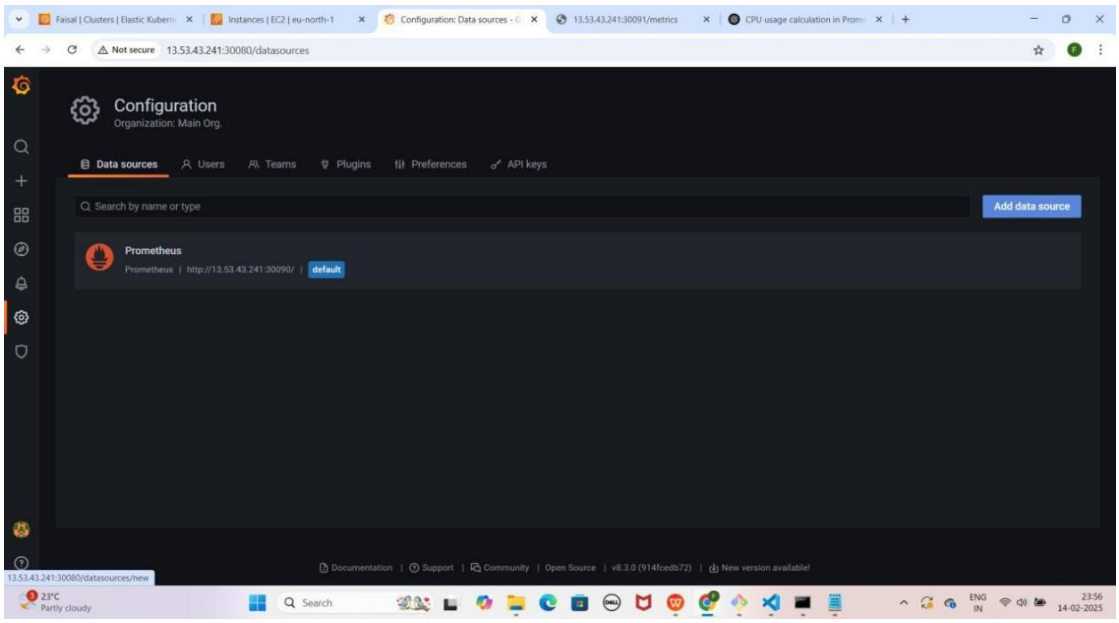
NOTE : Itna karne ke baad aap 30 sec ke interval par CPU usage, current Memory Usage aur Network transmit/receive bytes ko Monitor kar sakte hain.

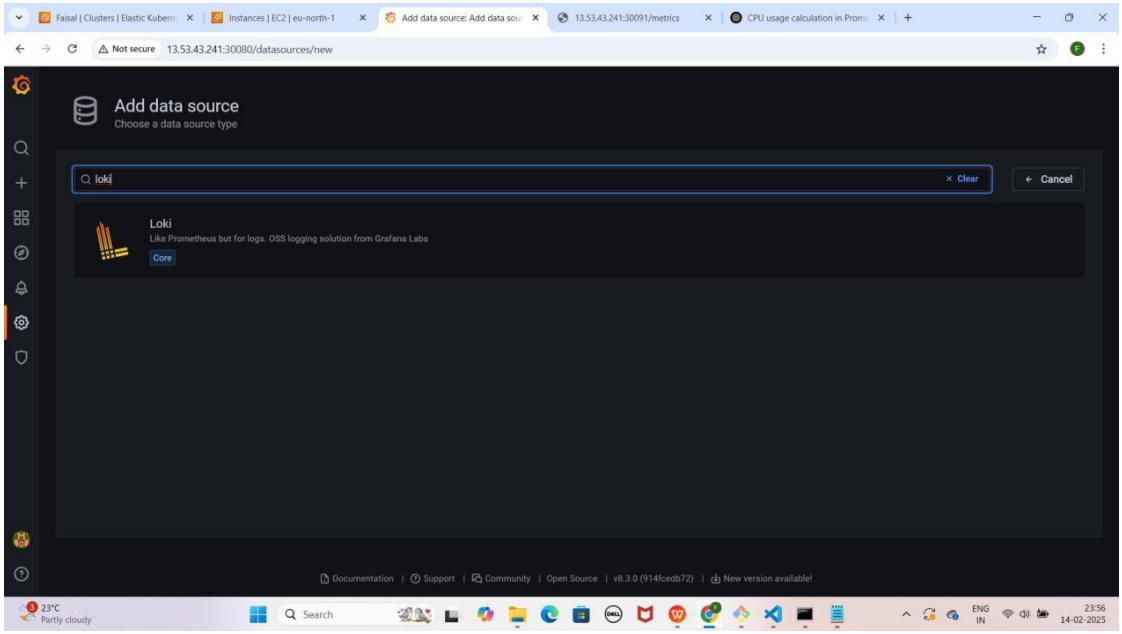
Step 9: Grafana Mein Loki Data Source Add Karna Aur Dashboard Create Karna

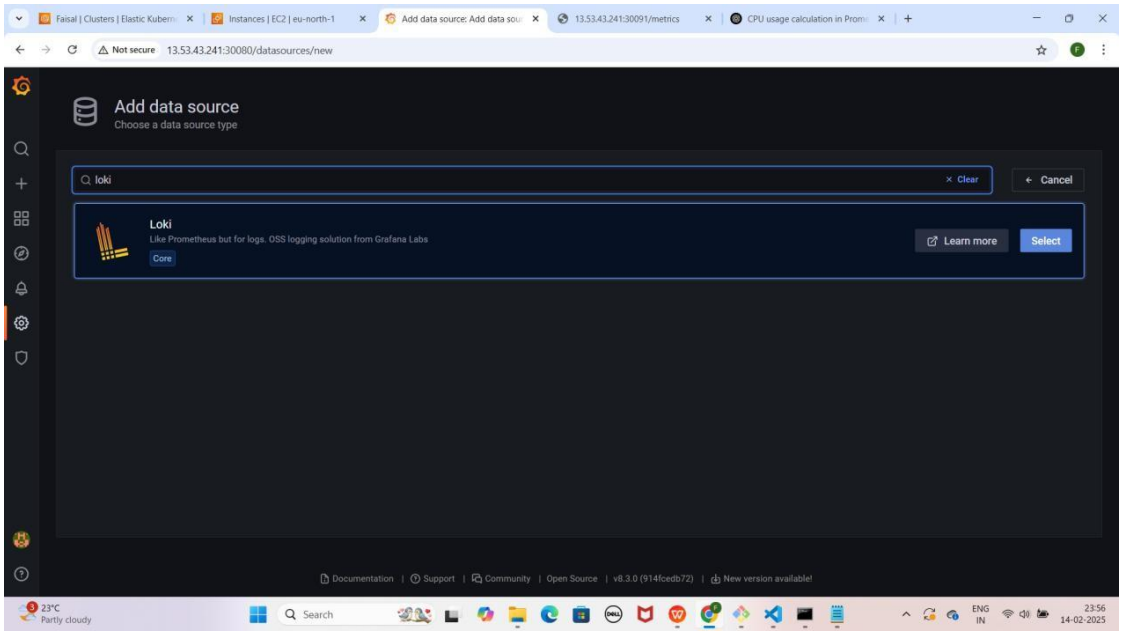
- **Grafana** open karo aur **Settings** icon pe click karo.
- **Data Sources** select karo.
- **Add data source** pe click karo.
- Search bar me **"Loki"** likho aur **Loki** select karo.
- Browser open karo aur yeh URL copy karo:
    - **Mere case me yeh kuch is tarah hogi:** http://EKS-Node-Public IP:30091/
    - **Aapke case me Public IP different ho sakti hai.**
- **HTTPS section** me URL box me paste karo.
- Neeche scroll karo aur **"Save & Test"** pe click karo.

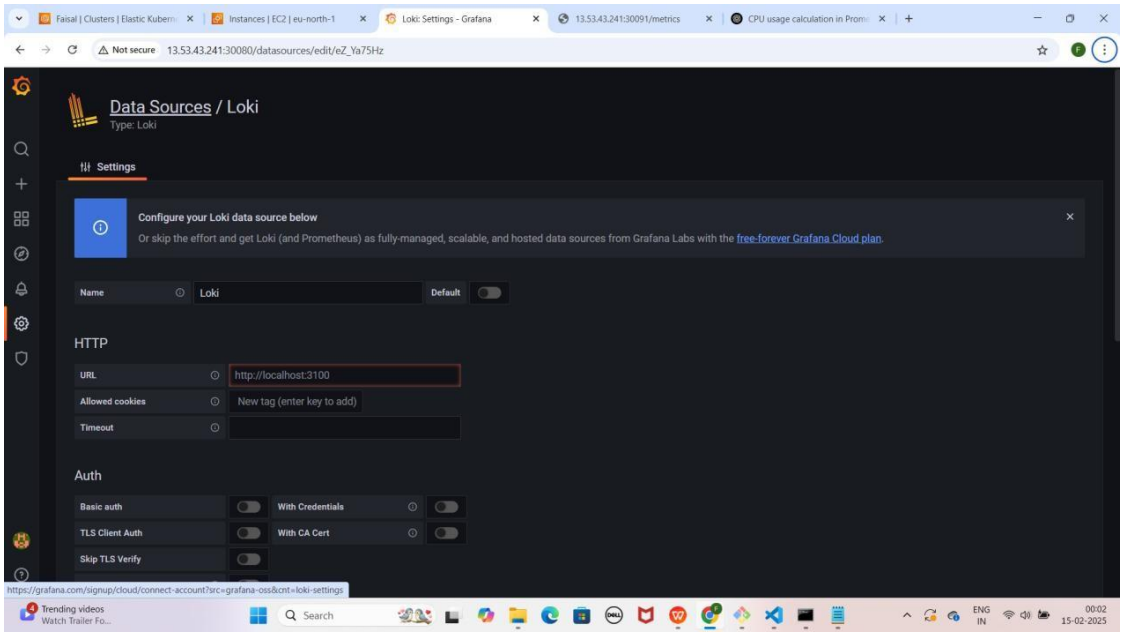
YE KUCH ISTARHA LAGEGA

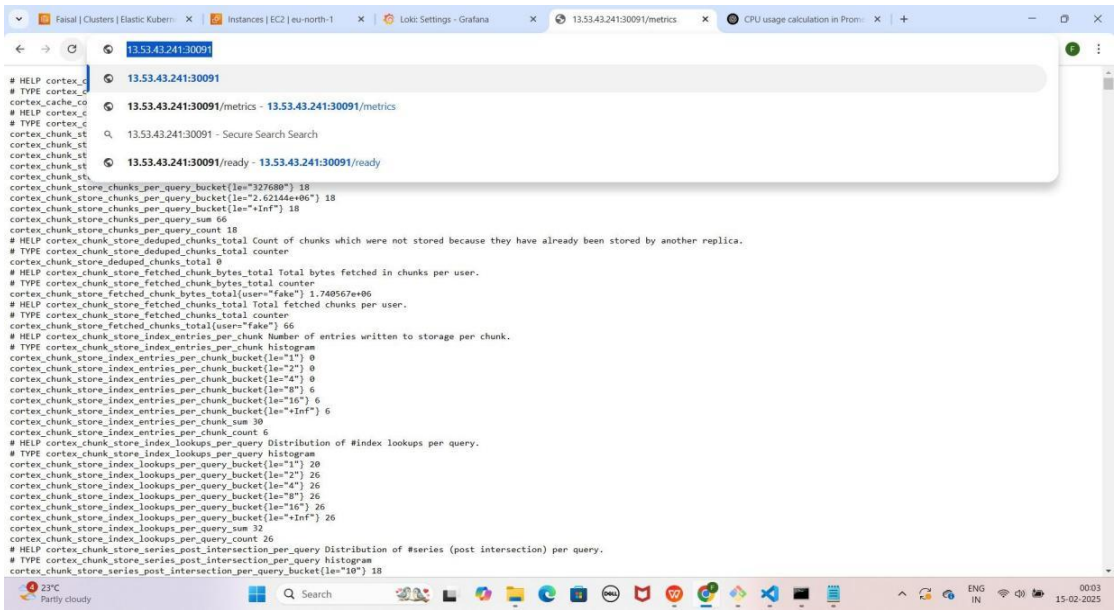


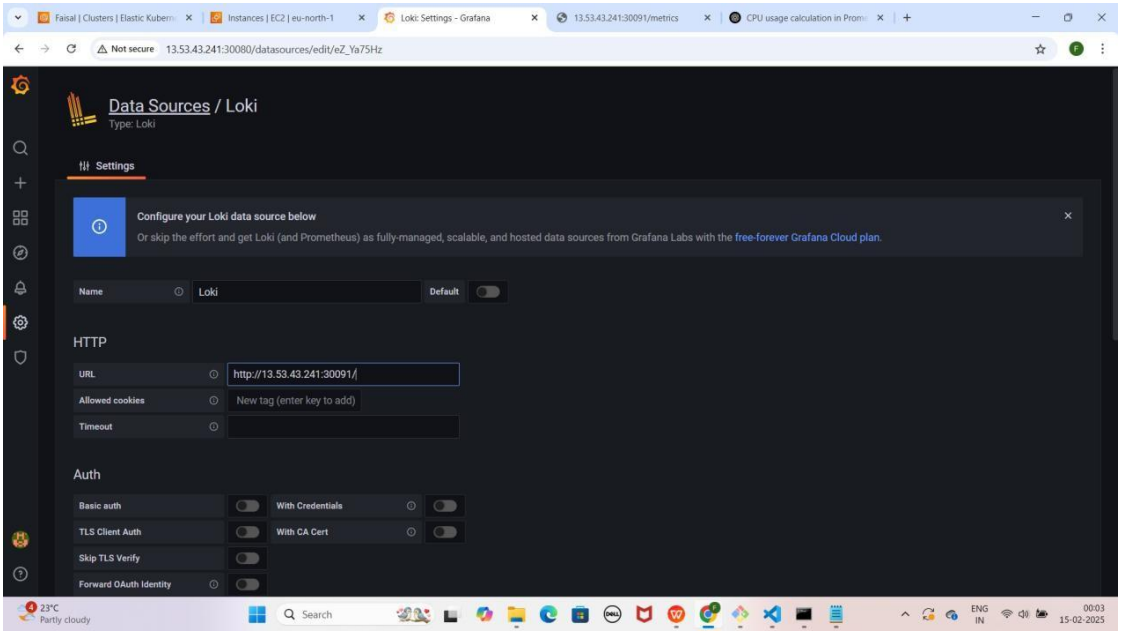

Not secure 13.53.43.241:30080/datasources
Configuration
Organization: Main Org.
Data sources
Users
Teams
Plugins
Preferences
API keys
Search by name or type
Add data source
Prometheus
Prometheus | http://13.53.43.241:30090/ | default
Documentation | Support | Community | Open Source | v8.3.0 (914fcedb72) | New version available!
13.53.43.241:30080/datasources/new
23°C
Partly cloudy
Search
ENG
IN
23:56
14-02-2025

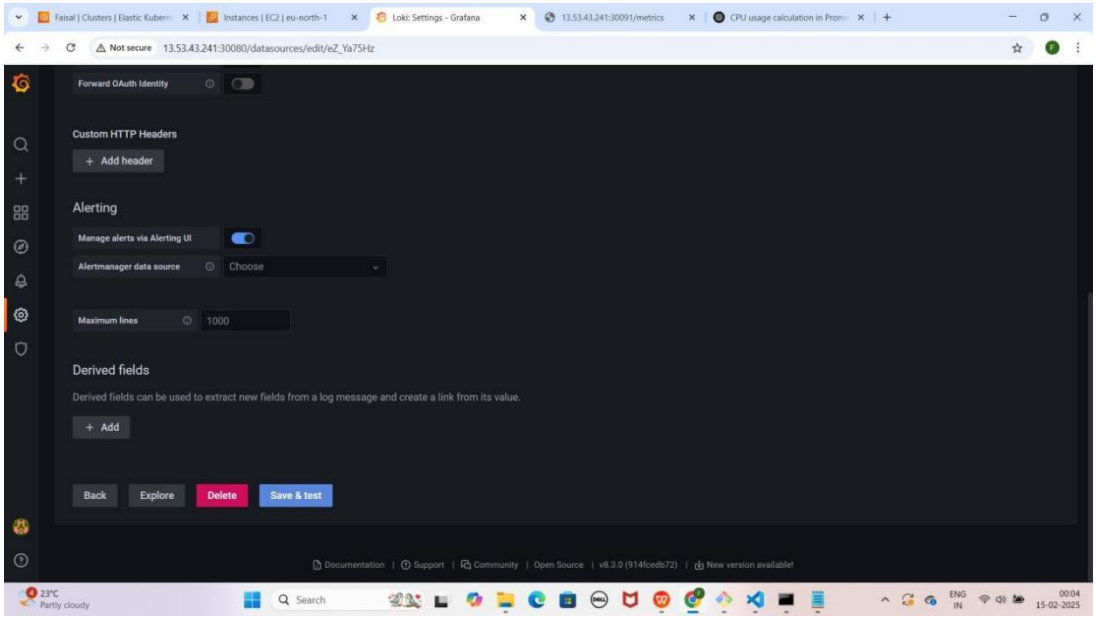

Not secure 13.53.43.241:30080/datasources/new
Add data source
Choose a data source type
loki
Clear
Cancel
Loki
Like Prometheus but for logs. OSS logging solution from Grafana Labs
Core
Documentation | Support | Community | Open Source | v8.3.0 (914fcedb72) | New version available!
23°C
Partly cloudy
Search
ENG
IN
23:56
14-02-2025

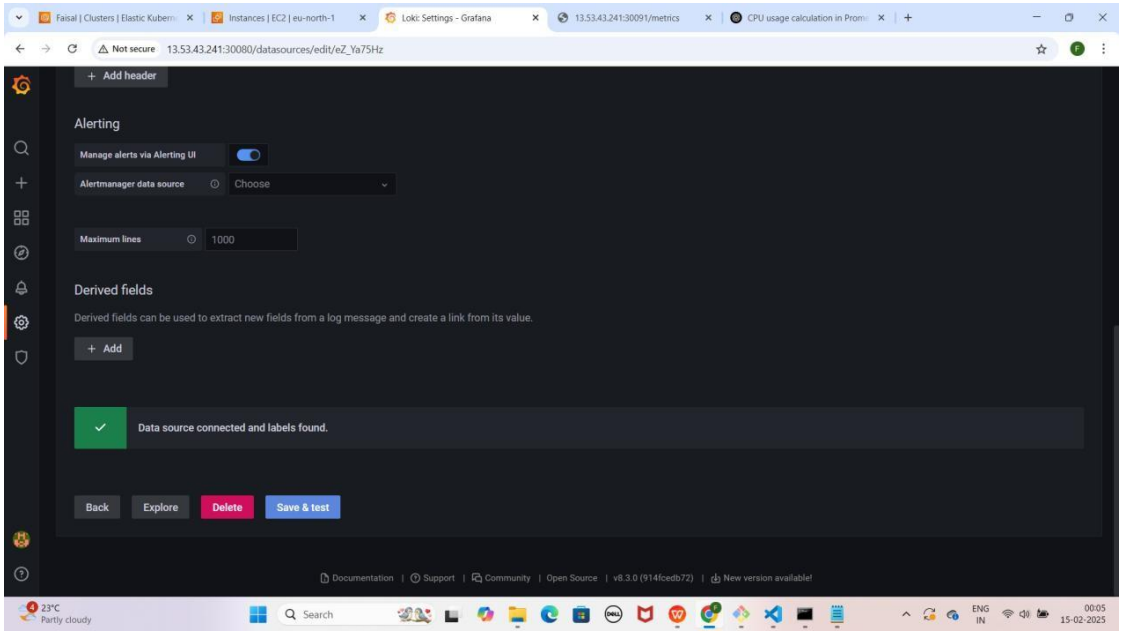

Not secure 13.53.43.241:30080/datasources/new
Add data source
Choose a data source type
loki
Clear
Cancel
Loki
Like Prometheus but for logs. OSS logging solution from Grafana Labs
Core
Learn more
Select
Documentation | Support | Community | Open Source | v8.3.0 (914fcedb72) | New version available!
23°C
Partly cloudy
Search
ENG
IN
23:56
14-02-2025


Not secure 13.53.43.241:30080/datasources/edit/eZ_Ya75Hz
Data Sources / Loki
Type: Loki
Settings
Configure your Loki data source below
Or skip the effort and get Loki (and Prometheus) as fully-managed, scalable, and hosted data sources from Grafana Labs with the free-forever Grafana Cloud plan.
Name
Loki
Default
HTTP
URL
http://localhost:3100
Allowed cookies
New tag (enter key to add)
Timeout
Auth
Basic auth
With Credentials
TLS Client Auth
With CA Cert
Skip TLS Verify
https://grafana.com/signup/cloud/connect-account?src=grafana-oss&cnt=loki-settings
Trending videos
Watch Trailer Fo...
Search
ENG
IN
00:02
15-02-2025


13.53.43.241:30091
13.53.43.241:30091
13.53.43.241:30091/metrics - 13.53.43.241:30091/metrics
13.53.43.241:30091 - Secure Search Search
13.53.43.241:30091/ready - 13.53.43.241:30091/ready
cortex_chunk_store_chunks_per_query_bucket{le="327680"} 18
cortex_chunk_store_chunks_per_query_bucket{le="2.62144e+06"} 18
cortex_chunk_store_chunks_per_query_bucket{le="+Inf"} 18
cortex_chunk_store_chunks_per_query_sum 66
cortex_chunk_store_chunks_per_query_count 18
HELP cortex_chunk_store_deduped_chunks_total Count of chunks which were not stored because they have already been stored by another replica.
TYPE cortex_chunk_store_deduped_chunks_total counter
cortex_chunk_store_deduped_chunks_total 0
HELP cortex_chunk_store_fetched_chunk_bytes_total Total bytes fetched in chunks per user.
TYPE cortex_chunk_store_fetched_chunk_bytes_total counter
cortex_chunk_store_fetched_chunk_bytes_total{user="fake"} 1.740567e+06
HELP cortex_chunk_store_fetched_chunks_total Total fetched chunks per user.
TYPE cortex_chunk_store_fetched_chunks_total counter
cortex_chunk_store_fetched_chunks_total{user="fake"} 66
HELP cortex_chunk_store_index_entries_per_chunk Number of entries written to storage per chunk.
TYPE cortex_chunk_store_index_entries_per_chunk histogram
cortex_chunk_store_index_entries_per_chunk_bucket{le="1"} 0
cortex_chunk_store_index_entries_per_chunk_bucket{le="2"} 0
cortex_chunk_store_index_entries_per_chunk_bucket{le="4"} 0
cortex_chunk_store_index_entries_per_chunk_bucket{le="8"} 6
cortex_chunk_store_index_entries_per_chunk_bucket{le="16"} 6
cortex_chunk_store_index_entries_per_chunk_bucket{le="+Inf"} 6
cortex_chunk_store_index_entries_per_chunk_sum 30
cortex_chunk_store_index_entries_per_chunk_count 6
HELP cortex_chunk_store_index_lookups_per_query Distribution of #index lookups per query.
TYPE cortex_chunk_store_index_lookups_per_query histogram
cortex_chunk_store_index_lookups_per_query_bucket{le="1"} 20
cortex_chunk_store_index_lookups_per_query_bucket{le="2"} 26
cortex_chunk_store_index_lookups_per_query_bucket{le="4"} 26
cortex_chunk_store_index_lookups_per_query_bucket{le="8"} 26
cortex_chunk_store_index_lookups_per_query_bucket{le="16"} 26
cortex_chunk_store_index_lookups_per_query_bucket{le="+Inf"} 26
cortex_chunk_store_index_lookups_per_query_sum 32
cortex_chunk_store_index_lookups_per_query_count 26
HELP cortex_chunk_store_series_post_intersection_per_query Distribution of #series (post intersection) per query.
TYPE cortex_chunk_store_series_post_intersection_per_query histogram
cortex_chunk_store_series_post_intersection_per_query_bucket{le="10"} 18
23°C
Partly cloudy
Search
ENG
IN
00:03
15-02-2025


Not secure
13.53.43.241:30080/datasources/edit/eZ_Ya75Hz
Data Sources / Loki
Type: Loki
Settings
Configure your Loki data source below
Or skip the effort and get Loki (and Prometheus) as fully-managed, scalable, and hosted data sources from Grafana Labs with the free-forever Grafana Cloud plan.
Name
Loki
Default
HTTP
URL
http://13.53.43.241:30091/
Allowed cookies
New tag (enter key to add)
Timeout
Auth
Basic auth
With Credentials
TLS Client Auth
With CA Cert
Skip TLS Verify
Forward OAuth Identity
23°C
Partly cloudy
Search
ENG
IN
00:03
15-02-2025

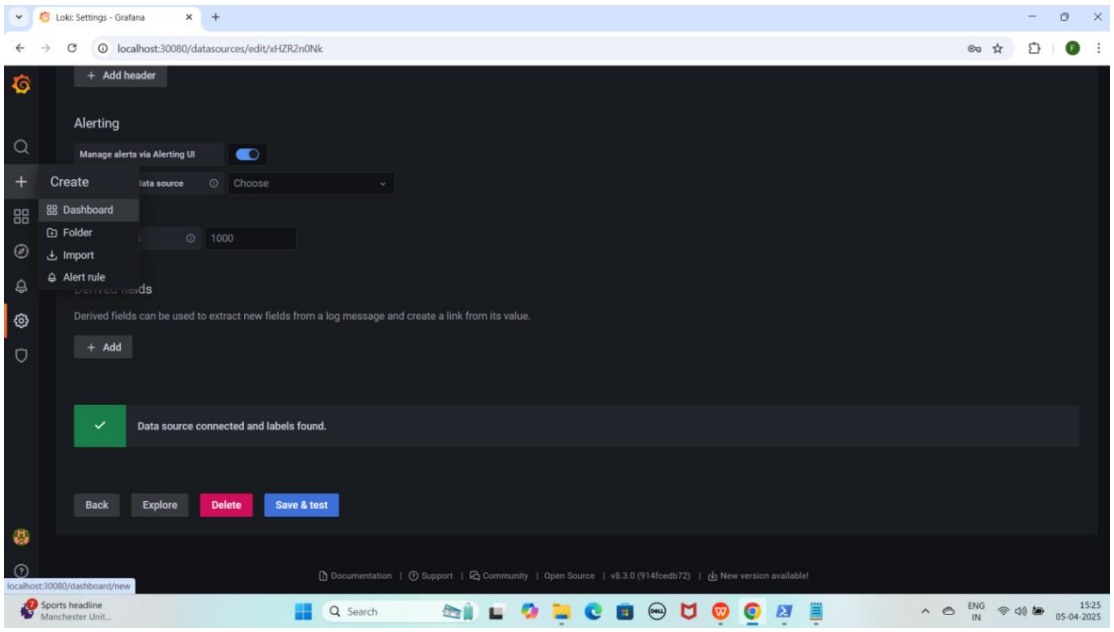


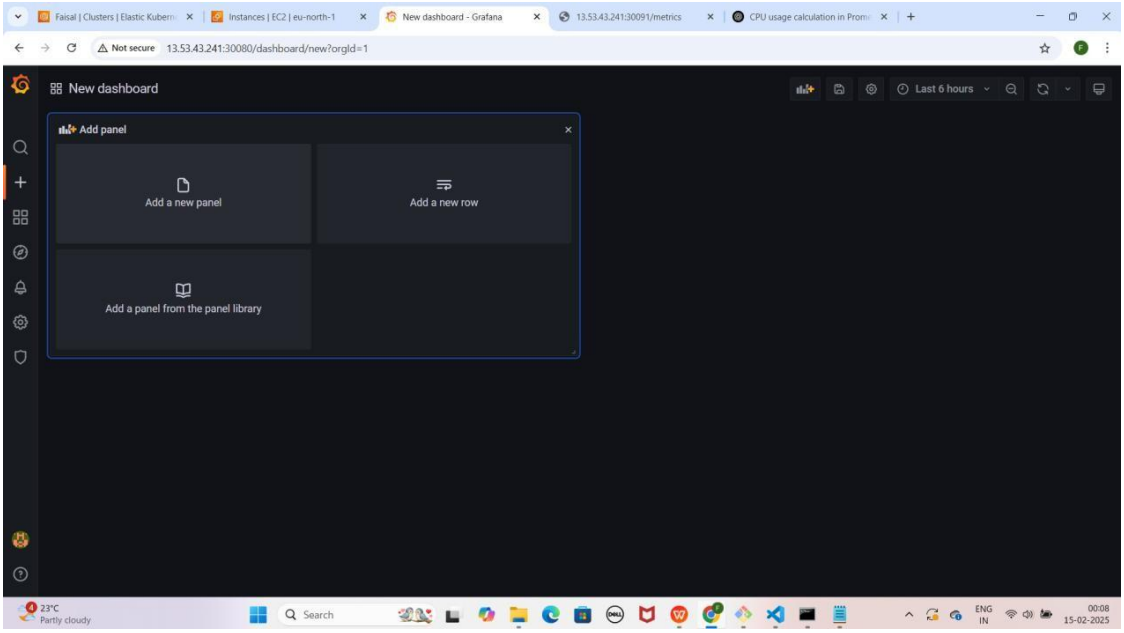


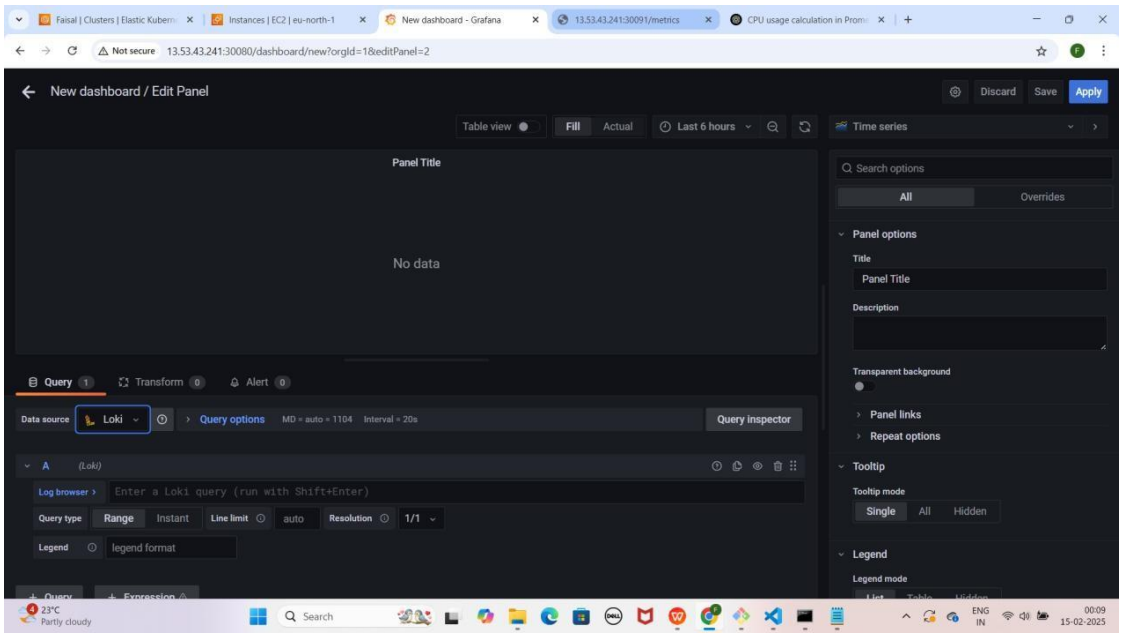
NOTE : Save & test pe click karne ke baad aapko Data source connected and label found karke pop up aayega

- **Loki ke Loggs visualize** karne ke liye **"+" (plus) icon** pe click karo.
- **Dashboard** select karo aur **"Add a new panel"** pe click karo.
- **Query section** me **Data Source ko "Loki"** select karo.

YE KUCH ISTARHA LAGEGA

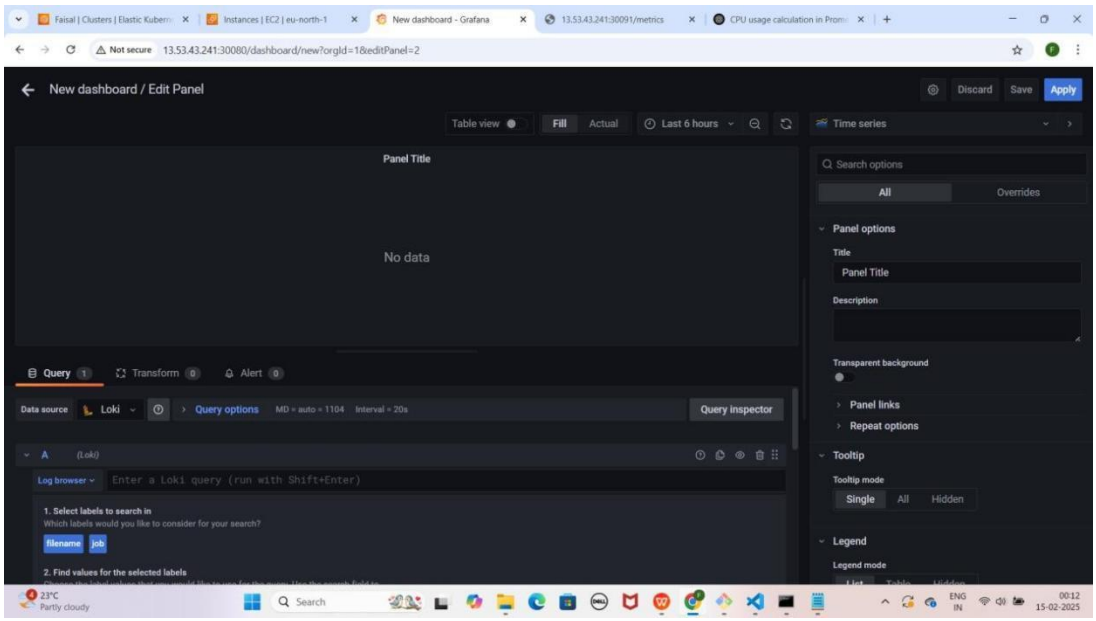


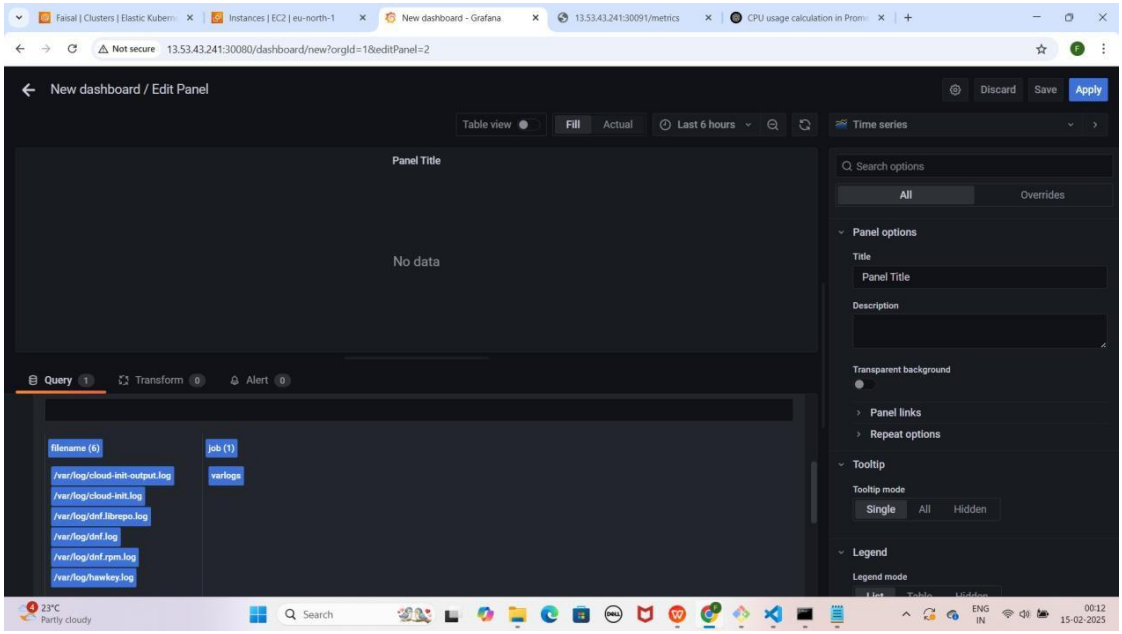


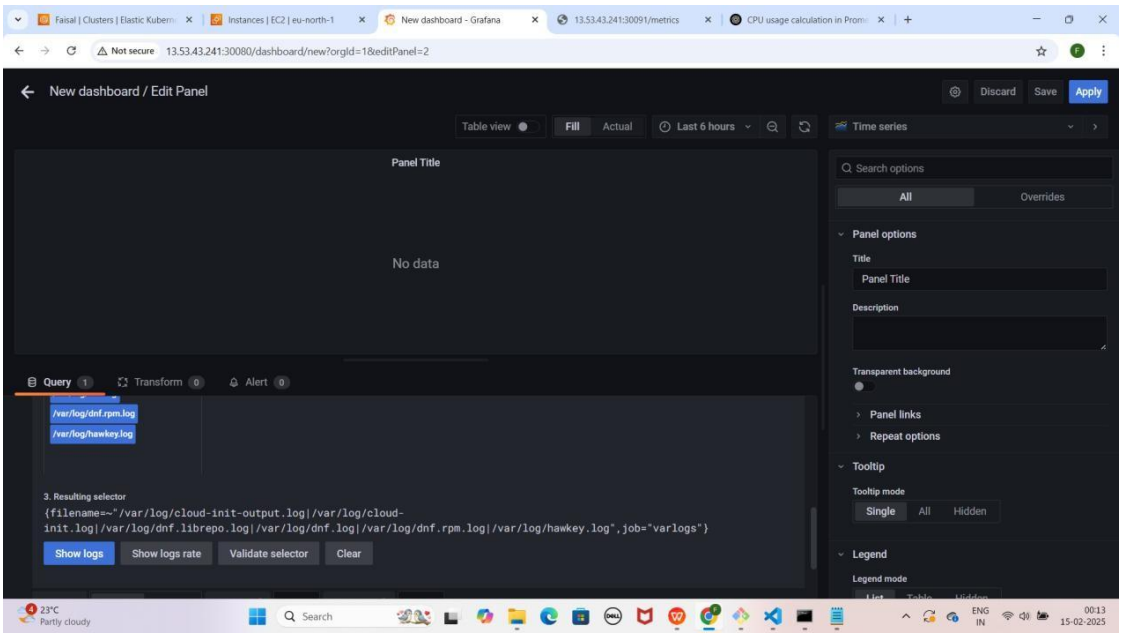


1. **"Log Browser"** pe **click** karo.
2. Pehle **"filename" select** karo, phir **"job"** (jaise ki **varlogs**) **select** karo.
3. Neeche **scroll** karo aur **"Show logs"** pe **click** karo.

YEKUCH ISTARHA LAGEGA



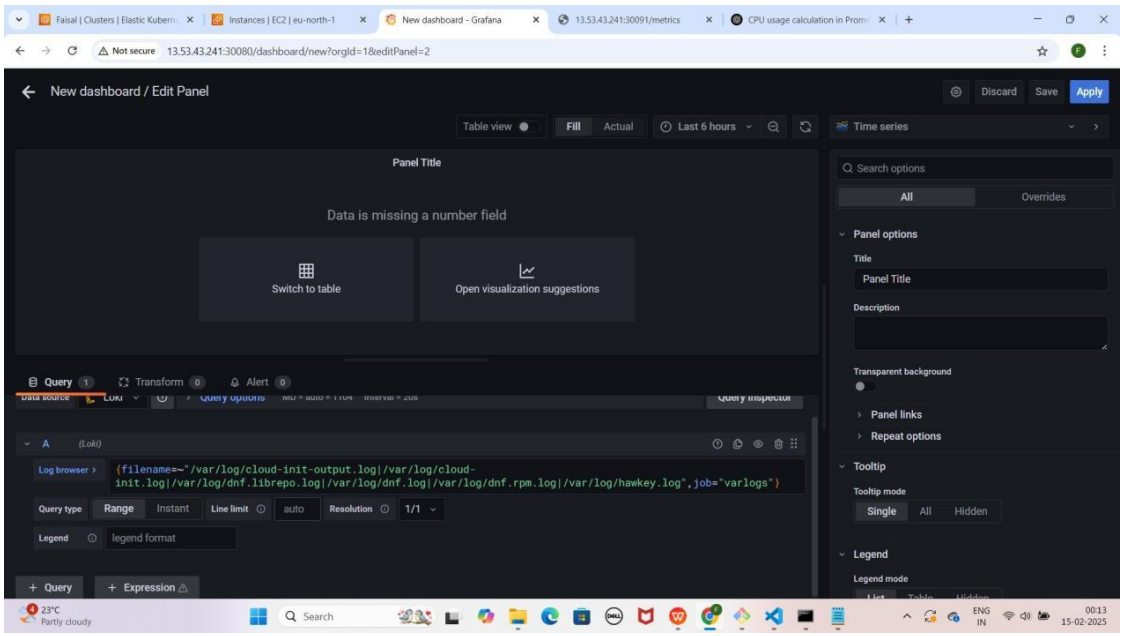


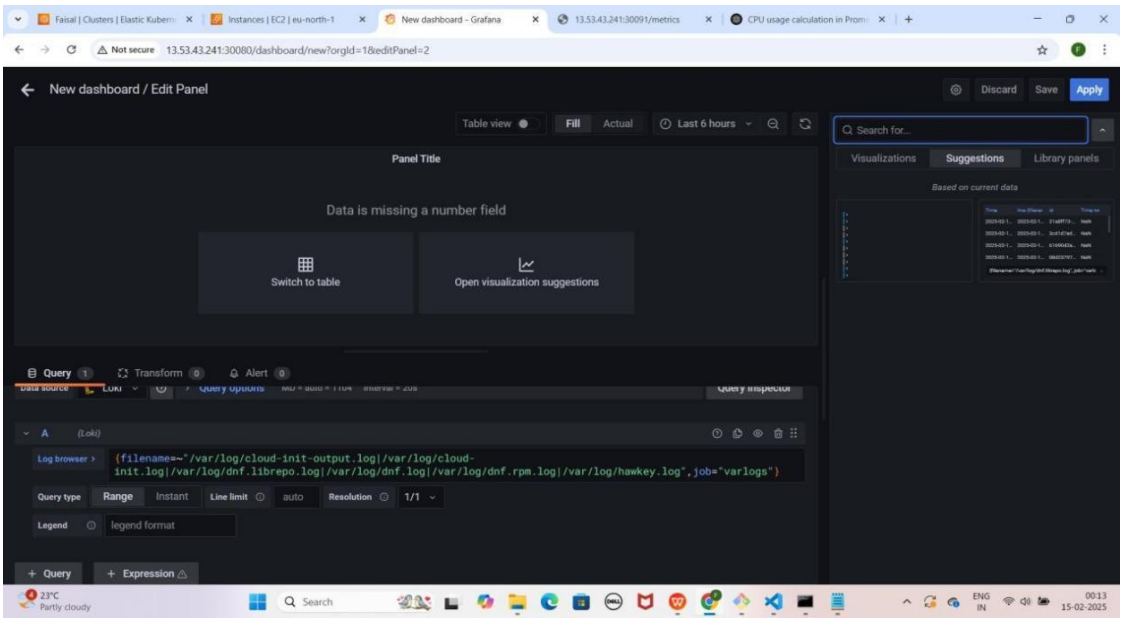


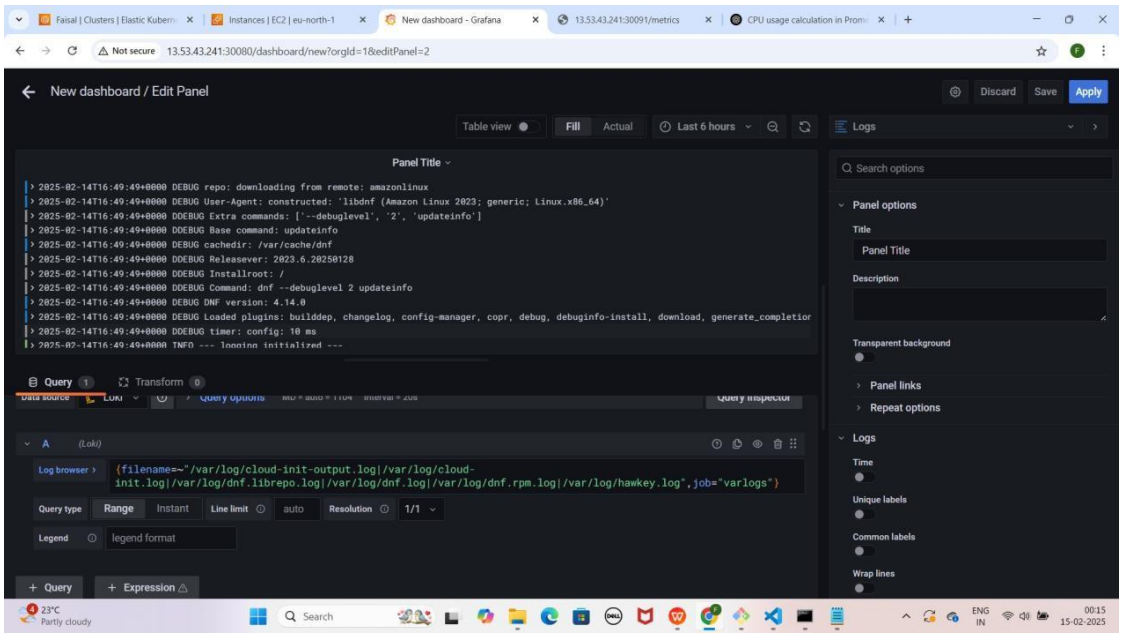
4. Time Series pe **click** karo

5. Suggestions me jao aur "**Dashboard**" select karo Jaise ki maine kiya hai

YE KUCH ISTARHA LAGEGA







NOTE : Is setup se hum cluster ke saare Logs Monitor kar sakte hain.

Part 9: Accessing Prometheus, Loki, and Grafana Using a Domain Name

Jab humne **NGINX ke liye domain name configure** kiya tha, tab hum **EKS Node ki Public IP ke liye records add** kar chuke hain.

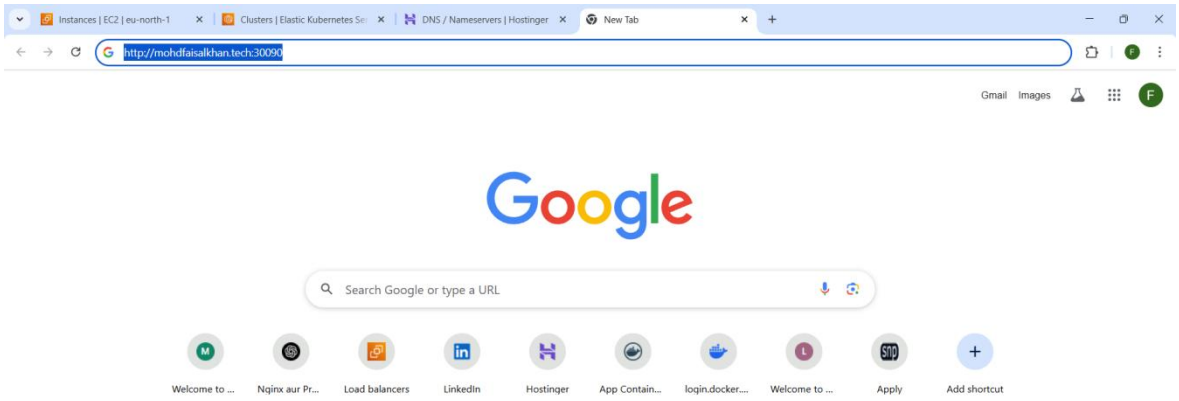
Ab kyunki **Prometheus, Loki, aur Grafana bhi NodePort se expose** ho chuke hain, isliye **ye bhi same domain name se access ho sakte hain**

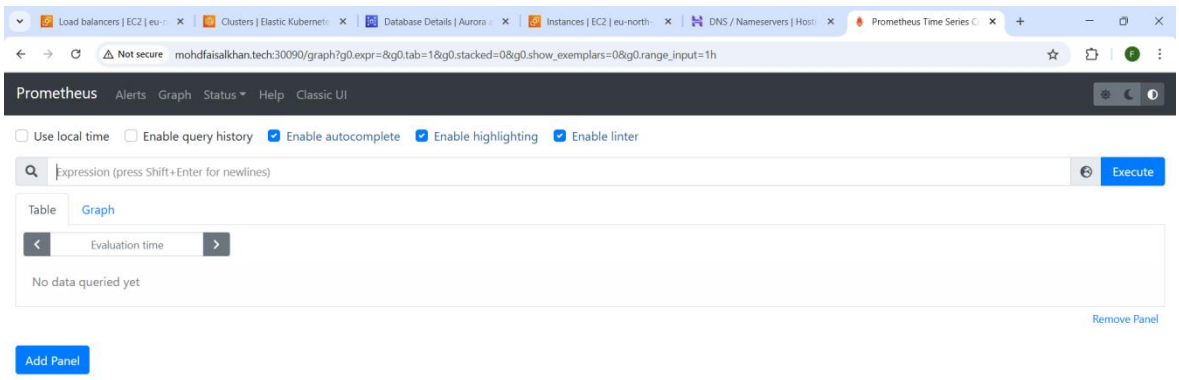
Step 1 : Websites Ko Domain Name Se Access Karna

1. Apni Prometheus application ko Domain Name aur NodePort ke saath access karo.

- **Prometheus:** http://mohdfaisalkhan.tech:30090

YE KUCH ISTARHA LAGEGA

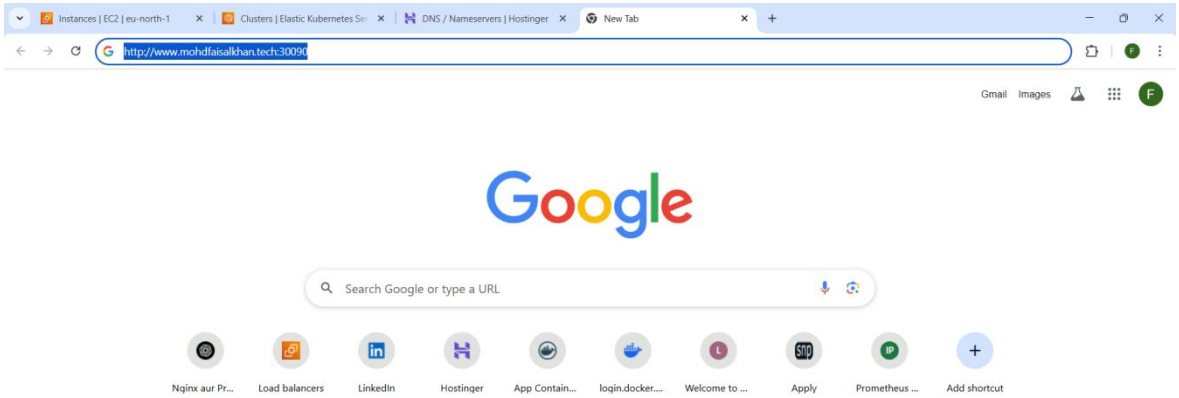


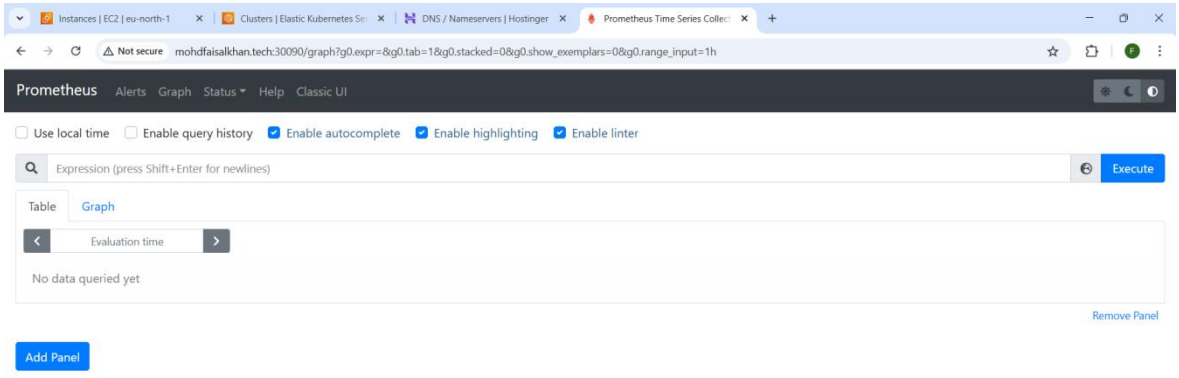


2. Apni Prometheus application ko WWW Domain Name aur NodePort ke saath access karo

- **Prometheus:** http://www.mohdfaisalkhan.tech:30090

YE KUCH ISTARHA LAGEGA

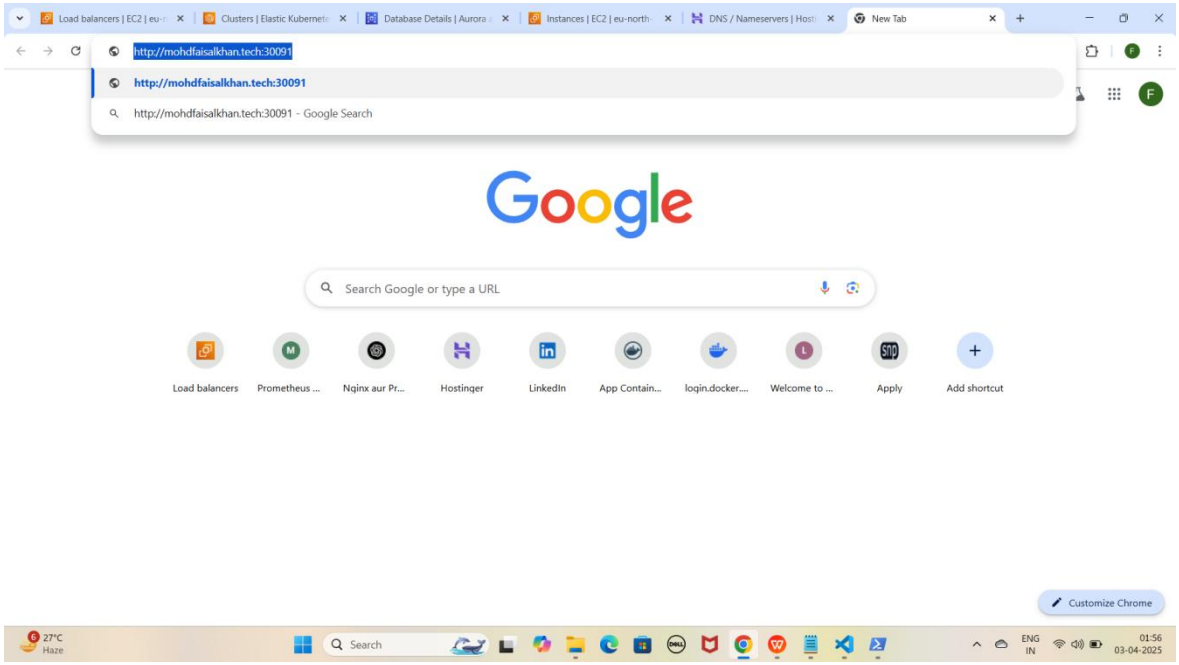




3. Apni Loki application ko Domain Name aur NodePort ke saath access karo.

- **Loki:** http://mohdfaisalkhan.tech:30091

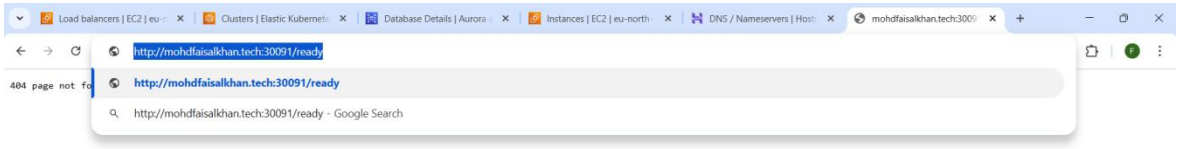
YE KUCH ISTARHA LAGEGA

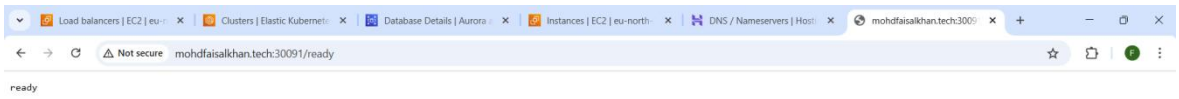


1. Lekin aapko **404 page not found** dikhayga to **/ready** se check kariye **loki** ko jaise ki mere case kuch asisa hoga.

http://mohdfaisalkhan.tech:30091/ready

YE KUCH ISTARHA LAGEGA

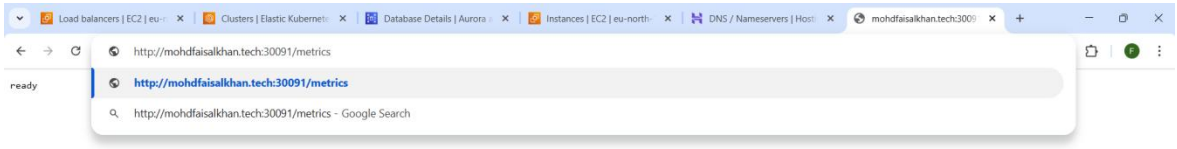


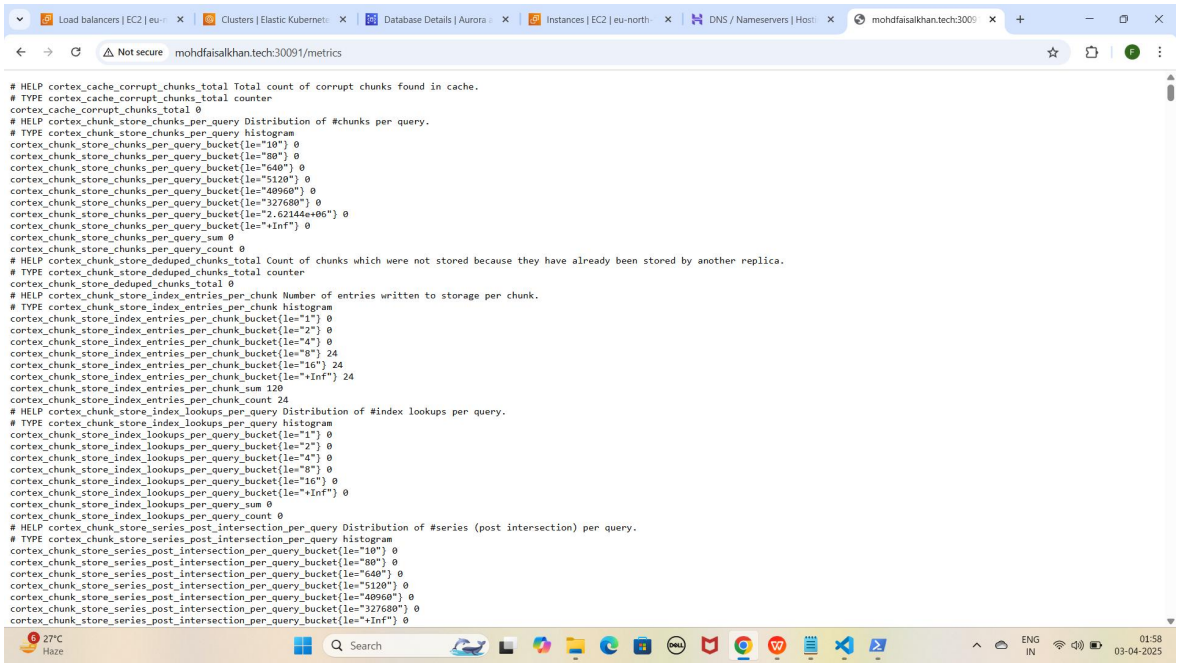


2. Agar aapko **ready show** karraha hai to iska matlab **loki successfully** run horaha hai ab **loki metrics loggs** collect karraha hai check karne ke liye **/metrics** run kariye jaise ki mere case me kuch aisa hoga.

http://mohdfaisalkhan.tech:30091/metrics

YE KUCH ISTARHA LAGEGA

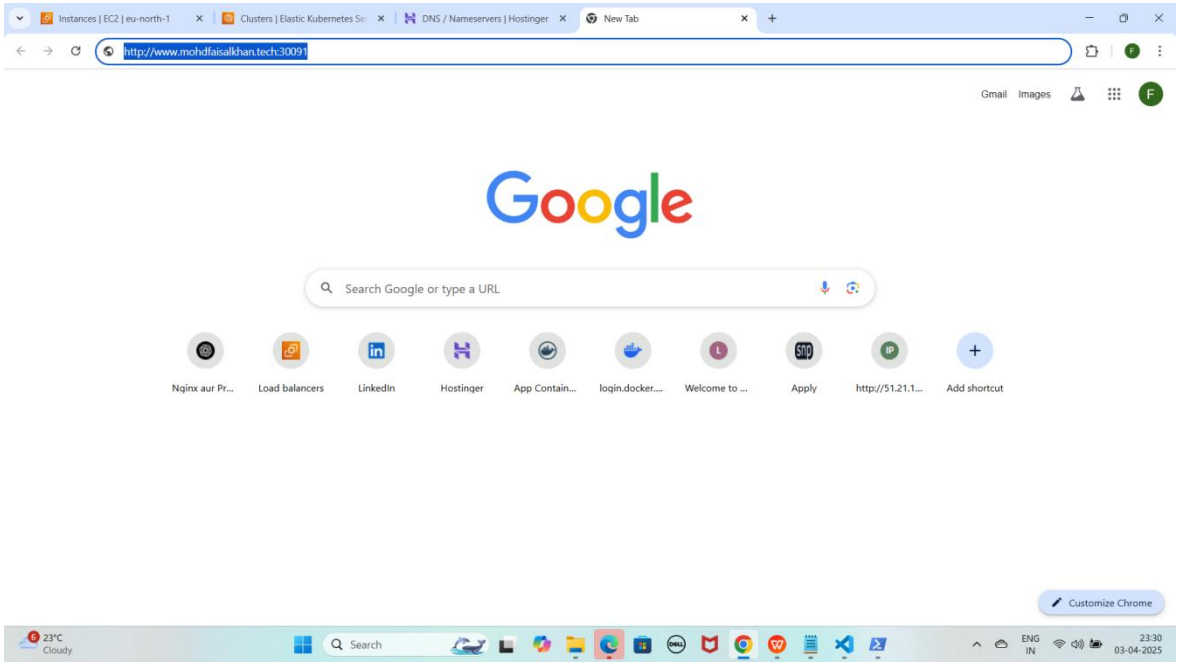


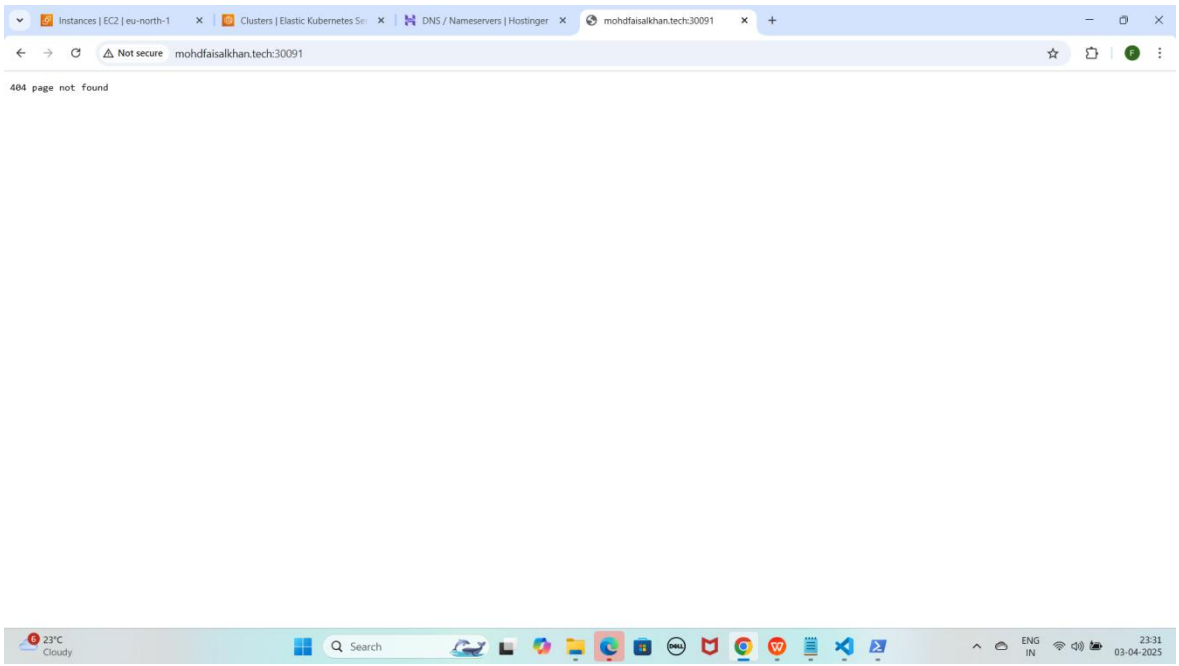


4. Apni Loki application ko WWW Domain Name aur NodePort ke saath access karo

- **Loki:** http://www.mohdfaisalkhan.tech:30091

YE KUCH ISTARHA LAGEGA

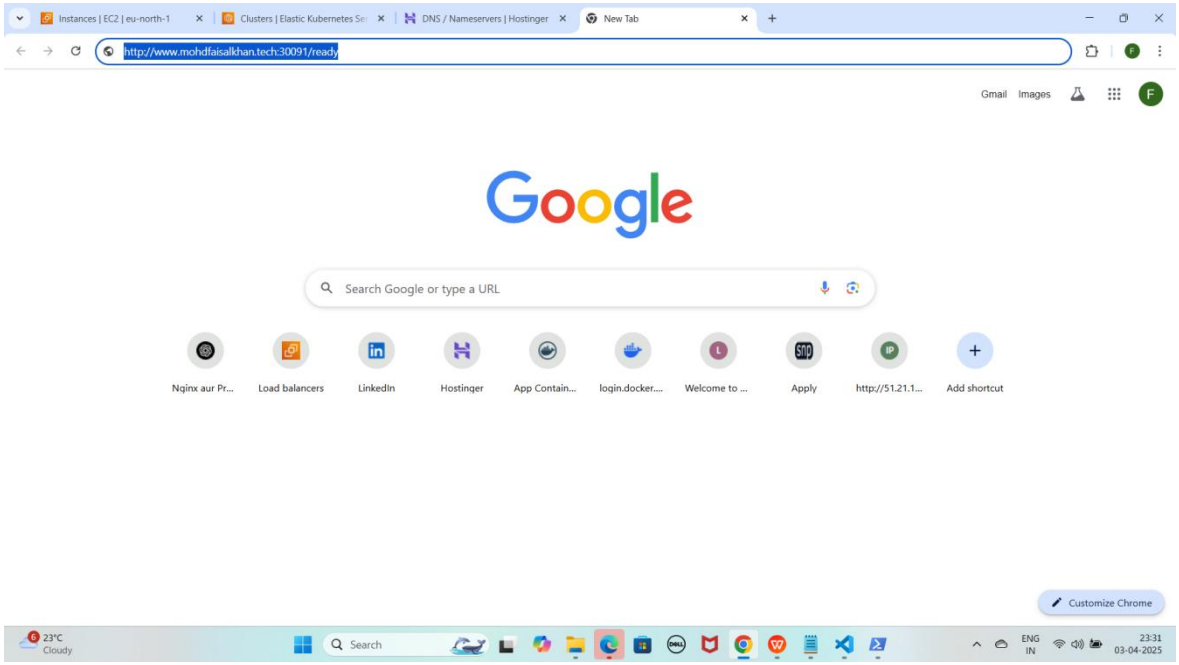


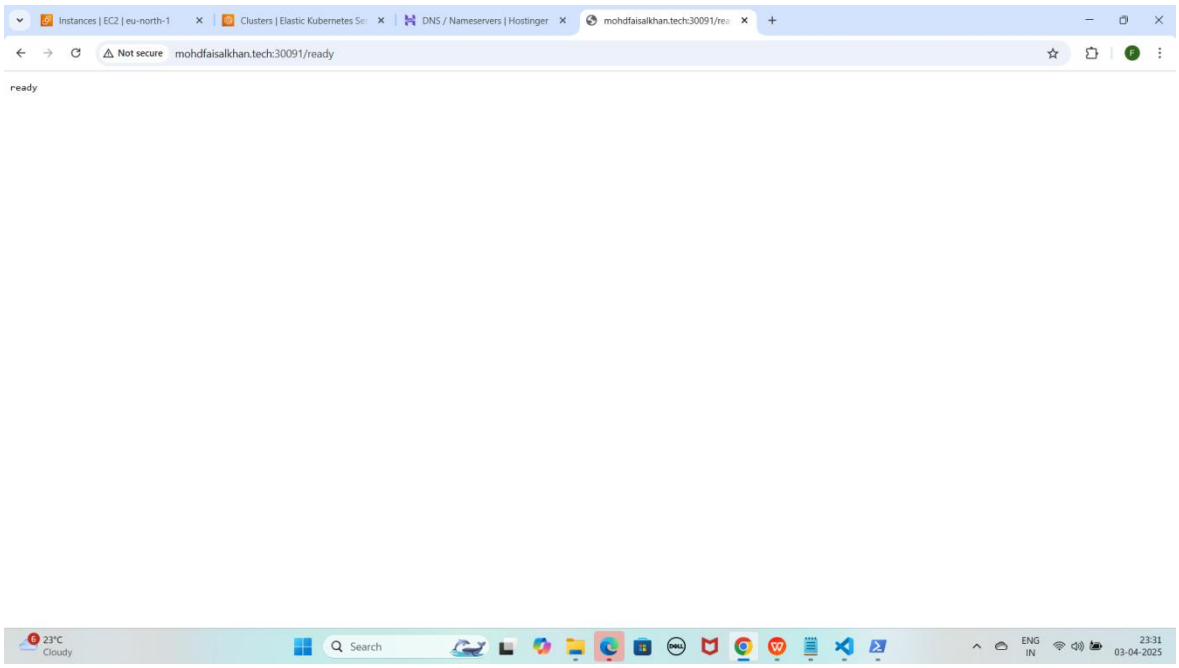


1. Lekin aapko **404 page not found** dikhayga to **/ready** se check kariye **loki** ko jaise ki mere case kuch asisa hoga.

http://www.mohdfaisalkhan.tech:30091/ready

YE KUCH ISTARHA LAGEGA

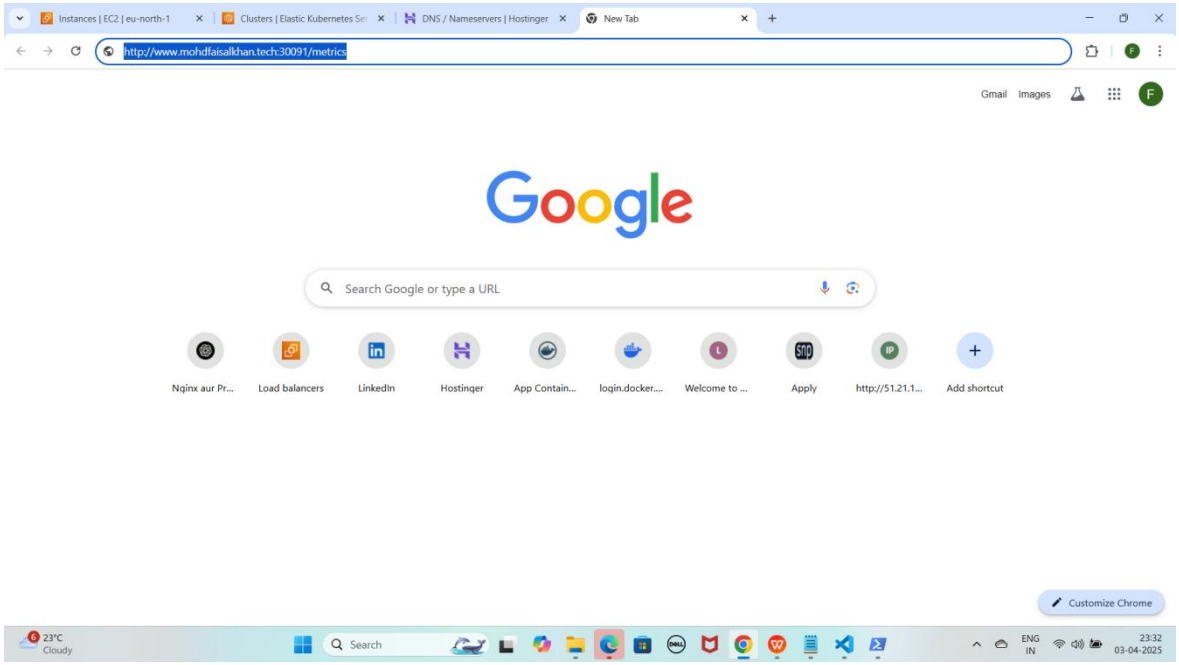


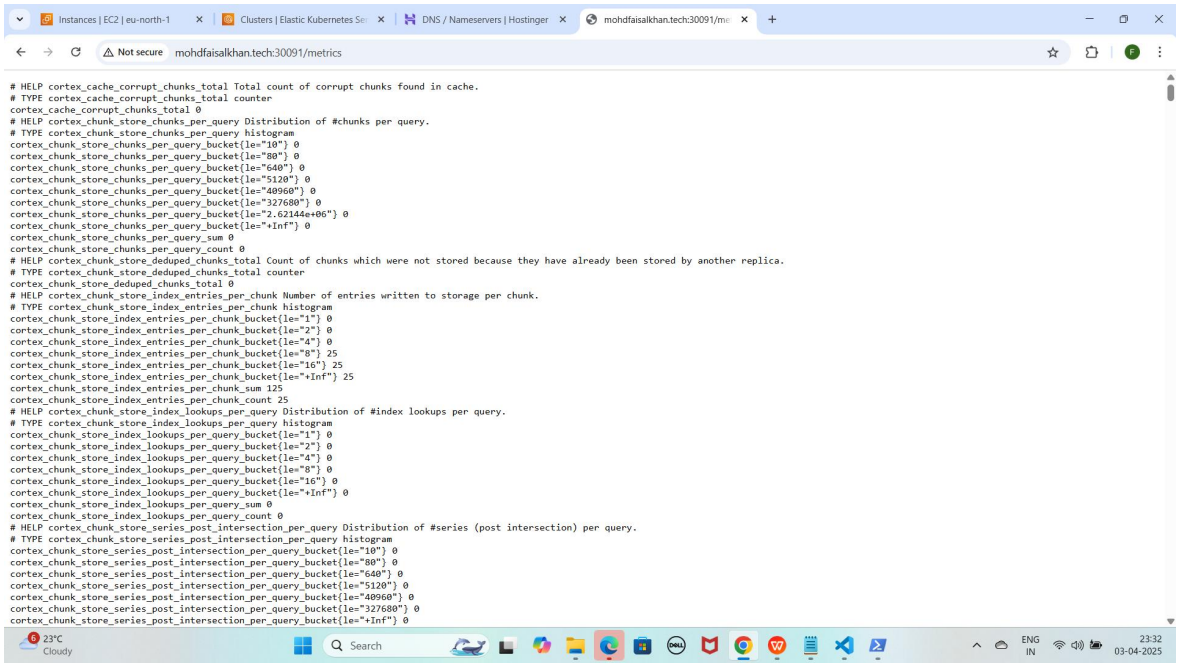


2. Agar aapko **ready** show karraha hai to iska matlab **loki successfully** run horaha hai ab **loki metrics loggs** collect karraha hai check karne ke liye **/metrics** run kariye jaise ki mere case me kuch aisa hoga.

http://www.mohdfaisalkhan.tech:30091/metrics

YE KUCH ISTARHA LAGEGA

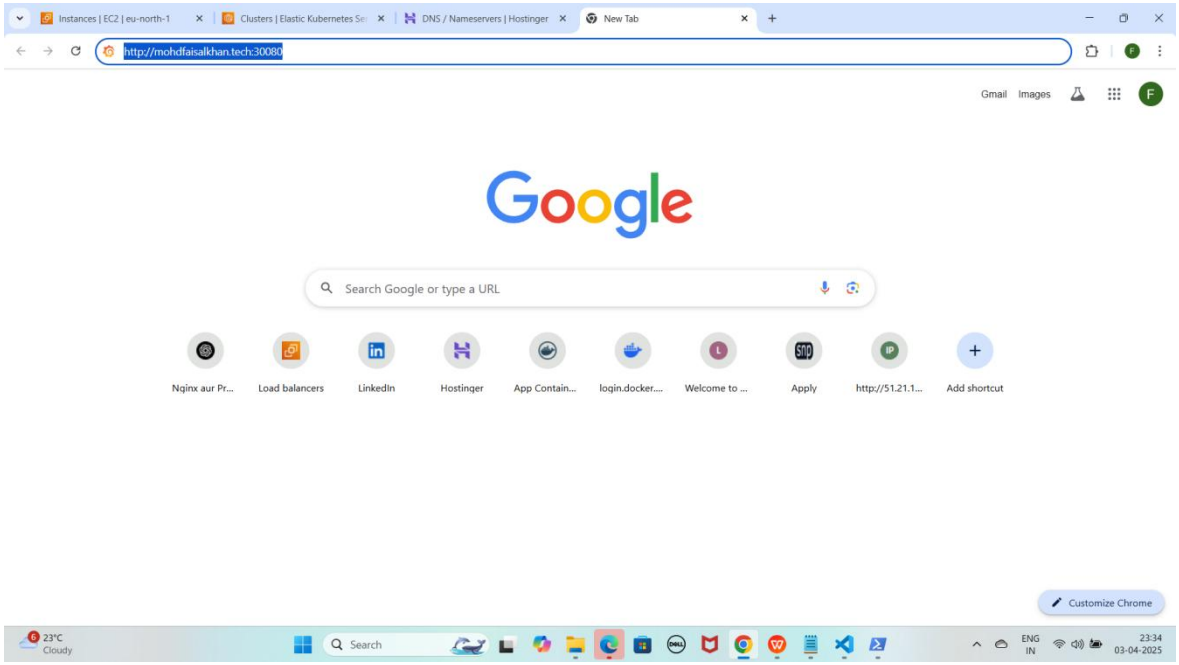


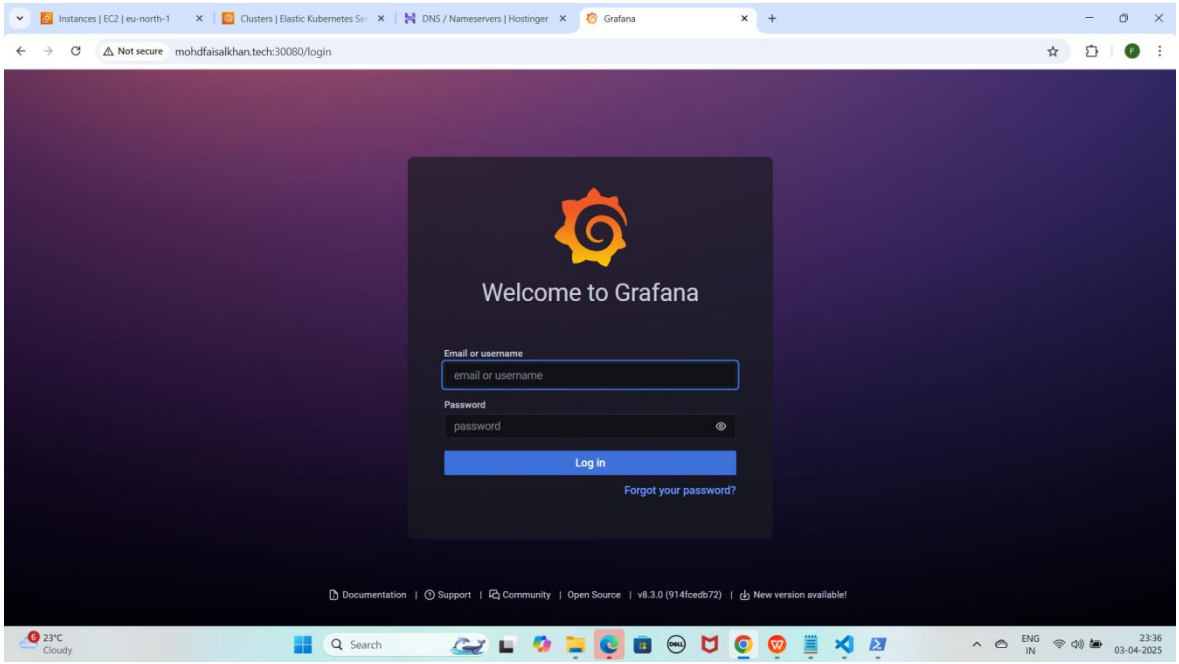


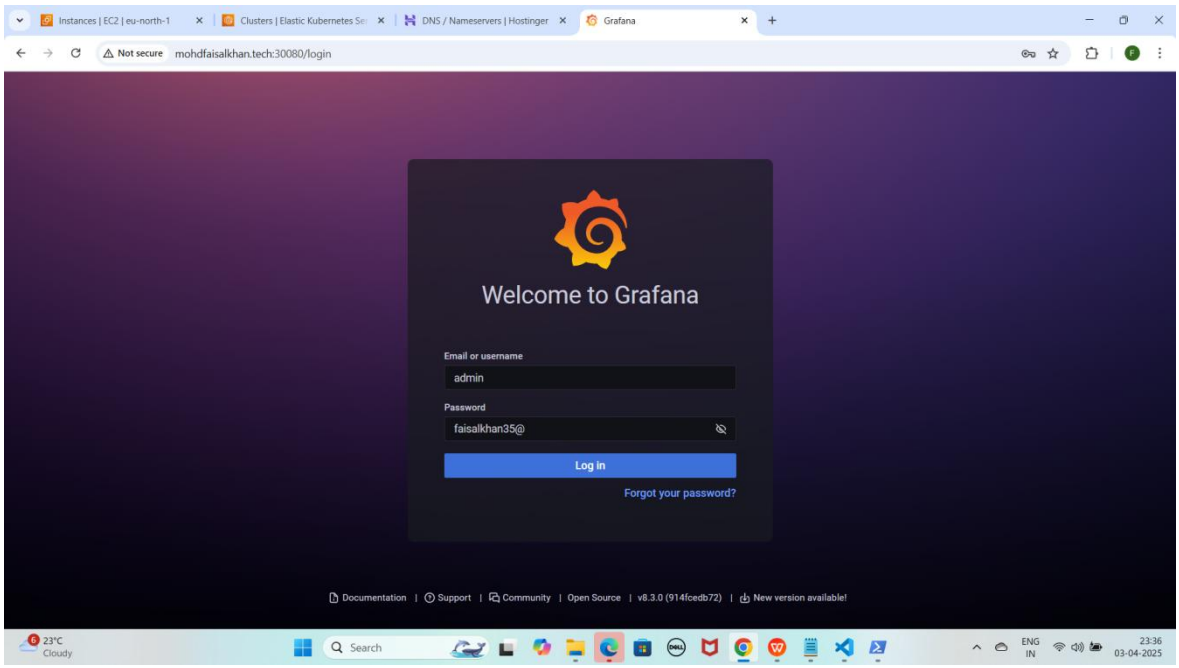
5. **Apni Grafana application ko Domain Name aur NodePort ke saath access karo.**

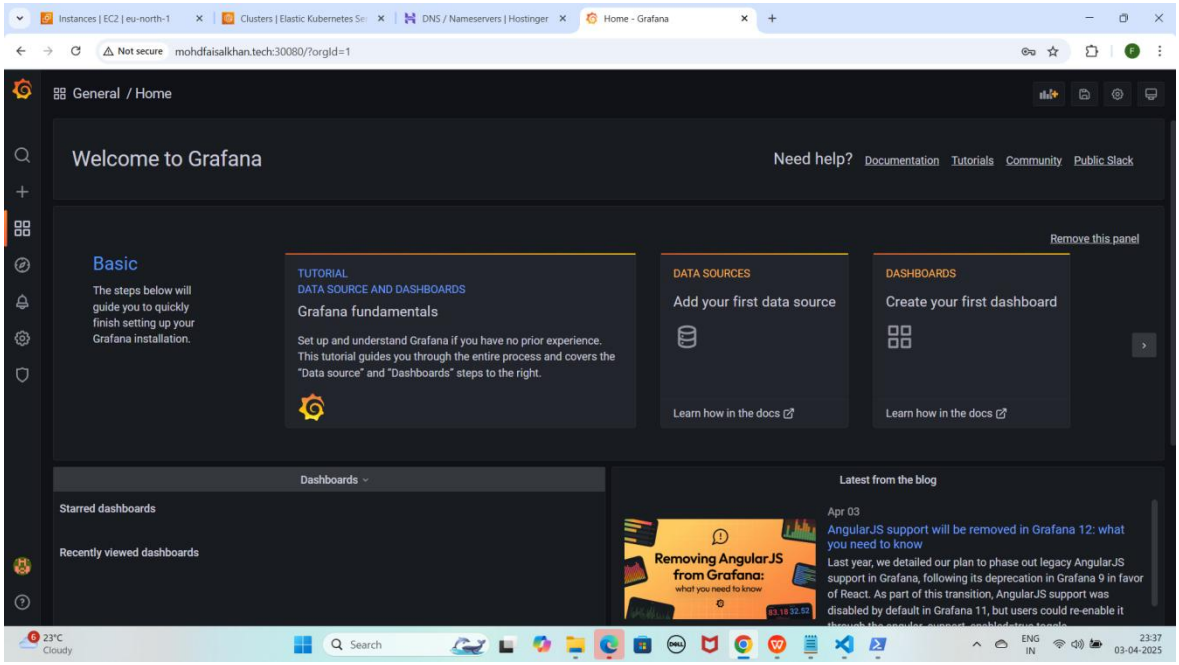
   - **Grafana:** http://mohdfaisalkhan.tech:30080

YE KUCH ISTARHA LAGEGA







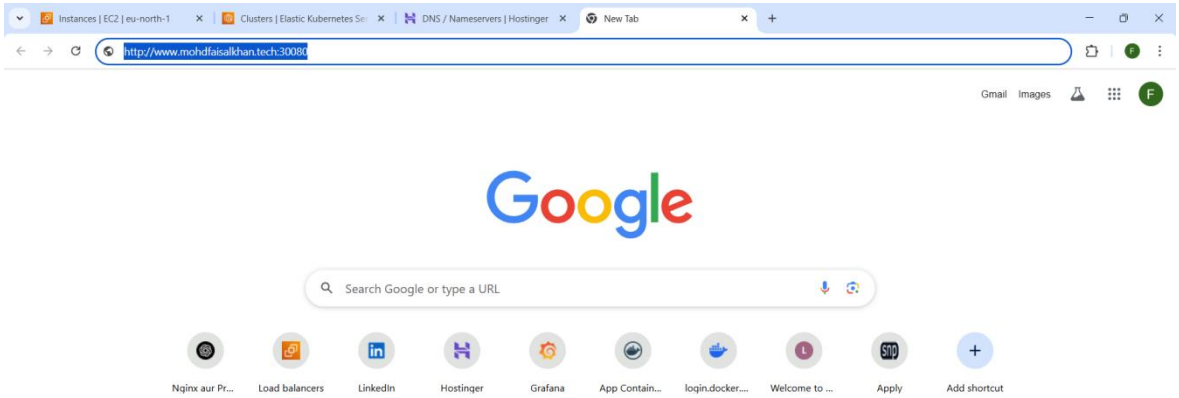


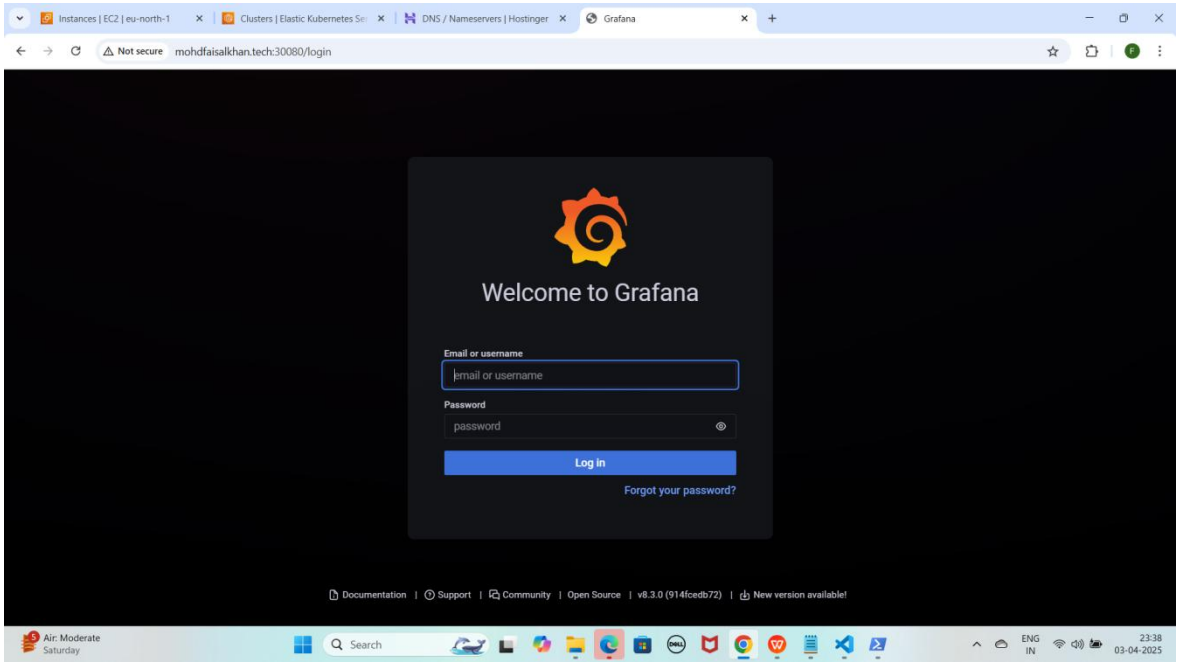
NOTE : Ye wahi password hai jo humne first time Grafana ki Public IP ko NodePort ke saath access karte waqt use kiya tha.

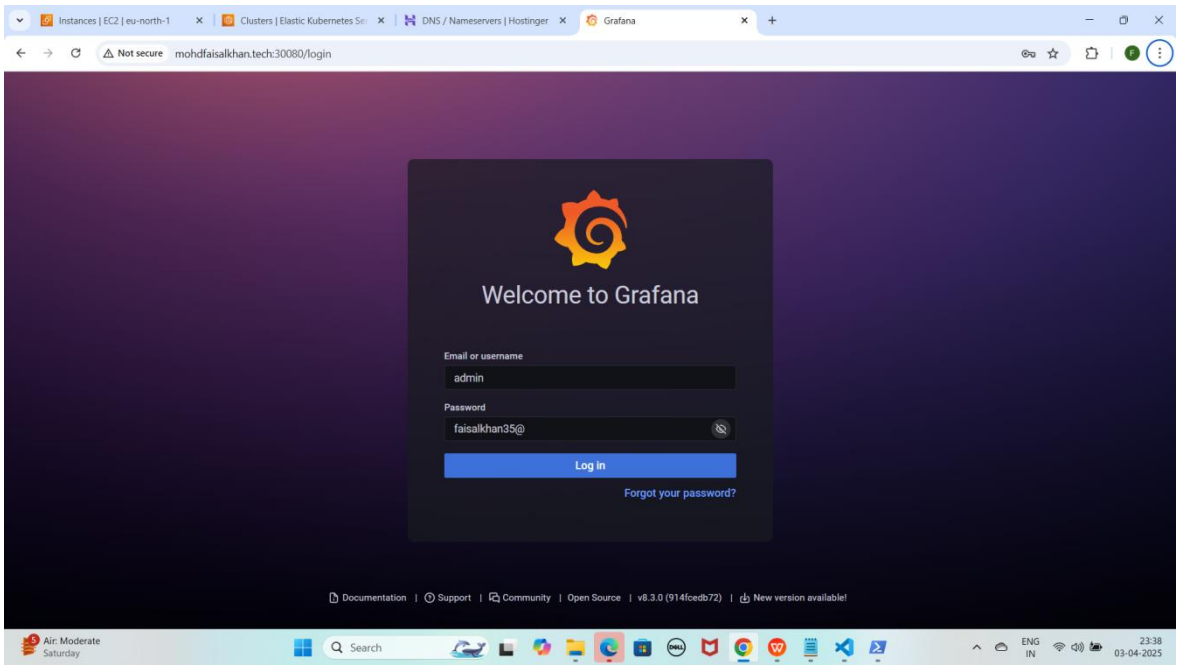
6. Apni Grafana application ko WWW Domain Name aur NodePort ke saath access karo

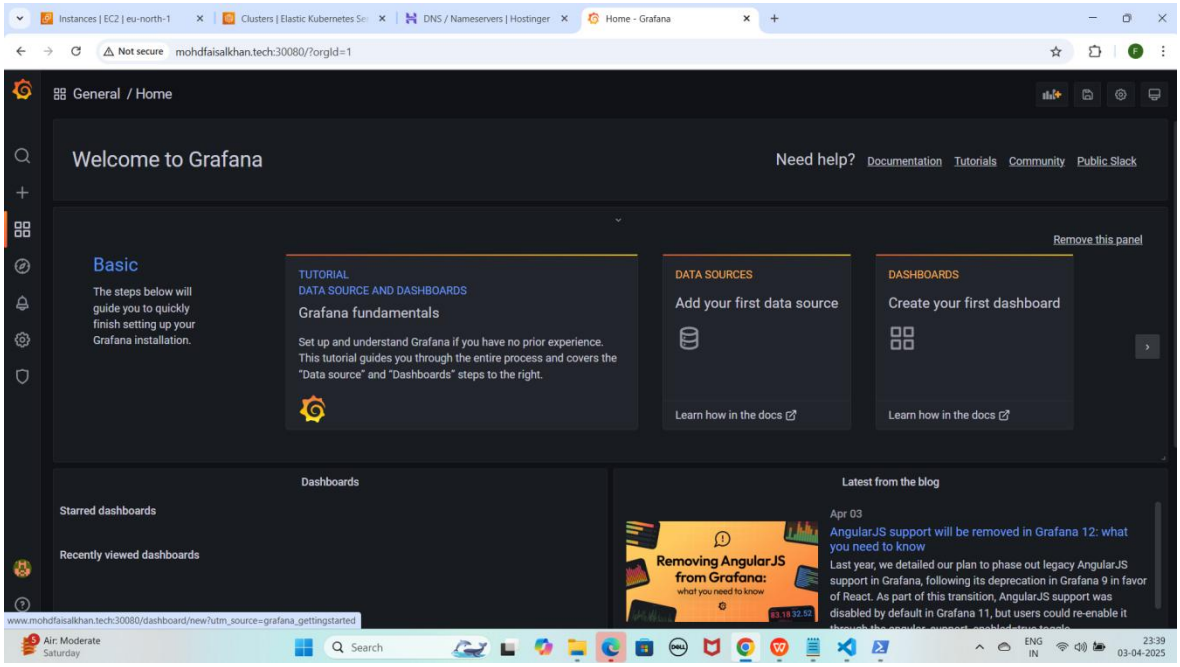
- **Grafana:** http://www.mohdfaisalkhan.tech:30080

YE KUCH ISTARHA LAGEGA









NOTE : Ye wahi password hai jo humne first time Grafana ki Public IP ko NodePort ke saath access karte waqt use kiya tha.

Recommend : Har Step aur Command ko meri Snapshots se Match karein taake Confirm ho sake ke sab kuch sahi tarah se Execute hua hai.

Project Video Demo : https://youtu.be/faStapXbjcQ

*****Commands Used in This Project*****

Part 1: EKS Cluster Creation and Setup

1. Configure AWS CLI

aws configure

2. Enter the following details

AWS Access Key ID: XXXXXXXXXXXXXXXX

AWS Secret Access Key: XXXXXXXXXXXXXXXXXXXXXX

Default Region: eu-north-1

Output Format: text

3. Update kubeconfig for your EKS cluster

aws eks update-kubeconfig --name Faisal --region eu-north-1

4. Verify the EKS node status

kubectl get nodes

Part 2: Nginx pods and Service Deployment

1. Deploy NGINX with Replicas

kubectl apply -f nginx-deployment.yaml

2. Expose NGINX using NodePort Service

kubectl apply -f nginx-nodeport-service.yaml

3. Verify Deployments & Services

kubectl get pods

kubectl get services

Part 5: MySQL Secrets and ConfigMap Configuration

1. Generate Base64 Encodings For Secrets

```
echo -n Faisal Khan | base64

echo -n Faisalkhan35@ | base64

echo -n 'RmFpc2FsIEtoYW4=' | base64 --decode

echo -n 'RmFpc2Fsa2hhbjM1QA==' | base64 --decode
```

2. Apply Secrets and ConfigMaps

```
kubectl apply -f mysql-secrets.yaml

kubectl apply -f mysql-configmap.yaml
```

3. Apply RBAC (Role-Based Access Control)

```
kubectl apply -f service-account.yaml

kubectl apply -f role.yaml

kubectl apply -f rolebinding.yaml
```

4. Verify Pods

```
kubectl get pods
```

Part 6: MySQL Database Pods and Services Deployment

1. Deploy MySQL Services & Persistent Volumes

kubectl apply -f mysql-headless-service.yaml

kubectl apply -f mysql-pv.yaml

kubectl apply -f mysql-pv-2.yaml

kubectl apply -f mysql-pv-3.yaml

2. Deploy MySQL StatefulSet

kubectl apply -f mysql-statefulset.yaml

3. Verify Deployments & Services

kubectl get pods

kubectl get services

Part 7: Accessing MySQL Database in EKS Cluster

1. Access MySQL Pod

kubectl exec -it mysql-0 -- /bin/bash

2. Login to MySQL

mysql -u root -p

3. Create & Verify Database

CREATE DATABASE faisal_db;

SHOW DATABASES;

Part 8: Monitoring Using Prometheus and Loki With Grafana

1. Create Monitoring Namespace

kubectl create namespace monitoring

2. Deploy Prometheus Components

kubectl apply -f prometheus-daemonset.yaml

kubectl apply -f prometheus-rbac.yaml

kubectl apply -f prometheus-nodeport-service.yaml

3. Verify Prometheus Pods & Services

kubectl get pods -n monitoring

kubectl get services -n monitoring

4. Important Prometheus Metrics

rate(process_cpu_seconds_total[30s])

process_resident_memory_bytes

process_network_transmit_bytes_total

process_network_receive_bytes_total

5. Deploy Loki & Promtail

kubectl apply -f promtail-daemonset.yaml

kubectl apply -f loki-daemonset.yaml

kubectl apply -f loki-nodeport-service.yaml

6. Verify Loki & Promtail Pods & Services

kubectl get pods -n monitoring

kubectl get services -n monitoring

7. Deploy Grafana

kubectl apply -f grafana-deployment.yaml

8. Verify Grafana Pods & Services

kubectl get pods -n monitoring

kubectl get services -n monitoring