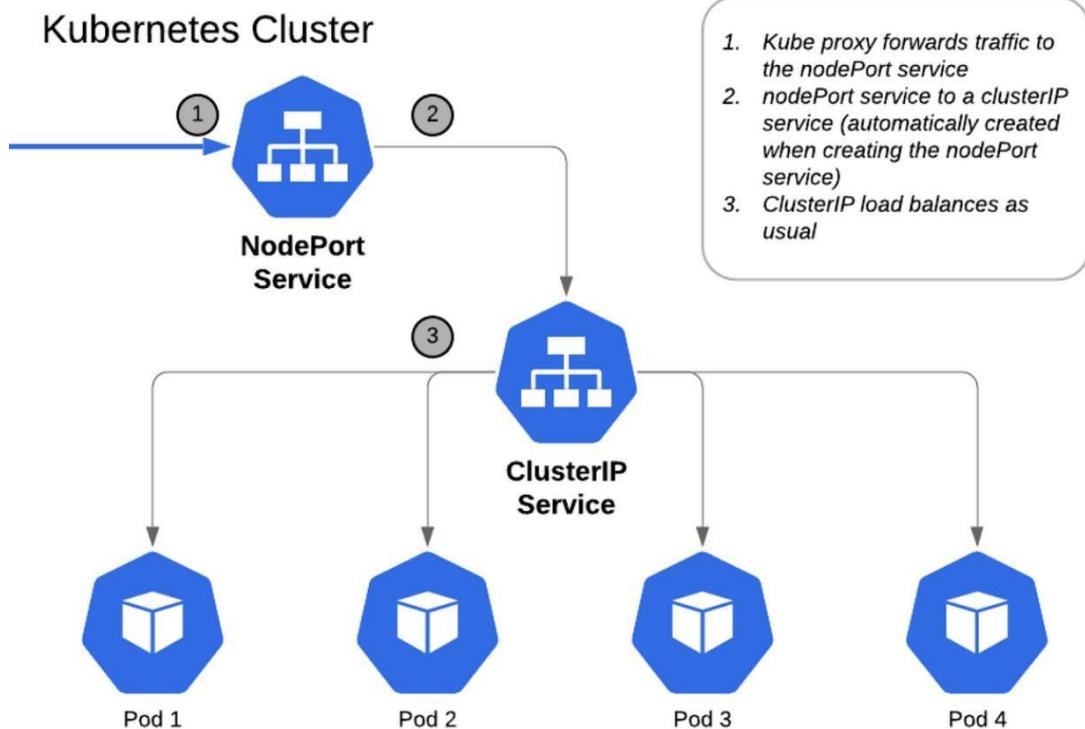


KUBERNETES PROJECT WITH NODEPORT SERVICE



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 hogा.

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>

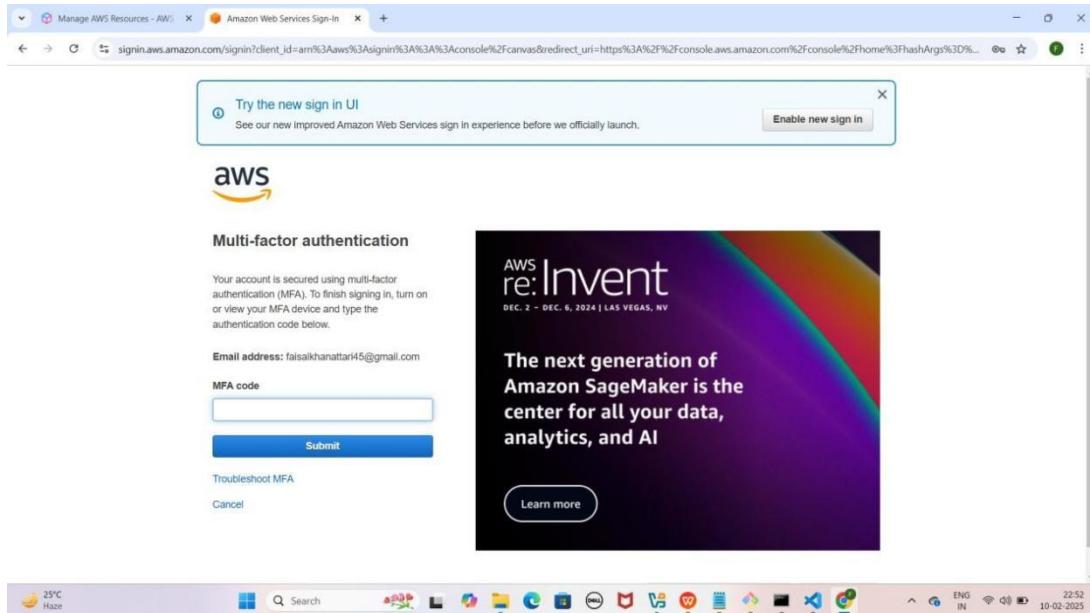
PROJECT TYPE 1-->(Stockholm Region Select Karo)

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



The screenshot shows the AWS EKS (Elastic Kubernetes Service) console. The left sidebar lists services like Elastic Kubernetes Service, Batch, and AWS FIS. The main content area displays the 'Services' and 'Features' sections. The 'Services' section includes links to 'Top features' (Clusters), 'Batch', and 'AWS FIS'. The 'Features' section includes 'Clusters' (Elastic Kubernetes Service feature) and 'Access points' (EFS feature). A right sidebar allows users to 'Create application' and search for existing ones.

Manage AWS Resources - AWS Console Home Clusters | Elastic Kubernetes Service

eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters

Search [Alt+S]

Clusters (0) Info

Filter clusters

Cluster name Status Kubernetes version Support period

No clusters

You do not have any clusters.

Create cluster

Amazon Elastic Kubernetes Service

Clusters

Amazon EKS Anywhere

Enterprise Subscriptions

Related services

Amazon ECR

AWS Batch

Console settings

Documentation

Submit feedback

CloudShell Feedback

25°C Haze

ENG IN 22:54 10-02-2025

Manage AWS Resources - AWS | eu-north-1.console.aws.amazon.com | Create EKS cluster | Clusters | +

aws | Search [Alt+S] | Europe (Stockholm) | Faisal Khan | ⓘ | ⋮

EKS > Clusters > Create EKS cluster

Configure cluster

Step 1 Configure cluster (selected)

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

Configuration options - new ⓘ

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 ⓘ

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 ⓘ

Name

Enter a unique name for this cluster. This property cannot be changed after the cluster is created.

Enter name

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CloudShell Feedback 25°C Haze 22:54 ENG IN 10-02-2025

Manage AWS Resources - AWS | eu-north-1.console.aws.amazon.com | Create EKS cluster | Clusters | +

aws | 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 ⓘ

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 ⓘ

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 ⓘ

Select Kubernetes version for this cluster:

1.31

Upgrade policy ⓘ

Choose one of the following options. You can switch the setting later while the standard support period is in effect.

Standard

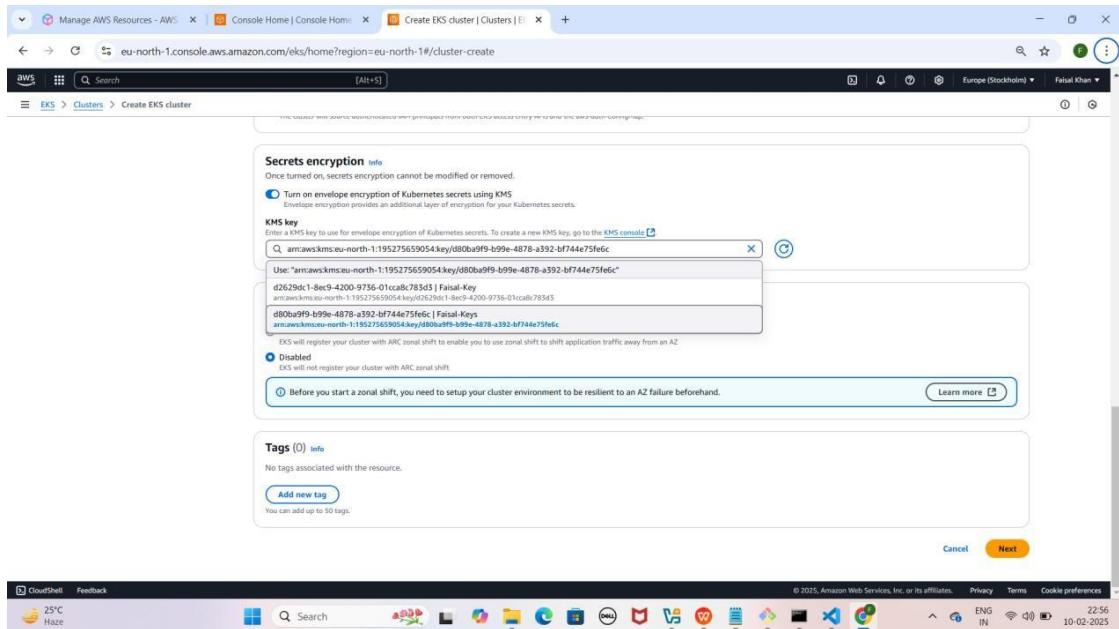
This option supports the Kubernetes version for 14 months after the release date. There is no additional cost. When standard support ends, your cluster will be auto-upgraded to the next version.

Extended

This option supports the Kubernetes version for 28 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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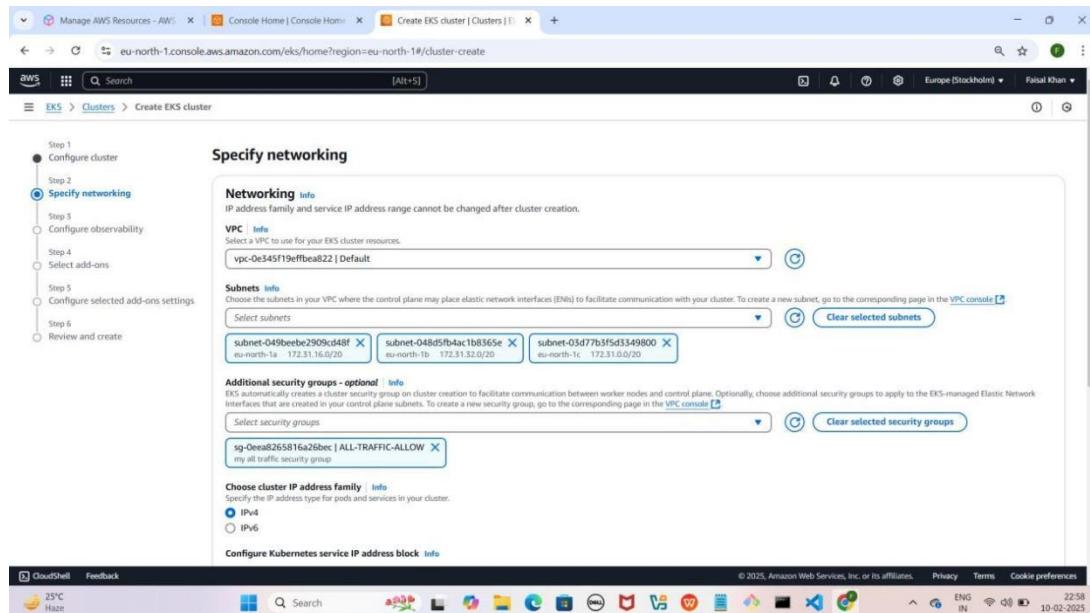
CloudShell Feedback 25°C Haze 22:57 ENG IN 10-02-2025

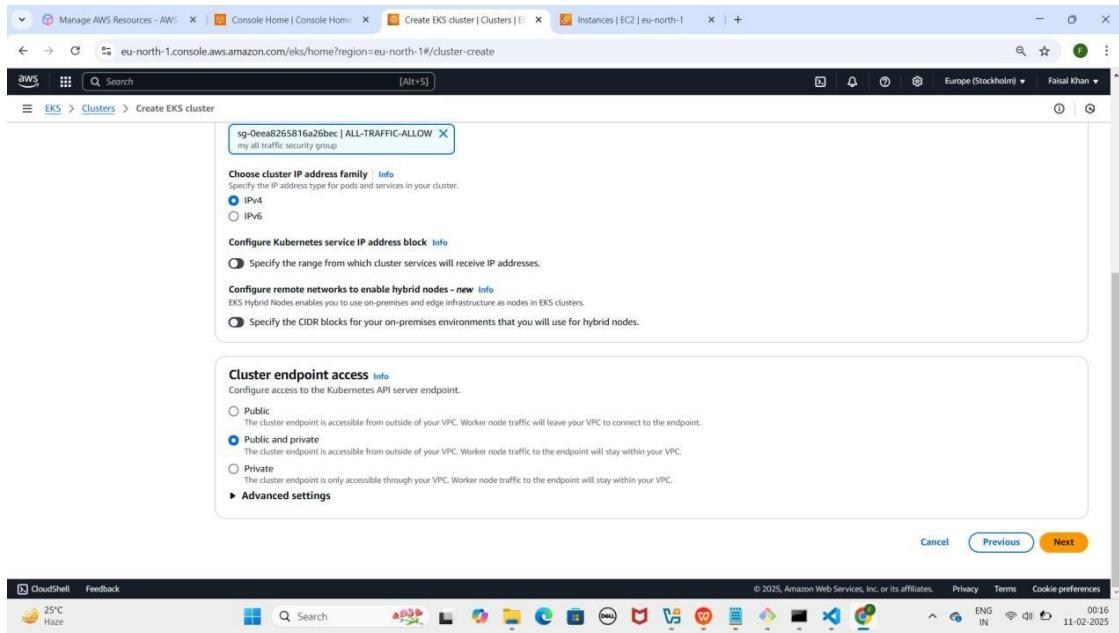


Step 2: Networking Configuration

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

YE KUCH ISTARHA LAGEGA

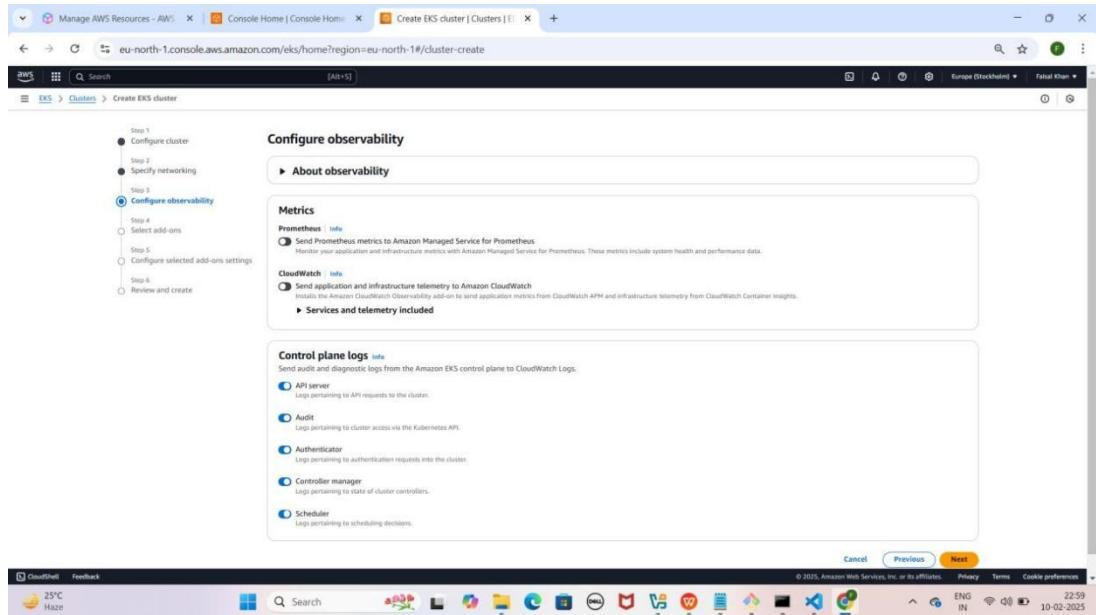




Step 3: Observability Configure Karna

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

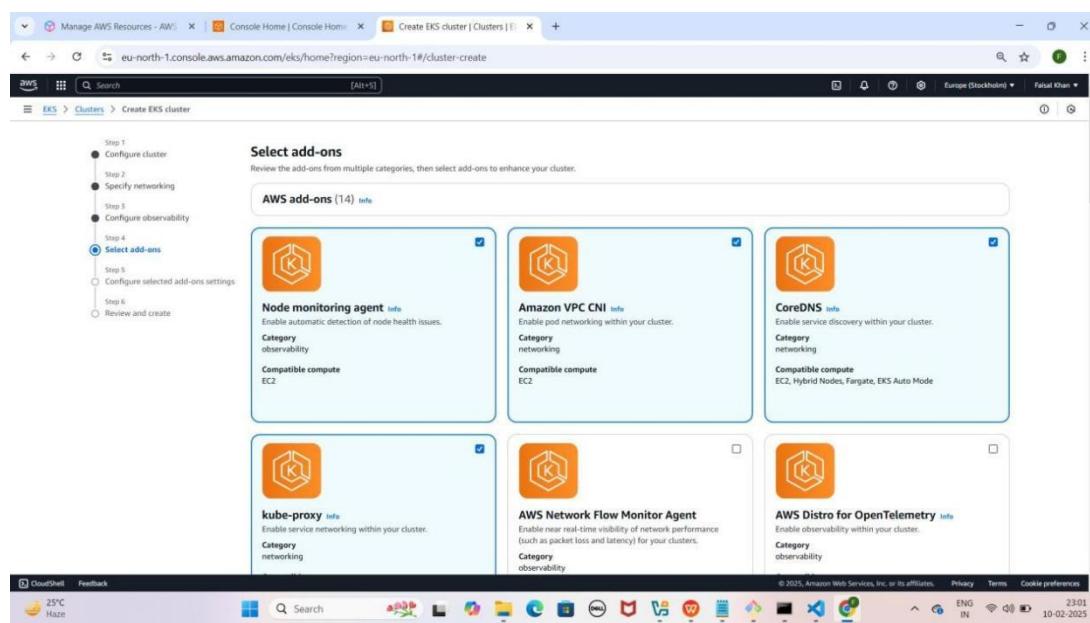
YE KUCH ISTARHA LAGEGA



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

YE KUCH ISTARHA LEGEGA



Screenshot of the AWS EKS Cluster Creation Wizard showing the "Configure selected add-ons settings" step.

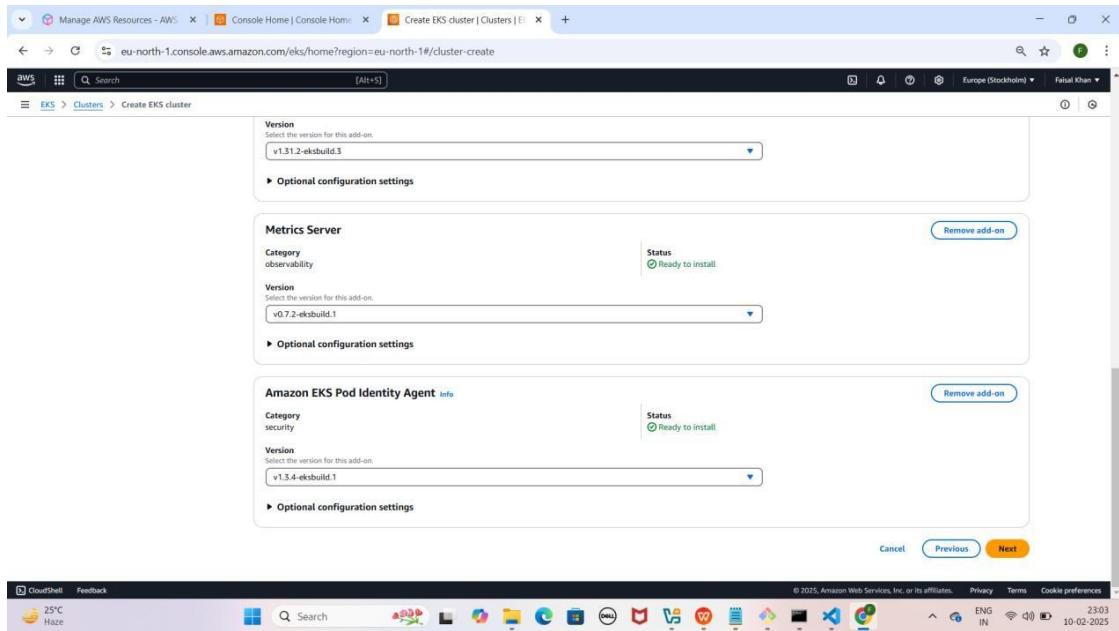
The wizard has completed 5 steps and is currently on Step 6: Configure selected add-ons settings.

Add-on Selection:

- Node monitoring agent**: Category: observability, Status: Ready to install, Version: v1.0.2-eksbuild.2
- Amazon VPC CNI**: Category: networking, Status: Ready to install, Version: Not set. It lists three roles:
 - POD-ROLE (arn:aws:iam:193275639054:role/POD-ROLE)
 - PODS-ROLE (arn:aws:iam:193275639054:role/PODS-ROLE)
 - PODS-ROLE (arn:aws:iam:193275639054:role/PODS-ROLE)

Optional configuration settings: Buttons for "Remove add-on" and "Create recommended role".

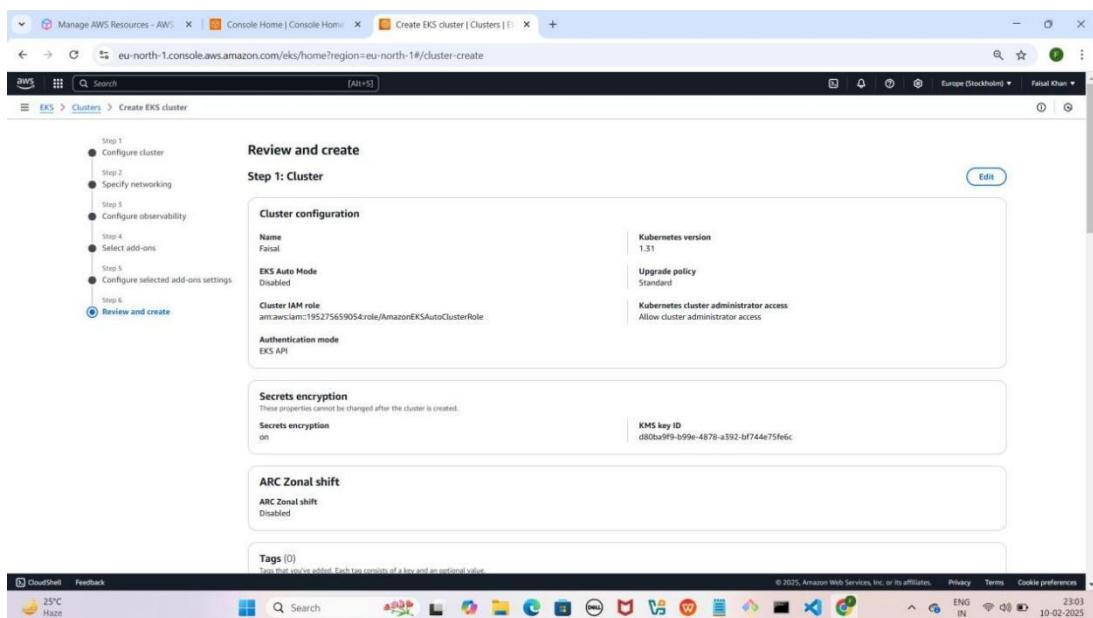
CloudShell Feedback: Shows the status bar with "25°C Haze", system icons, and the date/time "10-02-2025".



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" hogा
3. 15-20 min tak wait karo aur har 5 min baad refresh karo
4. Jab status "Active" hojaye, tab next step karo

YE KUCH ISTARHA LAGEGA



Create EKS cluster | Clusters | Step 5: Versions

Selected add-ons version (5)

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-cri	v1.19.0-eksbuild.1

EKS Pod Identity (1)

Add-on name	IAM role	Service account
vpc-cri	arn:aws:iam::195275659054:role/PODS-ROLE	aws-node

Create

Faisal | Clusters | Elastic Kubernetes Service

Faisal

Cluster info

- Status: Creating
- Kubernetes version: 1.31
- Support period: Standard support until November 26, 2025
- Provider: EKS

Overview

Details

- API server endpoint: <https://FEDB882588EA11BE571B065F19DABBBB.gr7.eu-north-1.eks.amazonaws.com>
- OpenID Connect provider URL: [View in IAM](#)
- Created: A few seconds ago
- 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

EKS automates routine cluster tasks for compute, storage, and networking to meet application compute needs.

EKS Auto Mode

<https://eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#clusters>

The screenshot shows the AWS EKS Clusters page. On the left, there's a sidebar with 'Amazon Elastic Kubernetes Service' and 'Clusters'. The main area displays a table titled 'Clusters (1) Info' with one row. The row contains the following information:

Cluster name	Status	Kubernetes version	Support period	Upgrade policy	Created	Provider
Faisal	Creating	1.31	Standard support until November 26, 2025	Standard	a few seconds ago	EKS

A blue banner at the top of the page says: 'Add-on(s) eks-node-monitoring-agent, vpc-cni, coredns, kube-proxy, metrics-server, eks-pod-identity-agent successfully added to cluster Faisal.'

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

YE KUCH ISTARHA LAGEGA

The screenshot shows two views of the AWS EKS Cluster Faisal dashboard. The top view displays the 'Overview' tab, which includes a summary of add-ons, notifications, and cluster details like Kubernetes version (1.31), support period (standard support until November 26, 2025), and provider (EKS). The bottom view shows the 'Compute' tab, which lists nodes (0) and node groups (0). Both views include standard AWS navigation and status bars at the bottom.

Cluster info

Status	Kubernetes version	Support period	Provider
Active	1.31	Standard support until November 26, 2025	EKS

Nodes (0)

Node name	Instance type	Compute	Managed by	Created	Status
No Nodes This cluster does not have any Nodes, or you don't have permission to view them.					

Node groups (0)

Manage AWS Resources - AWS

eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters/Faisal?selectedTab=cluster-compute-tab

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

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

Profile name	Namespaces	Status
No Fargate profiles		

This cluster does not have any Fargate profiles.

Add Fargate profile



Manage AWS Resources - AWS

eu-north-1.console.aws.amazon.com/eks/home?region=eu-north-1#/clusters/Faisal/add-node-group

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.

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

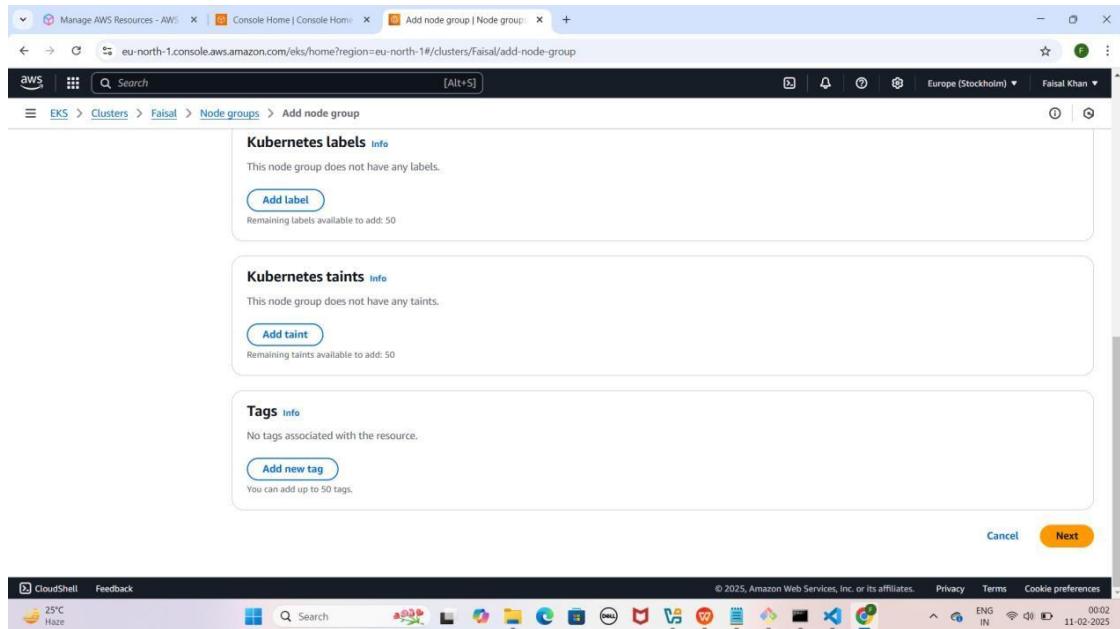
Select the IAM role that will be used by the nodes. To create a new role, go to the IAM console.

NODE-ROLE

Note: 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.

Launch template Info





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

YE KUCH ISTARHA LAGEGA

The screenshot shows the AWS EKS Add node group configuration wizard. The current step is "Set compute and scaling configuration". The left sidebar shows steps: Step 1 (Configure node group), Step 2 (Set compute and scaling configuration), Step 3 (Specify networking), and Step 4 (Review and create). Step 2 is highlighted.

Node group compute configuration
These properties cannot be changed after the node group is created.

AMI type Info
Select the EKS-optimized Amazon Machine Image for nodes.
Amazon Linux 2023 (x86_64) Standard (AL2023_x86_64_STANDARD)

Capacity type
Select the capacity purchase option for this node group.
On-Demand

Instance types Info
Select instance types you prefer for this node group.
Q Enter an instance type
t3.large
vCPU: 2 vCPUs Memory: 8 GiB Network: Up to 5 Gigabit Max ENI: 3 Max IP: 36

Disk size
Select the size of the attached EBS volume for each node.
100 GiB

Node group scaling configuration

Desired size
Set the desired number of nodes that the group should launch with initially.
1 nodes
Desired node size must be greater than or equal to 0

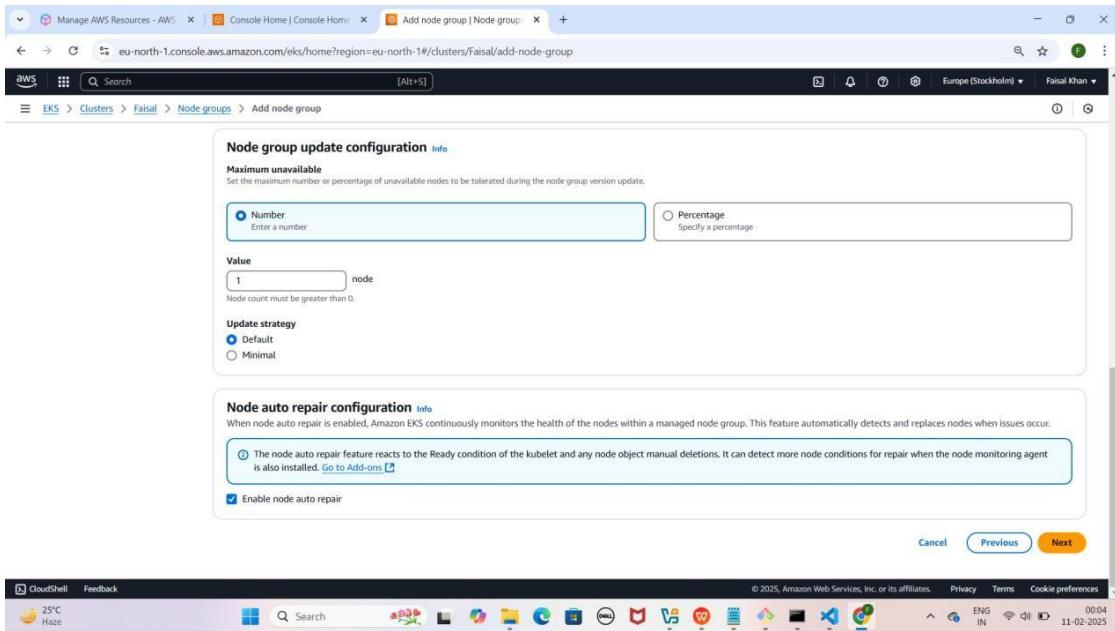
Minimum size
Set the minimum number of nodes that the group can scale to.
1 nodes
Minimum node size must be greater than or equal to 0

Maximum size
Set the maximum number of nodes that the group can scale out to.
1 nodes
Maximum node size must be greater than or equal to 1 and cannot be lower than the minimum size

Node group update configuration Info
Maximum unavailable
Set the maximum number or percentage of unavailable nodes to be tolerated during the node group version update.

Number
Enter a number

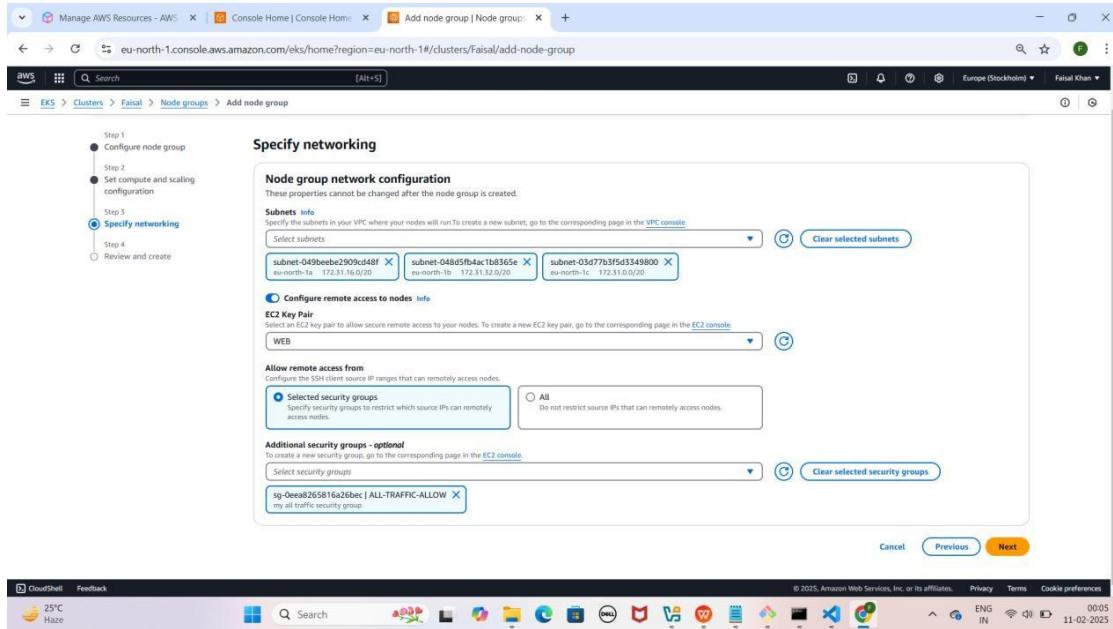
Percentage
Specify a percentage



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

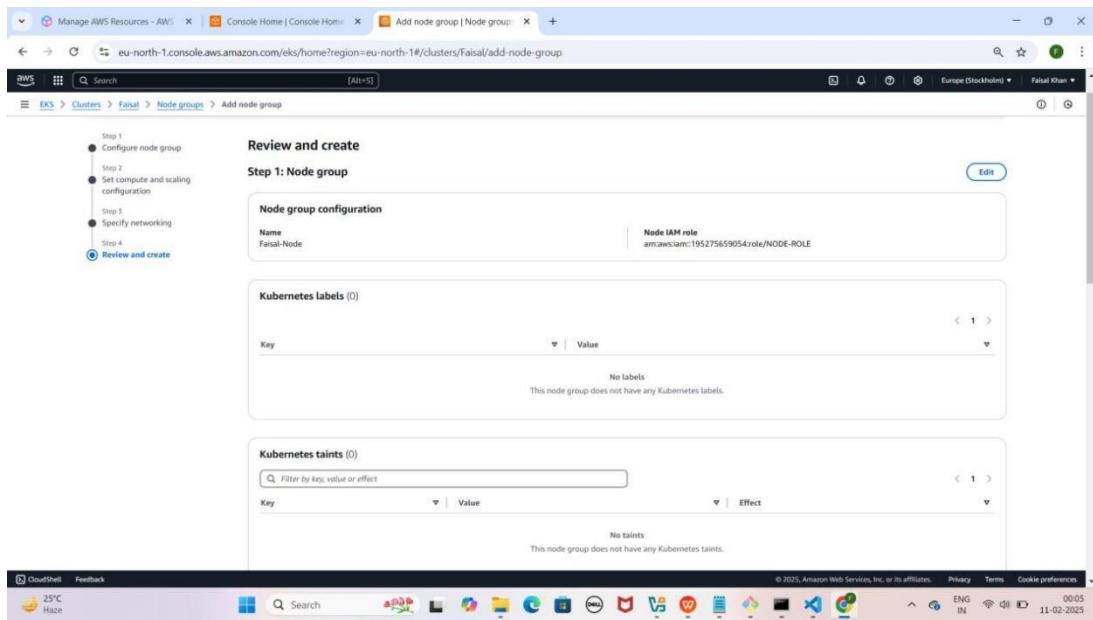
YE KUCH ISTARHA LAGEGA

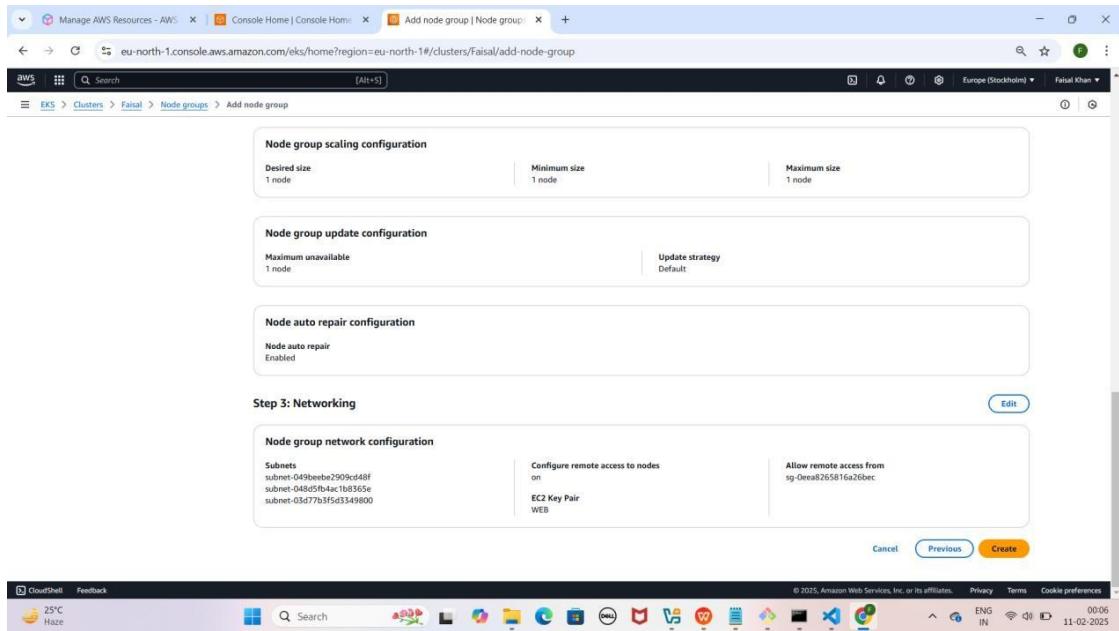


Step 9: Node Group Review and Create Karna

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

YE KUCH ISTARHA LAGEGA

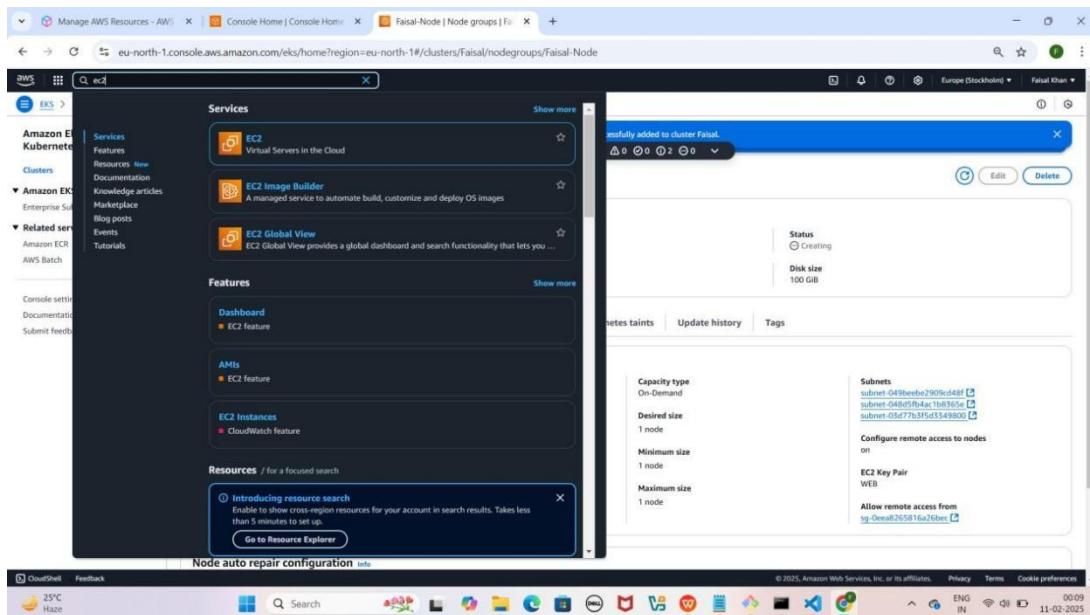




AWS Console open karo, search bar mein "EC2" likho, Instances section mein ek running instance nazar aayega, uska name "Faisal-Node" karo.

---> **(Aapka Name Likho)**

YE KUCH ISTARHA LAGEGA



Manage AWS Resources - AWS | Console Home | Faisal Khan | Home | EC2 | eu-north-1

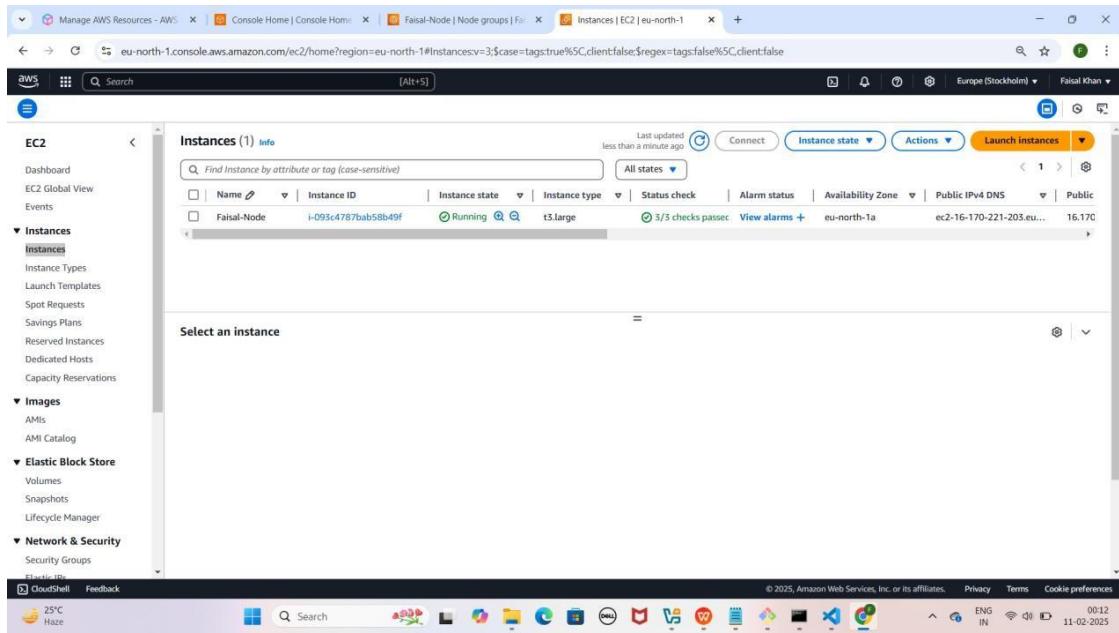
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Overview:

The screenshot shows the AWS EC2 Overview page. The left sidebar includes links for Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and AMI Catalog. The main content area features a hero section for 'Amazon Elastic Compute Cloud (EC2)' with a sub-section 'Create, manage, and monitor virtual servers in the cloud.' It highlights 'Benefits and features' such as ultimate scalability and control, and lists features like highest level of control, widest variety of server size options, and global scalability. A 'Launch a virtual server' box contains 'Launch instance' and 'View dashboard' buttons. A 'Get started' box provides walkthroughs and a tutorial. The bottom right shows the AWS footer and system tray.

Manage AWS Resources - AWS | Console Home | Faisal Khan | Instances | EC2 | eu-north-1

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instancesv=3;\$case=tags:true%5Cclient:false\$regex=tags:false%5Cclient:false

The screenshot shows the AWS EC2 Instances page. The left sidebar is identical to the Overview page. The main content displays a table titled 'Instances (1) Info' with one row for an instance named 'i-093c4787bab58b49f' which is 'Running'. Below the table is a 'Select an instance' dropdown menu with the same option. The bottom right shows the AWS footer and system tray.



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

The screenshot shows the AWS EKS console interface. On the left, a sidebar navigation includes 'Clusters', 'Amazon EKS Anywhere' (with 'Enterprise Subscriptions'), and 'Related services' (with 'Amazon ECR' and 'AWS Batch'). The main content area displays a table titled 'Clusters (1)'. A blue banner at the top states: 'Node group creation in progress. Faisal-Node is now being created. This process may take several minutes.' The table shows one cluster named 'Faisal' with the following details:

Cluster name	Status	Kubernetes version	Support period	Upgrade policy	Created	Provider
Faisal	Active	1.31 Upgrade now	Standard support until November 26, 2025	Standard	13 minutes ago	EKS

At the bottom of the page, there are links for 'CloudShell', 'Feedback', and a status bar showing '26°C Partly cloudy'.

The screenshot shows the 'Networking' tab for the 'Faisal' cluster. The top navigation bar includes 'Delete cluster', 'Upgrade version', and 'View dashboard'. A message box indicates: 'End of standard support for Kubernetes version 1.31 is November 26, 2025. On that date, your cluster will enter the extended support period with additional fees. For more information, see the [pricing page](#).'. Below this, the 'Cluster info' section provides basic cluster details: Status (Active), Kubernetes version (1.31), Support period (Standard support until November 26, 2025), and Provider (EKS). The 'Networking' tab is selected, showing VPC settings, Subnets, Cluster security groups, and API server endpoint access. The VPC section lists 'vpc-0e545f19effbea822' with an 'Info' link. The Subnets section lists three subnets: 'subnet-049beebe2909cd48f', 'subnet-048d5fb4ac1b8365e', and 'subnet-03d77hb3fd3349800'. The Cluster security group section lists 'sg-0fe4c3fa789510519' with an 'Info' link. The API server endpoint access section lists 'Public server endpoint access' with an 'Info' link and a note: 'Public and private'. The Public access source allowlist is set to '0.0.0.0/0 (open to all traffic)'. The bottom navigation bar includes 'Overview', 'Resources', 'Compute', 'Networking', 'Add-ons', 'Access', 'Observability', 'Update history', and 'Tags'.

Screenshot of the AWS VPC Security Groups console showing the details of a security group named "sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792".

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)

Name	Security group rule ID	IP version	Type	Protocol	Port range
-	sgr-09a714cdcadcd801	-	All traffic	All	All

Screenshot of the AWS VPC Security Groups console showing the "Edit inbound rules" page for the same security group.

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-09a714cdcadcd801	All traffic	All	All	Custom	sg-0fe4c3fa789510519

Add rule | Cancel | Preview changes | Save rules

The screenshot shows the AWS VPC console with the URL eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#ModifyInboundSecurityGroupRules;securityGroupId=sg-0fe4c3fa789510519. The page title is "Edit inbound rules". The breadcrumb navigation shows "VPC > Security Groups > sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792 > Edit inbound rules". The main content area is titled "Inbound rules" with a sub-link "Info". A message states "This security group has no inbound rules." Below this is a button "Add rule". At the bottom right are buttons for "Cancel", "Preview changes", and "Save rules".

This screenshot is identical to the one above, except it includes a new inbound rule. The rule is listed under the "Inbound rules" section with the following details:

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
	Info	Info	Info	All traffic	0.0.0.0/0

A warning message at the bottom left says: "⚠ 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." At the bottom right are buttons for "Cancel", "Preview changes", and "Save rules".

This screenshot shows the same interface as the previous ones, but the "Save rules" button has been clicked. The "Save rules" button is now highlighted in orange. The rest of the page content remains the same.

The screenshot shows the AWS VPC Security Groups console. The URL is eu-north-1.console.aws.amazon.com/vpcconsole/home?region=eu-north-1#SecurityGroup:group-id=sg-0fe4c3fa789510519. The page displays the details of a security group named sg-0fe4c3fa789510519 - eks-cluster-sg-Faisal-2096863792. The details section includes the 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.), owner (195275659054), and VPC ID (vpc-0e545f19effbea822). Below this, there are tabs for Inbound rules, Outbound rules, Sharing - new, VPC associations - new, and Tags. The Inbound rules table shows one rule: sgr-0e92141b589d283c0, IPv4, All traffic, All, and Source 0.0.0.0/0.

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

The screenshot shows the AWS EC2 Instances page with one instance listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IP
Faisal-Node	i-0aac44ac8fcc5c7cf	Running	t3.large	Initializing		eu-north-1b	ec2-13-60-180-105.eu...	13.60.180.105

Details Tab (Selected):

- Instance ID: i-0aac44ac8fcc5c7cf
- Private IP4 address: 13.60.180.105
- Instance state: Running
- Hostname type: IP name: ip-172-31-37-215.eu-north-1.compute.internal
- Private IP4 DNS (IPv4 only): ip-172-31-37-215.eu-north-1.compute.internal
- Instance type: t3.large
- Elastic IP addresses: 172.31.37.215
- Public IP4 DNS: ec2-13-60-180-105.eu-north-1.compute.amazonaws.com
- Public IP: 13.60.180.105

Security Tab:

- IAM Role: NODE-ROLE
- Owner ID: 195275659054
- Launch time: Tue Feb 11 2025 22:13:31 GMT+0530 (India Standard Time)
- Security groups:
 - sg-0d545cc897897743 (eks-remoteAccess-94ca7af2-27cf-1e4d-0afe-2c65e513154)
 - sg-0f6c43fa789510519 (eks-cluster-sg-Faisal-2096865792)
- Inbound rules (Listed):

Faisal | Clusters | Elastic Kuber... Instances | EC2 | eu-north-1

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instancesv=3;\$case=tagstrue%5C;client=false;\$regex=tagsfalse%5C;client=false

aws Search [Alt+S]

Last updated 3 minutes ago Connect Instance state Actions Launch Instances

EC2

Instances (1/1) Info

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-0aac44ac8fc5c7cf Running t3.large Initializing View alarms eu-north-1b ec2-13-60-180-105.eu... 13.60.

i-0aac44ac8fc5c7cf (Faisal-Node)

sgr-07e6955761c884132 22 TCP sg-0eeab265816a26bec 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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CloudShell Feedback 22:18 ENG IN 11-02-2025

The screenshot shows the AWS EC2 Instances page. It displays a single instance named 'Faisal-Node' with the ID 'i-0aac44ac8fc5c7cf'. The instance is currently running and is a t3.large type. It is located in the 'eu-north-1b' availability zone and has a public IP address 'ec2-13-60-180-105.eu...'. The instance was last updated 3 minutes ago. Below the main table, there is a detailed view for the instance, showing its security groups ('sg-0eeab265816a26bec' and 'eks-remoteAccess-94ca7af2-27cf-1e...'). Under the 'Outbound rules' section, it shows a single rule allowing all traffic from 0.0.0.0/0 to port 22 on the instance's security group. The AWS navigation bar at the top includes 'Clusters', 'Elastic Kuber...', 'Instances', 'EC2', and 'eu-north-1'. The bottom navigation bar includes 'CloudShell', 'Feedback', and the current date and time '11-02-2025'.

Faisal | Clusters | Elastic Kuber... Instances | EC2 | eu-north-1

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#SecurityGroupsgroup-name=eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c

aws Search [Alt+S]

Actions Export security groups to CSV Create security group

Find resources by attribute or tag

Clear Filters

Security Groups (1) Info

Security group name = eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c

Name Security group ID Security group name VPC ID Description

sg-0d545cc8978977743 eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c vpc-0e345f19effbea822 Security group for all nodes in the node...

CloudShell Feedback 22:20 ENG IN 11-02-2025

The screenshot shows the AWS EC2 Security Groups page. It displays a single security group named 'eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c'. The security group ID is 'sg-0d545cc8978977743'. The description for the security group is 'Security group for all nodes in the node...'. The AWS navigation bar at the top includes 'Clusters', 'Elastic Kuber...', 'Instances', 'EC2', and 'eu-north-1'. The bottom navigation bar includes 'CloudShell', 'Feedback', and the current date and time '11-02-2025'.

Screenshot of the AWS CloudShell interface showing the AWS Management Console. The user is navigating through the EC2 service to view a specific security group.

The URL in the browser is: eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#SecurityGroup:groupId=sg-0d545cc8978977743

The page displays the details of the security group **sg-0d545cc8978977743 - eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c**. Key information includes:

- 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-0e5f19effbea822

The **Inbound rules** section shows one rule:

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source
sgr-07e6955761c884132	-	-	SSH	TCP	22	sg-0eea8265816a

At the bottom of the page, there are links for **Actions**, **Manage tags**, and **Edit inbound rules**.

Screenshot of the AWS CloudShell interface showing the AWS Management Console. The user is editing the inbound rules for the security group.

The URL in the browser is: eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroup:securityGroupId=sg-0d545cc8978977743

The page title is **Edit inbound rules**. The user has added a new rule:

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	Custom	sg-0eea8265816a26bec

At the bottom of the page, there are buttons for **Add rule**, **Cancel**, **Preview changes**, and **Save rules**.

Screenshot of the AWS CloudShell interface showing the AWS Management Console. This is a duplicate screenshot of the previous one, showing the same configuration steps for modifying inbound security group rules.

The screenshot shows the AWS CloudShell interface with the following details:

- Region: Europe (Stockholm)
- User: Faisal Khan
- Page: Instances | EC2 | eu-north-1 | ModifyInboundSecurityGroupRules
- URL: eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0d545cc8978977743
- Section: Edit inbound rules
- Description: Inbound rules control the incoming traffic that's allowed to reach the instance.
- Table header: Inbound rules
- Table body: This security group has no inbound rules.
- Buttons: Add rule, Cancel, Preview changes, Save rules

The screenshot shows the AWS CloudShell interface with the following details:

- Region: Europe (Stockholm)
- User: Faisal Khan
- Page: Instances | EC2 | eu-north-1 | ModifyInboundSecurityGroupRules
- URL: eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0d545cc8978977743
- Section: Edit inbound rules
- Description: Inbound rules control the incoming traffic that's allowed to reach the instance.
- Table header: Inbound rules
- Table body:
 - Security group rule ID: -
 - Type: All traffic
 - Protocol: All
 - Port range: All
 - Source: Anywhere
 - Description: -
- Buttons: Add rule, Delete, Preview changes, Save rules
- Warning message: 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.

The screenshot shows the AWS CloudShell interface with the following details:

- Region: Europe (Stockholm)
- User: Faisal Khan
- Page: Instances | EC2 | eu-north-1 | ModifyInboundSecurityGroupRules
- URL: eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-0d545cc8978977743
- Section: Edit inbound rules
- Description: Inbound rules control the incoming traffic that's allowed to reach the instance.
- Table header: Inbound rules
- Table body: This security group has no inbound rules.
- Buttons: Add rule, Cancel, Preview changes, Save rules

The screenshot shows the AWS CloudShell interface with the following details:

- EC2 > Security Groups**: sg-0d545cc8978977743 - eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c
- Inbound security group rules successfully modified on security group [sg-0d545cc8978977743 | eks-remoteAccess-94ca7af2-27cf-1e4d-0a9e-2c565e31e34c]**
- Details** tab:
 - 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-0e545f19effba822
 - Owner**: 195275659054
 - Inbound rules count**: 1 Permission entry
 - Outbound rules count**: 1 Permission entry
- Inbound rules** tab: Shows 1 rule (sgr-04b0a647bc8b76aa2) allowing All traffic on All ports from 0.0.0.0/0.

Step 12: Project Ki GitHub Repository Clone Karen

1. Laptop Mein Documents Folder Mein Jao

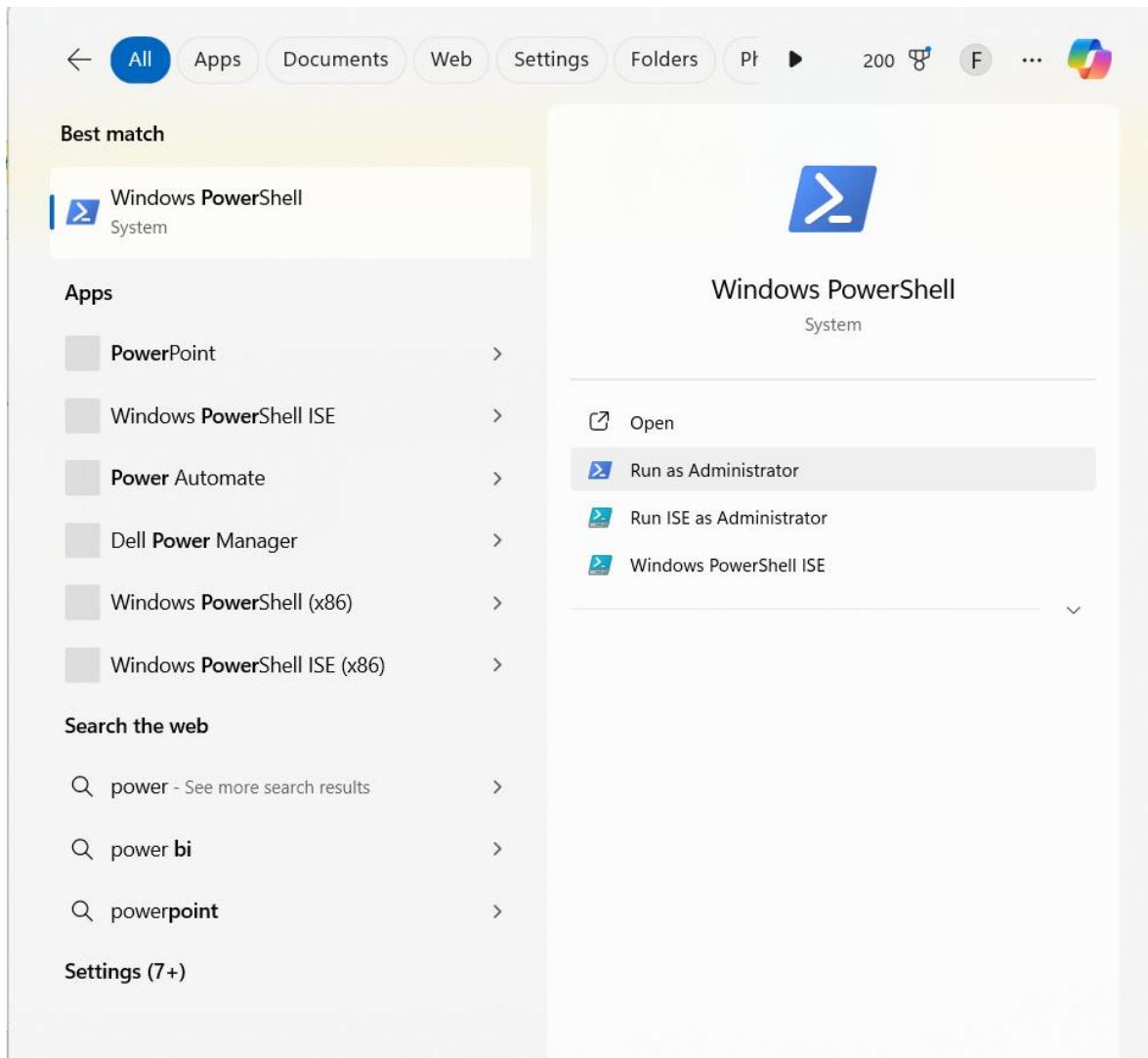
YE KUCH ISTARHA LEGAGA

The screenshot shows a Windows File Explorer window with the following details:

- Path**: OneDrive > Faisal - Personal > Documents
- Items** (22 items):
 - ALL KUBERNETES NOTES
 - controller
 - Custom Office Templates
 - database
 - EKS-CLUSTER-LOAD-BALANCER
 - EKS-CLUSTER-NODEPORTS
 - fat
 - git
 - KEY PAIRS
 - models
 - node_modules
 - rcclone
 - routes
 - Techdome-backend
 - templates
 - TERRAFORM_PROJECT
 - test
- Toolbar** includes New, Sort, View, Preview, and Search Documents.
- System Tray** shows weather (26°C Partly cloudy), network status, battery level (22:38), and date (11-02-2025).

2. PowerShell Ko "Run as Administrator" Open Karo

YE KUCH ISTARHA LAGEGA

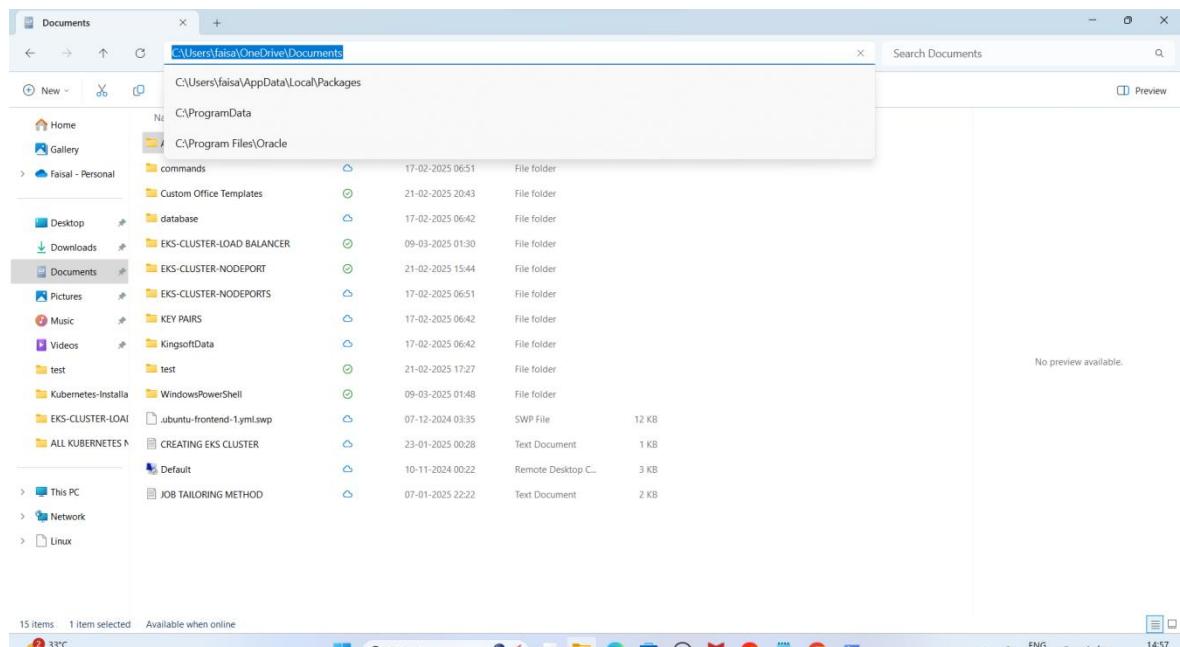


3. PowerShell me cd command ka use karke Documents folder ka path paste karein.

Jaisa ki mere case me, path kuch aisa hai

```
cd C:/Users/faisa/OneDrive/Documents
```

YE KUCH ISTARHA LAGEGA



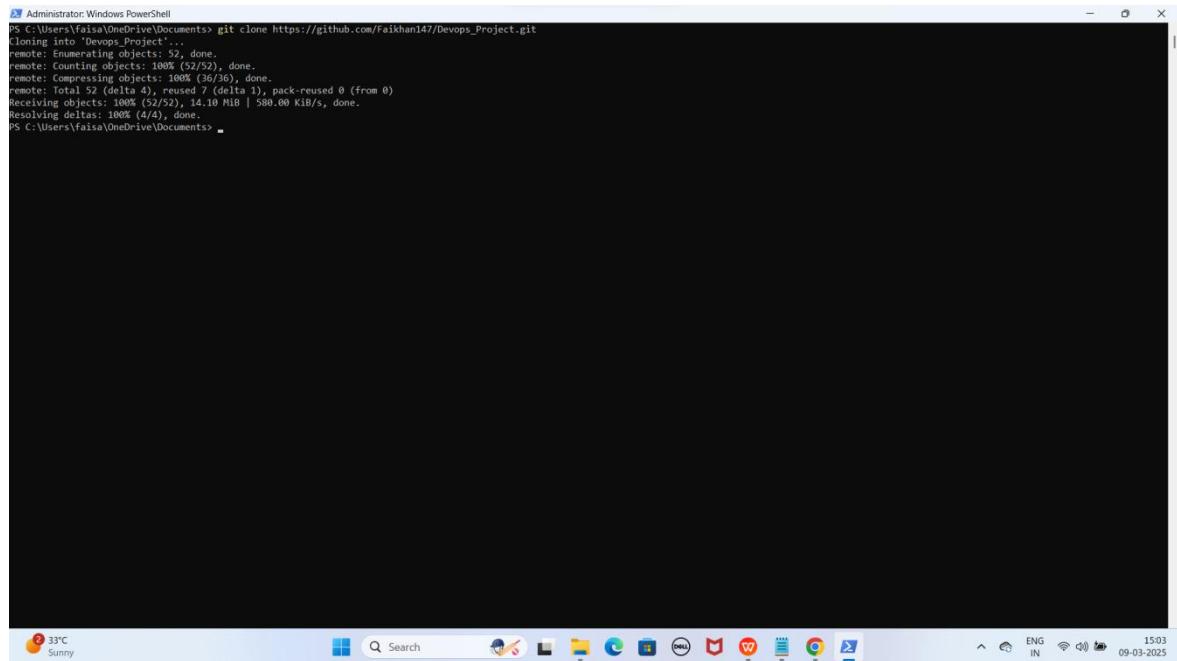
NOTE: Isse aap Documents folder me Navigate ho jaoge.

4. GitHub Repository Clone Karo

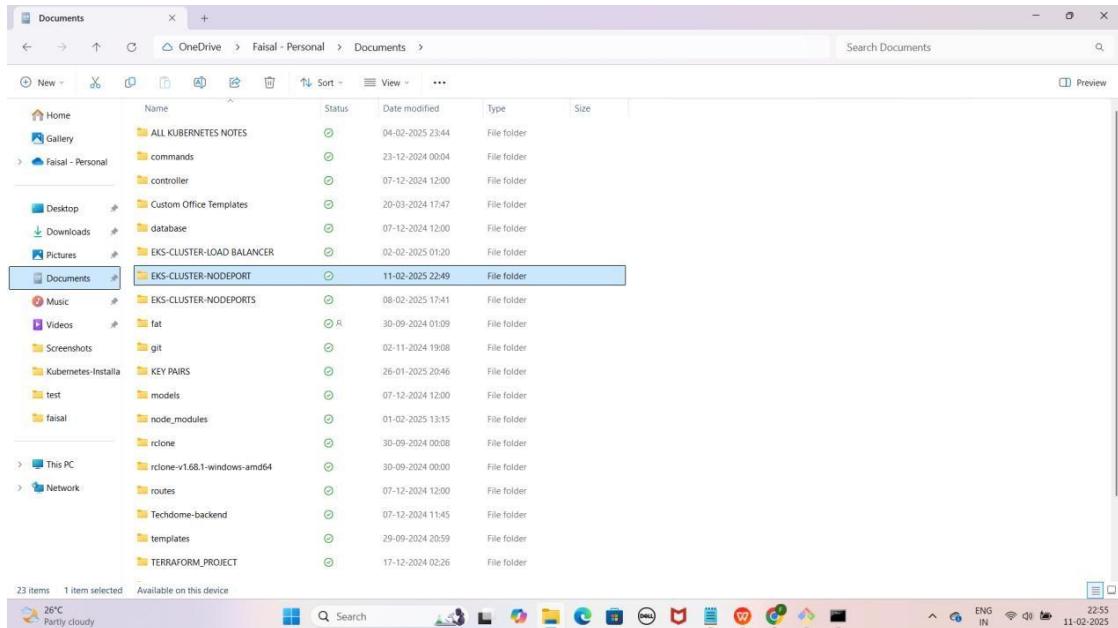
As it is niche diya gaya URL copy karo aur PowerShell me paste karo:

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

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents> git clone https://github.com/Faisalkhan45/EKS-CLUSTER-NODEPORT.git
Cloning into 'EKS-CLUSTER-NODEPORT...'...
remote: Enumerating objects: 52, done.
remote: Counting objects: 100% (52/52), done.
remote: Compressing objects: 100% (36/36), done.
remote: Total 36 (delta 4), reused 7 (delta 1), pack-reused 0 (from 0)
Receiving objects: 100% (52/52), 14.10 MiB | 580.00 KiB/s, done.
Resolving deltas: 100% (4/4)
PS C:\Users\faisa\OneDrive\Documents>
```



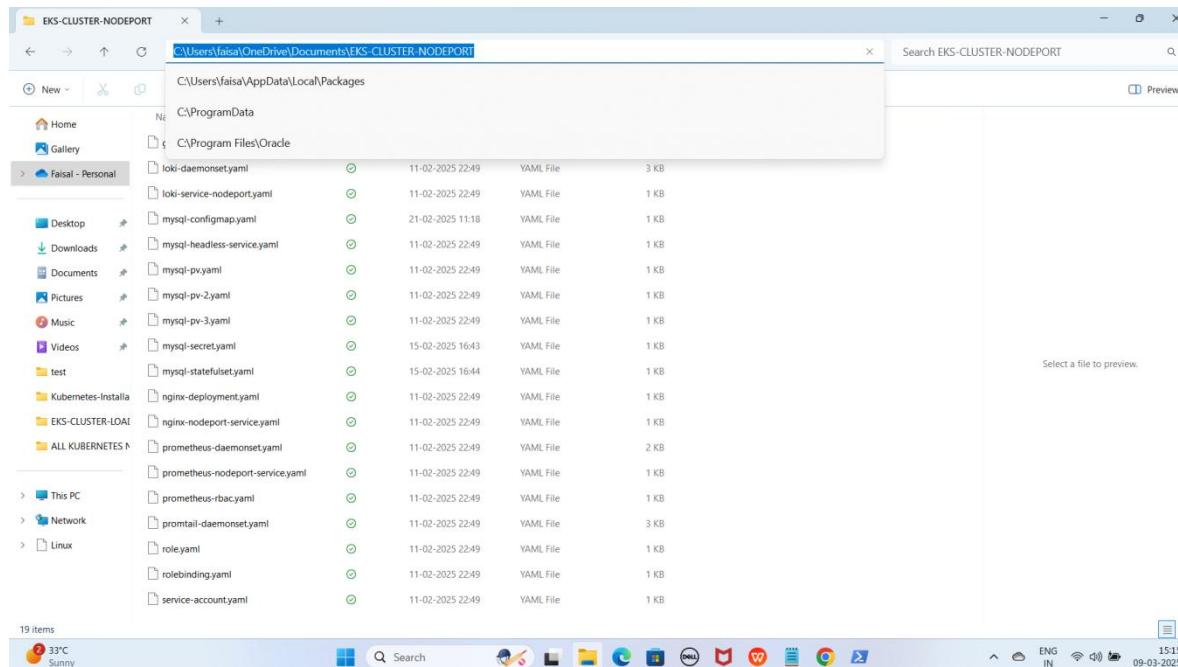
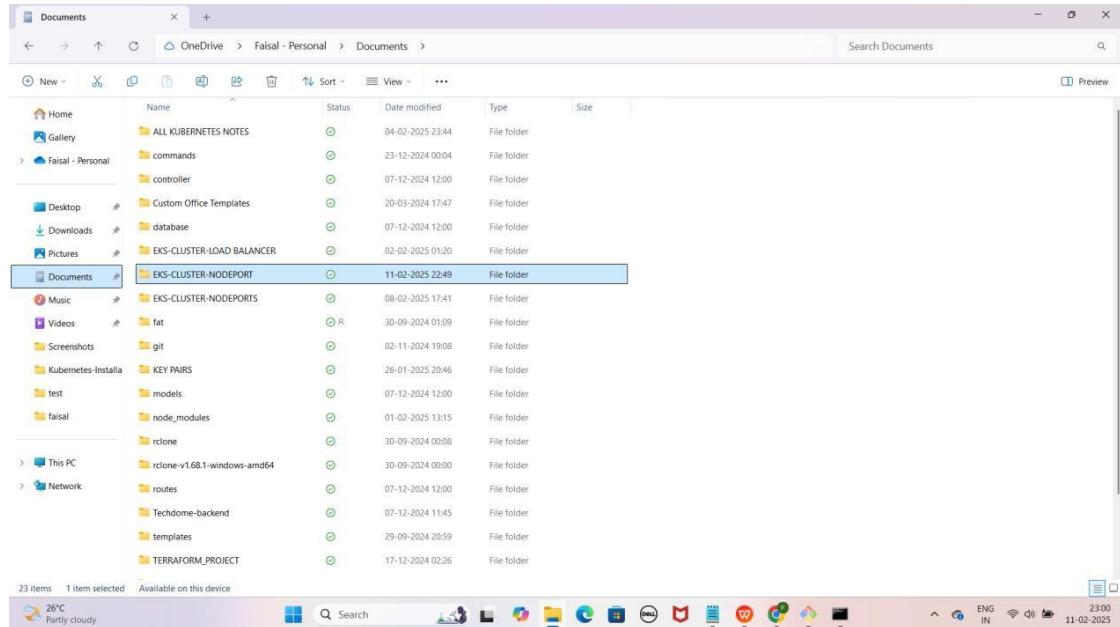
NOTE: Repository clone hone ke baad, aapko "EKS-CLUSTER-NODEPORT" naam ka folder Documents me dikhega

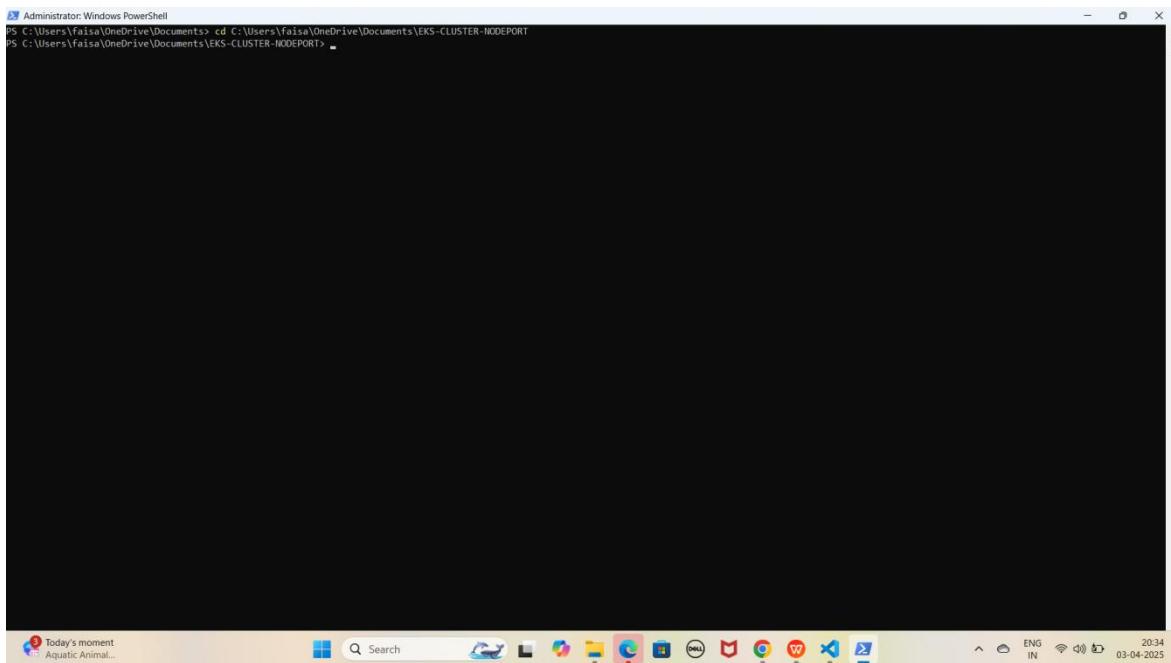
5. EKS-CLUSTER-NODEPORT Folder Me Jao PowerShell me cd command ka use karo aur apna path paste karo

Jaise ki mere case me path kuch aisa hogा

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

YE KUCH ISTARHA LAGEGA





```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents> cd C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

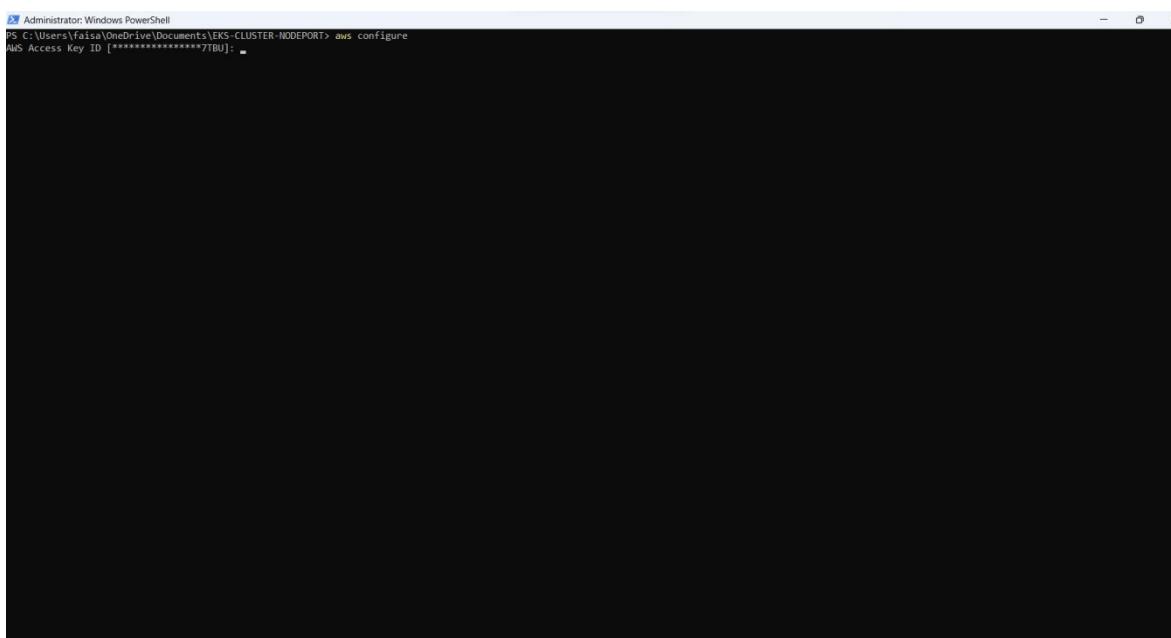
NOTE: Is command se aap PowerShell me EKS-CLUSTER-NODEPORT folder me Navigate ho jaoge.

Step 13: AWS CLI Configure Karo

1. Configure karne ke liye ye command run karo

```
aws configure
```

YE KUCH ISTARHA LAGEGA

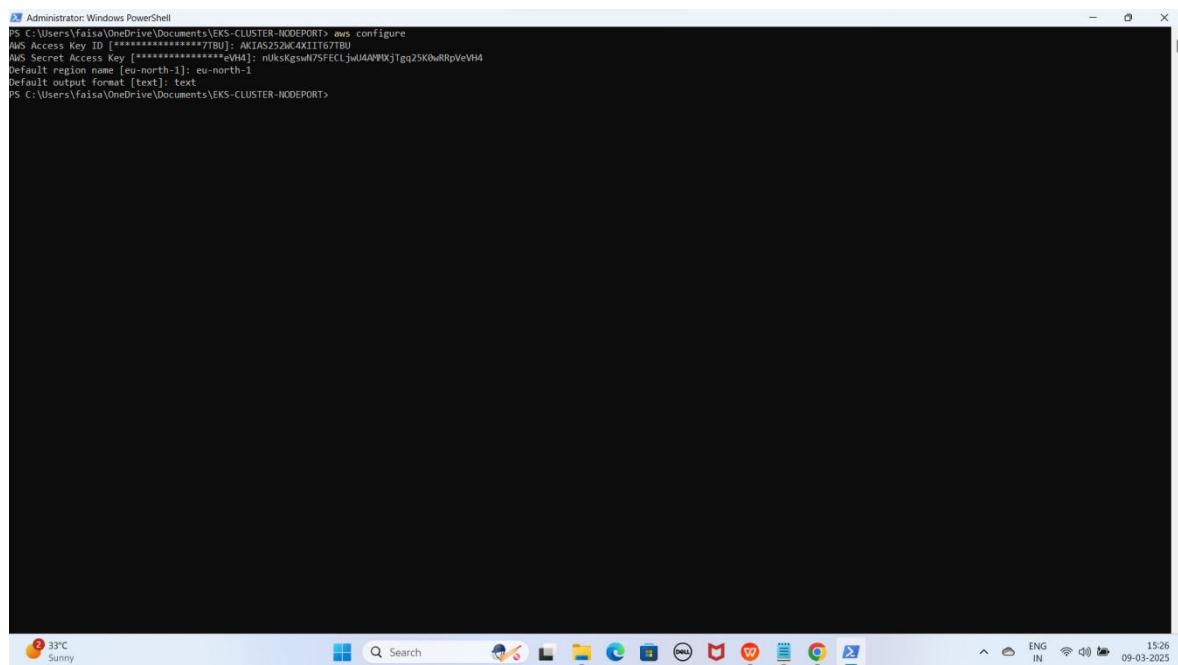


```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> aws configure
AWS Access Key ID [*****7jBU]:
```

2. Details Enter Karo

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

YE KUCH ISTARHA LAGEGA



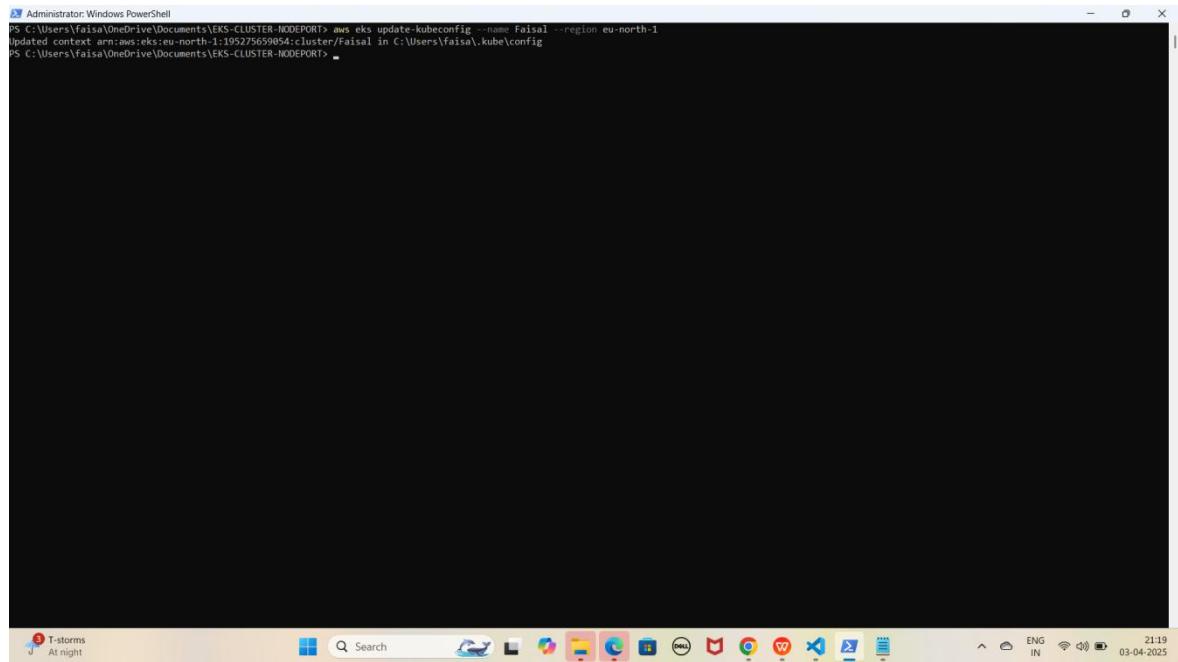
```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> aws configure
AWS Access Key ID [*****7IBU]: AKIAS252w4XLTg7IBU
AWS Secret Access Key [*****eVH4]: n0kskgsWl75FECIjwIA4AMWxjTgq2SK0wRrpVeVH4
Default region name [eu-north-1]: eu-north-1
Default output format [text]: text
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

The screenshot shows a Windows PowerShell window titled "Administrator: Windows PowerShell". The command "aws configure" is run, and the output displays the configuration details: AWS Access Key ID (AKIAS252w4XLTg7IBU), AWS Secret Access Key (n0kskgsWl75FECIjwIA4AMWxjTgq2SK0wRrpVeVH4), Default region name (eu-north-1), and Default output format (text). The PowerShell window is set against a background of a desktop environment with icons like File Explorer, Task View, and Start.

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



```
Administrator: Windows PowerShell
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT> aws eks update-kubeconfig --name Faisal --region eu-north-1
Updated context arn:aws:eks:eu-north-1:195275659054:cluster/Faisal in C:\Users\faisal\.kube\config
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

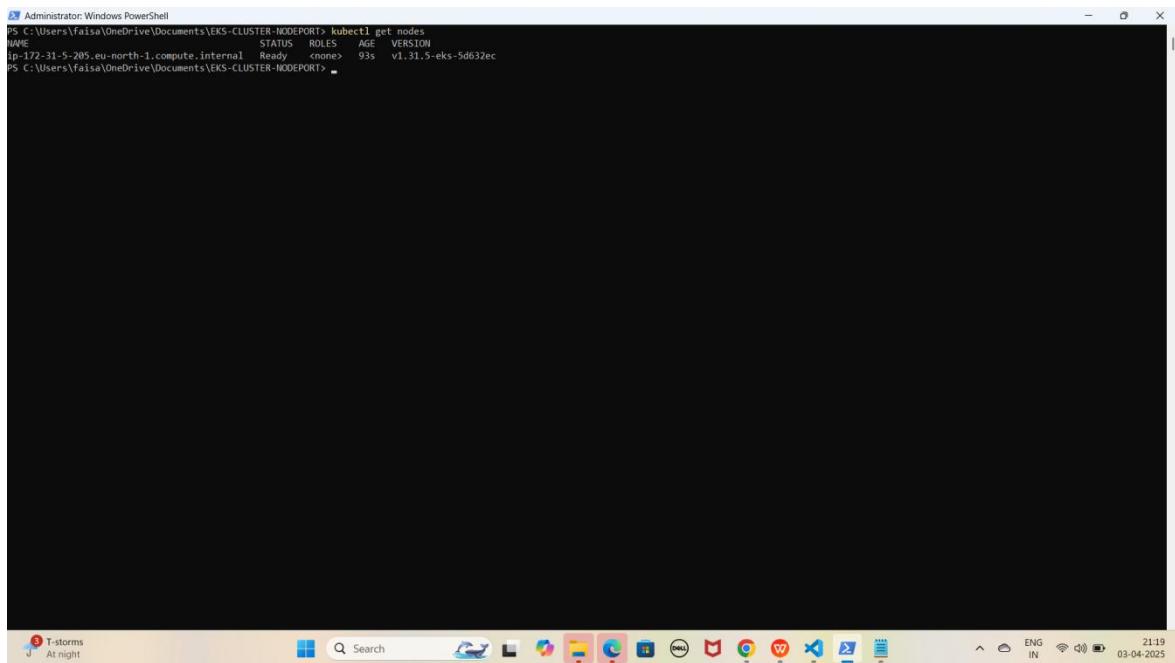
NOTE: Yaha par Faisal mere cluster ka name hai aap ke case me cluster
ka name alag hosakta hai to according to your cluster name
command aapke cluster name se Replace karo or ye hum
Stockholm region me karrahe hai

Step 14: Nodes Check Karna

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

kubectl get nodes

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEREPORT> kubectl get nodes
NAME           STATUS   ROLES      AGE   VERSION
ip-172-31-5-205.eu-north-1.compute.internal   Ready    <none>   93s   v1.31.5-eks-5d632ec
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEREPORT>
```

**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.

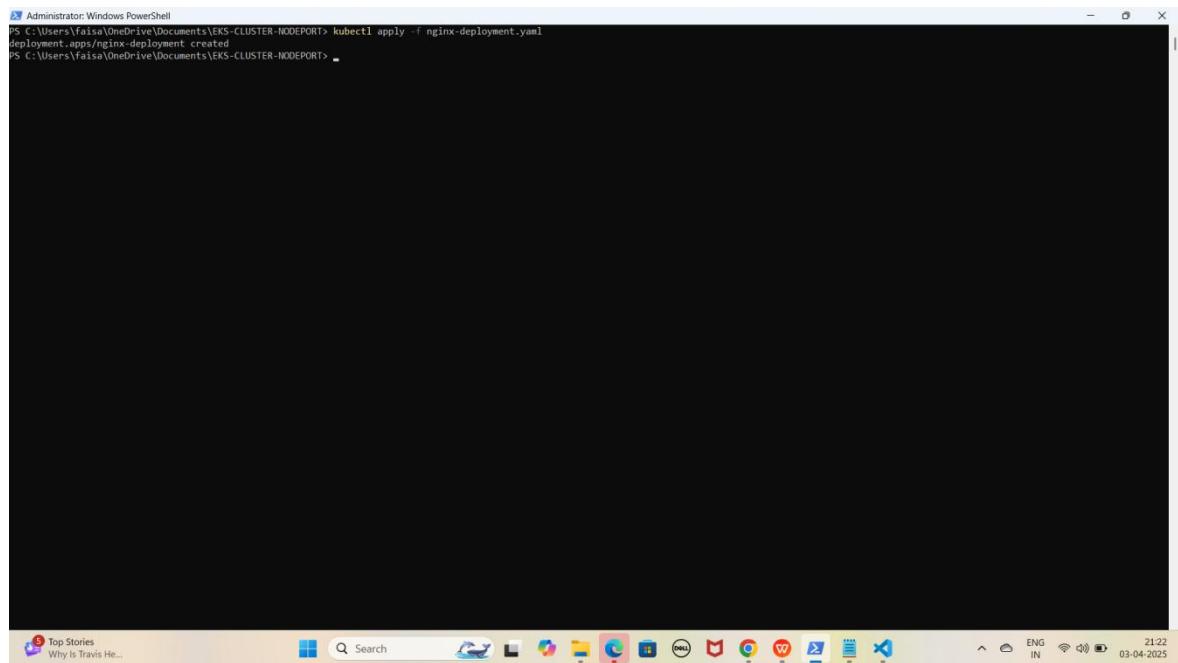
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

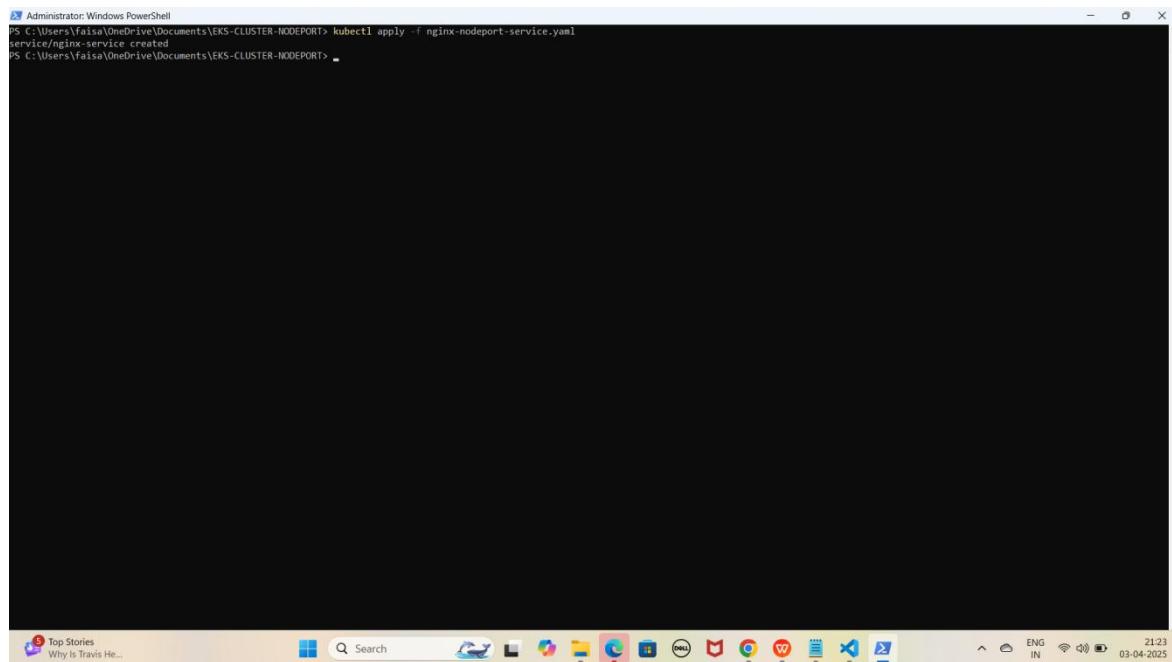
JAISE KI:-

```
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

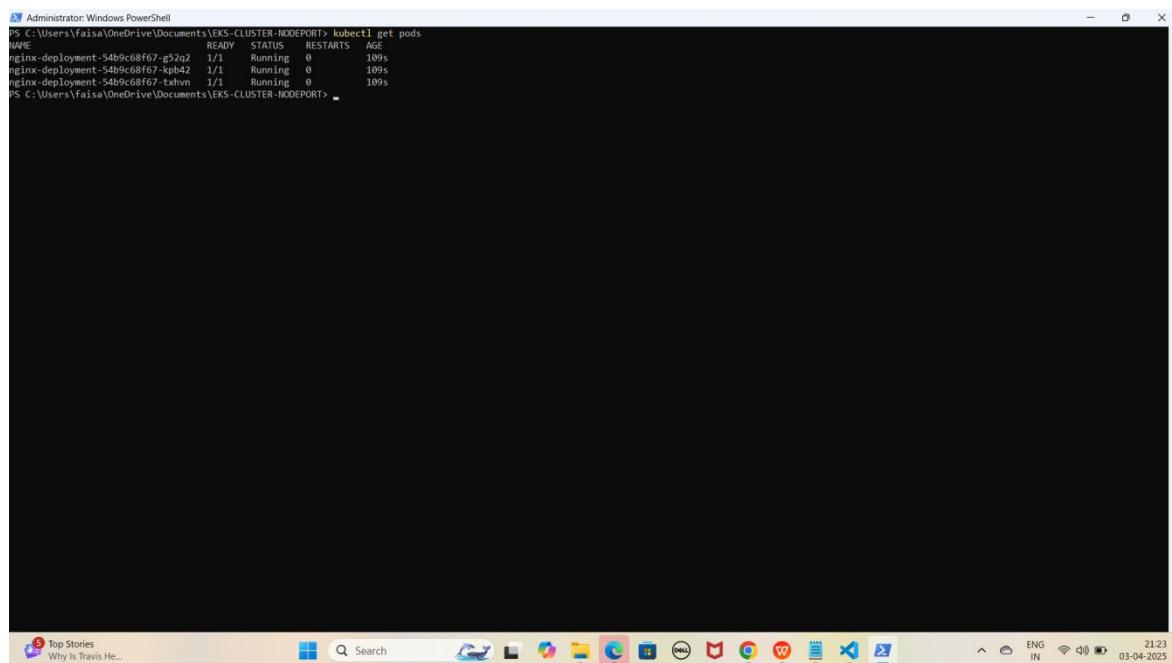


```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f nginx-nodeport-service.yaml
service/nginx-service created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

1. Pods check karne ke liye ye command run kariye

kubectl get pods

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl get pods
NAME           READY   STATUS    RESTARTS   AGE
nginx-deployment-549c68f67-g52q2  1/1     Running   0          109s
nginx-deployment-549c68f67-kpb42  1/1     Running   0          109s
nginx-deployment-549c68f67-txhvn  1/1     Running   0          109s
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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

2. Services check karne ke liye ye commad run kariye

kubectl get services

YE KUCH ISTARHA LAGEGA

```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl get services
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
kubernetes   ClusterIP   10.100.0.1    <none>        443/TCP     42m
nginx-service   NodePort    10.100.223.3  <none>        80:30807/TCP  105s
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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 hogा

NGINX NodePort Address :

<http://EKS-Node-Public IP:30007>

YE KUCH ISTARHA LAGEGA

The screenshot shows the AWS EC2 Instances page. The main table lists one instance:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
Faisal-Node	i-0c30c439c518870fc	Running	t3.large	3/3 checks passed	View alarms	eu-north-1c	ec2-13-5...

Below the table, the instance details for 'i-0c30c439c518870fc (Faisal-Node)' are shown. The 'Details' tab is selected, displaying the following information:

- Instance summary**: Instance ID: i-0c30c439c518870fc, IPv6 address: -, Instance state: Running.
- Public IPv4 address copied**: Address: 13.50.17.193.
- Private IPv4 addresses**: 172.31.5.205, 172.31.9.191.
- Public IPv4 DNS**: ec2-13-50-17-193.eu-north-1.compute.amazonaws.com.

The browser status bar at the bottom indicates the URL is 13.50.17.193:3000.

The screenshot shows a web browser displaying the Google homepage. The address bar shows the URL 13.50.17.193:3000. The browser interface includes a search bar, a toolbar with various icons, and a taskbar at the bottom.

Google search results for "Google" are displayed, showing the classic Google logo and a snippet of the Google homepage content.

The browser status bar at the bottom indicates the URL is 13.50.17.193:3000.



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

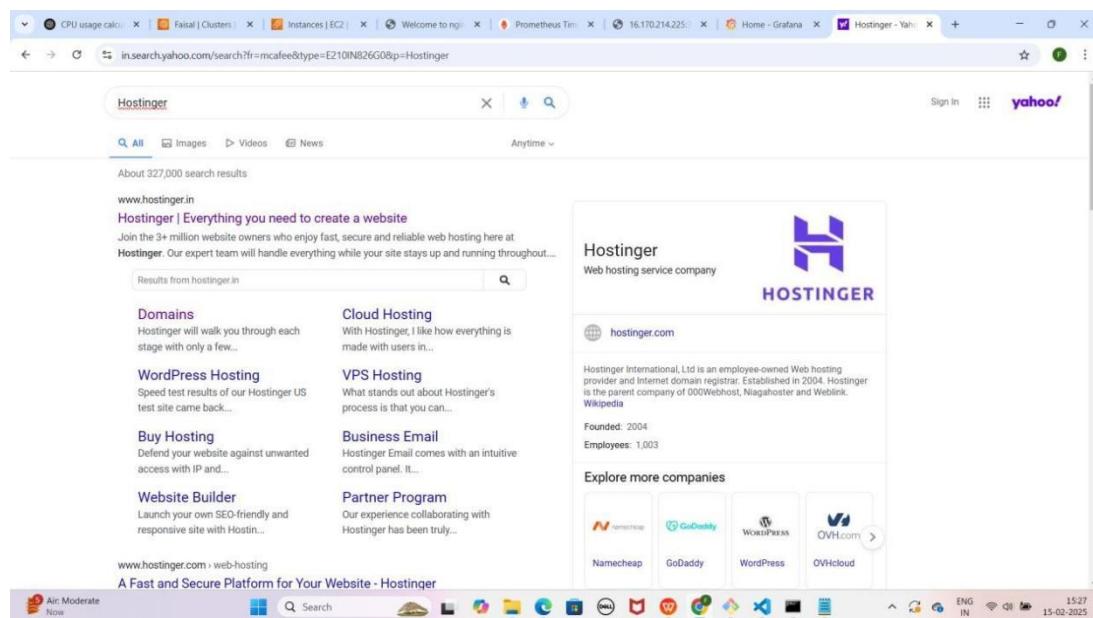
Step 1: Domain Name Provider Choose Karo

- 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

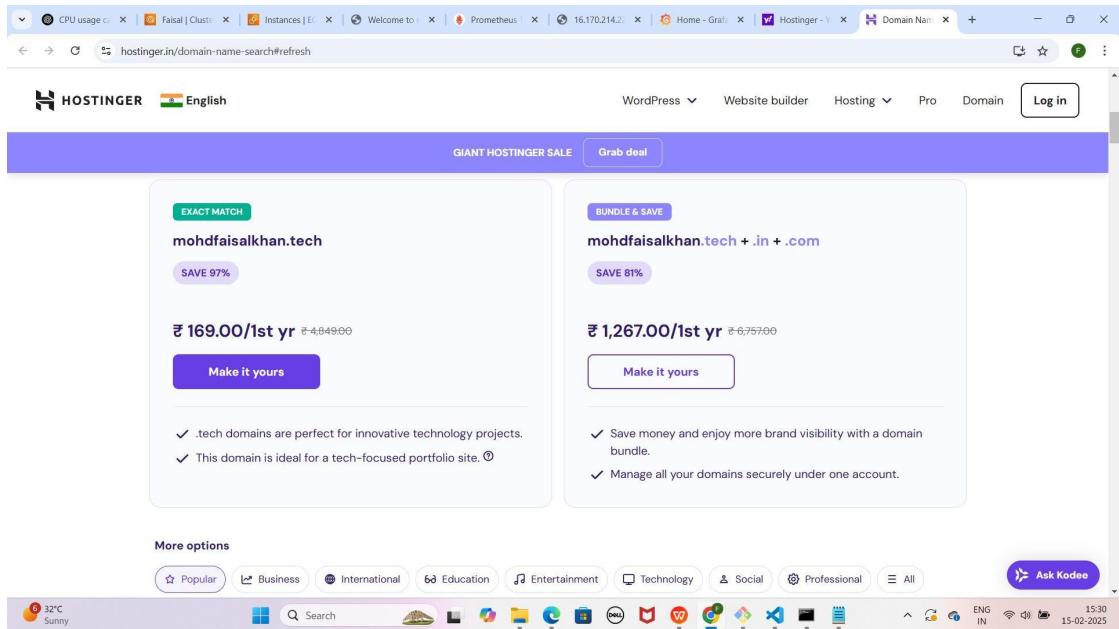
- **Google** pe jao aur "**Hostinger**" search karo
- "**Domains**" pe click karo
- Search bar me apna desired **domain** likho (Jaise: **mohdfaiskhan.tech**)
- (Aapke Name se Search Karo)
- **Search button** pe **click** karo

YE KUCH ISTARHA LAGEGA



The screenshot shows the Hostinger domain search interface. At the top, there's a purple header with the Hostinger logo, language selection (English), and navigation links for WordPress, Website builder, Hosting, Pro, Domain, and Log in. A banner at the top says "GIANT HOSTINGER SALE" with a "Grab deal" button. Below the banner, a large heading says "Search and buy a domain in minutes". A sub-instruction below it reads: "It's easy – simply enter your desired domain name and instantly check its availability. Register it before someone else will." There are two buttons: "Find new domain" and "Generate domain using AI". A search input field contains the placeholder "Type in that perfect domain name". To the right of the search field is a red "Search" button. Below the search field, there's a row of six domain extension boxes: ".in" (₹ 799.00 ₹ 119.00), ".com" (₹ 179.00 ₹ 499.00), ".online" (₹ 2,859.00 ₹ 169.00), ".shop" (₹ 2,859.00 ₹ 89.00), ".org" (₹ 1,999.00 ₹ 699.00), and ".XYZ" (₹ 1,999.00 ₹ 179.00). A note at the bottom states: "Free WHOIS privacy protection is included with every eligible domain registration." An "Ask Kodee" button is also present.

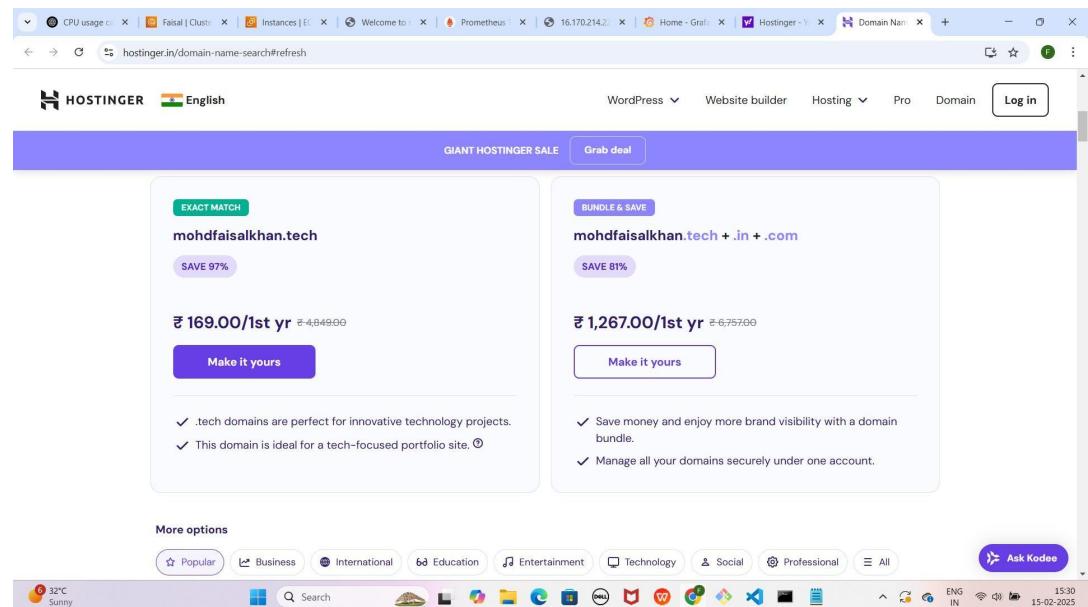
This screenshot shows the same Hostinger domain search interface as the first one, but with a different search term. The search input field now contains "mohdfaikhan.tech". The rest of the interface, including the banner, extension options, and footer information, remains identical to the first screenshot.



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



Screenshot of a web browser showing a domain registration cart page for 'mohdfaikhan.tech' on Hostinger.

Your cart

mohdfaikhan.tech
.TECH domain registration

Period: 2 years (SAVE 48%) ₹5,018.00
Registration renews at ₹4,849.00/year on 15/02/2027

FREE domain privacy protection included (Info)

Subtotal ₹9,690.00 ₹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	.in	.org	.online
₹719.00	₹729.00	₹1,299.00	₹2,059.00
₹749.00/year	₹349.00/year	₹699.00/year	₹169.00/year

Ask Kodee

32°C Sunny Search ENG IN 15:31 15-02-2025

Screenshot of a web browser showing a domain registration cart page for 'mohdfaikhan.tech' on Hostinger.

Your cart

mohdfaikhan.tech
.TECH domain registration

Period: 1 year (SAVE 97%) ₹169.00
15/02/2026

2 years included (Info)
3 years

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	.in	.org	.online
₹719.00	₹729.00	₹1,299.00	₹2,059.00
₹749.00/year	₹349.00/year	₹699.00/year	₹169.00/year

Ask Kodee

32°C Sunny Search ENG IN 15:32 15-02-2025

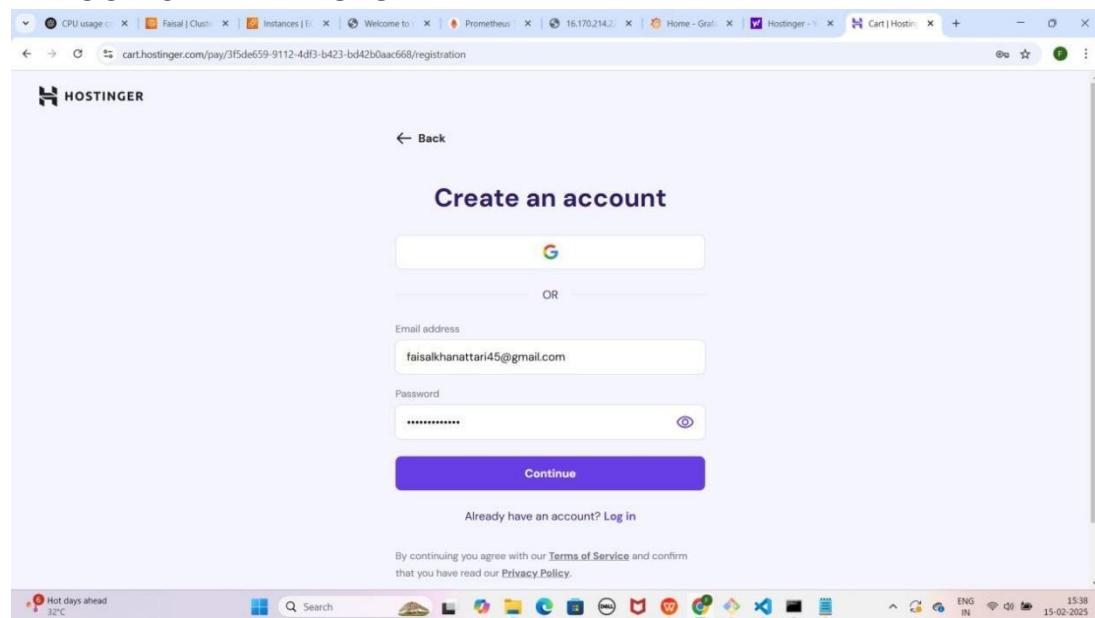
Step 4: Account Create Karo

- **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



Screenshot of a web browser showing the Hostinger checkout page for a domain purchase.

The URL in the address bar is cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout.

The page displays the following information:

Billing address

- First name*: [Input field]
- Last name*: [Input field]
- Phone number:
+91 (India) [Dropdown] 00000000
- Country of residence*: India [Dropdown]
- Address*: [Input field]
City*: [Input field]
- State*: [Input field]
ZIP code*: [Input field]
- Add company details [Link]

Order summary

mohdfaikhan.tech

Description	Amount
Domain registration - 1 year	₹169.00
ICANN fee	₹14.93
Domain privacy protection	₹0.00
Subtotal	₹183.93
Discount -96%	-₹4,680.00
Taxes (Calculated after billing information)	
Est. total	₹183.93

[Have a coupon code?](#)

[Ask Kodee](#)

At the bottom of the browser window, the taskbar shows various pinned icons and the system status bar indicates ENG IN 15:39 15-02-2025.

Screenshot of a web browser showing the Hostinger checkout page for a domain purchase.

The URL in the address bar is cart.hostinger.com/pay/3f5de659-9112-4df3-b423-bd42b0aac668/checkout.

The page displays the following information:

Billing address

- First name*: Faisal [Input field]
Last name*: Khan [Input field]
- Phone number:
+91 (India) [Dropdown] 8374452927
- Country of residence*: India [Dropdown]
- Address*: Falaknuma [Input field]
City*: Hyderabad [Input field]
- State*: Telangana [Input field]
ZIP code*: 500053 [Input field]
- Add company details [Link]

Order summary

mohdfaikhan.tech

Description	Amount
Domain registration - 1 year	₹169.00
ICANN fee	₹14.93
Domain privacy protection	₹0.00
Subtotal	₹183.93
Discount -96%	-₹4,680.00
Taxes (Calculated after billing information)	
Est. total	₹183.93

[Have a coupon code?](#)

[Ask Kodee](#)

At the bottom of the browser window, the taskbar shows various pinned icons and the system status bar indicates ENG IN 15:40 15-02-2025.

Screenshot of the Hostinger checkout page (Step 1: Billing address).

Billing address

First name*	Last name*
Faisal	Khan
Phone number	+91 (India) 8374452927
Country of residence*	India
Address*	Falaknuma
City*	Hyderabad
State*	Telangana
ZIP code*	500053

Add company details (Optional)

Continue

Order summary

mohdfaikhan.tech	
Domain registration - 1 year	₹4,849.00 ₹169.00
ICANN fee	₹14.93
Domain privacy protection <small>(Optional)</small>	₹0.00
Subtotal	₹4,863.93 ₹183.93
Discount - 96%	-₹4,680.00
Taxes <small>(Calculated after billing information)</small>	₹33.11
Est. total	₹183.93

[Have a coupon code?](#)

Ask Koddee

Finance headline India Wholesale...

Search bar and system tray are visible at the bottom.

Screenshot of the Hostinger checkout page (Step 2: Payment).

Billing address

Faisal Khan
+91 8374452927
India, TS, Hyderabad
Falaknuma, 500053

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

mohdfaikhan.tech	
Domain registration - 1 year	₹4,849.00 ₹169.00
ICANN fee	₹14.93
Domain privacy protection <small>(Optional)</small>	₹0.00
Subtotal	₹4,863.93 ₹183.93
Discount - 96%	-₹4,680.00
Taxes <small>(Optional)</small>	₹33.11
Total	₹183.93

[Have a coupon code?](#)

Ask Koddee

Finance headline India Wholesale...

Search bar and system tray are visible at the bottom.

The screenshot shows the Hostinger checkout process. On the left, there's a 'Billing address' section with the name 'Faisal Khan' and address 'India, TG, Hyderabad, Falaknuma, 500053'. Below it is a 'Payment' section with dropdown menus for 'Card' (VISA), 'UPI' (UPI), 'PayTM', 'Net Banking', and 'PayPal'. A note says '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.' To the right is an 'Order summary' table:

	Amount
Domain registration - 1 year	₹169.00
ICANN fee	₹14.93
Domain privacy protection	₹0.00
Subtotal	₹183.93
Discount -9%	-₹16.80
Taxes	₹33.11
Total	₹217.04

At the bottom, there's a link 'Have a coupon code?' and a footer with copyright information and links to 'Ask Kodas'.

The screenshot shows a payment confirmation page. On the left, a 'Continue payment via UPI' form asks for 'Phone' (8374452927) and 'UPI ID' (Enter Your UPI ID). Below are payment method icons for G Pay, PhonePe, and Google Pay. On the right is an 'Order Summary' table:

Order Summary	
Receipt ID: hb_26018865	
.TECH Domain (billed every year) - mohdfaikhan.tech	₹169.00
Domain WHOIS Privacy Protection	₹0.00
ICANN fee (billed every year)	₹14.93
GST 18%	₹33.11
Credits	₹0.00
Total	₹ 217.04

At the bottom, there's a dark bar with system status icons and a timestamp '15:49 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.

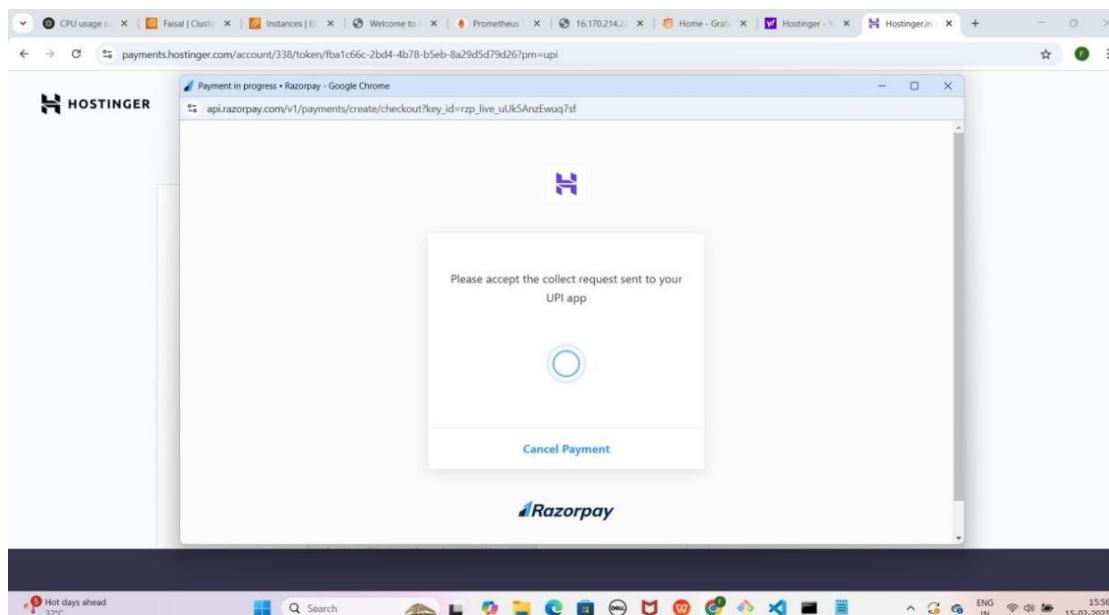
YE KUCH ISTARHA LAGEGA

This is a UPI AutoPay payment

You'll be charged ₹ 217.04 today.

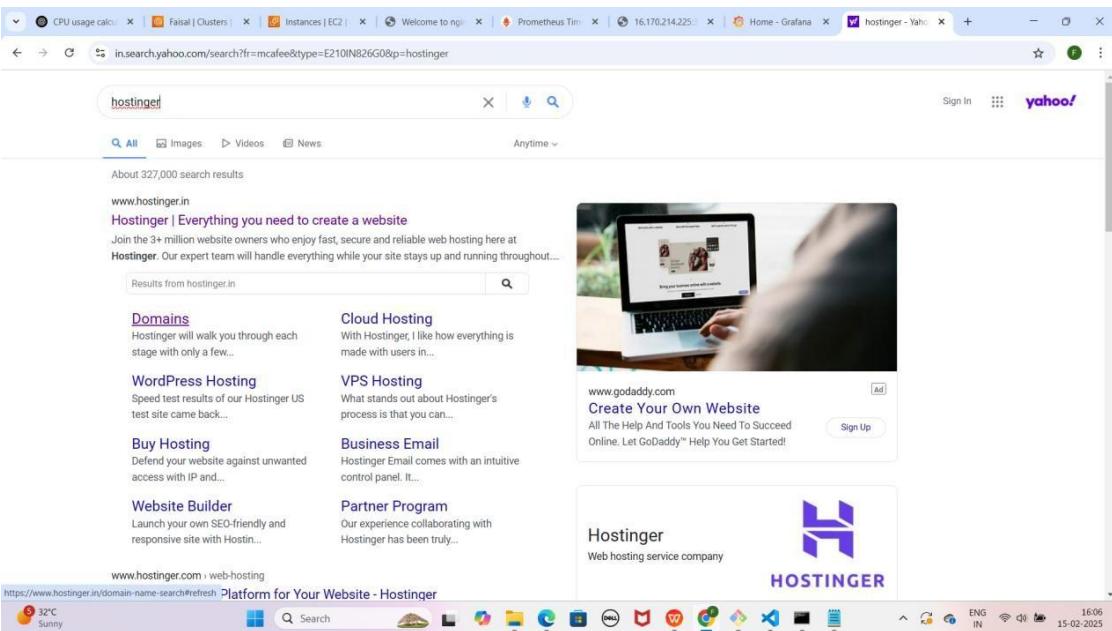
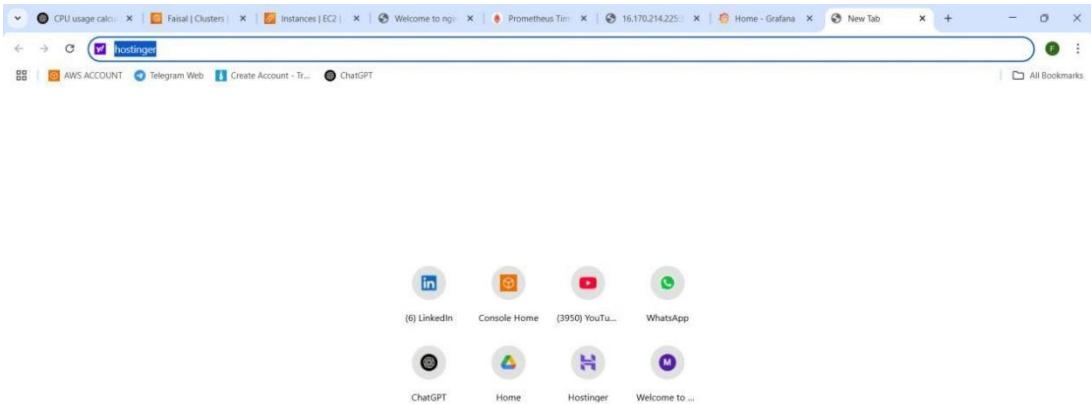
When you go to approve your payment, you will see the transaction limit of ₹ 7,500.00. **You won't be charged this amount.** The limit is set to automate your future payments (if any) and set up UPI AutoPay. Cancel AutoPay anytime.

Continue



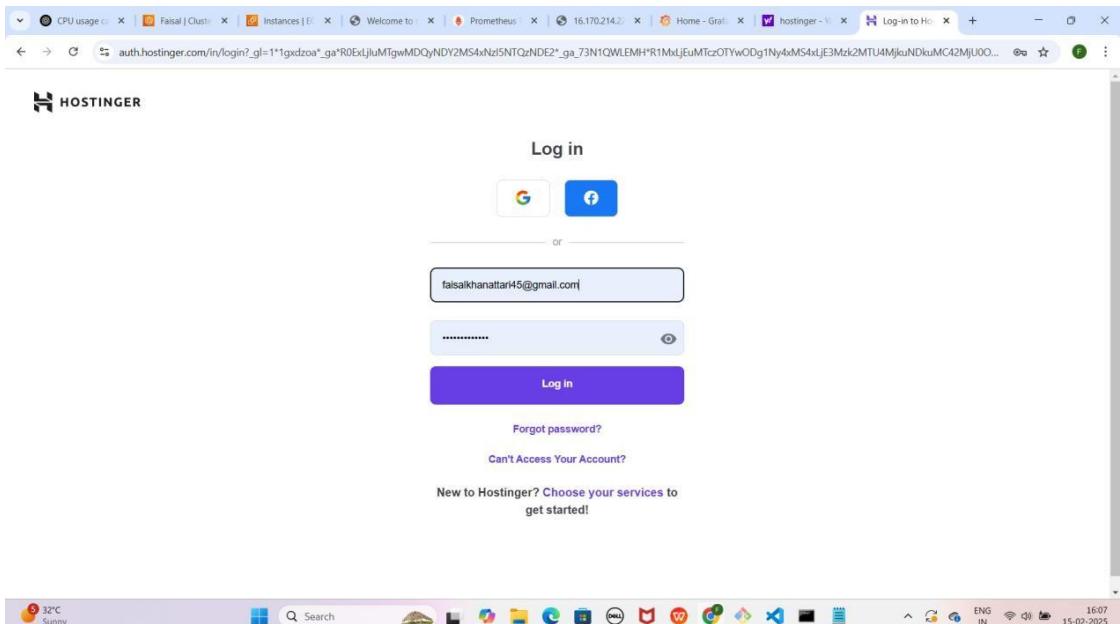
- **PhonePe** open karo aur **payment** complete karo
- **Browser** me new tab open karo aur **Google** me **Hostinger** search karo
- **Hostinger website** pe jao aur "Domains" pe **click** karo
- **Top right corner** pe "Log in" pe **click** karo
- **Email** aur **password** enter karo jo tumne pehle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

YE KUCH ISTARHA LAGEGA



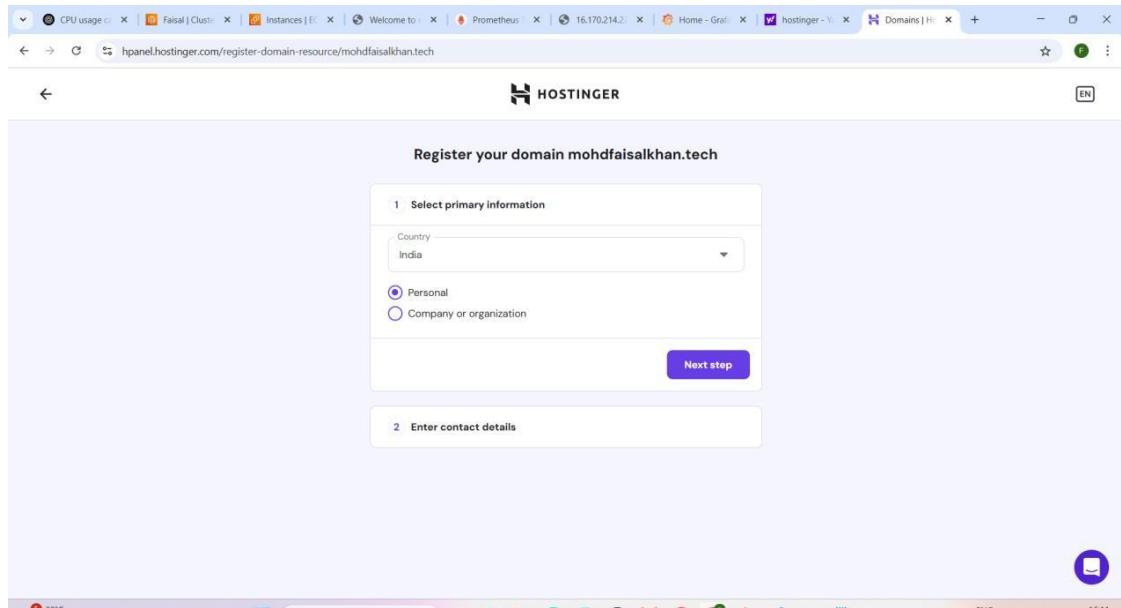
The screenshot shows the Hostinger domain search interface. At the top, there's a navigation bar with links for CPU usage, Faisal Cluster, Instances, Welcome to, Prometheus, Home - Grafana, hostinger.in, Domain Name, and Log in. Below the navigation is a purple header with the Hostinger logo, a flag icon for English, and a "Giant Hostinger Sale" banner with a "Grab deal" button. The main heading is "Search and buy a domain in minutes". A sub-instruction reads: "It's easy – simply enter your desired domain name and instantly check its availability. Register it before someone else will." Below this are two buttons: "Find new domain" and "Generate domain using AI". A search input field contains the placeholder "Type in that perfect domain name". To the right of the input field is a red "Search" button. Below the input field are six domain extension options: ".in" (₹799.00), ".com" (₹499.00), ".online" (₹2,659.00), ".shop" (₹89.00), ".org" (₹1,999.00), and ".xyz" (₹179.00). A note at the bottom states: "Free WHOIS privacy protection is included with every eligible domain registration." The status bar at the bottom shows the URL https://auth.hostinger.com/in/login, the weather (32°C, Sunny), and the date/time (15-02-2025, 16:07).

The screenshot shows the Hostinger login interface. The title is "Log in". There are two social login buttons: Google and Facebook. Below them is a "or" link. There are two input fields: "Email" and "Password", each with a visibility toggle icon. A large blue "Log in" button is centered below the password field. Below the log-in form are three links: "Forgot password?", "Can't Access Your Account?", and "New to Hostinger? Choose your services to get started!". The status bar at the bottom shows the URL https://auth.hostinger.com/in/login?_gl=1*1gxdzoa*_ga*R0ExLjluMTgwMDQyNDY2MS4xNzI5NTQzNDE2*_ga_73N1QWLEMH*R1MxLjEuMtczOTYwODg1Ny4xMS4xLjE3Mzk2MTU4MjkaNDkuMC42MjU0O..., the weather (32°C, Sunny), and the date/time (15-02-2025, 16:07).

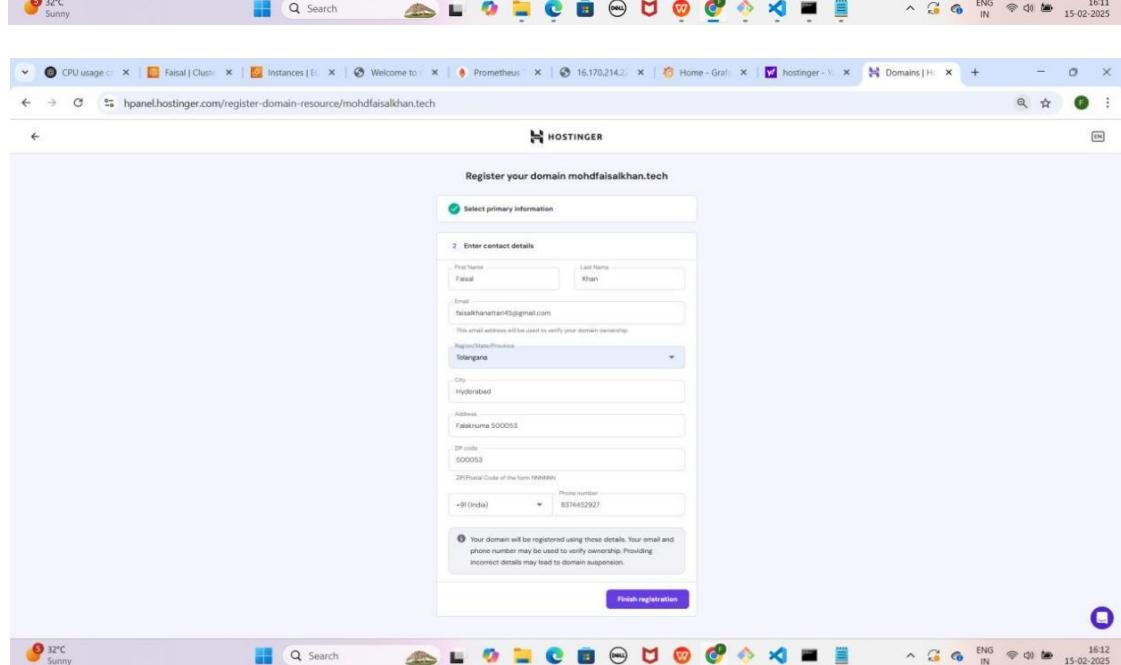


- **Login** karne ke baad tumhe "**Register your domain mohdfaiskhan.tech**" ka option milega
- "**Next Step**" pe click karo
- "**Finish Registration**" pe click karo
- Tumhara **domain registration complete ho jayega**

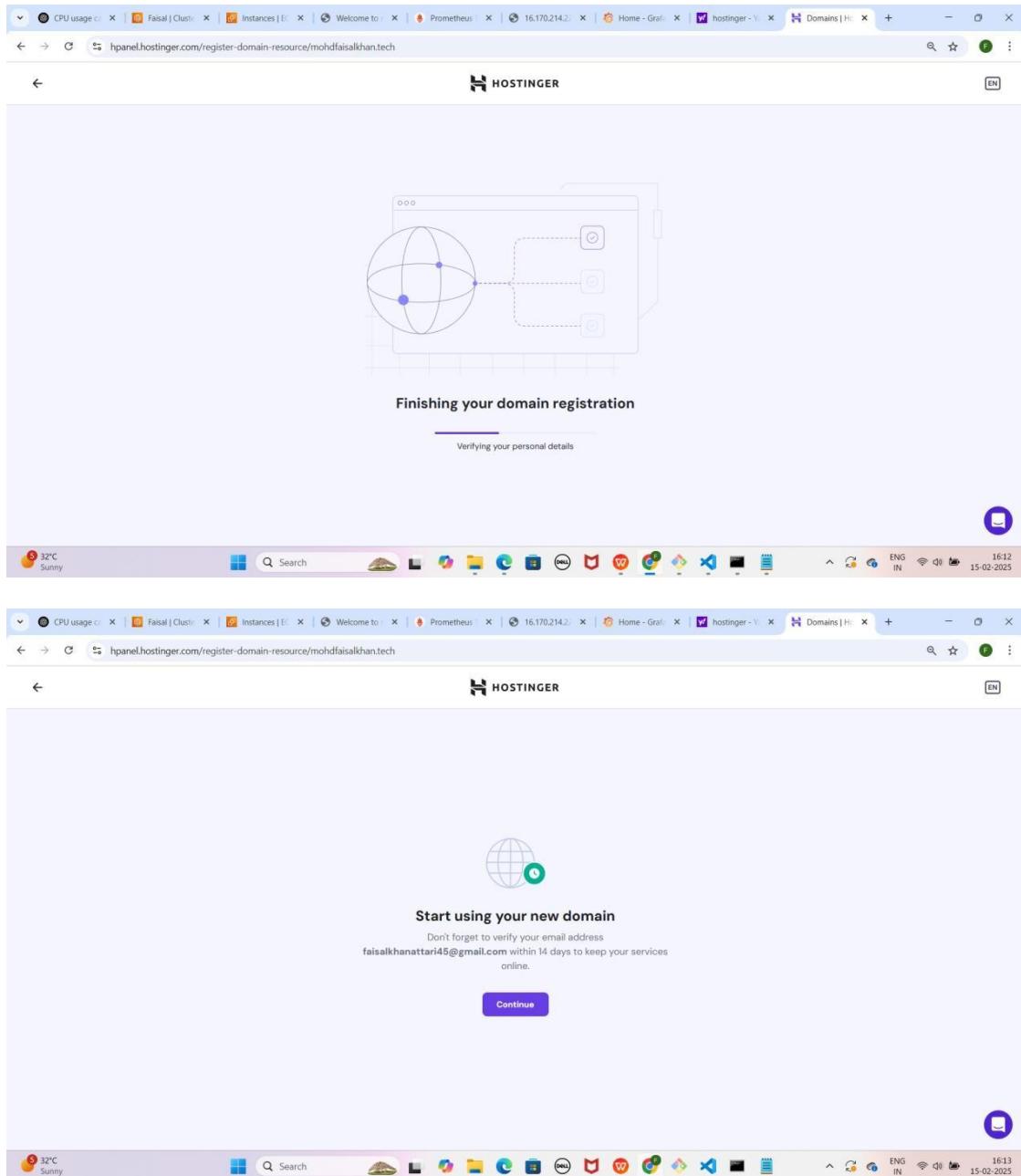
YE KUCH ISTARHA LAGEGA



The screenshot shows the first step of a domain registration process on the Hostinger website. The URL in the browser is hpanel.hostinger.com/register-domain-resource/mohdfaikhan.tech. The page title is "Register your domain mohdfaikhan.tech". A dropdown menu for "Country" is open, showing "India" as the selected option. Below it, there are two radio button options: "Personal" (selected) and "Company or organization". A blue "Next step" button is located at the bottom right of the form.



The screenshot shows the second step of the domain registration process. The URL remains the same. The page title is "Register your domain mohdfaikhan.tech". The "Select primary information" step is now marked with a green checkmark. The "Enter contact details" step is the active one. The form fields include: First Name (Faisal), Last Name (Khan), Email (faisalkhanattari45@gmail.com), Region (Hyderabad), City (Hyderabad), Address (Falaqnama SO0053), ZIP code (500053), and Phone number (+91 (India) 8374452927). A note at the bottom states: "Your domain will be registered using these details. Your email and phone number may be used to verify ownership. Providing incorrect details may lead to domain suspension." A blue "Finish registration" button is at the bottom right.



NOTE: Continue pe click karo

YE KUCH ISTARHA LAGEGA

The screenshot shows a web browser window with multiple tabs open, including CPU usage, Faisal | Cluster, Instances | E., Welcome to..., Prometheus, Home - Grafana, hostinger - Y..., Offer | Hostinger, and hpanel.hostinger.com/hosting-offer/mohdfaikhan.tech. The main content is a promotional offer from Hostinger:

Everything You Need to Create a Website

Web Hosting

₹ 69.00 /mo

8-399000 **SAVE 82%**

No-Code Website builder
Malware Scanner
1 Email Account
Free Automatic Website Migration
Unlimited Free SSL

Unmetered traffic
Weekly Backups
50 GB SSD Storage
Managed WordPress
24/7 Customer Support

Explore plans

Plan renews at ₹ 179.00/month

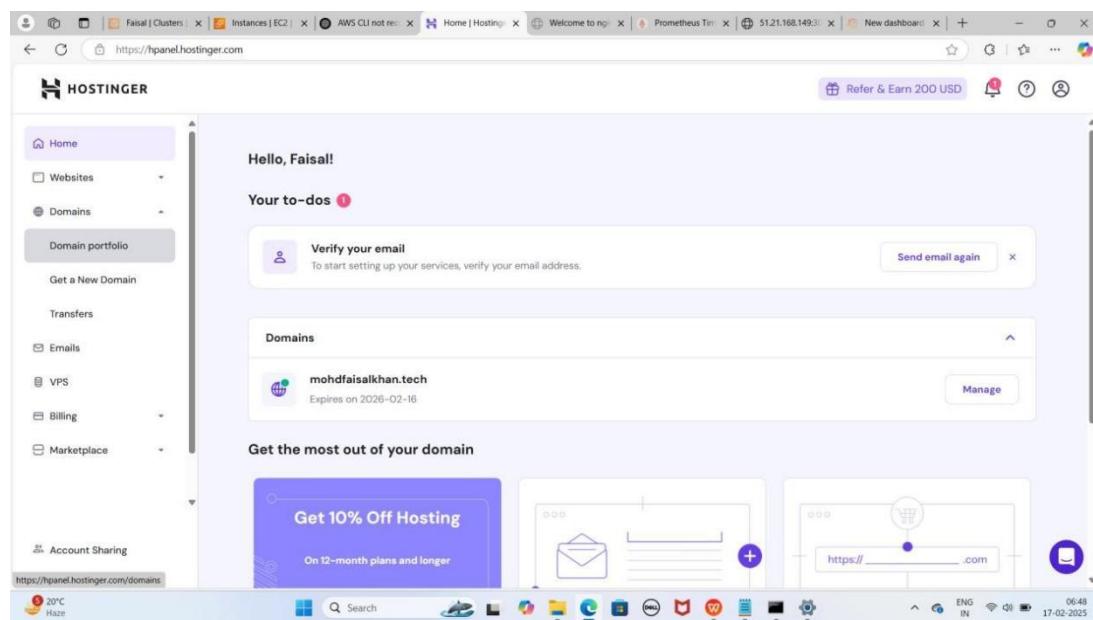
Skip, I don't need a website

The sidebar on the left includes links for Home, Websites, Domains, Emails, VPS, Billing, and Marketplace. A notification bar at the bottom indicates it's 32°C and sunny, with a timestamp of 16:14 on 15-02-2025.

Step 6: Hostinger Me Domains Section Me Navigate Karo

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

YE KUCH ISTARHA LAGEGA



The screenshot shows the 'Domain portfolio' section of the Hostinger control panel. On the left sidebar, under 'Domains', 'Domain portfolio' is selected. The main area displays a table of domains with columns for 'Domain name', 'Status', 'Expiration date', and 'Auto-renewal'. A specific domain, 'mohdfaikhan.tech', is highlighted. At the top right, there's a purple button labeled '+ Add new domain'.

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

The screenshot shows the 'Domain Overview' page for the domain 'mohdfaikhan.tech'. The left sidebar has 'DNS / Nameservers' selected. The main area shows domain details like 'Expires on: 2026-02-16' and 'Auto-renewal' status. It also features sections for 'Try Website Builder for FREE!', 'Protect your internet identity', and 'Your domain checklist!'. A purple button labeled 'Edit' is visible next to the 'DNS/Nameservers' section.

https://hpanel.hostinger.com/domain/mohdfaikhan.tech/dns

HOSTINGER

Main menu

Domain Overview

DNS / Nameservers

Domain Ownership

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: Points to: TTL: 14400 Add Record

Search

Type: Name: Priority: Content: TTL:

Give feedback

20°C Haze

Search

0653 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

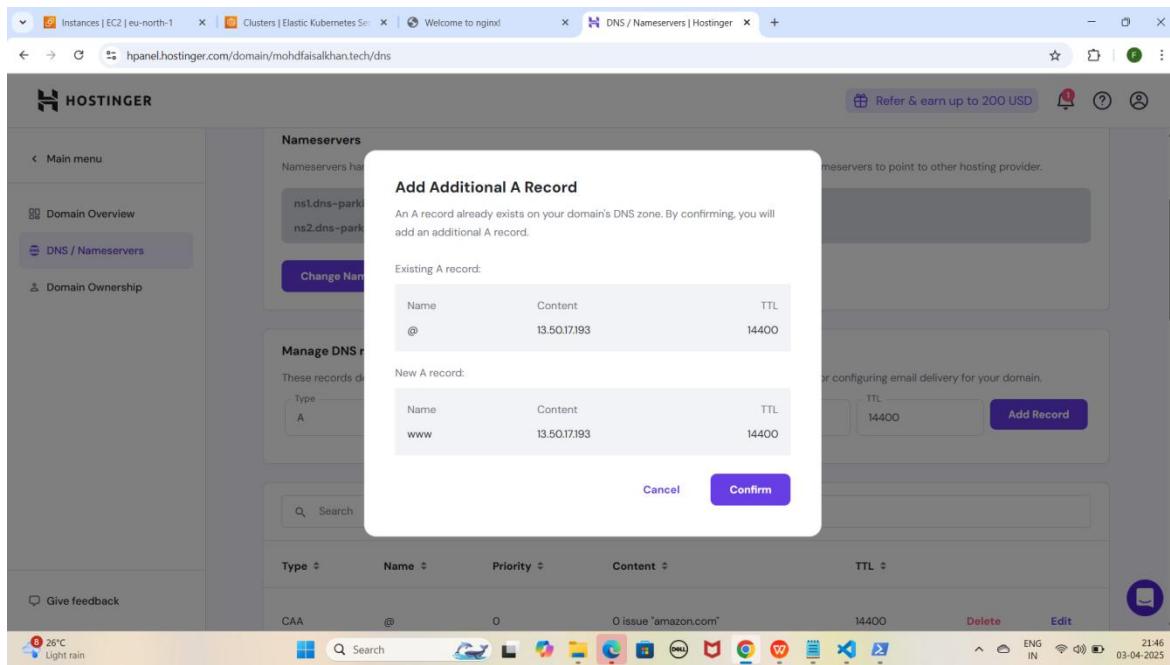
YE KUCH ISTRAHA LAGEGA

The screenshot shows the AWS EC2 Instances console. On the left, there's a navigation sidebar with options like Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, AMI Catalog, and Elastic Block Store. The main area displays a table titled 'Instances (1/1) info' with one row for 'Faisal-Node'. The instance details include: Name: Faisal-Node, Instance ID: i-0c30c439c518870fc, Instance state: Running, Instance type: t3.large, Status check: 3/3 checks passed, Alarm status: View alarms, Availability Zone: eu-north-1c, Public IP: ec2-13-51-17-193.eu-north-1.compute.amazonaws.com. Below the table, a detailed view for 'i-0c30c439c518870fc (Faisal-Node)' is shown with tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. The 'Details' tab is selected, showing the Instance summary with a note about Public IPv4 address copied, the Instance ID (i-0c30c439c518870fc), and the Instance state (Running). It also lists Private IPv4 addresses (172.31.5.205, 172.31.9.191) and Public IPv4 DNS (ec2-13-51-17-193.eu-north-1.compute.amazonaws.com). The bottom of the screen shows the Windows taskbar with various pinned icons.

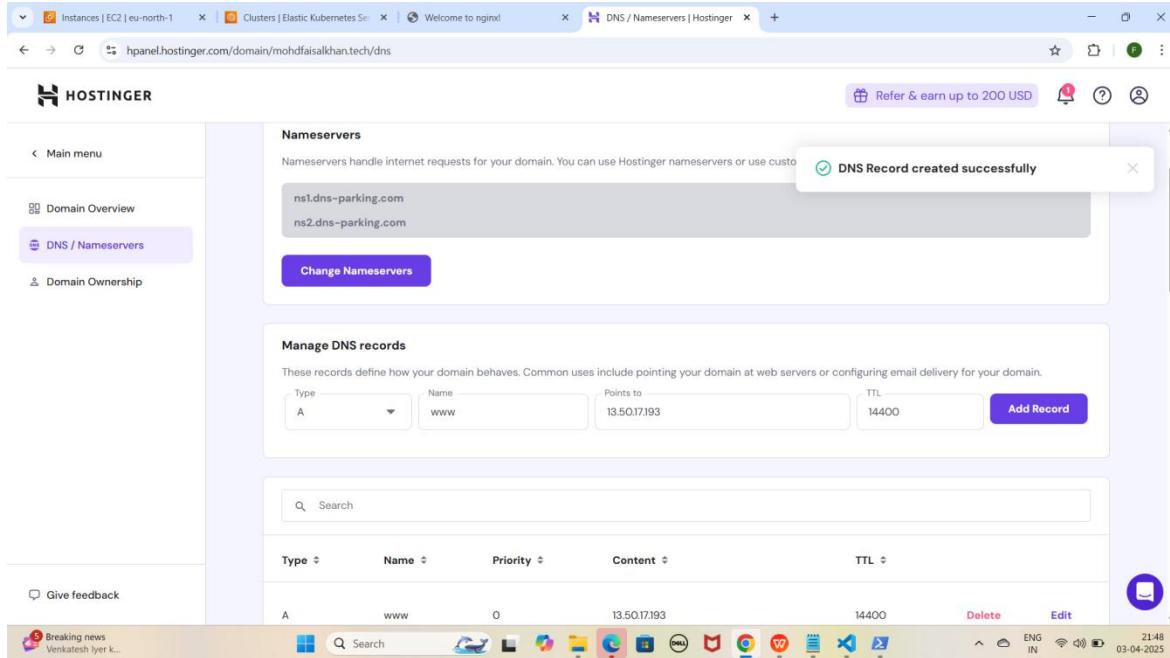
The screenshot shows the Hostinger DNS / Nameservers management interface. On the left, there's a sidebar with Main menu, Domain Overview, DNS / Nameservers (selected), and Domain Ownership. The main area has two sections: 'Nameservers' and 'Manage DNS records'. In the 'Nameservers' section, it says 'Nameservers handle internet requests for your domain. You can use Hostinger nameservers or use custom nameservers to point to other hosting provider.' It lists ns1.dns-parking.com and ns2.dns-parking.com. There's a 'Change Nameservers' button. In the 'Manage DNS records' section, it says 'These records define how your domain behaves. Common uses include pointing your domain at web servers or configuring email delivery for your domain.' It shows a table with columns Type, Name, Points to, TTL, and Add Record. A new record is being added with Type: A, Name: @, Points to: 13.50.17.193, TTL: 14400. Below the table is a search bar and a list of existing records: CAA, @, 0, O issue "comodoca.com", 14400, Delete, Edit. The bottom of the screen shows the Windows taskbar with various pinned icons.

The screenshot shows the Hostinger DNS/Nameservers management interface. On the left sidebar, under the 'DNS / Nameservers' section, there is a message: 'DNS Record created successfully'. The main area displays two nameservers: ns1.dns-parking.com and ns2.dns-parking.com. Below them is a 'Change Nameservers' button. A 'Manage DNS records' section follows, featuring a table with columns: Type, Name, Points to, and TTL. A new record is being added with the following values: Type: A, Name: @, Points to: 13.50.17.93, and TTL: 14400. An 'Add Record' button is visible. At the bottom, a search bar and a list of existing DNS records are shown.

This screenshot is nearly identical to the one above, showing the same successful DNS record creation message and interface layout. The main difference is in the 'Manage DNS records' section where a new record is being added. In this version, the 'Name' field contains 'www' instead of '@'. The rest of the fields (Points to: 13.50.17.93, TTL: 14400) remain the same. The overall interface and status bar at the bottom are identical.



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://mohdfaikhan.tech:30007>

YE KUCH ISTARHA LAGEGA



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.

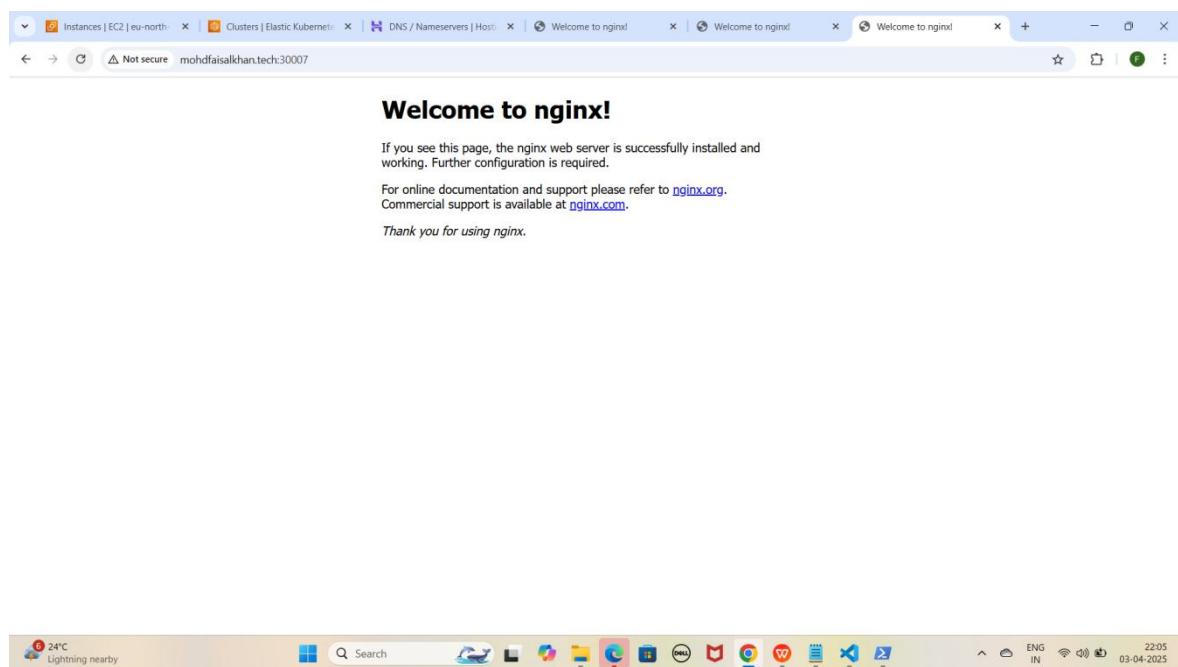
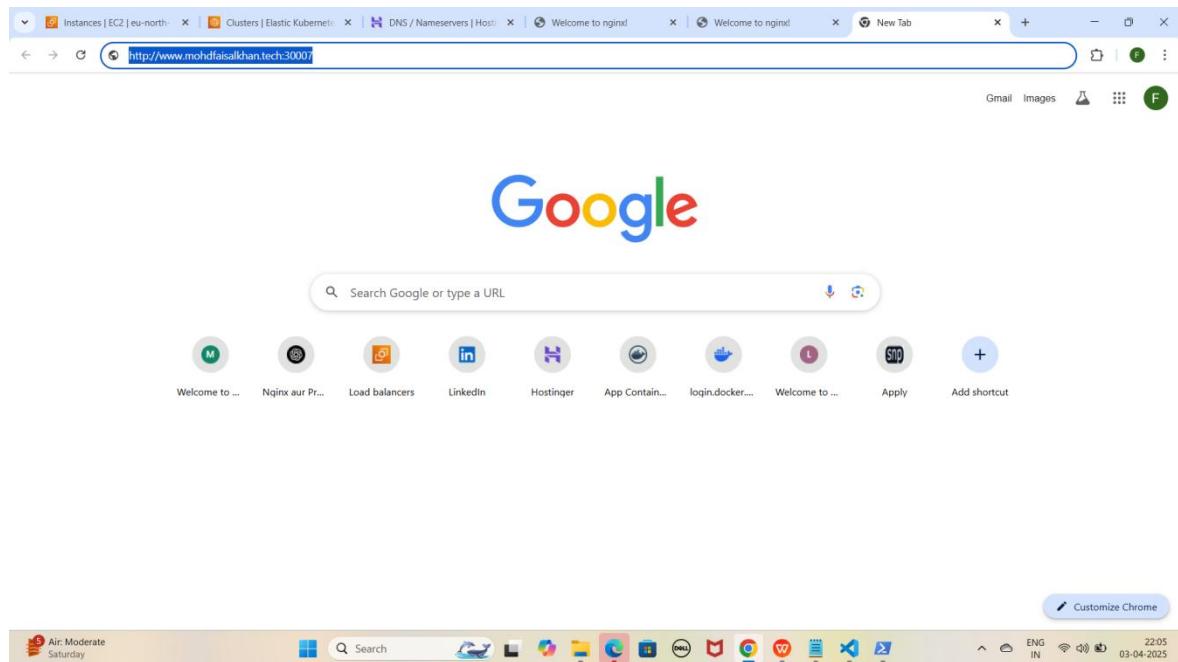
Thank you for using nginx.



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

- Nginx: <http://www.mohdfaiskhan.tech:30007>

YE KUCH ISTARHA LAGEGA



Part 5: MySQL Secrets and ConfigMap Configuration

Step 1: mysql-secrets.yaml File Ka Kaam

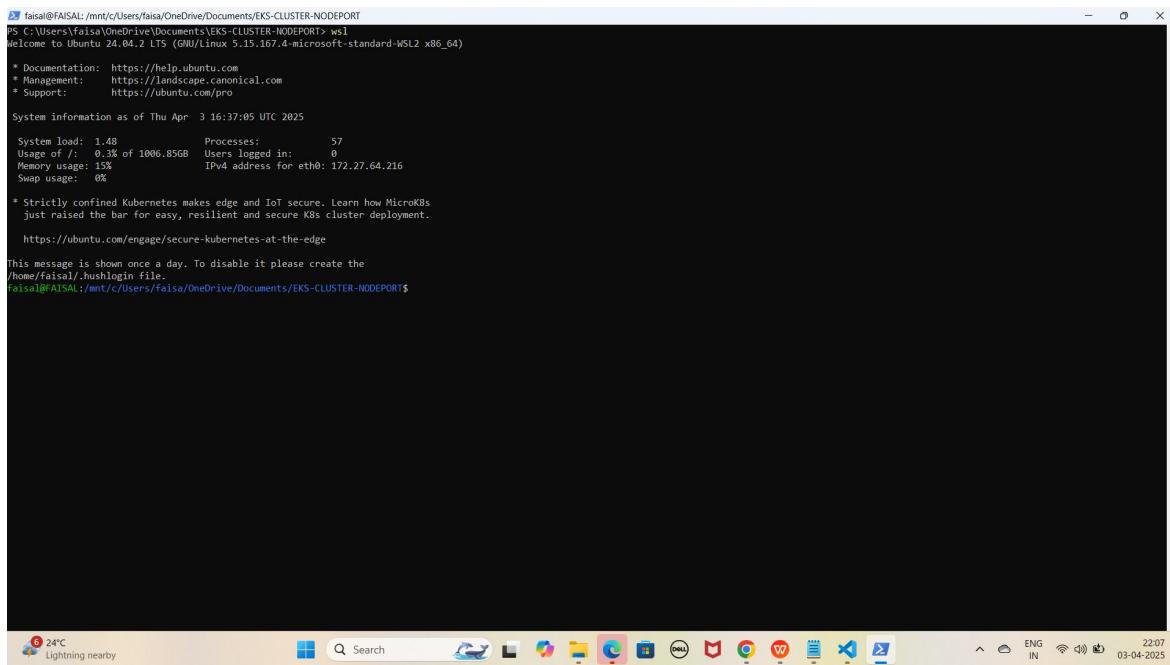
Ye file username aur password ko securely store karne ke liye use hoti hai. Kyunki **Secrets secure hoti hain**, is wajah se hum **Base64 encoding** ka use karke username aur password ko **encrypt** kar dete hain.

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



```
faisal@FAISAL: /mnt/c/Users/faisa/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ wsl
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 5.15.167.4-microsoft-standard-WSL2 x86_64)

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

System information as of Thu Apr  3 16:37:05 UTC 2025

  System Load: 1.48      Processes:      57
  Usage of /: 0.3% of 1006.85GB  Users logged in: 0
  Memory usage: 15%          IPv4 address for eth0: 172.27.64.216
  Swap usage: 0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.

  https://ubuntu.com/engage/secure-kubernetes-at-the-edge

This message is shown once a day. To disable it please create the
/home/faisal/.hushlogin file.
faisal@FAISAL:/mnt/c/Users/faisa/OneDrive/Documents/EKS-CLUSTER-NODEPORT$
```

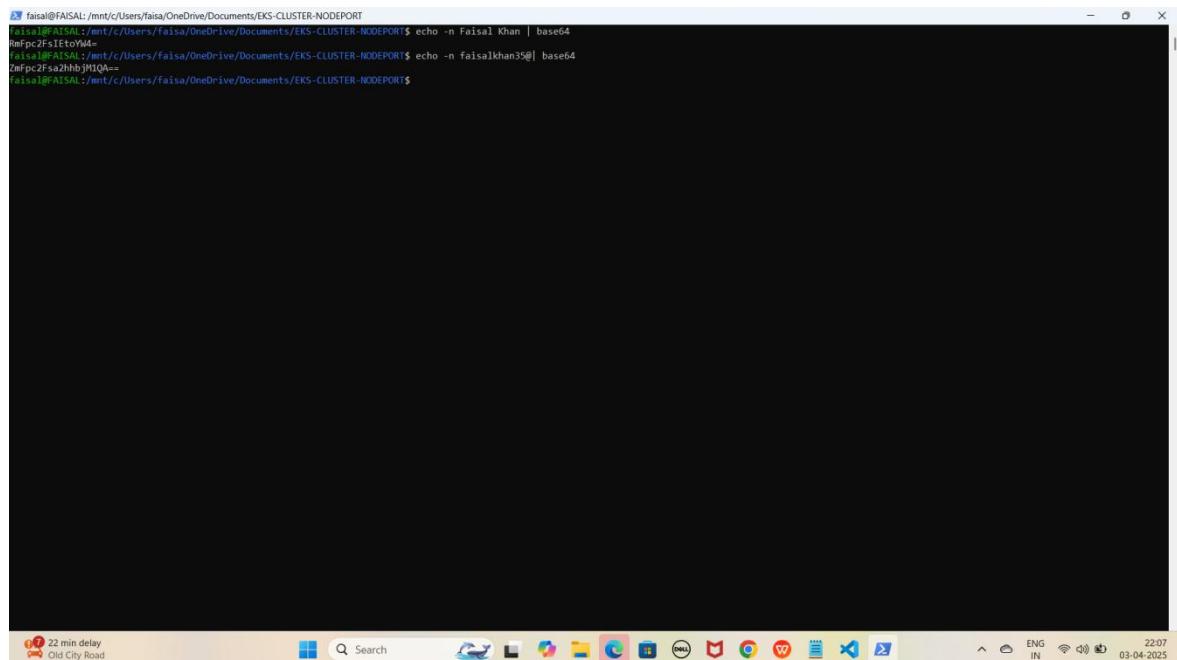
2. Username encode karein

- echo -n Faisal Khan | base64

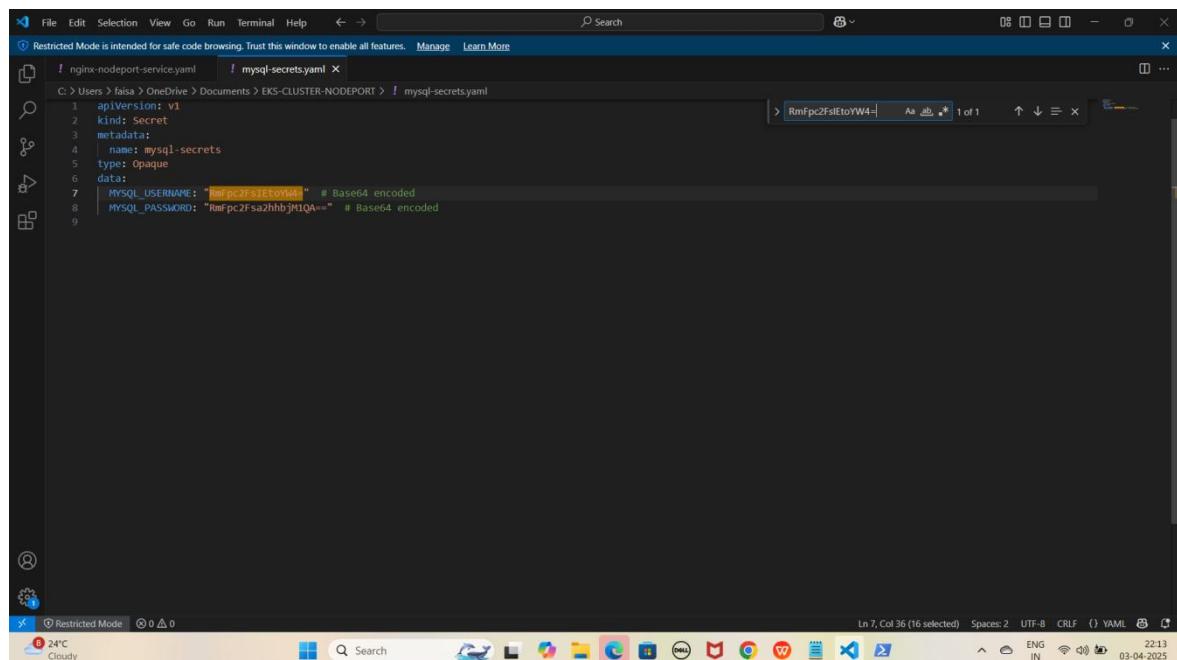
3. Password encode karein

- echo -n Faisalkhan35@ | base64

YE KUCH ISTARHA LAGEGA



```
faisal@FAISAL: /mnt/c/Users/faisal/OneDrive/Documents/EKS-CLUSTER-NODEPORT
faisal@FAISAL: /mnt/c/Users/faisal/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ echo -n Faisal Khan | base64
RmFpc2FsIEt0YW4=
faisal@FAISAL: /mnt/c/Users/faisal/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ echo -n faisalkhan35@ | base64
ZmFpc2FsazhhbjNtQw==
```



```
apiVersion: v1
kind: Secret
metadata:
  name: mysql-secrets
  type: Opaque
data:
  MYSQL_USERNAME: "RmFpc2FsIEt0YW4=" # Base64 encoded
  MYSQL_PASSWORD: "ZmFpc2FsazhhbjNtQw==" # Base64 encoded
```

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

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:-

```
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

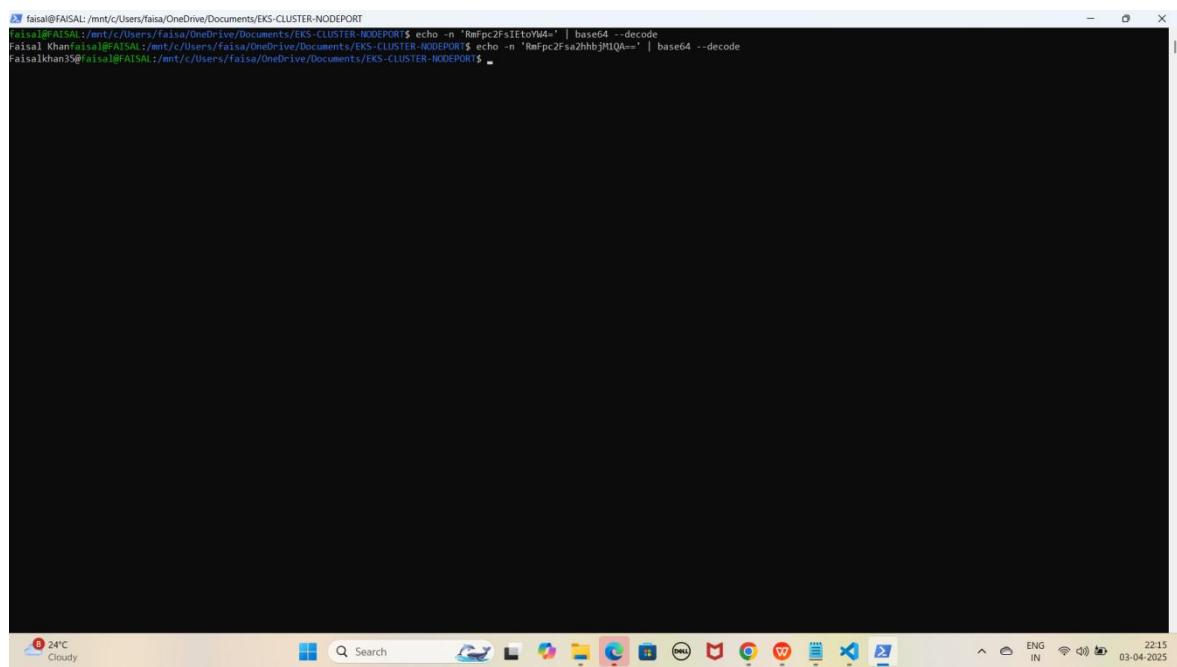
4. Username decode karein

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

5. Password decode karein

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

YE KUCH ISTARHA LAGEGA



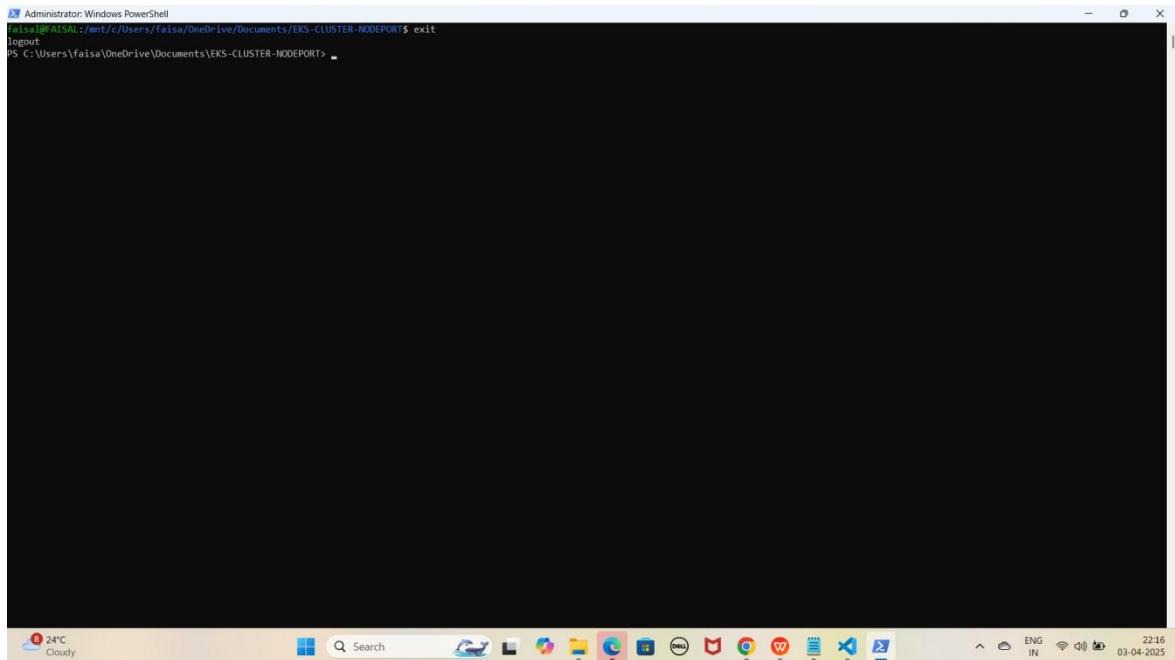
A screenshot of a Windows terminal window titled 'Terminal'. The command 'echo -n 'RmFpc2FsIEtoYW4=' | base64 --decode' is entered and executed, resulting in the output 'Faisal Khan'. Below this, another command 'echo -n 'RmFpc2Fsa2hhbjM1QA==' | base64 --decode' is entered and executed, resulting in the output 'FaisalKhan35@faisal'. The terminal window is set against a dark background.

```
faisal@FAISAL:/mnt/c/Users/faisa/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ echo -n 'RmFpc2FsIEtoYW4=' | base64 --decode
Faisal Khan
faisal@FAISAL:/mnt/c/Users/faisa/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ echo -n 'RmFpc2Fsa2hhbjM1QA==' | base64 --decode
FaisalKhan35@faisal:faisal:/mnt/c/Users/faisa/OneDrive/Documents/EKS-CLUSTER-NODEPORT$
```

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

exit

YE KUCH ISTARHA LAGEGA

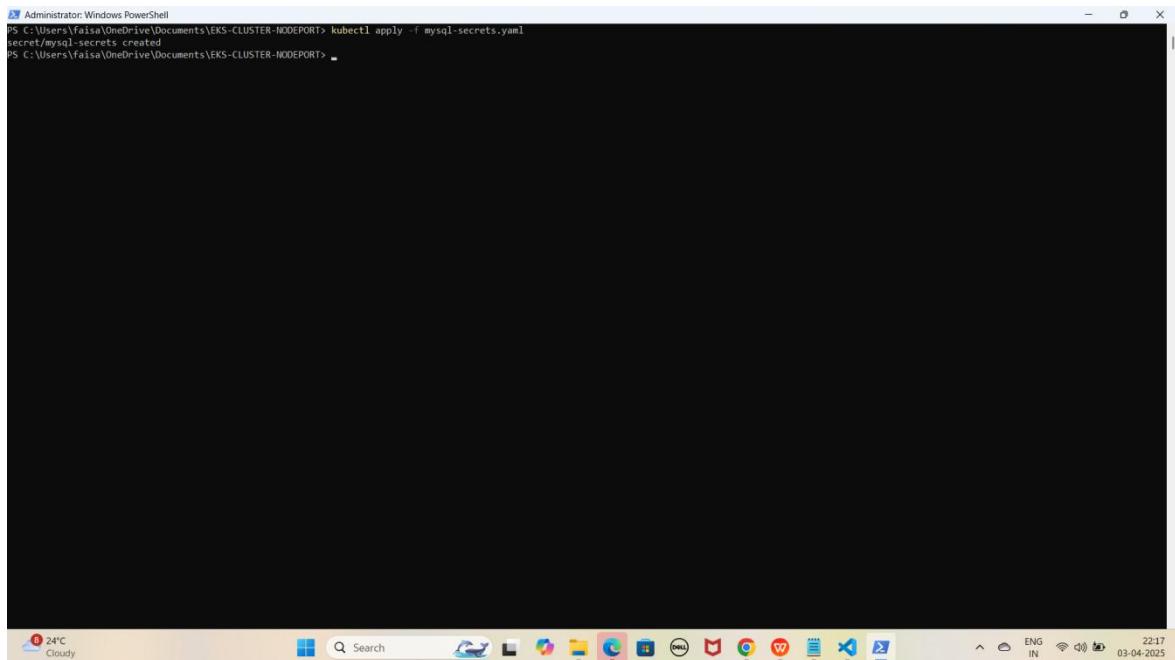


```
Administrator: Windows PowerShell
faisal@FAISAL:~mnt/c/Users/faisal/OneDrive/Documents/EKS-CLUSTER-NODEPORT$ exit
logout
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

Secret Apply Karo

kubectl apply -f mysql-secrets.yaml

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-secrets.yaml
secret/mysql-secrets created
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

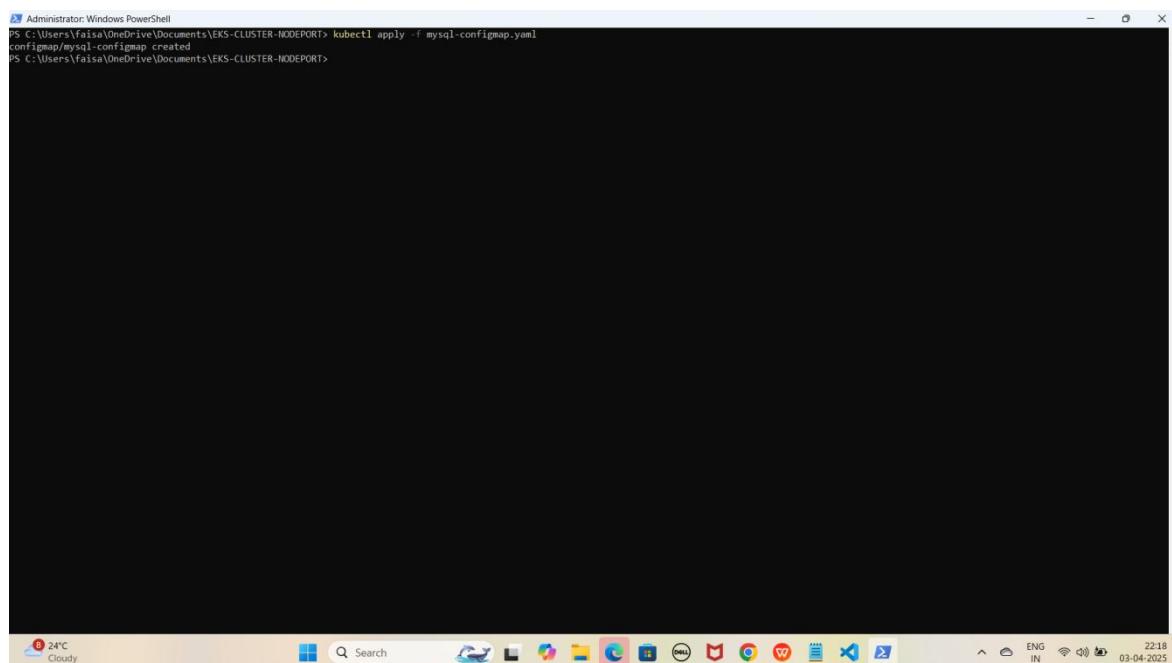
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-configmap.yaml
configmap/mysql-configmap created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

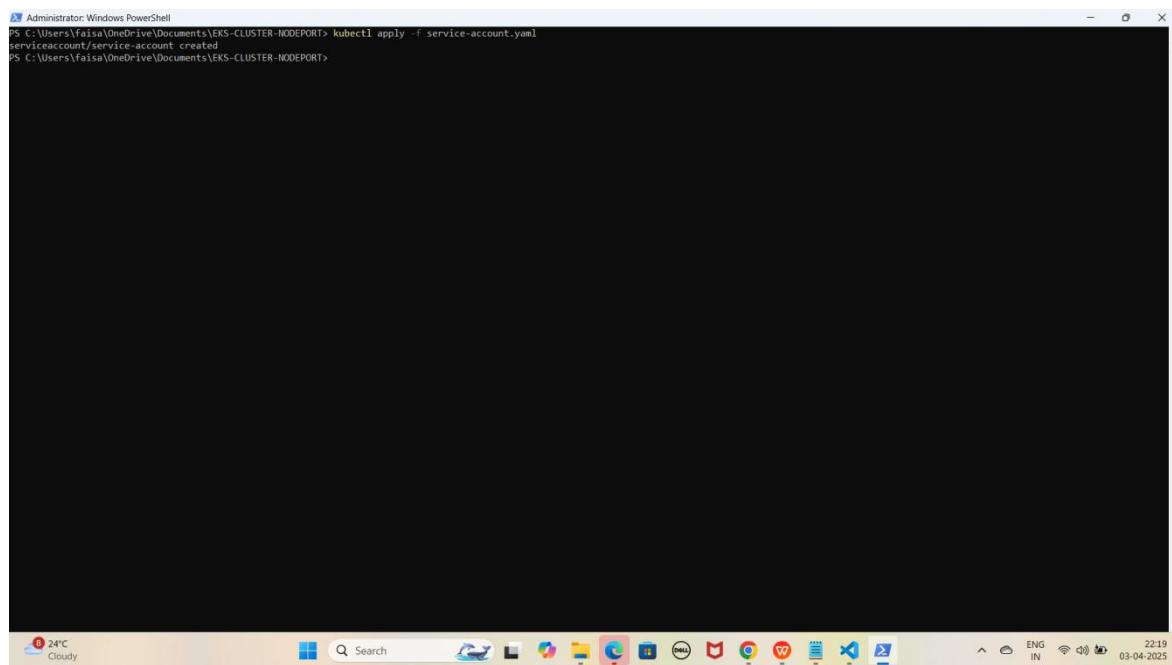
JAISE KI:-

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

Service Account Apply Karo

kubectl apply -f service-account.yaml

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f service-account.yaml
serviceaccount/service-account created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

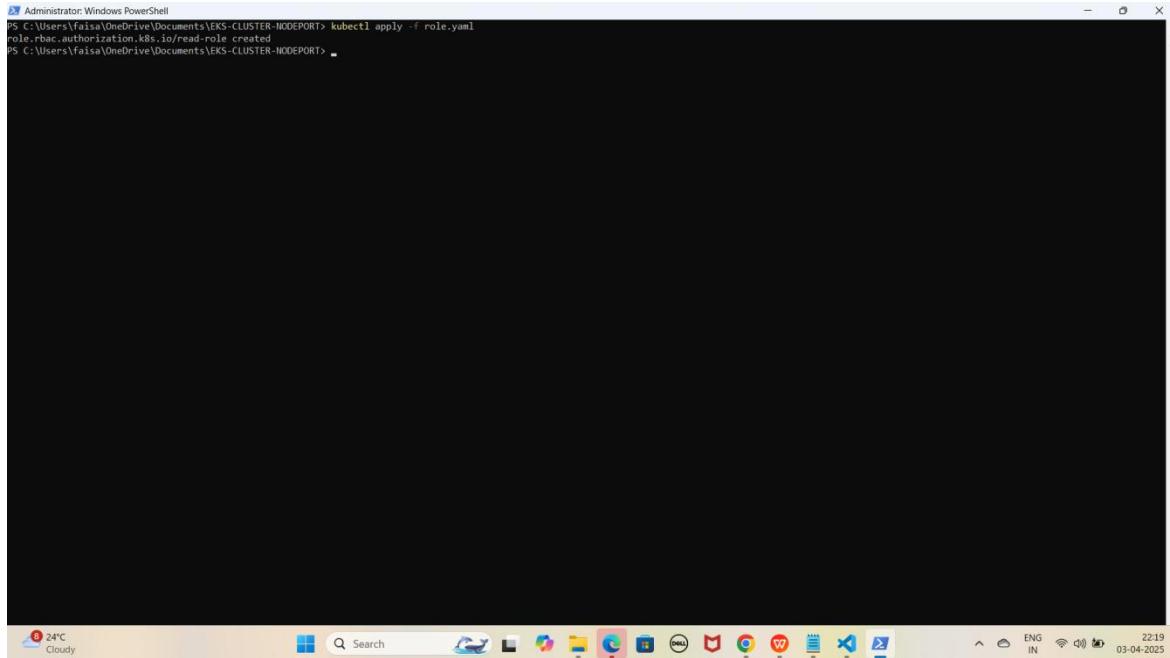
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f role.yaml
role.rbac.authorization.k8s.io/read-role created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

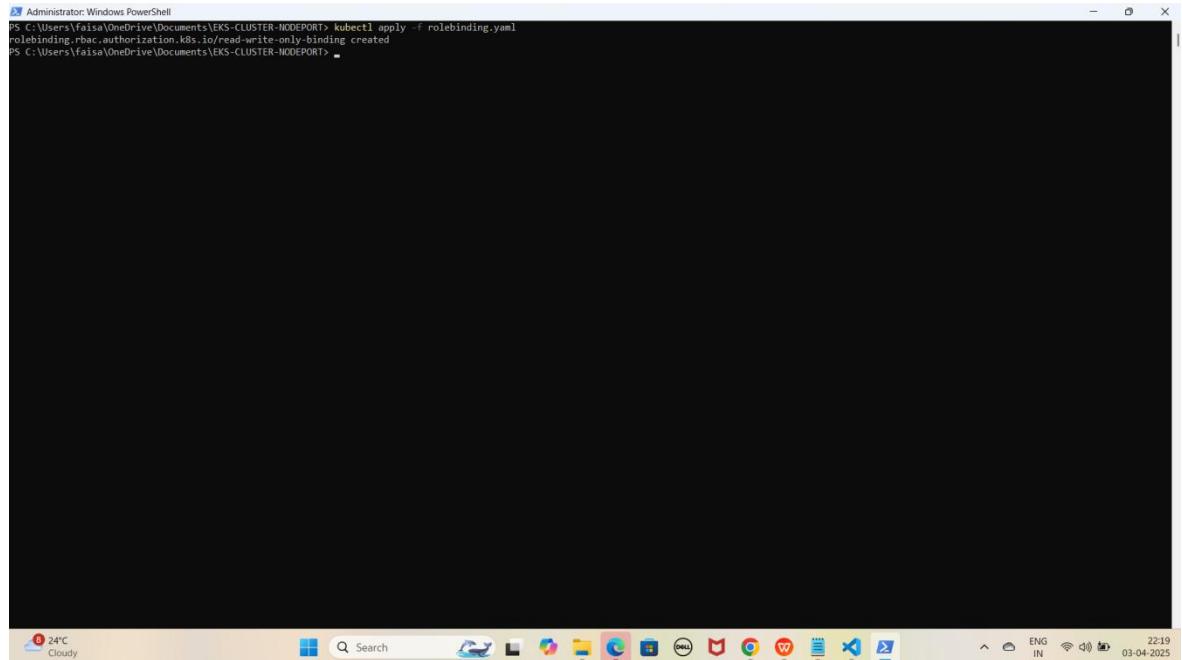
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f rolebinding.yaml
rolebinding.rbac.authorization.k8s.io/read-write-only-binding created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

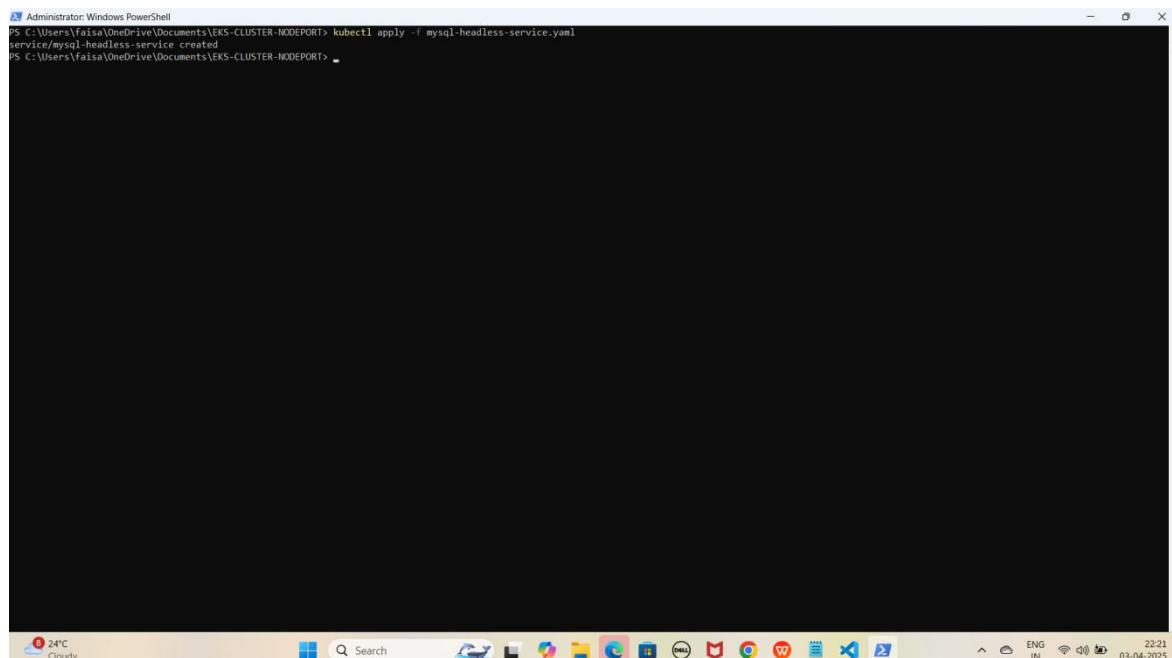
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-headless-service.yaml
service/mysql-headless-service created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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:-

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

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

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

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

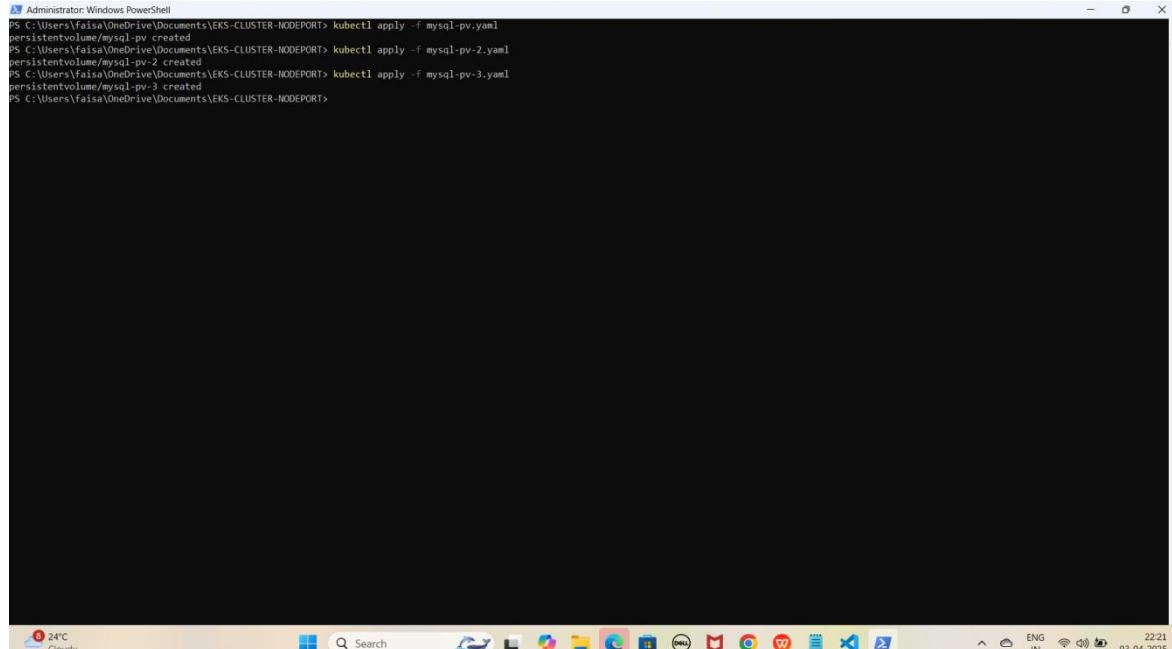
Persistent Volumes Apply Karo

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

```
kubectl apply -f mysql-pv-2.yaml
```

```
kubectl apply -f mysql-pv-3.yaml
```

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell  
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-pv.yaml  
persistentvolume/mysql-pv created  
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-pv-2.yaml  
persistentvolume/mysql-pv-2 created  
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-pv-3.yaml  
persistentvolume/mysql-pv-3 created  
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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.

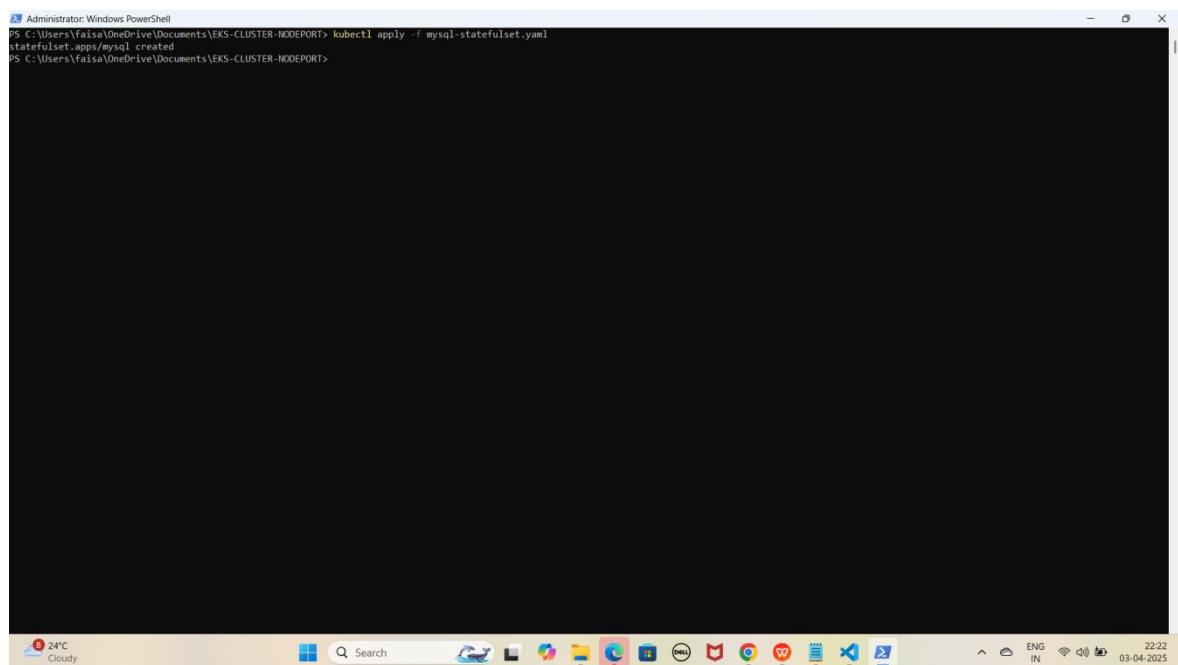
JAISE KI:-

```
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

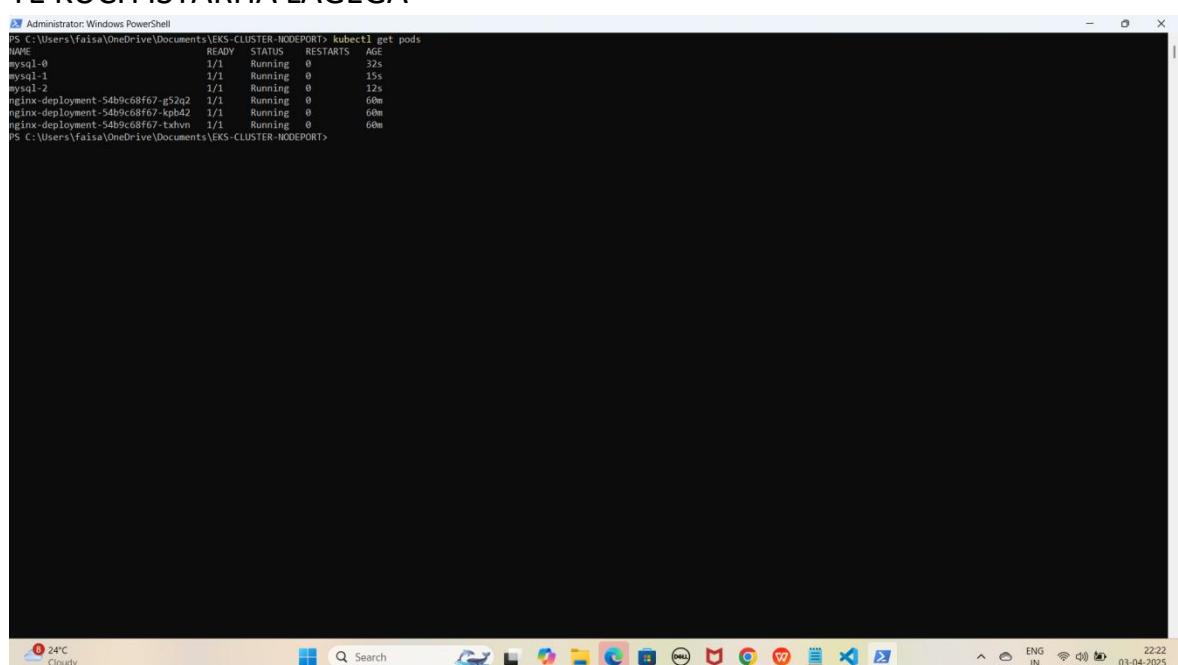


```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl apply -f mysql-statefulset.yaml
statefulset.apps/mysql created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

1. Pods check karne ke liye ye command run kariye

```
kubectl get pods
```

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl get pods
  NAME     READY   STATUS    RESTARTS   AGE
mysql-0    1/1    Running   0          32s
mysql-1    1/1    Running   0          15s
mysql-2    1/1    Running   0          12s
nginx-deployment-54b9c68f67-g52q2  1/1    Running   0          60m
nginx-deployment-54b9c68f67-kpb42  1/1    Running   0          60m
nginx-deployment-54b9c68f67-txhvn  1/1    Running   0          60m
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

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

2. Services check karne ke liye ye commad run kariye

kubectl get services

YE KUCH ISTARHA LAGEGA

```
Administrator: Windows PowerShell
PS C:\Users\Faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl get services
NAME           TYPE      CLUSTER-IP   EXTERNAL-IP  PORT(S)        AGE
kubernetes     ClusterIP 10.100.0.1   <none>       443/TCP       101m
mysql-headless-service ClusterIP None        <none>       3306/TCP     2m30s
nginx-service  NodePort   10.100.223.3  <none>       80:30807/TCP  60m
PS C:\Users\Faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>
```

The screenshot shows a Windows desktop environment with a PowerShell window open. The taskbar at the bottom displays various icons for applications like File Explorer, Edge, and Control Panel. The system tray shows the date (03-04-2025), time (22:23), battery status, and network connection.

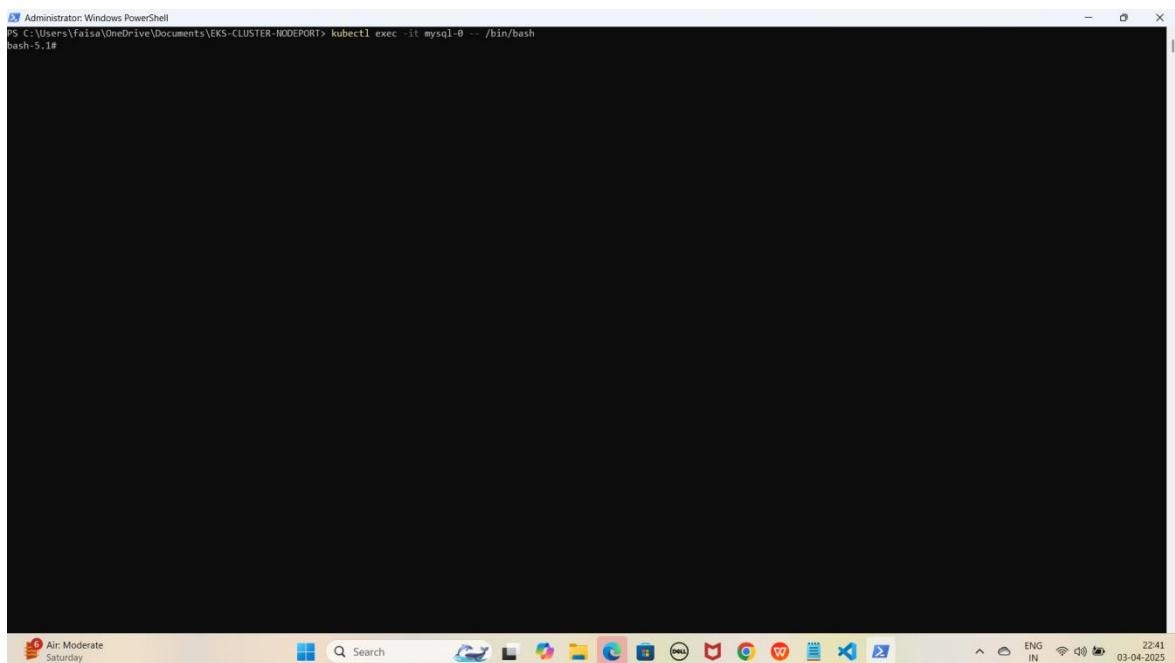
Part 7: Accessing MySQL Database in EKS Cluster

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

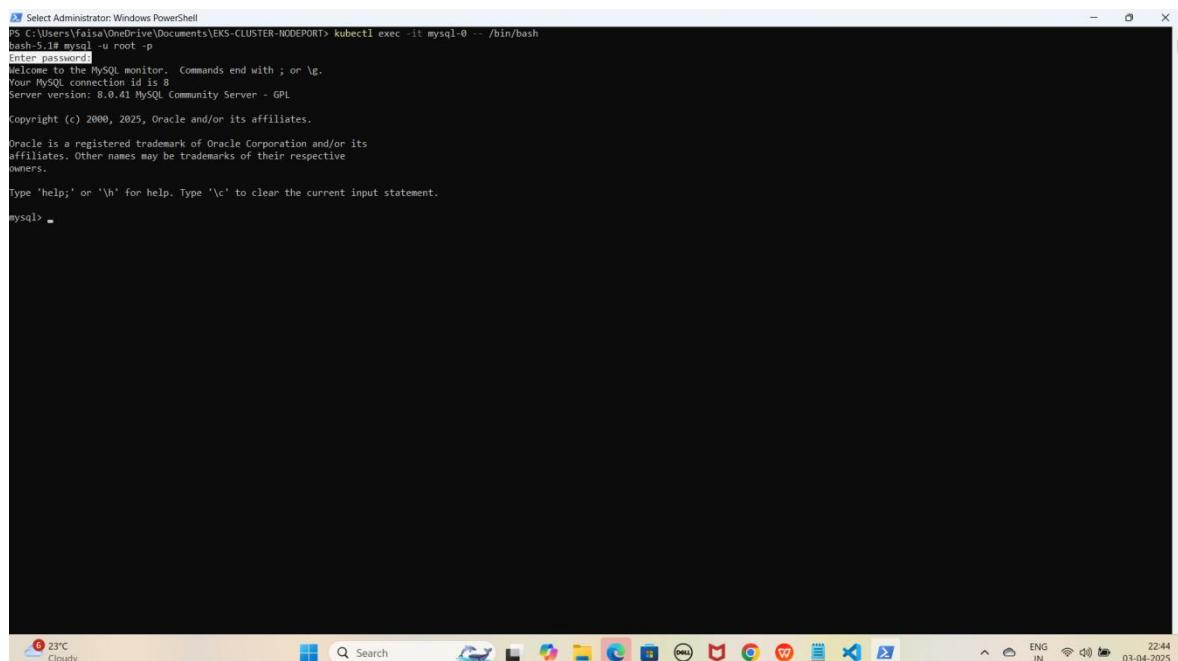


A screenshot of a Windows PowerShell window titled "Administrator: Windows PowerShell". The command entered is "kubectl exec -it mysql-0 -- /bin/bash". The terminal session is currently blank, showing only the prompt "bash-5.1#". The window is set against a dark background. At the bottom, the taskbar shows various pinned icons and the system tray displays the date and time as "03-04-2025 22:41".

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

```
mysql -u root -p
```

YE KUCH ISTARHA LAGEGA



The screenshot shows a Windows PowerShell window titled "Select Administrator: Windows PowerShell". The command run is "PS C:\Users\Faisa\OneDrive\Documents\LEKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash". Inside the MySQL monitor, the password is entered, and the MySQL prompt "mysql>" is visible. The window has a black background and white text. The taskbar at the bottom shows various icons and the date "03-04-2025".

```
PS C:\Users\Faisa\OneDrive\Documents\LEKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.41 MySQL Community Server - GPL

Copyright (c) 2000, 2025, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

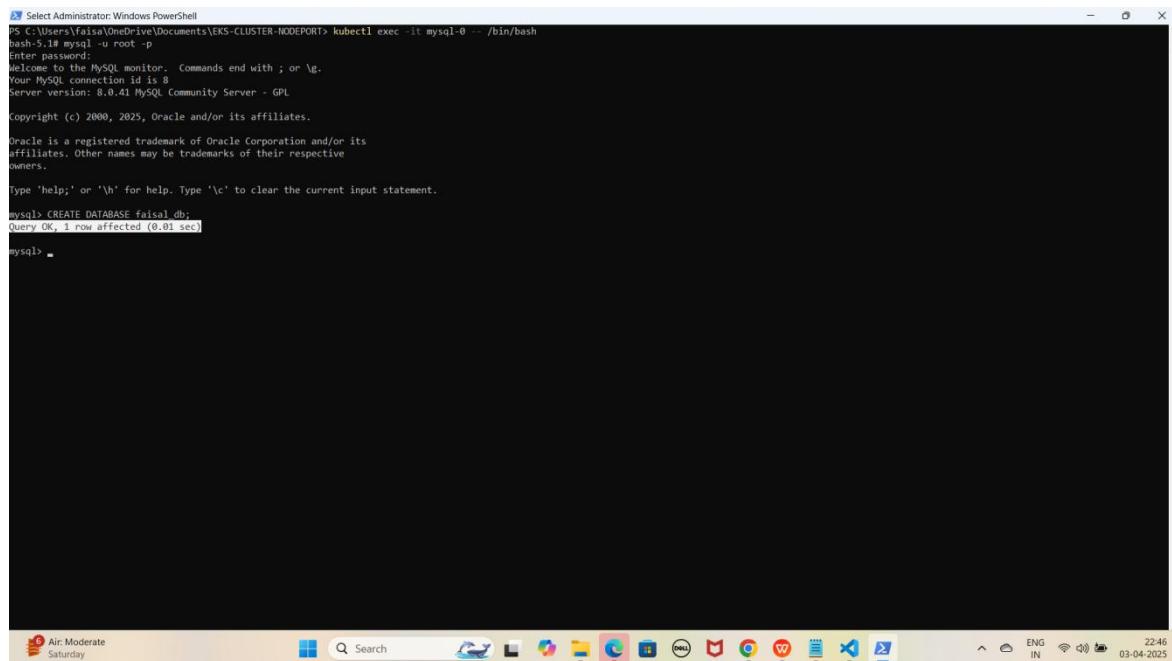
mysql> 
```

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



```
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.41 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

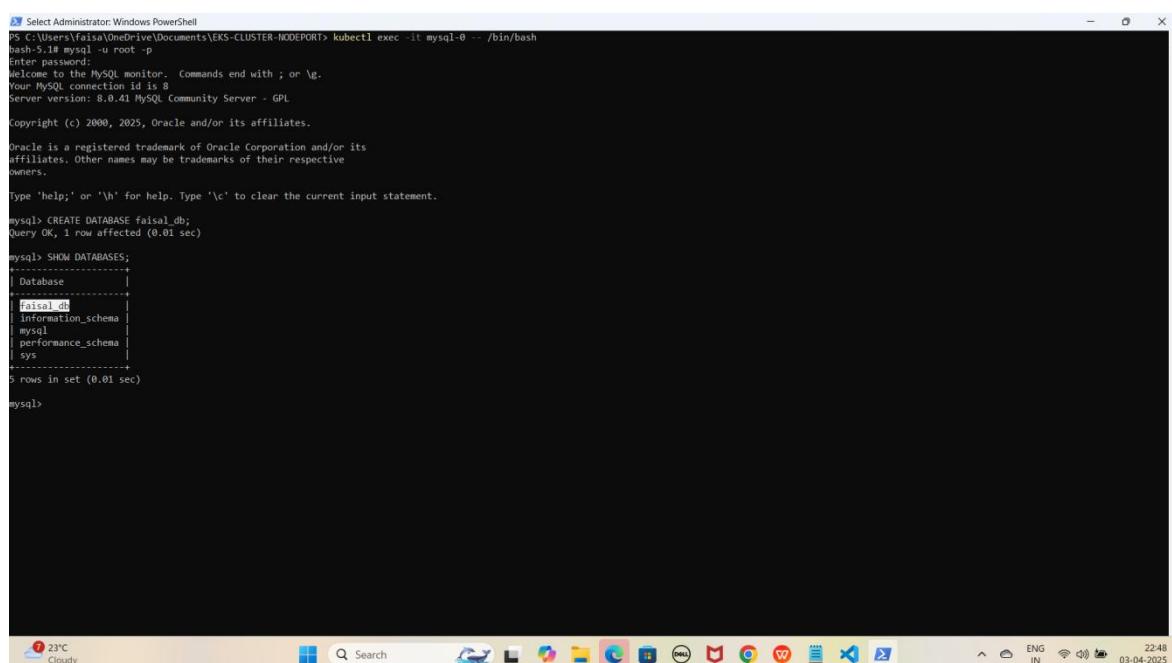
mysql> CREATE DATABASE faisal_db;
Query OK, 1 row affected (0.01 sec)

mysql> .
```

4. Databases check karne ke liye ye command run kariye

SHOW DATABASES;

YE KUCH ISTARHA LAGEGA



```
PS C:\Users\faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.41 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE faisal_db;
Query OK, 1 row affected (0.01 sec)

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| faisal_db |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.01 sec)

mysql> .
```

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

exit

YE KUCH ISTARHA LAGEGA

```
PS C:\Users\Faisal\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.41 MySQL Community Server - GPL

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE faisal_db;
Query OK, 1 row affected (0.01 sec)

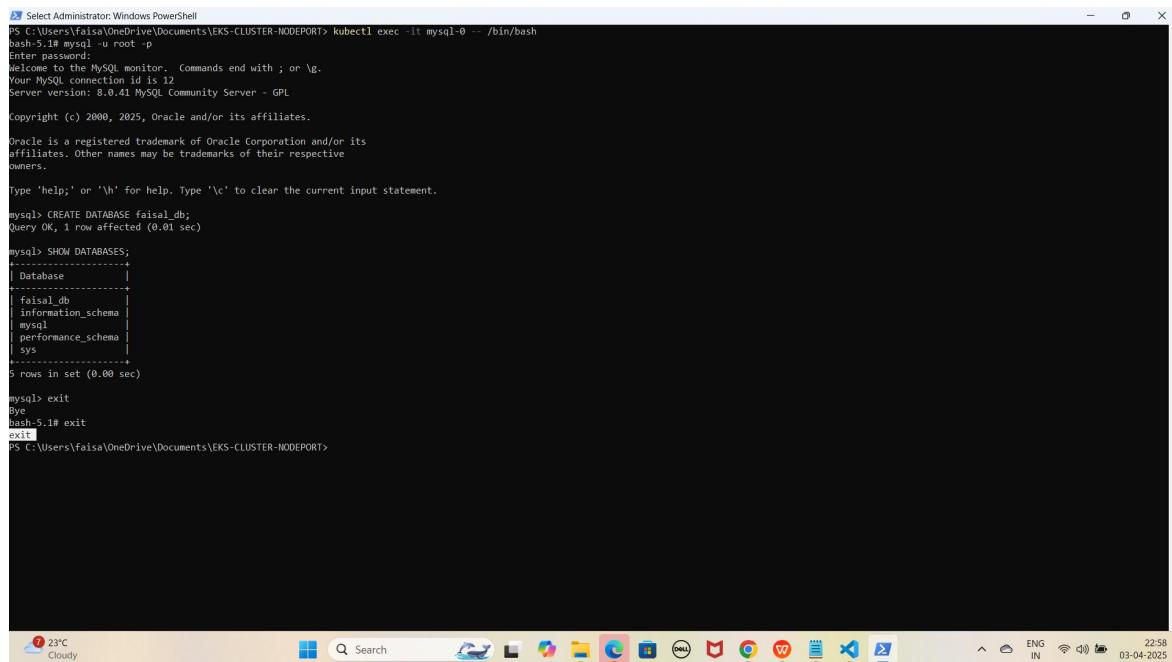
mysql> SHOW DATABASES;
+ Database
| faisal_db |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.00 sec)

mysql> exit
Bye
bash-5.1#
```

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

exit

YE KUCH ISTARHA LAGEGA



PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT> kubectl exec -it mysql-0 -- /bin/bash
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.41 MySQL Community Server - GPL

Copyright (c) 2009, 2025, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> CREATE DATABASE faisal_db;
Query OK, 1 row affected (0.01 sec)
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| faisal_db |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.00 sec)
mysql> exit
Bye
bash-5.1# exit
exit
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-NODEPORT>

NOTE : Aapko faisal_db naam ka database dikhega, aur isi tarah aap

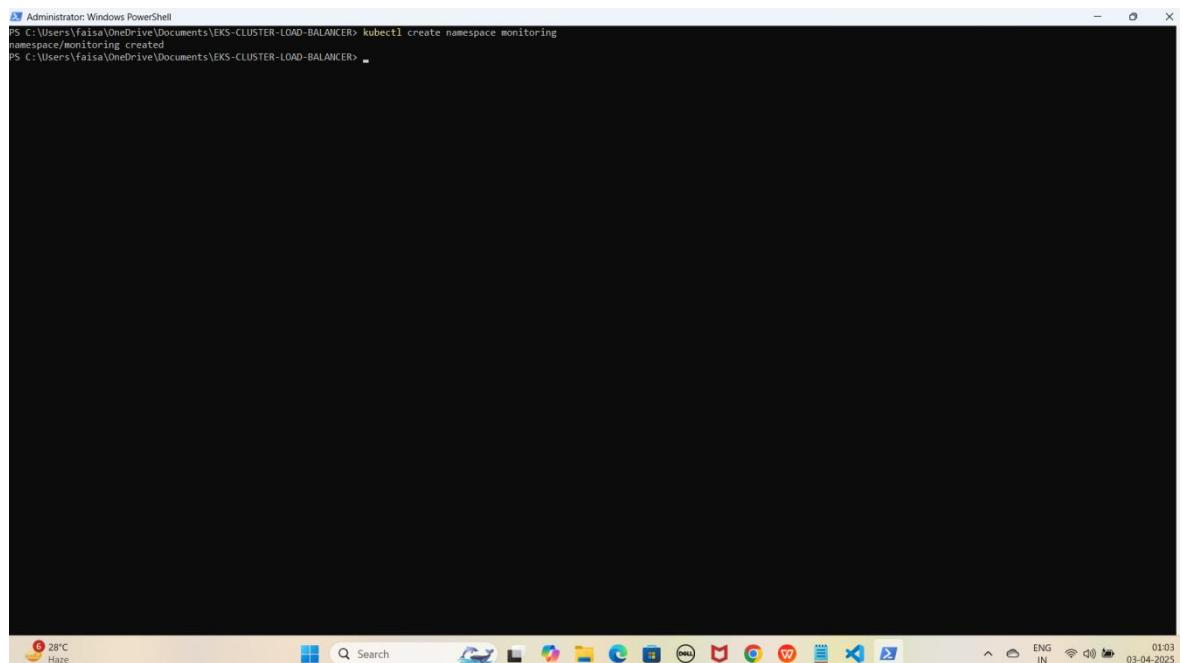
mysql-1 aur mysql-2 ke liye bhi access kar sakte hain.

Part 8: Monitoring Using Prometheus and Loki With Grafana

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

kubectl create namespace monitoring

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl create namespace monitoring
namespace/monitoring created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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:-

```
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

    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
```

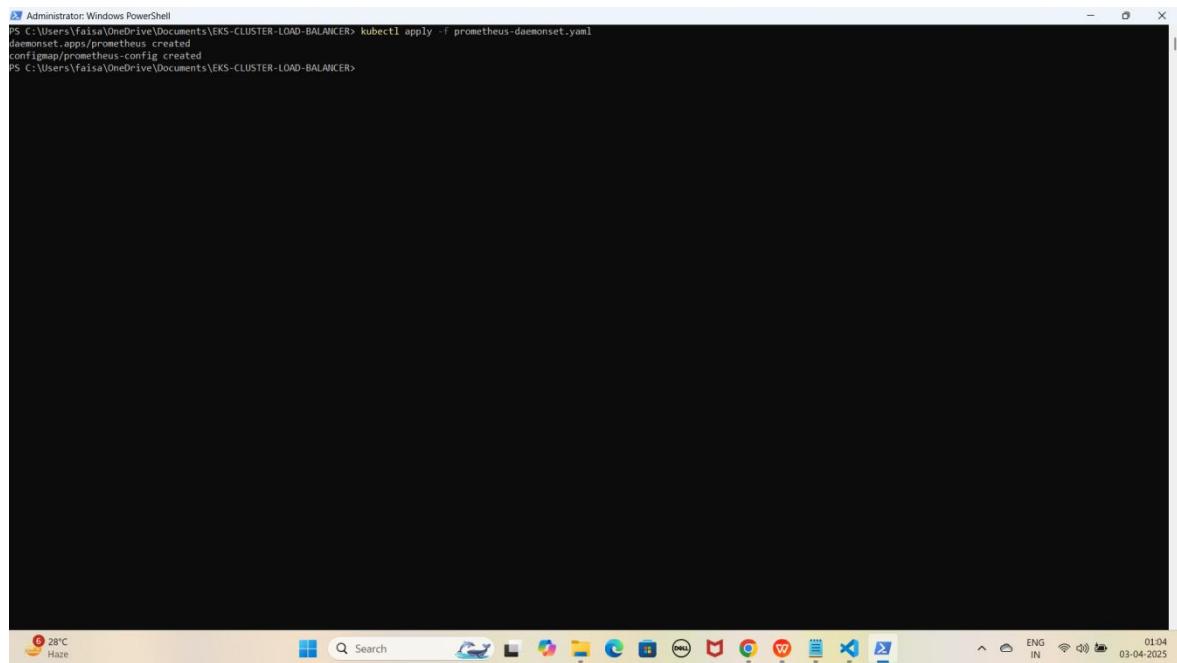
```
target_label: kubernetes_hostname

# 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.

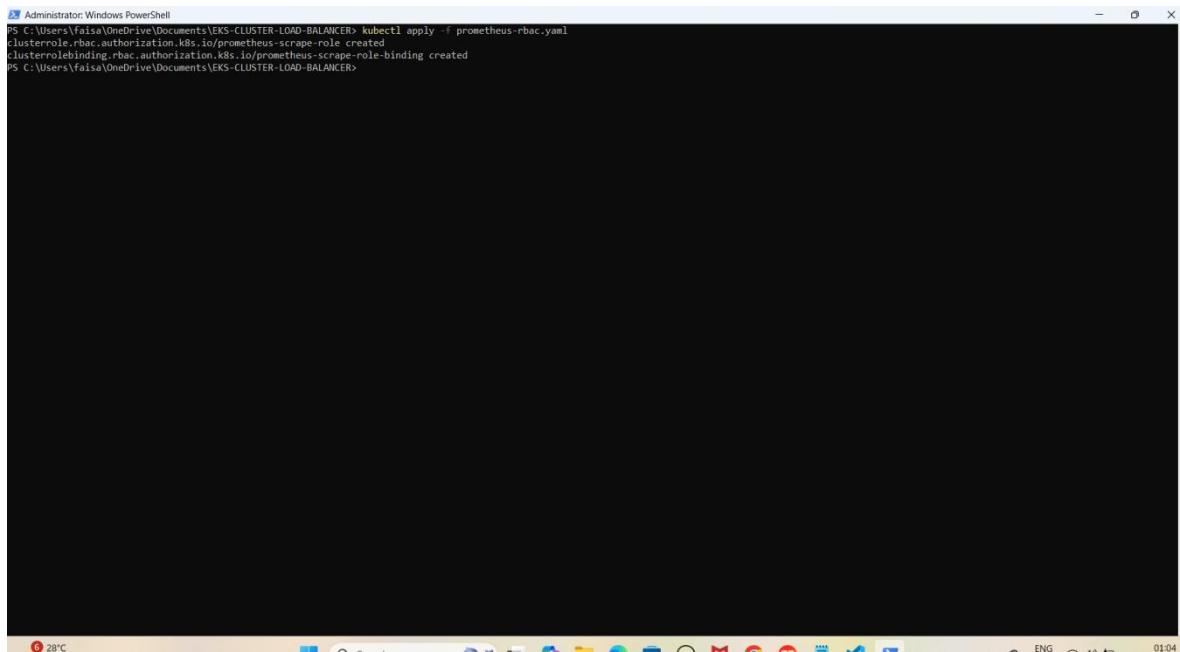
JAISE KI:-

```
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



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f prometheus-rbac.yaml
clusterrole.rbac.authorization.k8s.io/prometheus-scrape-role created
clusterrolebinding.rbac.authorization.k8s.io/prometheus-scrape-role-binding created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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.

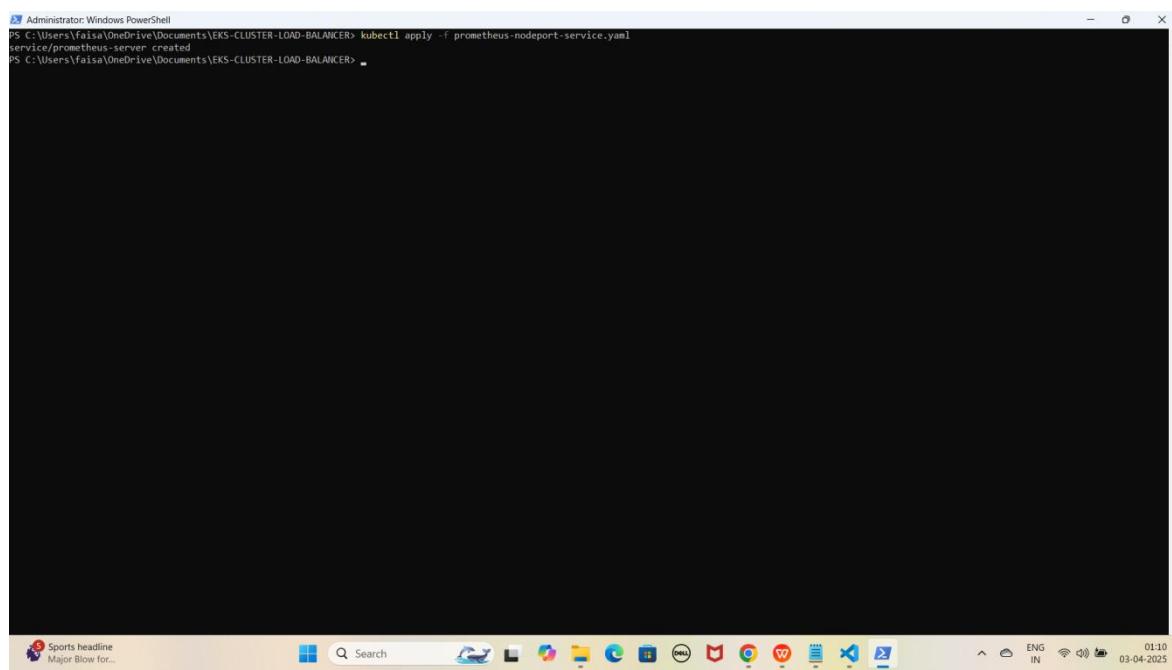
JAISE KI:-

```
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

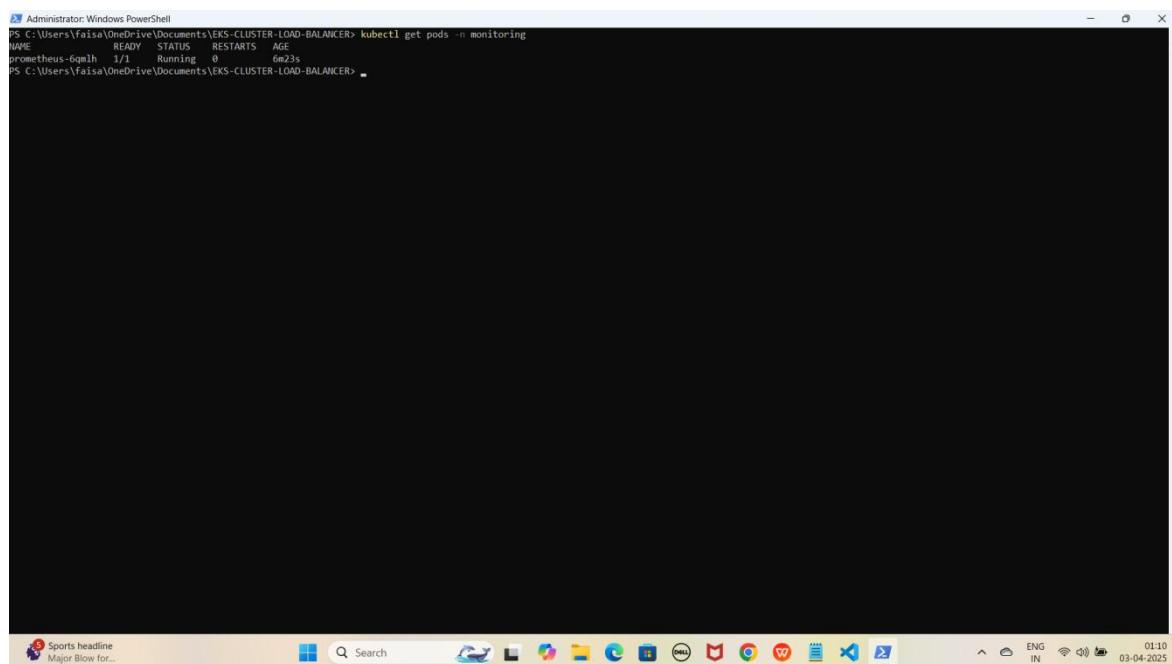


```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f prometheus-nodeport-service.yaml
service/prometheus-server created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA



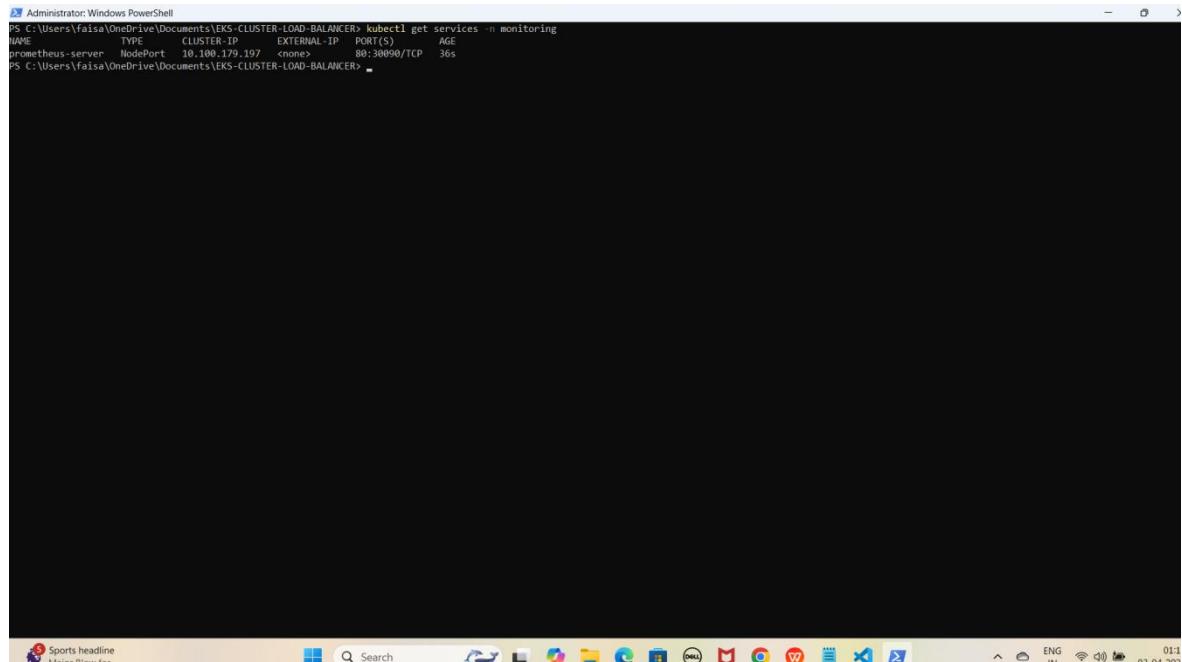
```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get pods -n monitoring
NAME           READY   STATUS    RESTARTS   AGE
prometheus-6qmzh   1/1     Running   0          6m23s
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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

2. Services check karne ke liye ye commad run kariye

kubectl get services -n monitoring

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get services -n monitoring
NAME           TYPE        CLUSTER-IP      EXTERNAL-IP    PORT(S)          AGE
prometheus-server   NodePort    10.100.179.197  <none>        80:30090/TCP   36s
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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 hogा

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

YE KUCH ISTARHA LAGEGA

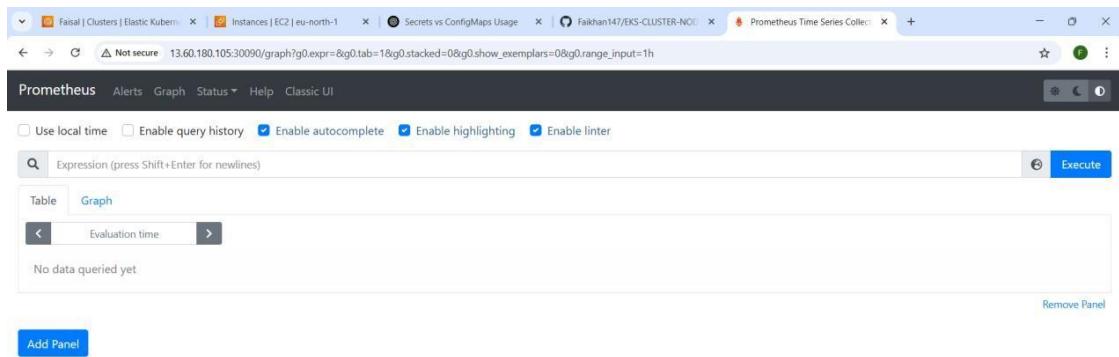
The screenshot shows the AWS Management Console with the EC2 service selected. On the left, the navigation pane is open, showing categories like Dashboard, EC2 Global View, Events, Instances, Images, Elastic Block Store, Network & Security, and Metrics. The Instances section is expanded, showing sub-options like Instances Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, and Capacity Reservations.

The main content area displays the 'Instances (1/1) Info' page. It lists a single instance named 'Faisal-Node' with the ID 'i-0aac44ac8fc5c7cf'. The instance is shown as 'Running' with a status check of '3/3 checks passed'. It is an 't3.large' type in the 'eu-north-1b' availability zone, with a Public IPv4 DNS of 'ec2-13-60-180-105.eu...'. The Public IPv4 address is listed as '13.60.180.105' with a note '(open address)'.

Below the main table, there is a detailed view for the selected instance ('i-0aac44ac8fc5c7cf (Faisal-Node)'). This view includes tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. The Details tab is active, showing the Instance summary. It provides information such as Instance ID ('i-0aac44ac8fc5c7cf'), Public IPv4 address ('13.60.180.105'), Private IP DNS name ('ip-172-31-37-215.eu-north-1.compute.internal'), and Instance state ('Running'). It also lists Private IPv4 addresses ('172.31.37.215', '172.31.35.31') and Public IPv4 DNS ('ec2-13-60-180-105.eu-north-1.compute.amazonaws.com').

This screenshot shows a Windows desktop environment. At the top, the taskbar displays several pinned icons, including CloudShell, Feedback, 26°C Party cloudy, AWS ACCOUNT, Telegram Web, Create Account - Tr..., ChatGPT, Search, and a New Tab button. The system tray shows network connectivity, battery level, and the date/time (12-02-2025).

The desktop background is white, and there are several pinned icons on it, including icons for LinkedIn, YouTube, WhatsApp, ChatGPT, Home, Welcome to ..., and an inbox icon labeled 'Inbox (1,768)'. The overall interface is clean and organized, reflecting a typical developer or IT professional's workspace.



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

Instance	CPU Usage Rate
{instance="172.31.37.215:61678",job="kubernetes-pods"}	0.000666666666666524
{instance="172.31.37.8:9153",job="kubernetes-pods"}	0.001333333333333049
{instance="172.31.42.159:9153",job="kubernetes-pods"}	0.001333333333333049

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

Process	Resident Memory Bytes
process_resident_memory_bytes{instance="172.31.37.215:61678",job="kubernetes-pods"}	68644864
process_resident_memory_bytes{instance="172.31.37.8:9153",job="kubernetes-pods"}	57167872
process_resident_memory_bytes{instance="172.31.42.159:9153",job="kubernetes-pods"}	57577472



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

The screenshot shows the Prometheus UI interface. The URL in the address bar is `13.60.180.105:30090/graph?g0.expr=process_network_transmit_bytes_total&g0.tab=1&g0.stacked=0&g0.show_exemplars=0&g0.range_input=1h`. The search bar contains the query `process_network_transmit_bytes_total`. The results table shows one row with the value `47341376`. The status bar at the bottom indicates `Load time: 200ms Resolution: 14s Result series: 1`.

The screenshot shows the Prometheus UI interface. The URL in the address bar is `13.60.180.105:30090/graph?g0.expr=process_network_receive_bytes_total&g0.tab=1&g0.stacked=0&g0.show_exemplars=0&g0.range_input=1h`. The search bar contains the query `process_network_receive_bytes_total`. The results table shows one row with the value `1475239029`. The status bar at the bottom indicates `Load time: 200ms Resolution: 14s Result series: 1`.



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:-

```
---
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

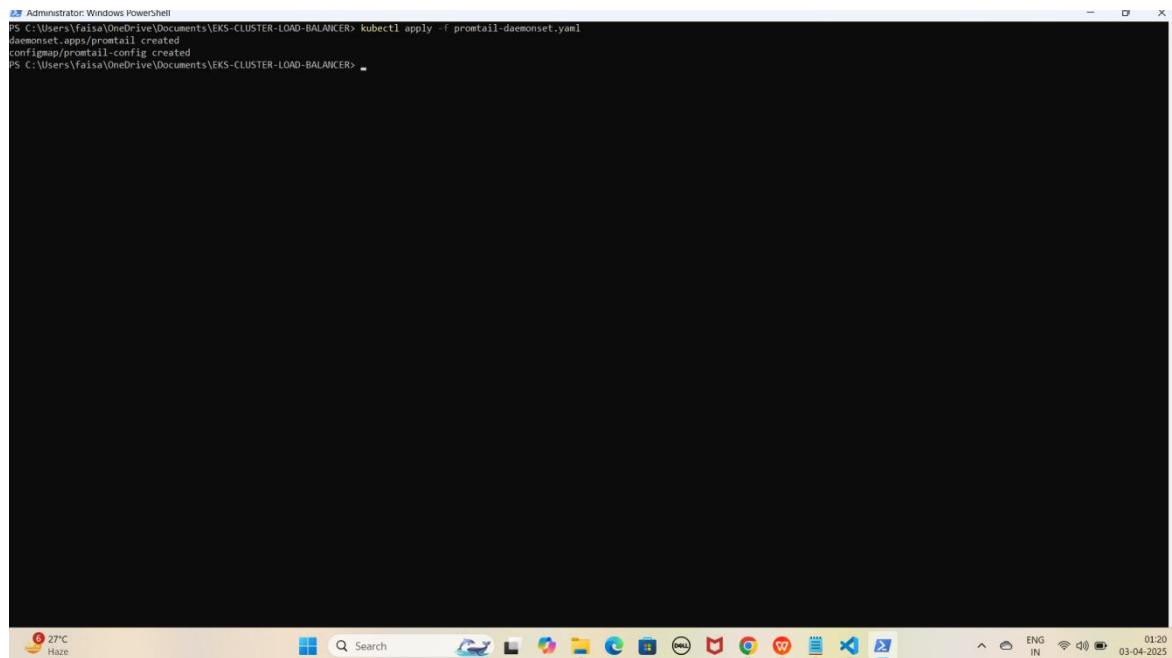
    - job_name: kubernetes-pods
      static_configs:
        - targets:
            - localhost
        labels:
          job: podlogs
          __path__: /var/log/pods/**/*.*.log

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

Promtail DaemonSet Apply Karo

```
kubectl apply -f promtail-daemonset.yaml
```

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f promtail-daemonset.yaml
daemonset.apps/promtail created
configmap/promtail-config created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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:-

```
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
```

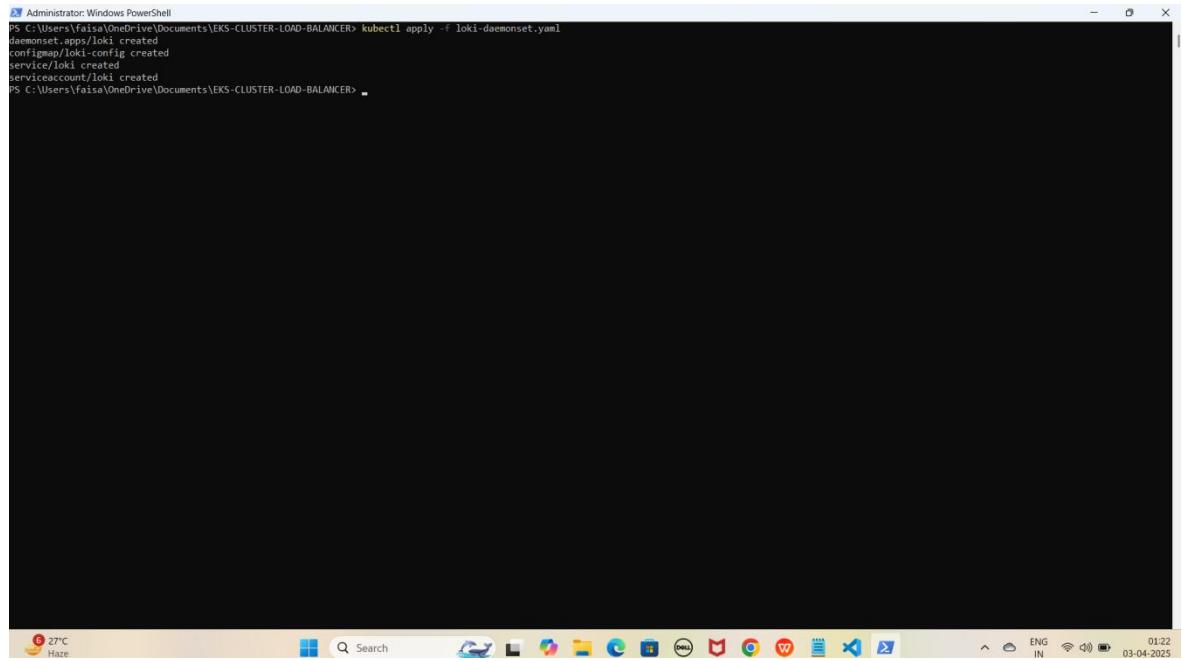
```
---
```

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

Loki DaemonSet Apply Karo

```
kubectl apply -f loki-daemonset.yaml
```

YE KUCH ISTARHA LAGEGA



```
[Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f loki-daemonset.yaml
daemonset.apps/loki created
configmap/loki-config created
service/loki created
serviceaccount/loki created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> ]
```

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.

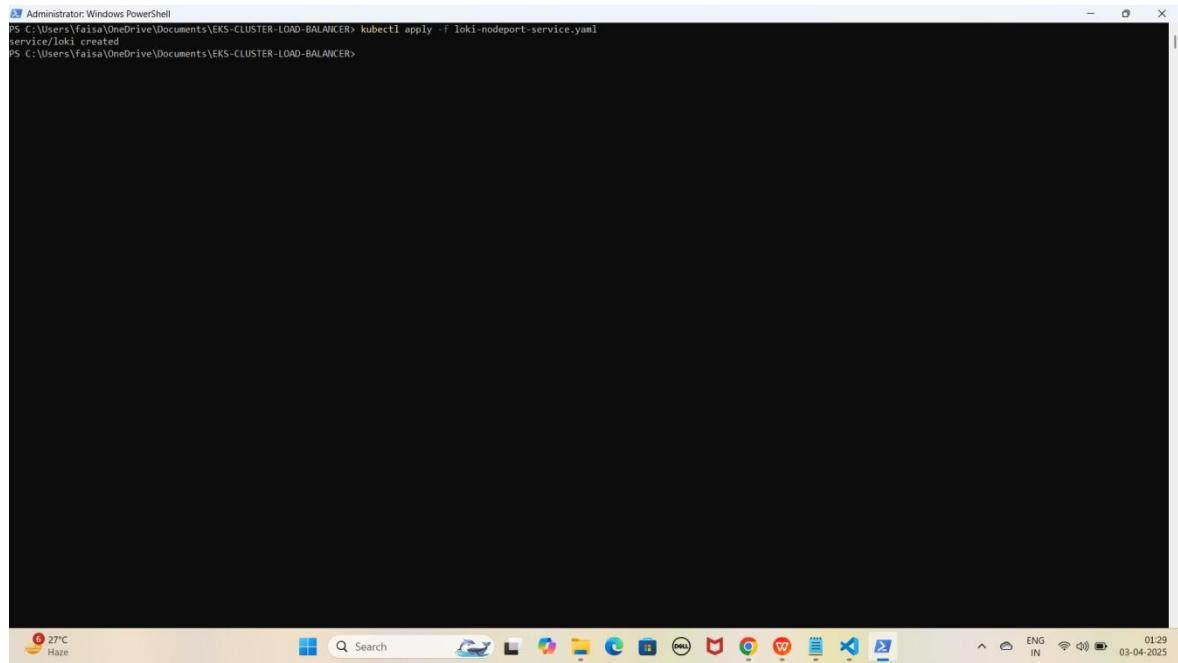
JAISE KI:-

```
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

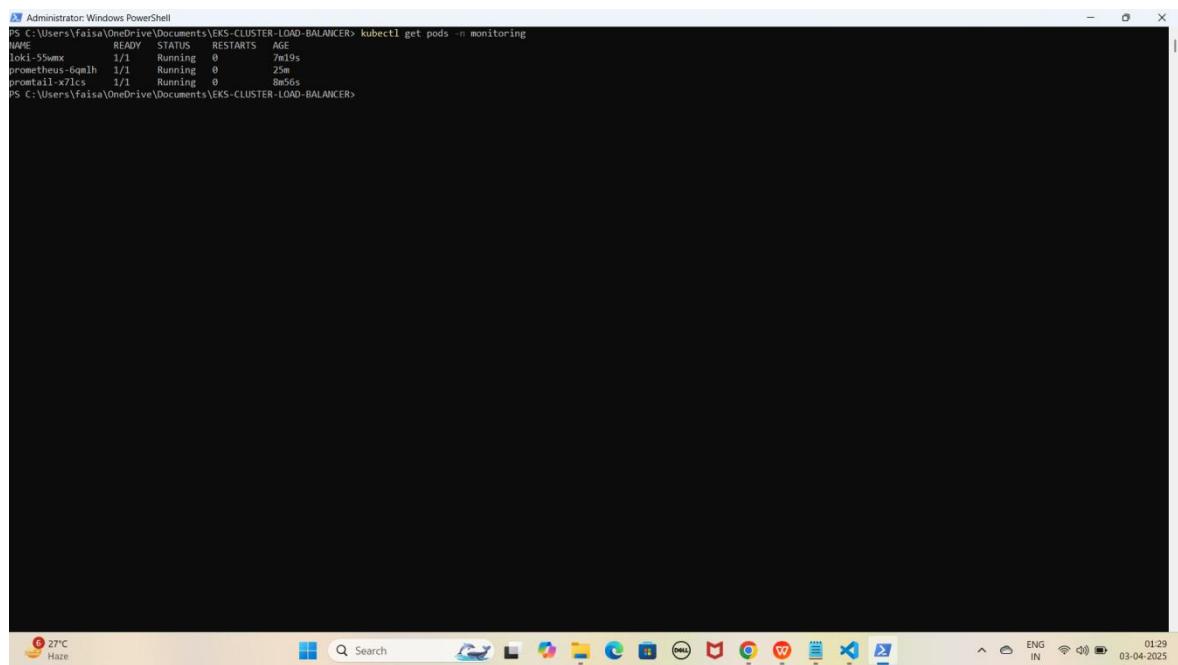


```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f loki-nodeport-service.yaml
service/loki created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get pods -n monitoring
NAME          READY   STATUS    RESTARTS   AGE
loki-55wmx   3/3     Running   0          7m19s
loki-metrics   3/3     Running   0          22s
promtail-x7lcs  3/3     Running   0          8m56s
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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

2. Services check karne ke liye ye commad run kariye

kubectl get services -n monitoring

YE KUCH ISTARHA LAGEGA

```
Administrator: Windows PowerShell
PS C:\Users\Faisal\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get services -n monitoring
NAME           TYPE      CLUSTER-IP   EXTERNAL-IP     PORT(S)        AGE
loki           NodePort   10.100.139.86 <none>        3100:30091/TCP  94s
prometheus-server   NodePort   10.100.179.197 <none>        80:30090/TCP   26m
PS C:\Users\Faisal\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

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 hogा.

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

YE KUCH ISTARHA LAGEGA

The screenshot shows the AWS EC2 Instances page. The left sidebar is collapsed, and the main area displays a table of instances. One instance is listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IP
Faisal-Node	i-Oaac4ac8fcc5c7cf	Running	t5.large	5/5 checks passed	View alarms	eu-north-1b	ec2-13-60-180-105.eu...	13.60.1...

Below the table, the details for the selected instance (i-Oaac4ac8fcc5c7cf) are shown. The 'Details' tab is active, displaying the following information:

- Instance summary**:
 - Instance ID: i-Oaac4ac8fcc5c7cf
 - Public IPv4 address: 13.60.180.105 [open address]
 - Private IP4 addresses:
 - 172.31.37.215
 - 172.31.35.31
 - Public IP4 DNS: ec2-13-60-180-105.eu-north-1.compute.amazonaws.com [open address]
 - Instance type: t5.large
- IPv6 address**: -
- Hostname type**: IP name: ip-172-31-37-215.eu-north-1.compute.internal
- Annotations**: private_resource.DNS name.

The screenshot shows a web browser window with multiple tabs open. The address bar contains the IP address 13.50.234.136:30091. The main content area displays the Google homepage.

Address bar: 13.50.234.136:30091

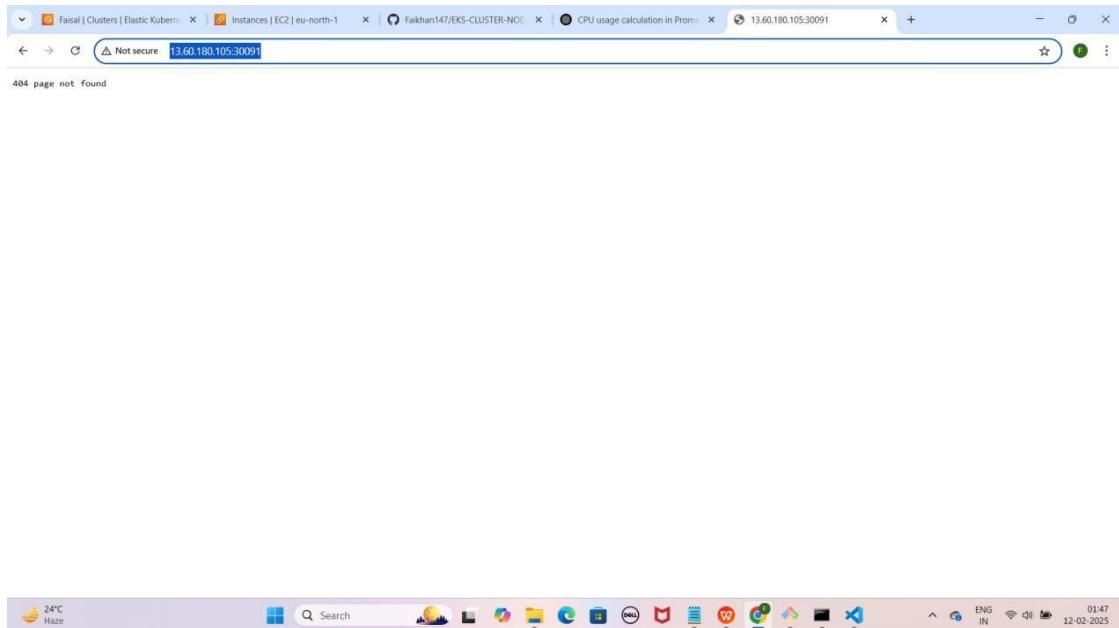
Address bar: 13.50.234.136:30091 - Google Search

Google logo

Search bar: Search Google or type a URL

Toolbar icons: M, Web Store, Add shortcut

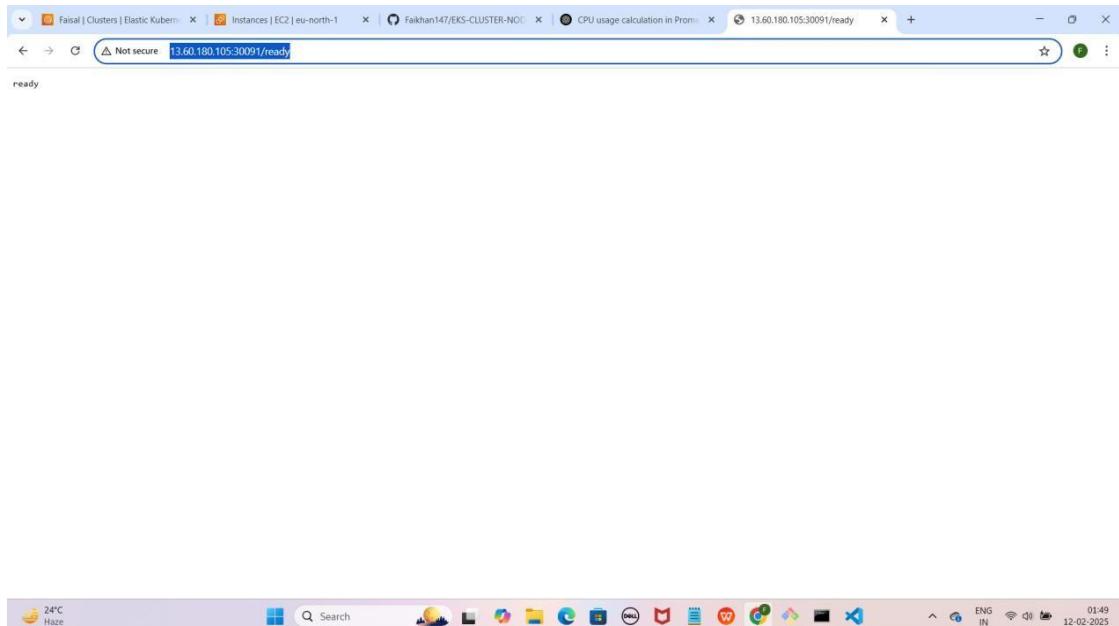
System tray: 24°C Haze, Custom Chrome, ENG IN, 22:20, 19-02-2025



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

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

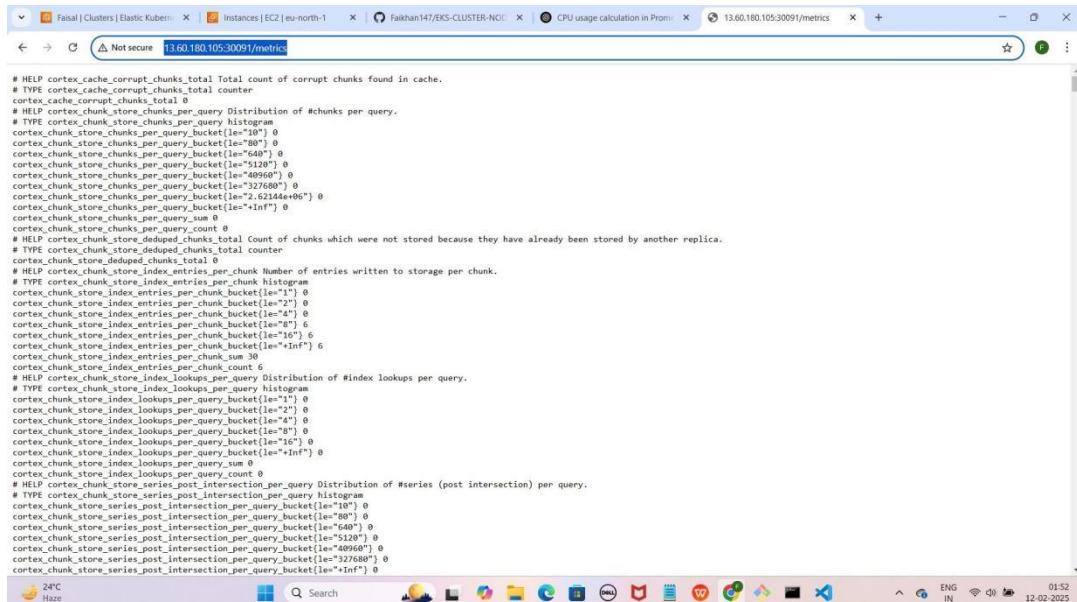
YE KUCH ISTARHA LAGEGA



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 hogा.

<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** hogा.

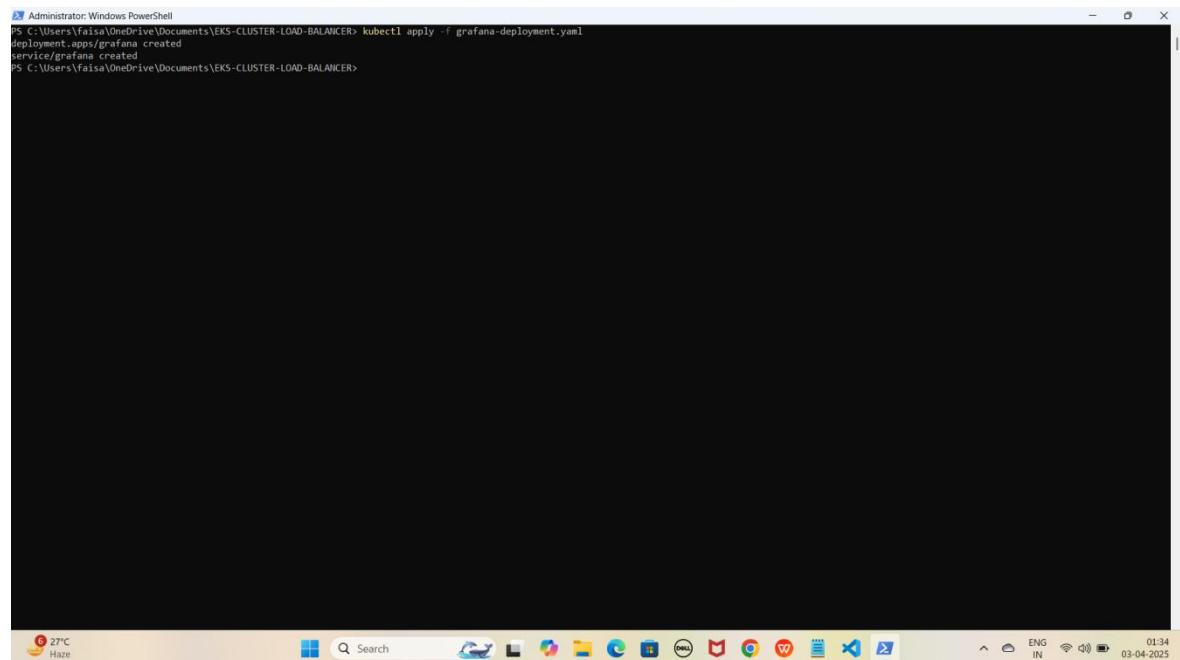
JAISE KI:-

```
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



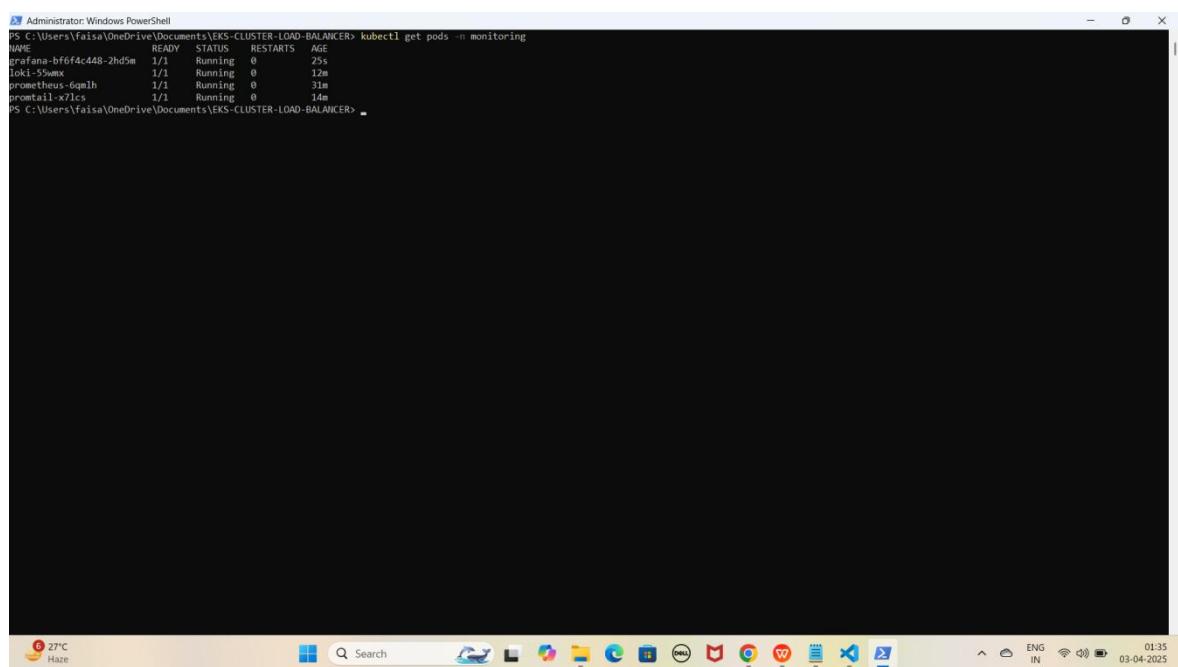
```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl apply -f grafana-deployment.yaml
deployment.apps/grafana created
service/grafana created
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

The screenshot shows a Windows PowerShell window titled "Administrator: Windows PowerShell". The command `kubectl apply -f grafana-deployment.yaml` is run, and the output shows the creation of a deployment and a service named "grafana". The PowerShell window has a dark theme. Below it is a standard Windows taskbar with icons for various applications like File Explorer, Edge, and Task View.

1. Pods check karne ke liye ye command run kariye

kubectl get pods -n monitoring

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get pods -n monitoring
NAME          READY   STATUS    RESTARTS   AGE
grafana-bff64c448-2hd5m   1/1     Running   0          25s
loki-559sm      1/1     Running   0          1.0m
metricscrape-6qmh     1/1     Running   0          31m
promtail-x7lcs      1/1     Running   0          14m
PS C:\Users\faisa\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

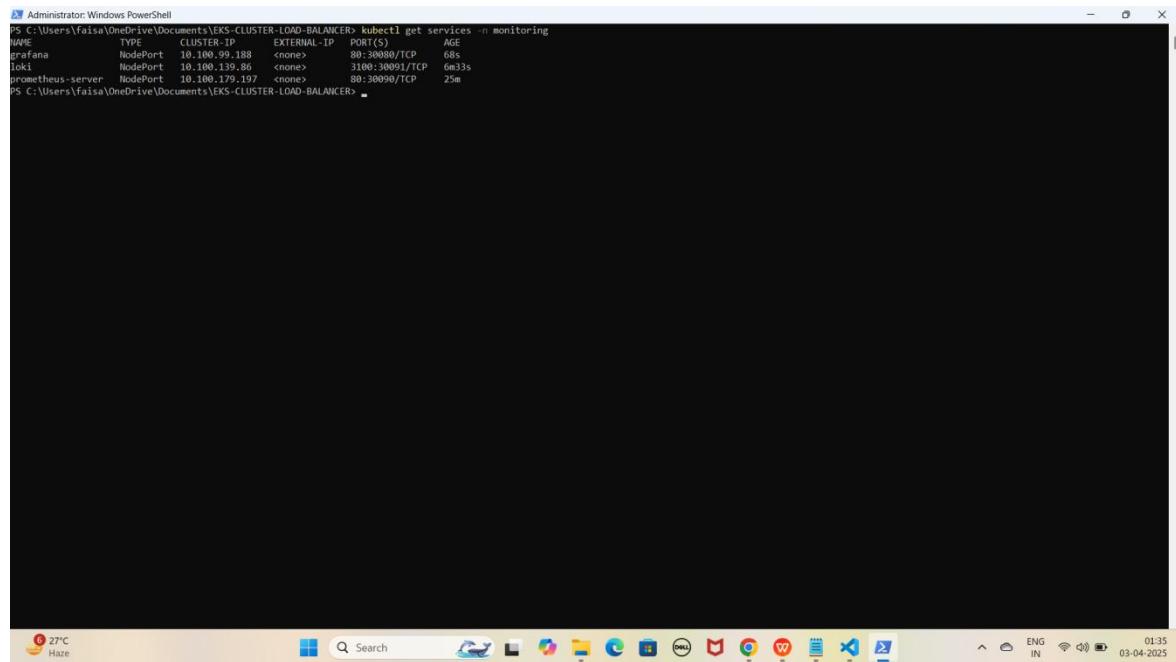
The screenshot shows a Windows PowerShell window titled "Administrator: Windows PowerShell". The command "kubectl get pods -n monitoring" is run, and the output lists four pods: "grafana-bff64c448-2hd5m", "loki-559sm", "metricscrape-6qmh", and "promtail-x7lcs". All pods are in a "Running" state with 1/1 ready status and 0 restarts. The "grafana" pod is the most recent, at 25 seconds old. The "loki" pod is at 1.0m, "metricscrape" is at 31m, and "promtail" is at 14m. The PowerShell window is set against a dark background. At the bottom, the Windows taskbar is visible with various icons for search, file explorer, and other applications. The system tray shows the date and time as 03-04-2025 and 01:35.

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

2. Services check karne ke liye ye commad run kariye

kubectl get services -n monitoring

YE KUCH ISTARHA LAGEGA



```
Administrator: Windows PowerShell
PS C:\Users\Faisal\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER> kubectl get services -n monitoring
NAME        TYPE      CLUSTER-IP    EXTERNAL-IP   PORT(S)        AGE
grafana     NodePort   10.100.99.188 <none>        80:30080/TCP   68s
loki        NodePort   10.100.139.86  <none>        3100:30091/TCP  6m33s
prometheus-server  NodePort   10.100.179.197 <none>        80:30090/TCP   25m
PS C:\Users\Faisal\OneDrive\Documents\EKS-CLUSTER-LOAD-BALANCER>
```

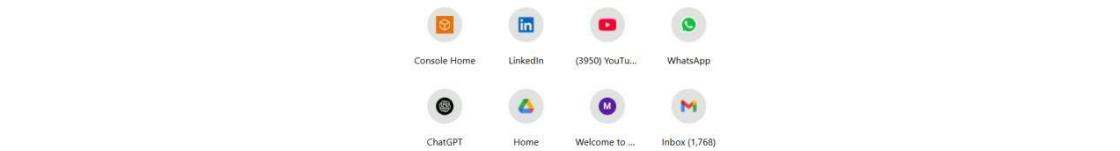
NOTE: Ab aapka Grafana 30080 port par expose ho chuka hai. Browser me Cluster Node ki Public IP ke saath check karein jaise ki mere case me kuch aisa hogा.

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

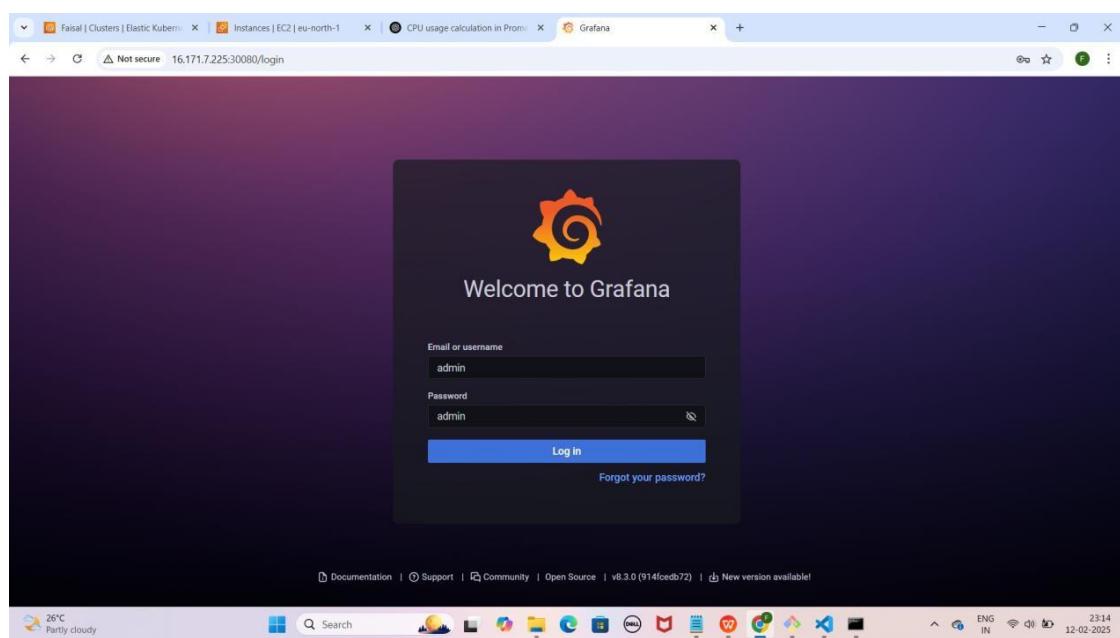
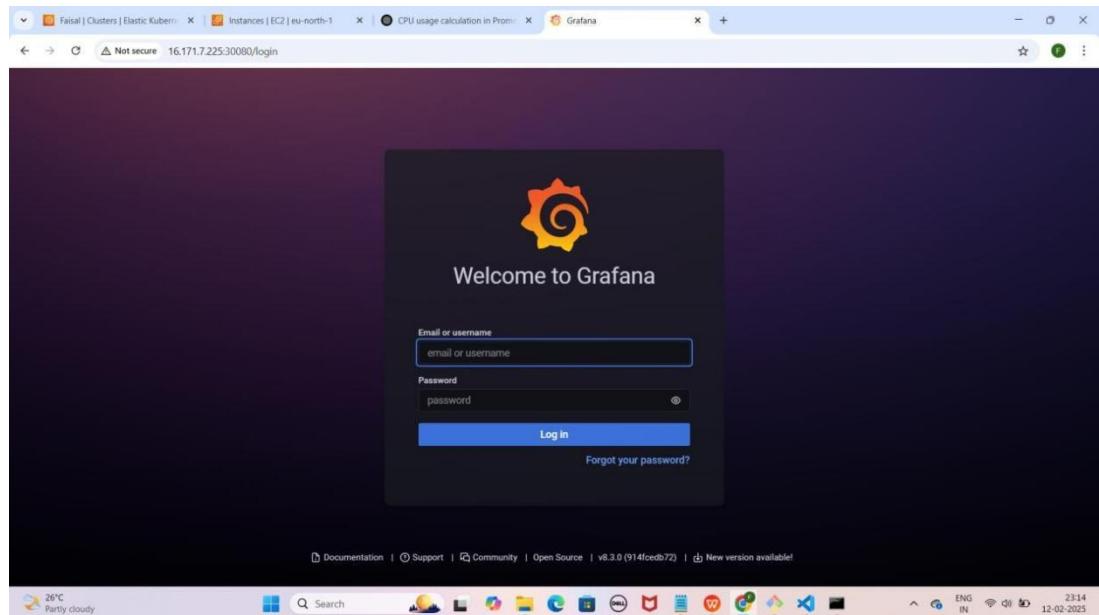
YE KUCH ISTARHA LAGEGA

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with 'EC2' selected, followed by 'Dashboard', 'EC2 Global View', 'Events', 'Instances' (selected), 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', and 'Capacity Reservations'. Below that is 'Images' (AMIs, AMI Catalog), 'Elastic Block Store' (Volumes, Snapshots, Lifecycle Manager), and 'Network & Security' (Security Groups). At the bottom of the sidebar are 'CloudShell' and 'Feedback' buttons. The main content area has a title 'Instances (1/1) Info' with a search bar. A table lists one instance: 'Faisal-Node' (i-051cf41fa2e598947), which is 'Running' (t3.large, eu-north-1b, 16.171.7-225.eu-north-1.compute.internal). The 'Details' tab is selected, showing the instance summary, IPv4 address (16.171.7.225), instance state (Running), hostname type (ip-172-31-47-52.eu-north-1.compute.internal), and instance type (t3.large). To the right, there are sections for 'Public IPv4 addresses' (172.31.47.32, 172.31.37.43) and 'Private IP4 DNS' (ec2-16-171-7-225.eu-north-1.compute.amazonaws.com). The status bar at the bottom shows '23:09 12-02-2025'.

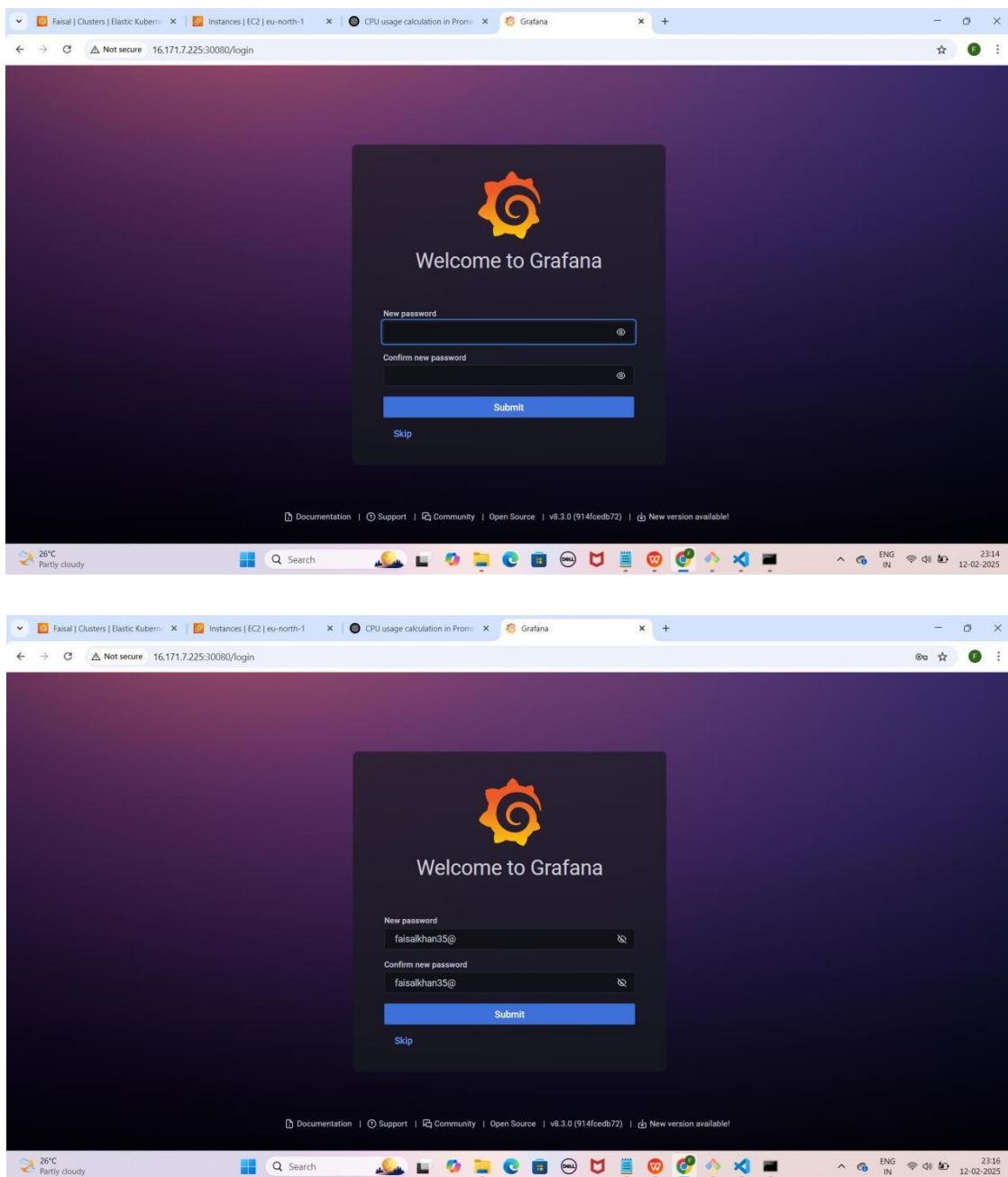
The screenshot shows a browser window with the URL '16.171.7.225:30080' in the address bar. The page content is mostly blank or loading. The status bar at the bottom shows '23:09 12-02-2025'.



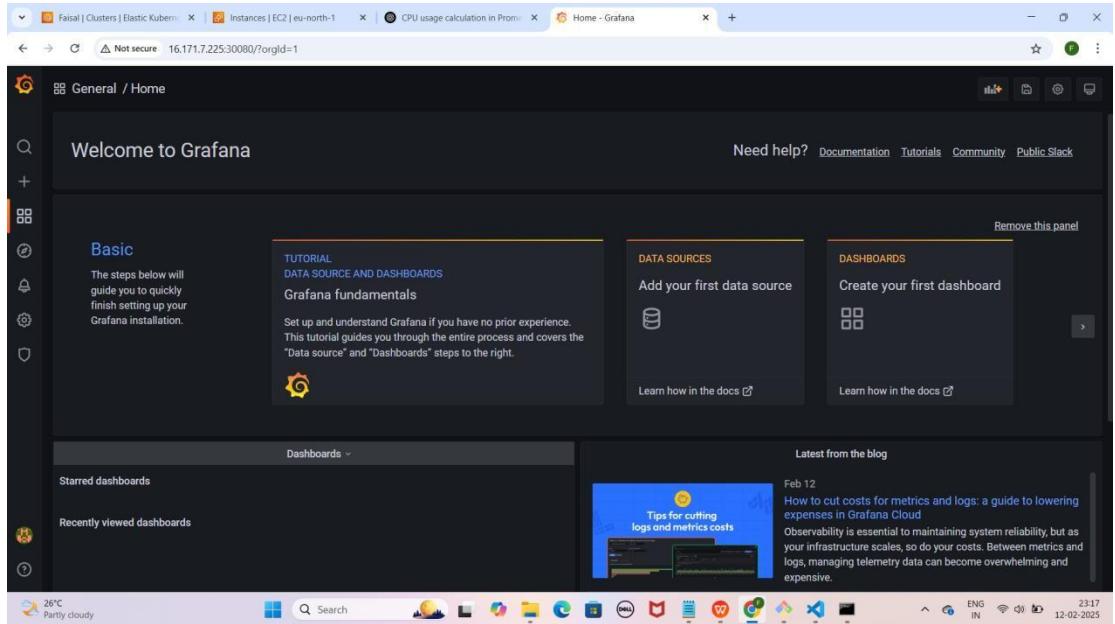
YE KUCH ISTARHA LAGEGA



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



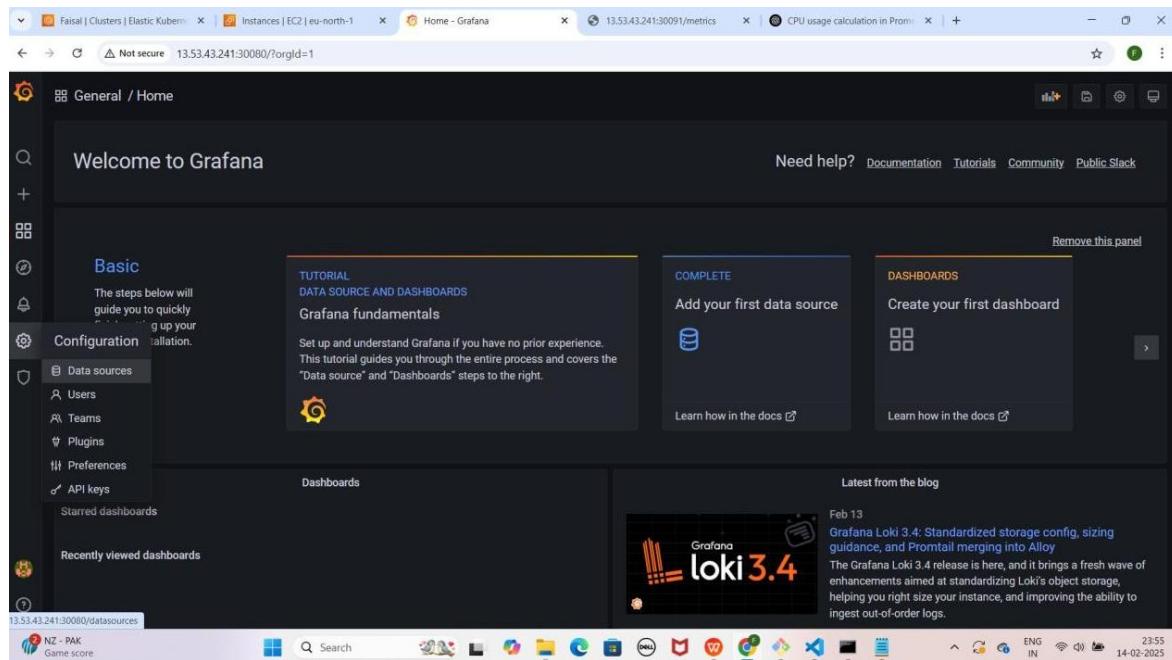
**NOTE : Is step par aapko apne pasand ka naya password set karsakte hai.
Yaha mai faisalkhan35@ password set kar raha hoon.Password type
karne ke baad Submit par click kariye**

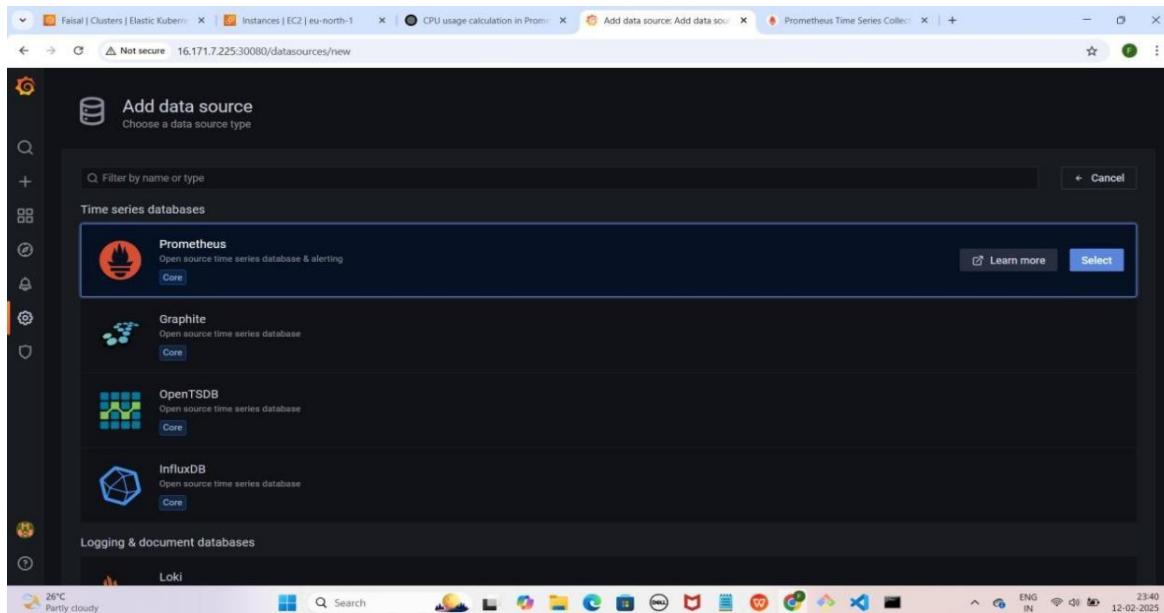
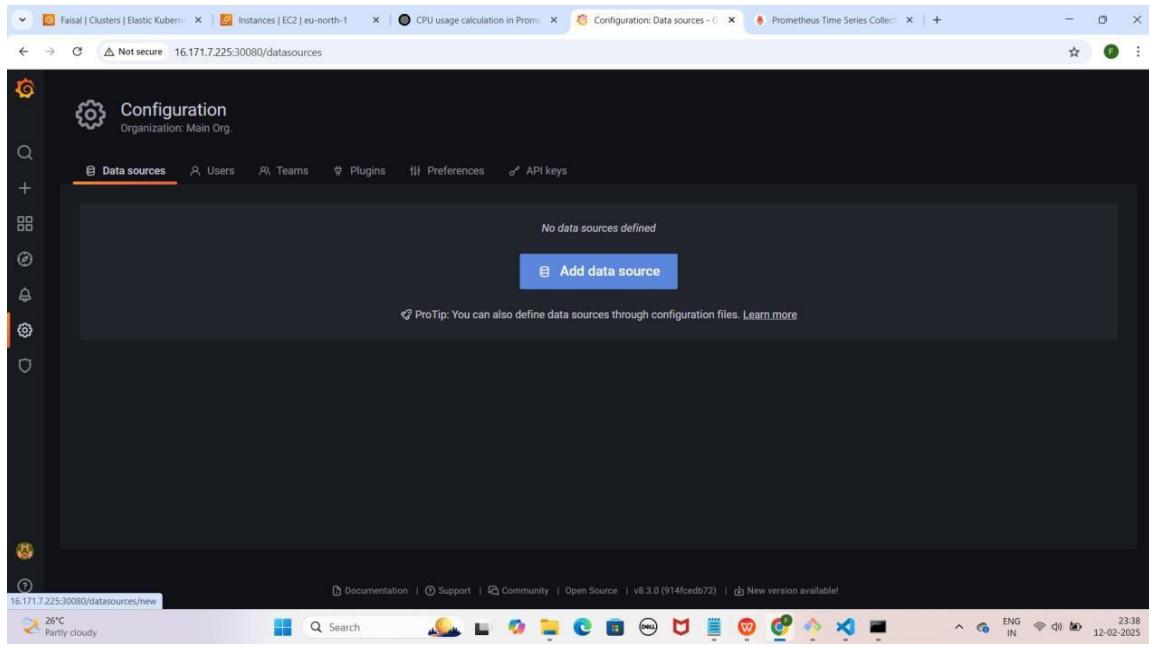


Step 8: Grafana Mein Prometheus Data Source Add Karna, Queries Add Karna Aur Dashboard Create Karna

- **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





The screenshot shows the 'Data Sources / Prometheus' configuration page in Grafana. The 'Settings' tab is selected. A prominent message box says: 'Configure your Prometheus data source below' and '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](#)'. Below this, the 'Name' field is set to 'Prometheus' and the 'Default' toggle is on. Under the 'HTTP' section, the 'URL' is set to 'http://localhost:9090'. The 'Auth' section includes options for 'Basic auth' (with 'With Credentials' and 'With CA Cert' toggles), 'TLS Client Auth', and 'Skip TLS Verify'. The Grafana interface includes a sidebar with icons for settings, dashboards, and other data sources. The Windows taskbar at the bottom shows various open applications like File Explorer, Edge, and PowerShell.

The screenshot shows the Prometheus UI at the URL '16.171.7.225:30090'. The top navigation bar includes links for Prometheus, Alerts, Graph, Status, Help, and Classic UI. Below the navigation, there are checkboxes for 'Use local time', 'Enable query history', 'Enable autocomplete', 'Enable highlighting', and 'Enable linter'. A search bar contains the placeholder 'Expression (press Shift+Enter for newlines)'. A 'Graph' tab is selected, showing a panel with the message 'No data queried yet'. At the bottom left is a 'Add Panel' button, and at the bottom right is a 'Remove Panel' link. The Windows taskbar at the bottom shows various open applications.



Faisal | Clusters | Elastic Kuber... Instances | EC2 | eu-north-1 CPU usage calculation in Prometheus Settings - Grafana Prometheus Time Series Collector

Not secure 16.171.7.225:30080/datasources/edit/K7TqfRchZ

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 23:41 ENG IN 12-02-2025

Faisal | Clusters | Elastic Kuber... Instances | EC2 | eu-north-1 CPU usage calculation in Prometheus Settings - Grafana Prometheus Time Series Collector

Not secure 16.171.7.225:30080/datasources/edit/K7TqfRchZ

Alerting

Manage alerts via Alerting UI:

Alertmanager data source: Choose

Scrape interval: 15s
Query timeout: 60s
HTTP Method: POST

Misc

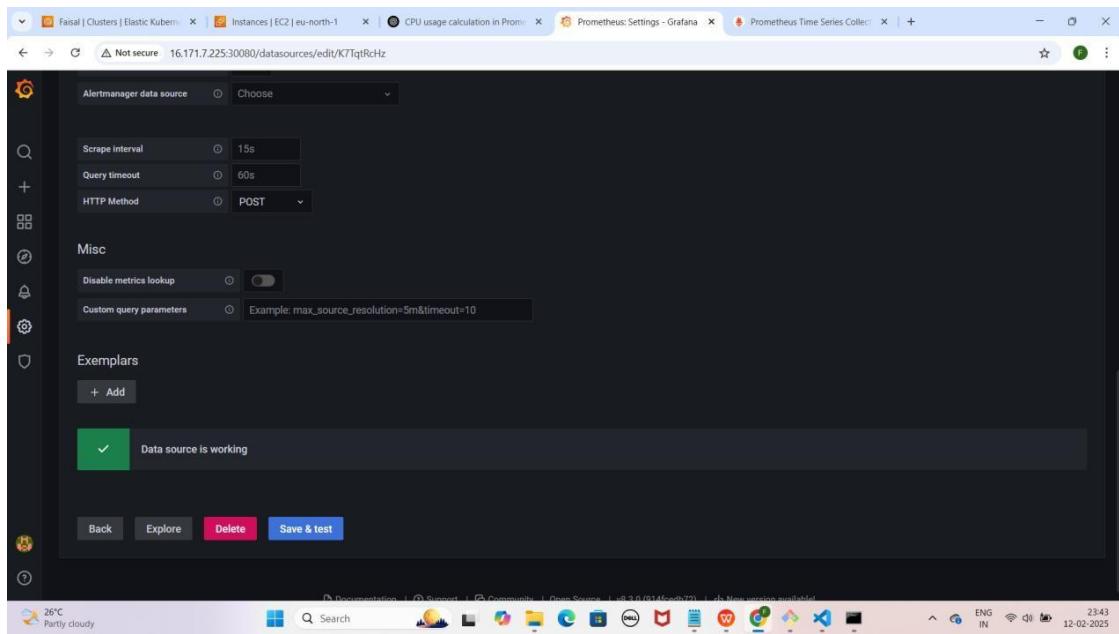
Disable metrics lookup:
Custom query parameters: Example: max_source_resolution=5m&timeout=10

Exemplars

+ Add Back Explore Delete Save & test

Documentation | Support | Community | Open Source | v8.3.0 (914fcdb72) | New version available!

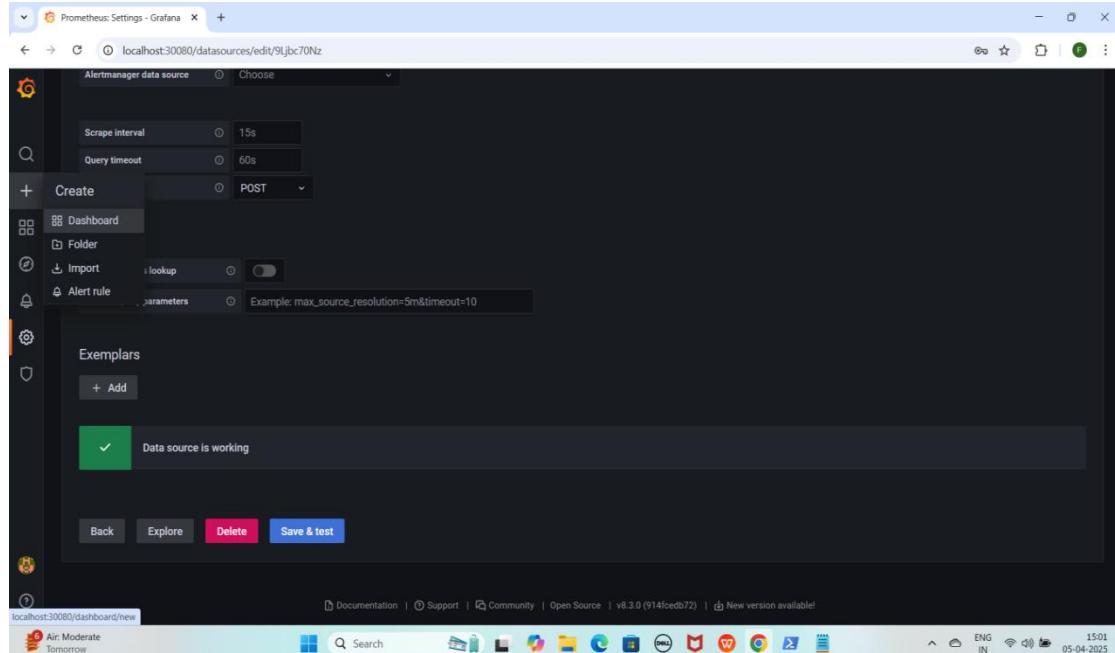
26°C Partly cloudy Search 23:42 ENG IN 12-02-2025



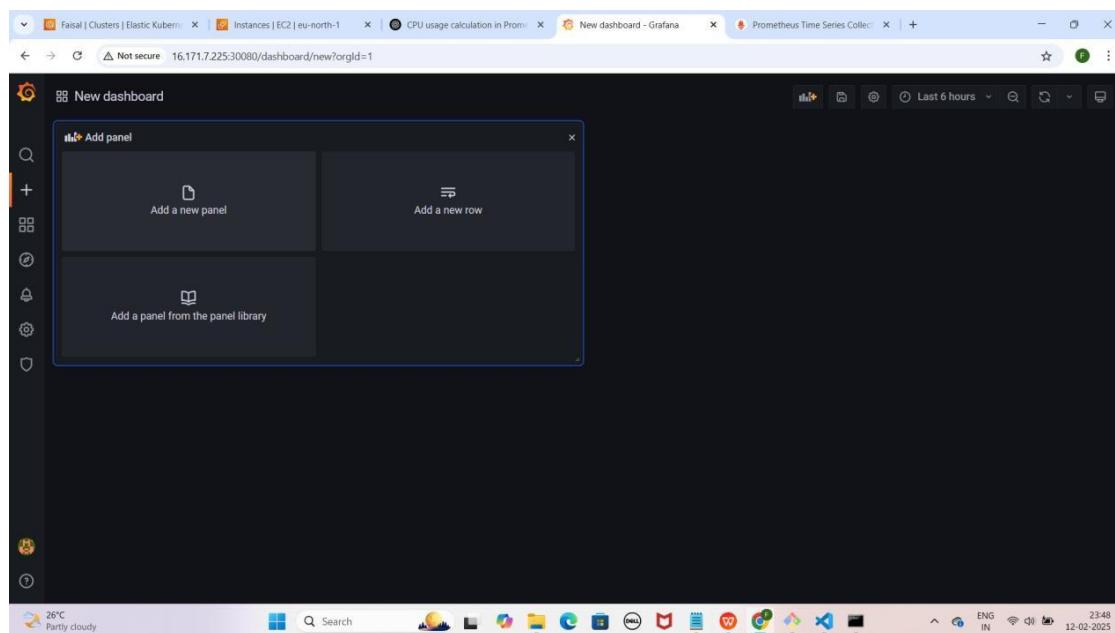
NOTE : Save & test pe click karne ke baad aapko Data source is working karke pop up aayega

- 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.

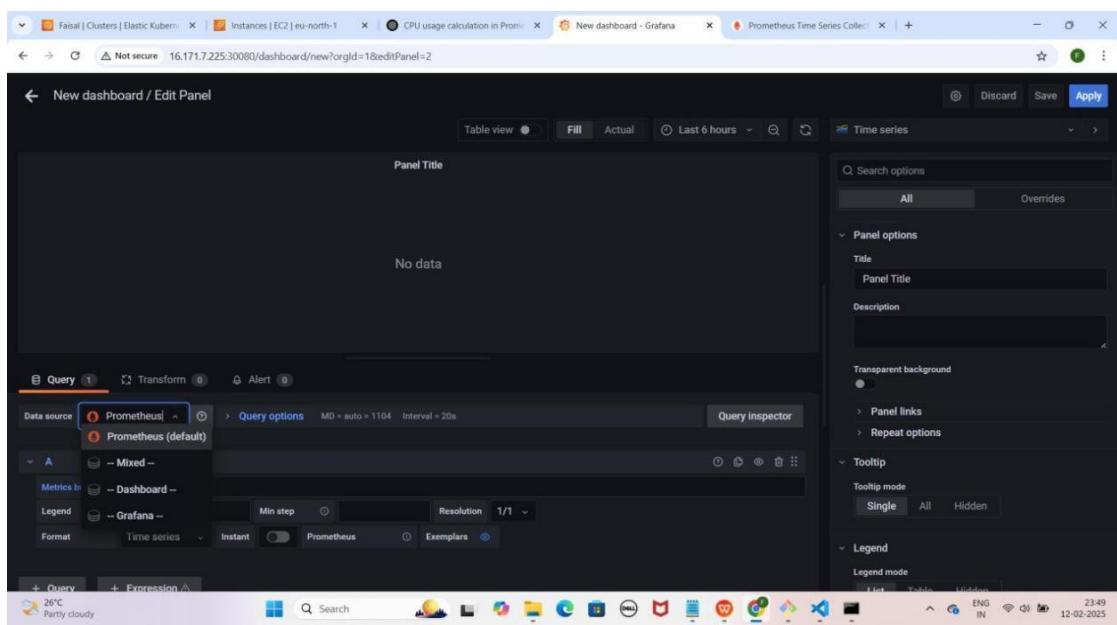
YE KUCH ISTARHA LAGEGA

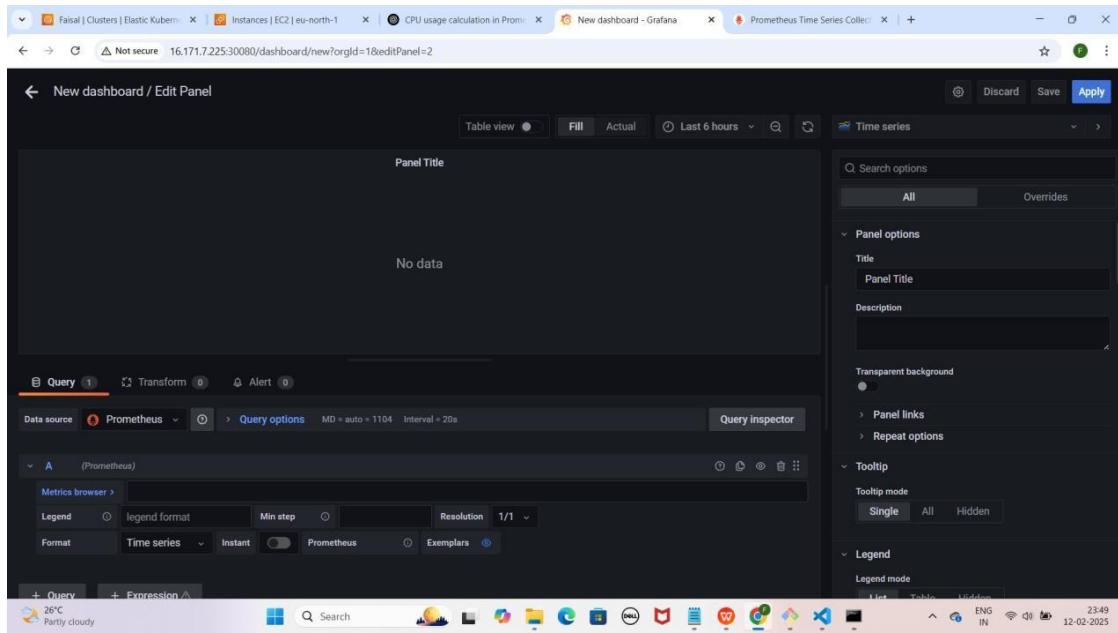


The screenshot shows the Grafana interface for managing data sources. A success message 'Data source is working' is displayed. Buttons for 'Back', 'Explore', 'Delete', and 'Save & test' are visible at the bottom.



The screenshot shows the 'New dashboard' dialog box. It contains three main options: 'Add panel' (with a sub-option 'Add a new panel'), 'Add a new row', and 'Add a panel from the panel library'. The dashboard title bar shows multiple open tabs, including 'Faisal | Clusters | Elastic Kuber...', 'Instances | EC2 | eu-north-1', 'CPU usage calculation in Prom...', 'New dashboard - Grafana', and 'Prometheus Time Series Collect...'. The system tray at the bottom indicates it's 12:02 PM on 23-Feb-2024, the weather is 26°C Partly cloudy, and the battery level is 1501.



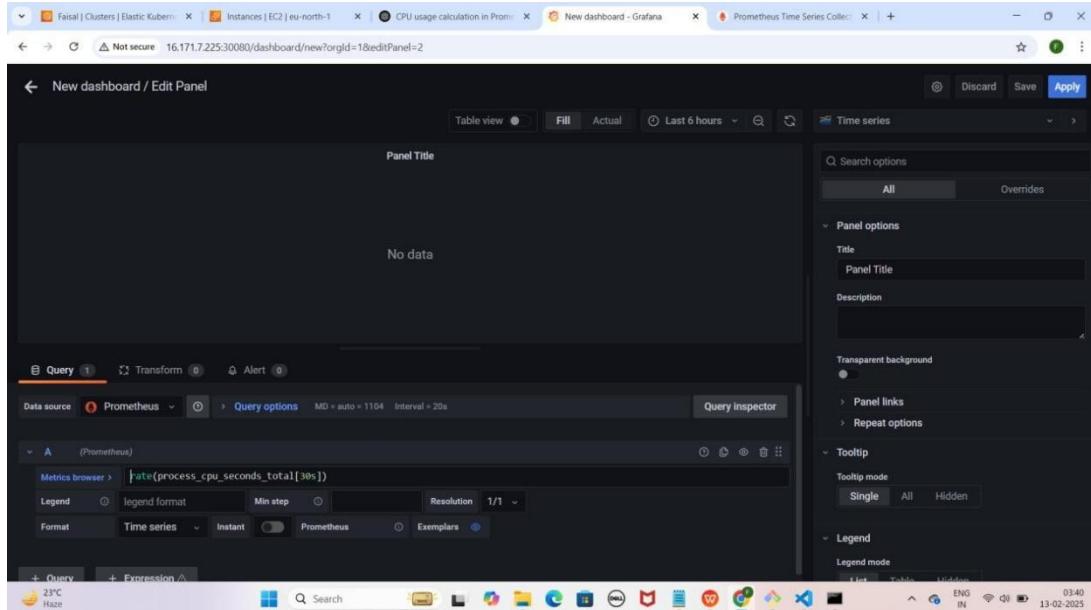


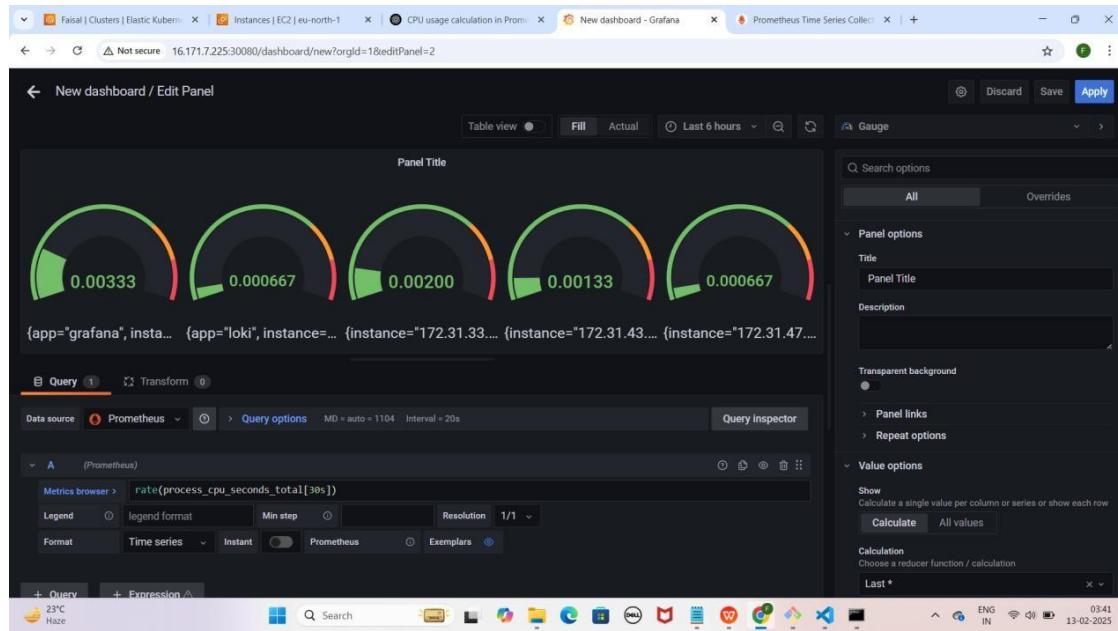
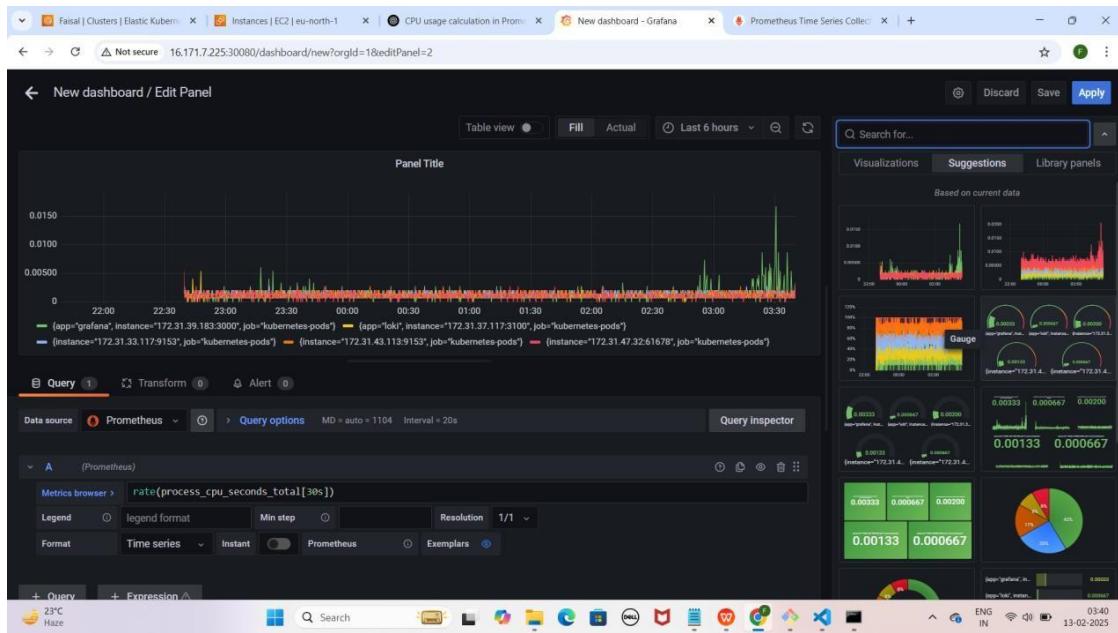
1. Prometheus ko data source select karne ke baad, CPU Usage dekhne ke liye Metric Browser me yeh query paste karein

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

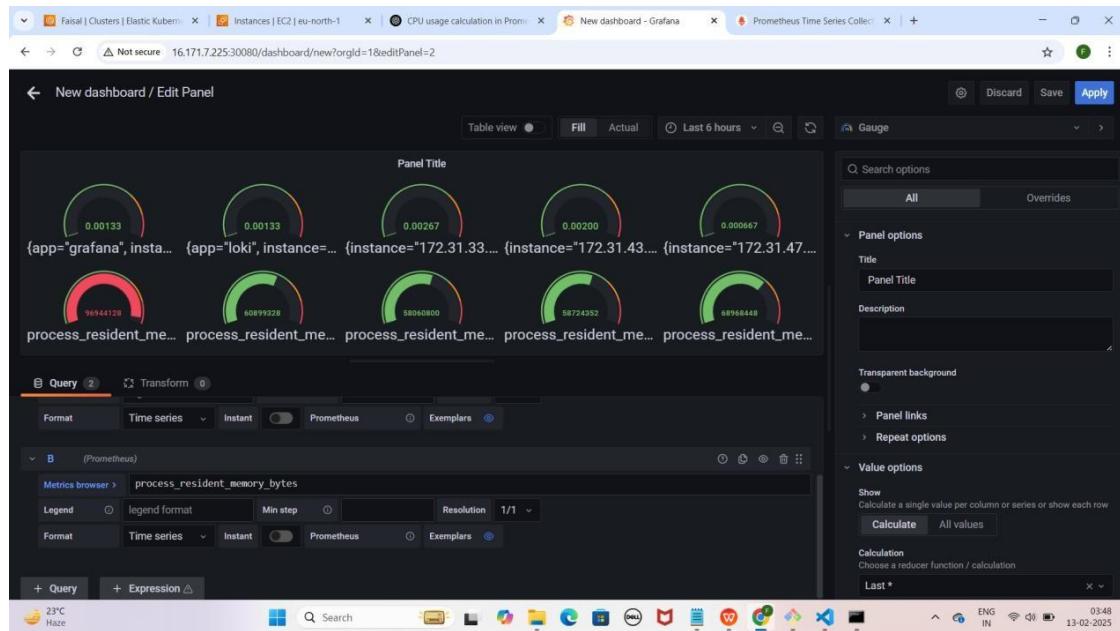




**2. Memory Usage dekhne ke liye "+ Query" par click karein.
Yeh query paste karein taake memory usage dekh sakein**

process_resident_memory_bytes

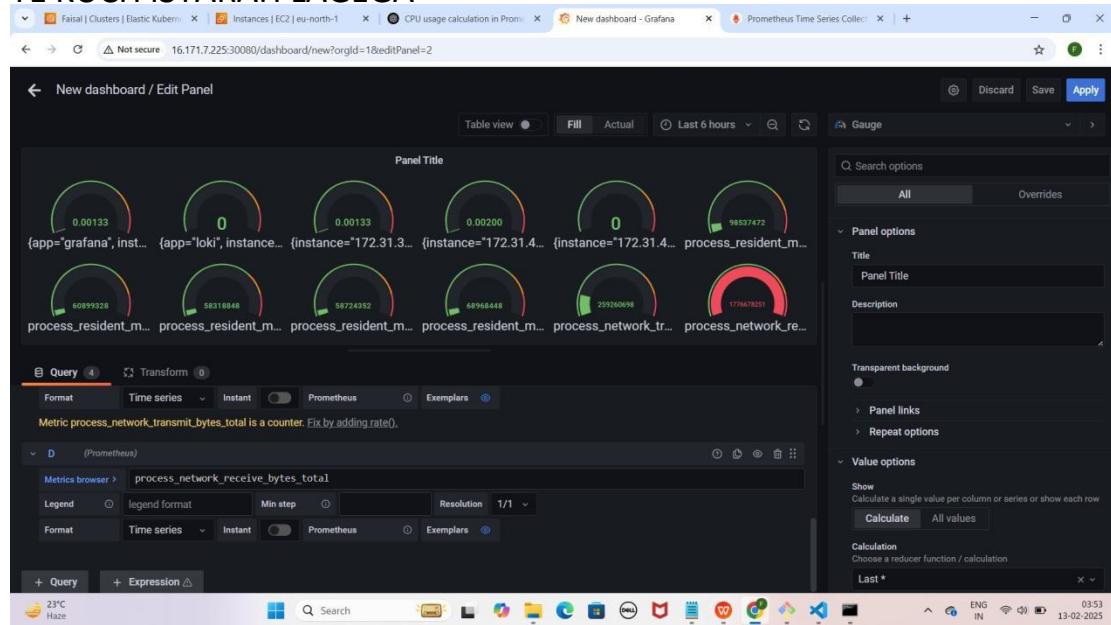
YE KUCH ISTARHA LAGEGA



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

process_network_transmit_bytes_total

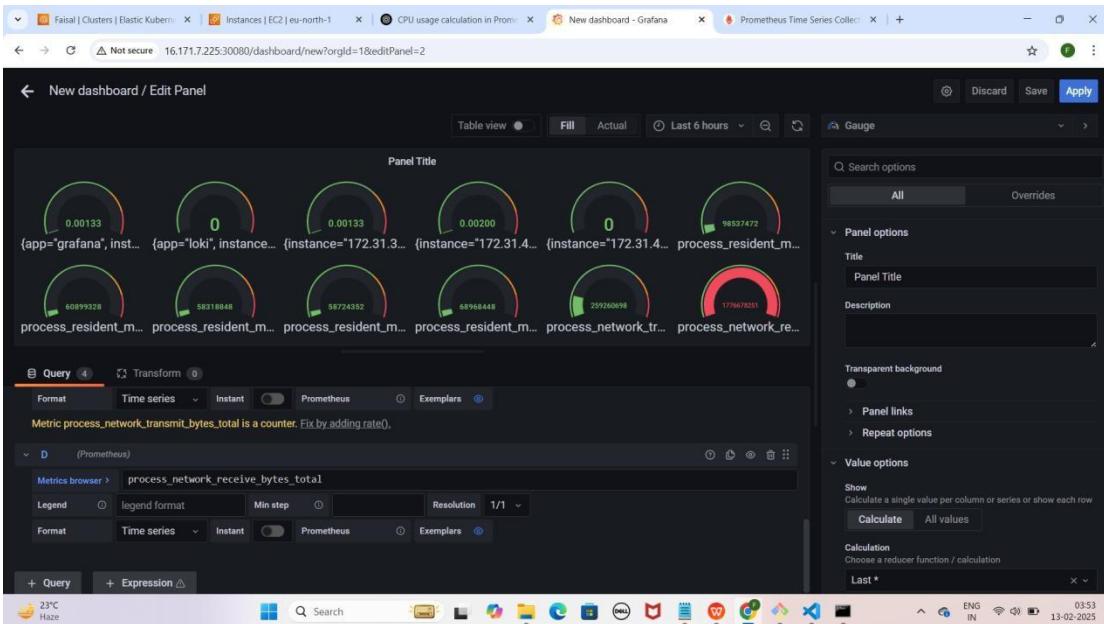
YE KUCH ISTARAH LAGEGA



**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

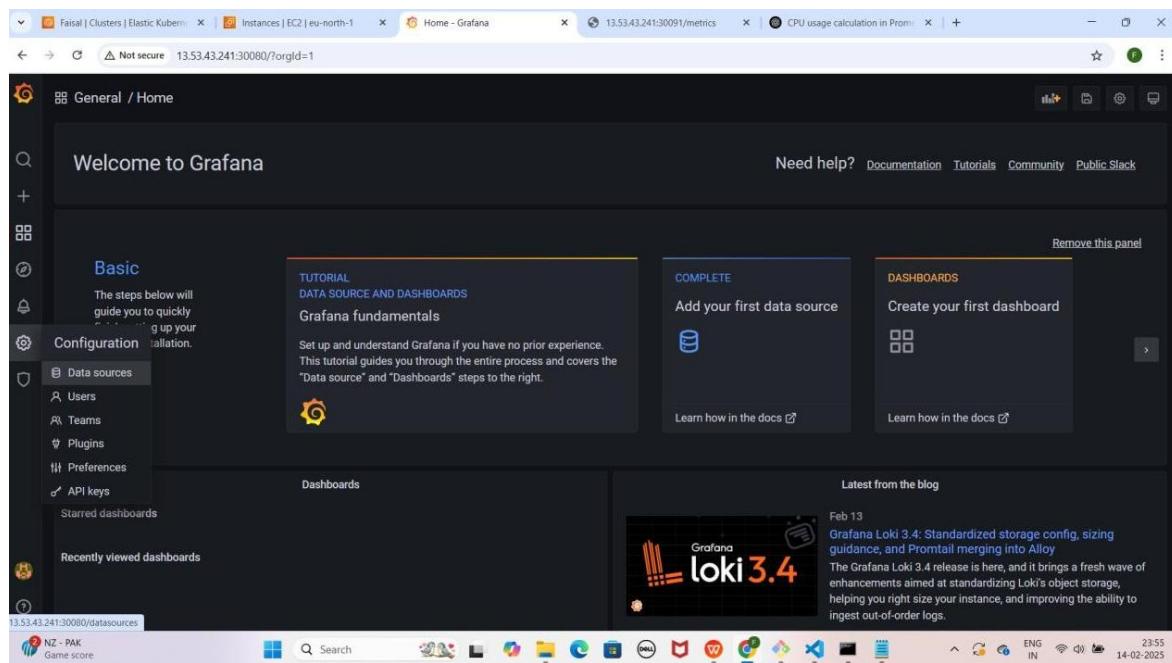


NOTE : Itna karne ke baad aap 30 sec ke interval par CPU usage, current Memory Usage aur Network transmit/receive bytes ko Monitor kar sakte hain.

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

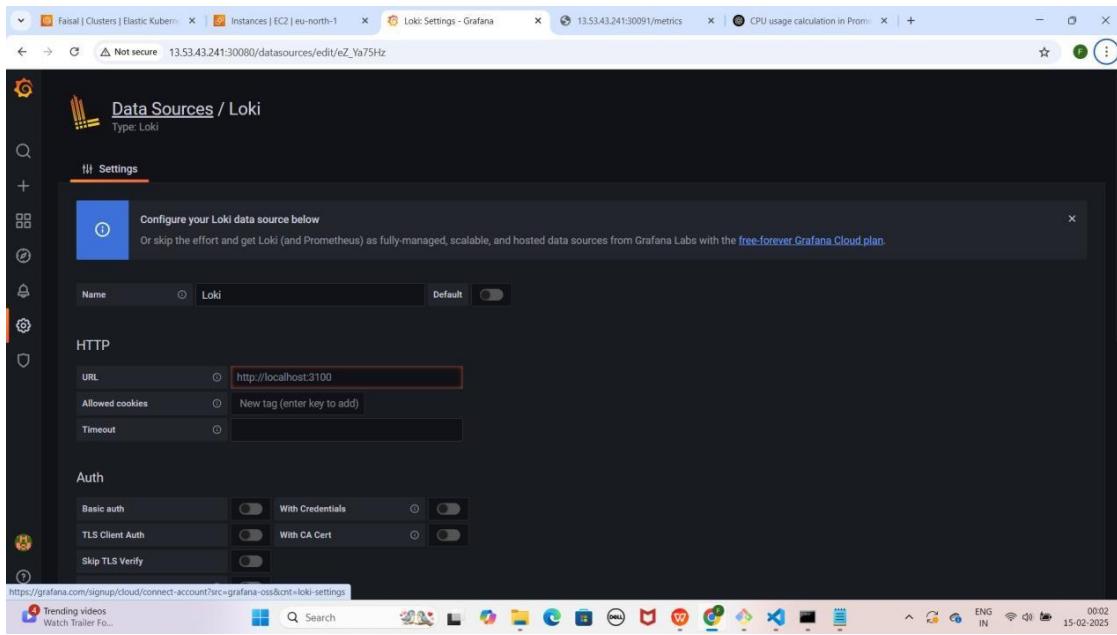
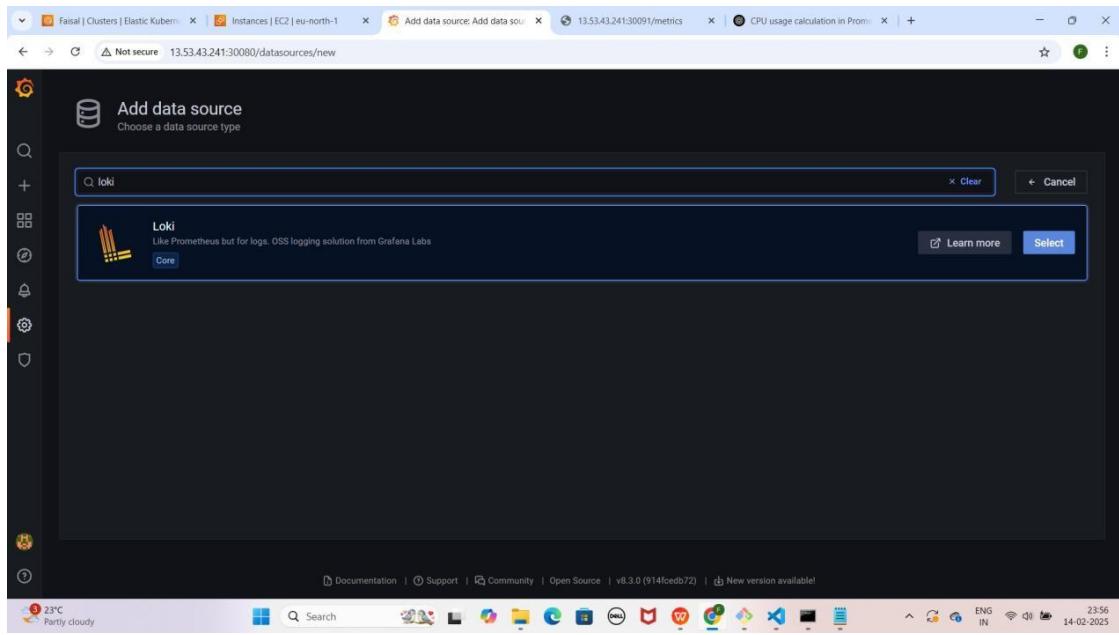
- Grafana open karo aur **Settings** icon pe click karo.
- **Data Sources** select karo.
- **Add data source** pe click karo.
- Search bar me "**Loki**" likho aur **Loki** select karo.
- Browser open karo aur yeh URL copy karo:
 - **Mere case me yeh kuch is tarah hogi:** <http://EKS-Node-Public-IP:30091/>
 - **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

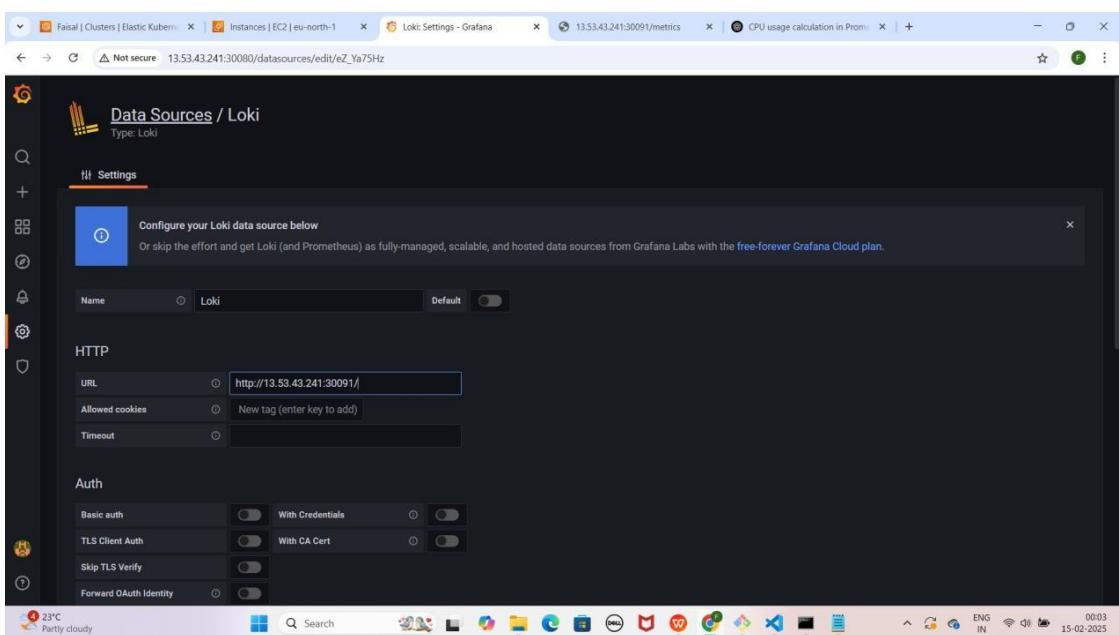


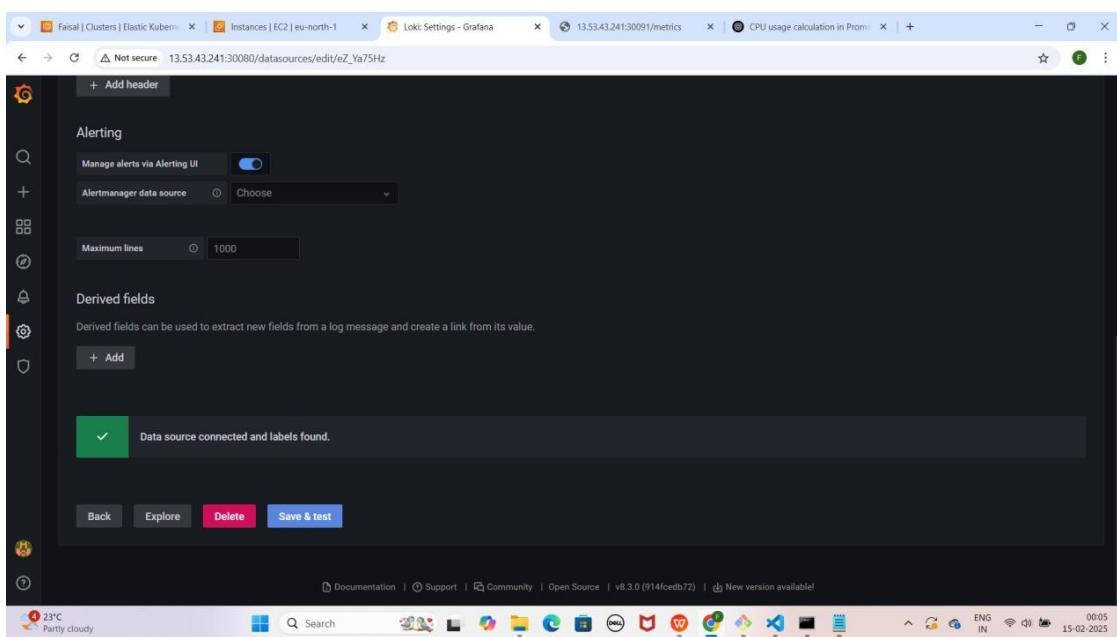
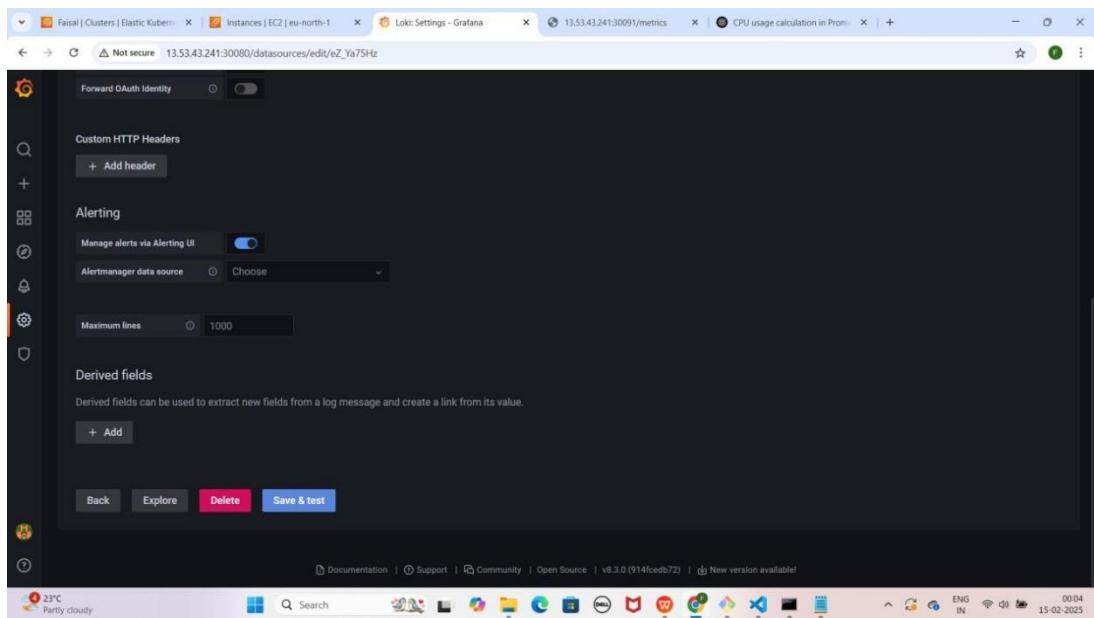
The screenshot shows the Grafana Configuration interface. The top navigation bar includes tabs for 'Clusters' (selected), 'Elastic Kibana', 'Instances', 'EC2 | eu-north-1', 'Configuration: Data sources', '13.53.43.241:30091/metrics', and 'CPU usage calculation in Prometheus'. The main area is titled 'Configuration' under 'Data sources' with the organization set to 'Main Org.'. A search bar at the top allows searching by name or type. Below it, a table lists a single data source: 'Prometheus' (icon), 'Prometheus | http://13.53.43.241:30090/ | default'. A blue button labeled 'Add data source' is located in the top right corner. The bottom of the screen shows a Windows taskbar with various pinned icons and system status.

The screenshot shows the 'Add data source' page in Grafana. The top navigation bar is identical to the previous screenshot. The main area is titled 'Add data source' with the sub-tutorial 'Choose a data source type'. A search bar contains the query 'loki'. Below it, a card for 'Loki' is displayed, featuring its icon (two vertical bars with horizontal dashes), a brief description ('Like Prometheus but for logs. OSS logging solution from Grafana Labs'), and a 'Core' button. The bottom of the screen shows a Windows taskbar with various pinned icons and system status.



```
# HELP cortex_stores_chunks_per_query_bucket Distribution of #chunks per query histogram
# TYPE cortex_stores_chunks_per_query_bucket 18
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
# HELP cortex_chunk_store_index_entries_per_chunk Bucketed distribution of #index entries per chunk
# TYPE cortex_chunk_store_index_entries_per_chunk 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"} 0
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"} 16
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
```

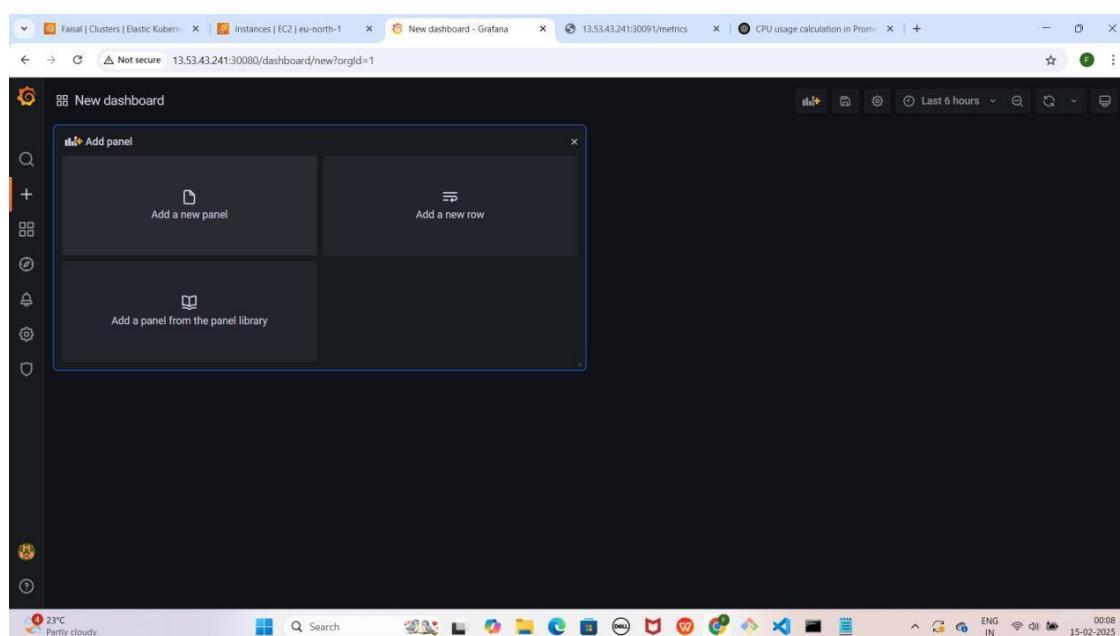
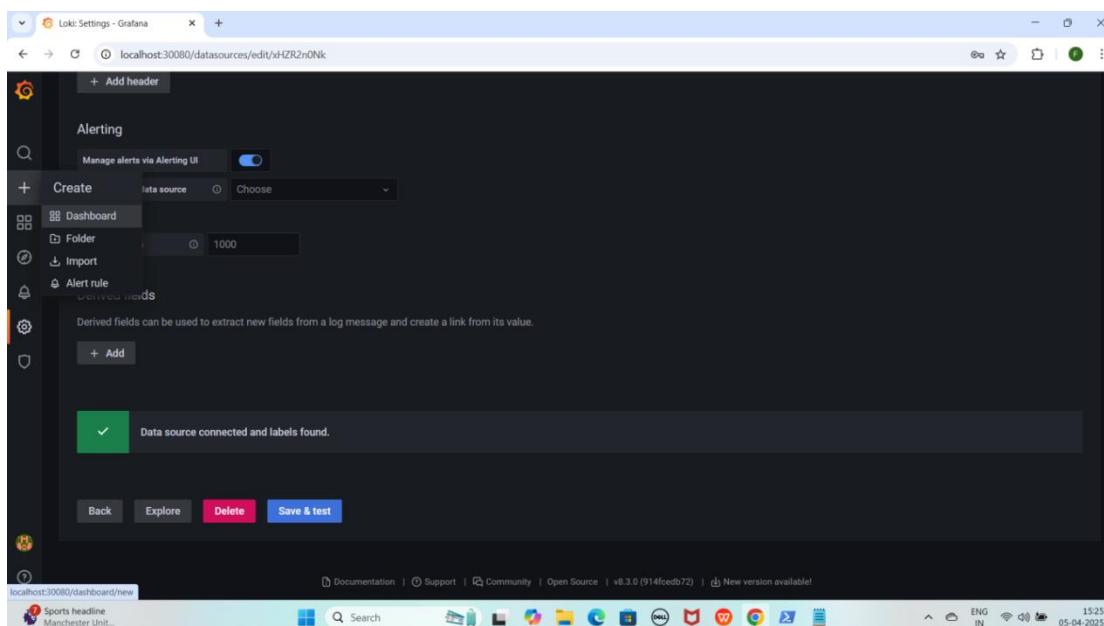


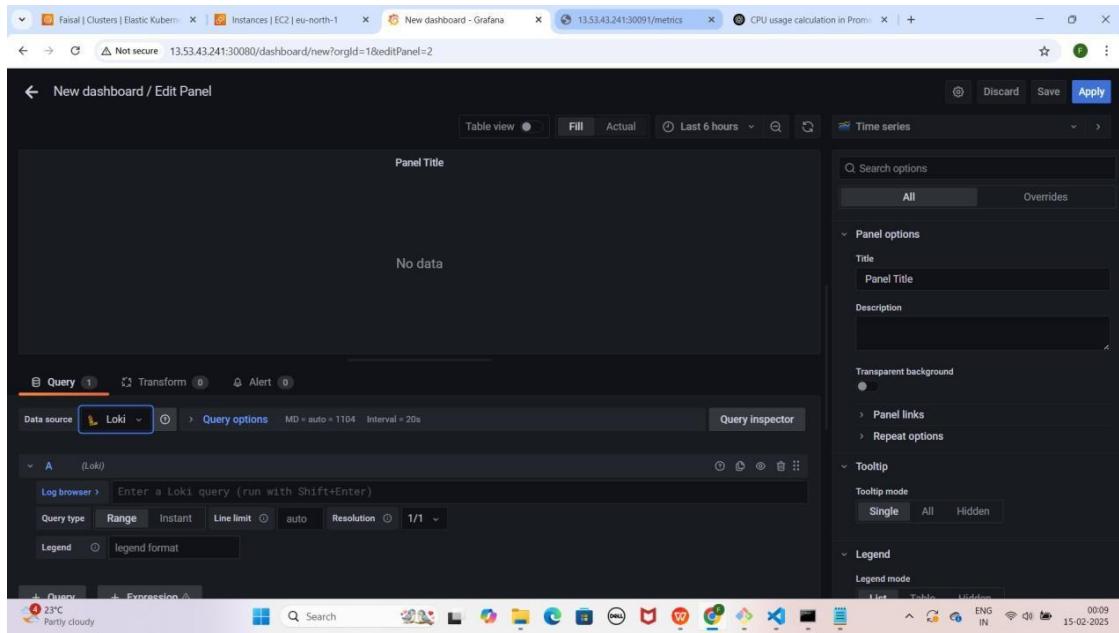


NOTE : Save & test pe click karne ke baad aapko Data source connected and label found karke pop up aayega

- 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.

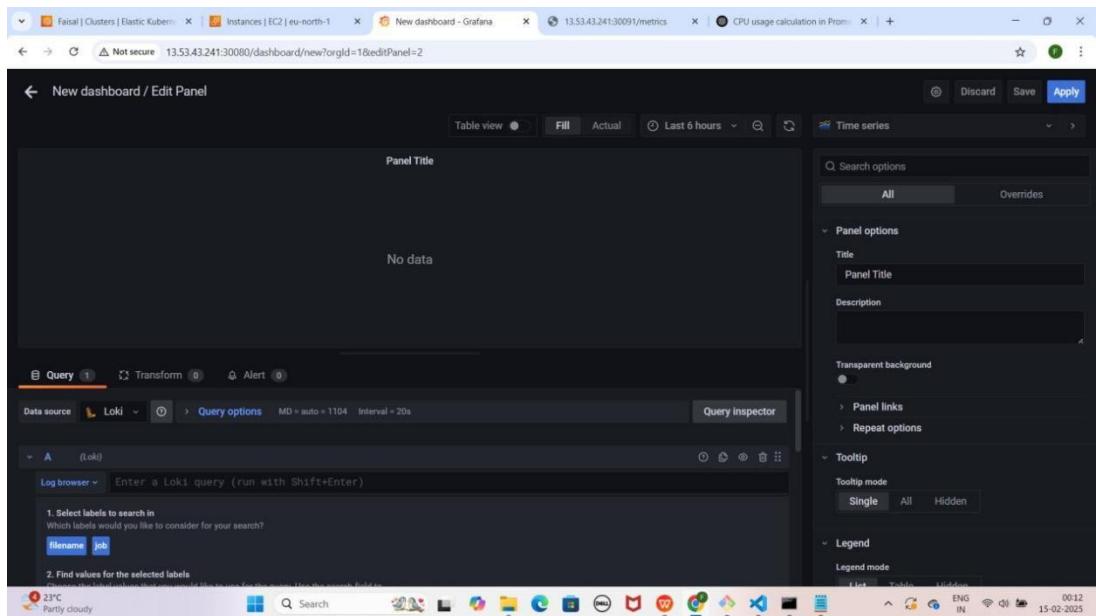
YE KUCH ISTARHA LAGEGA

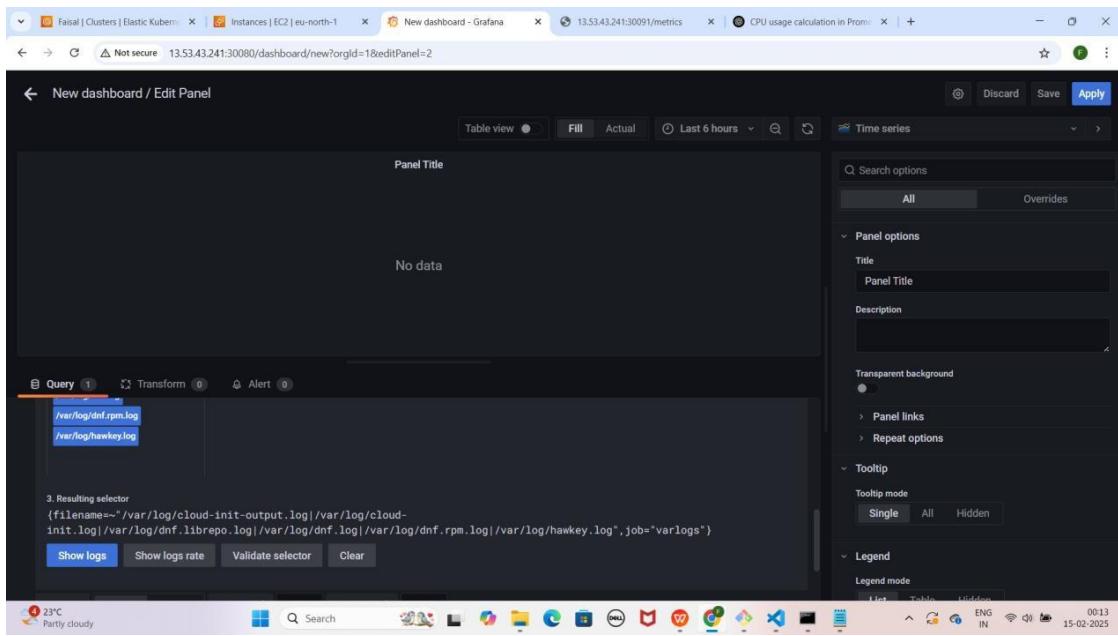
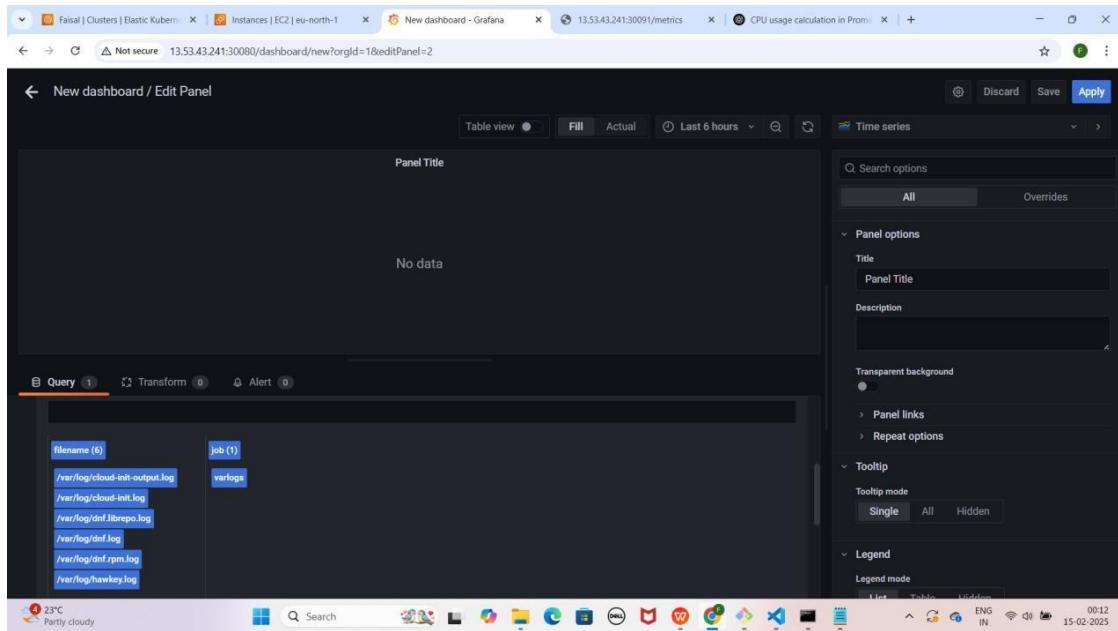




1. "Log Browser" pe click karo.
2. Pehle "filename" select karo, phir "job" (jaise ki varlogs) select karo.
3. Neeche scroll karo aur "Show logs" pe click karo.

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

New dashboard / Edit Panel

Panel Title

Data is missing a number field

Switch to table Open visualization suggestions

Query 1 Transform 0 Alert 0

Log browser > {filename=~"/var/log/cloud-init-output.log|/var/log/cloud-init.log|/var/log/dnf.librepo.log|/var/log/dnf.log|/var/log/dnf.rpm.log|/var/log/hawkey.log",job="varlogs"}

Query type Range Instant Line limit auto Resolution 1/1

Legend legend format

+ Query + Expression

23°C Party cloudy

Search

13.53.43.241:30080/dashboard/new?orgId=1&editPanel=2

Not secure 13.53.43.241:30091/metrics

CPU usage calculation in Prom... | +

Discard Save Apply

Time series

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 List Table Selection

00:13 15-02-2025

New dashboard / Edit Panel

Panel Title

Data is missing a number field

Switch to table Open visualization suggestions

Query 1 Transform 0 Alert 0

Log browser > {filename=~"/var/log/cloud-init-output.log|/var/log/cloud-init.log|/var/log/dnf.librepo.log|/var/log/dnf.log|/var/log/dnf.rpm.log|/var/log/hawkey.log",job="varlogs"}

Query type Range Instant Line limit auto Resolution 1/1

Legend legend format

+ Query + Expression

23°C Party cloudy

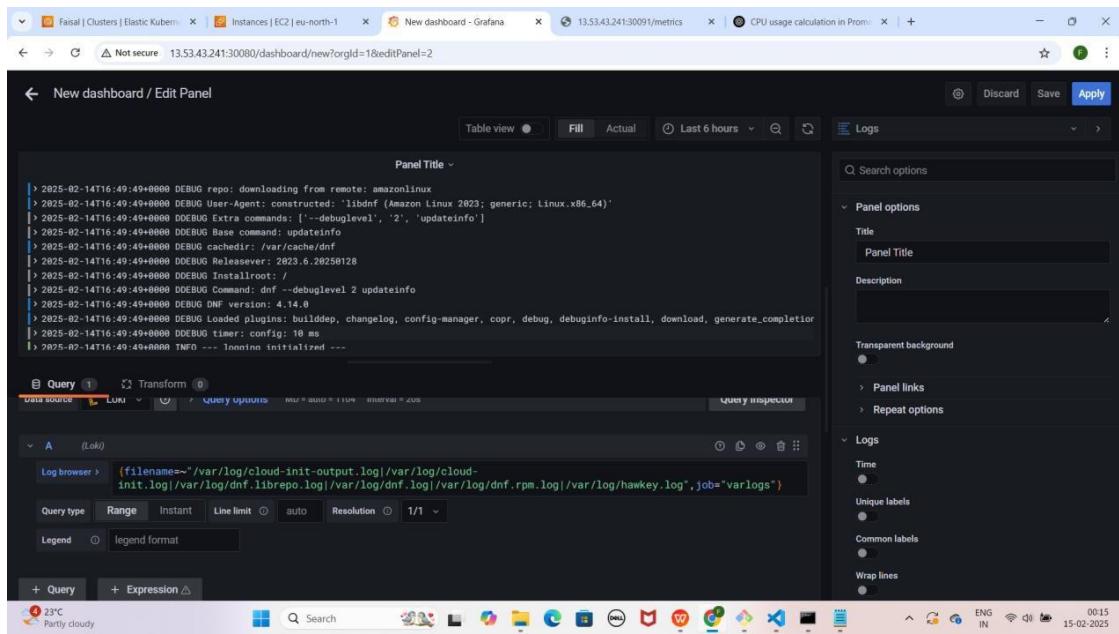
Search

Visualizations Suggestions Library panels

Based on current data

ID	File Name	File Path	Time
20230211_000001_1	20230211_1	2148072	new
20230211_000002_1	20230211_1	2148073	scripted
20230211_000003_1	20230211_1	2148074	new
20230211_000004_1	20230211_1	2148075	new
20230211_000005_1	20230211_1	2148076	new

00:13 15-02-2025



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.

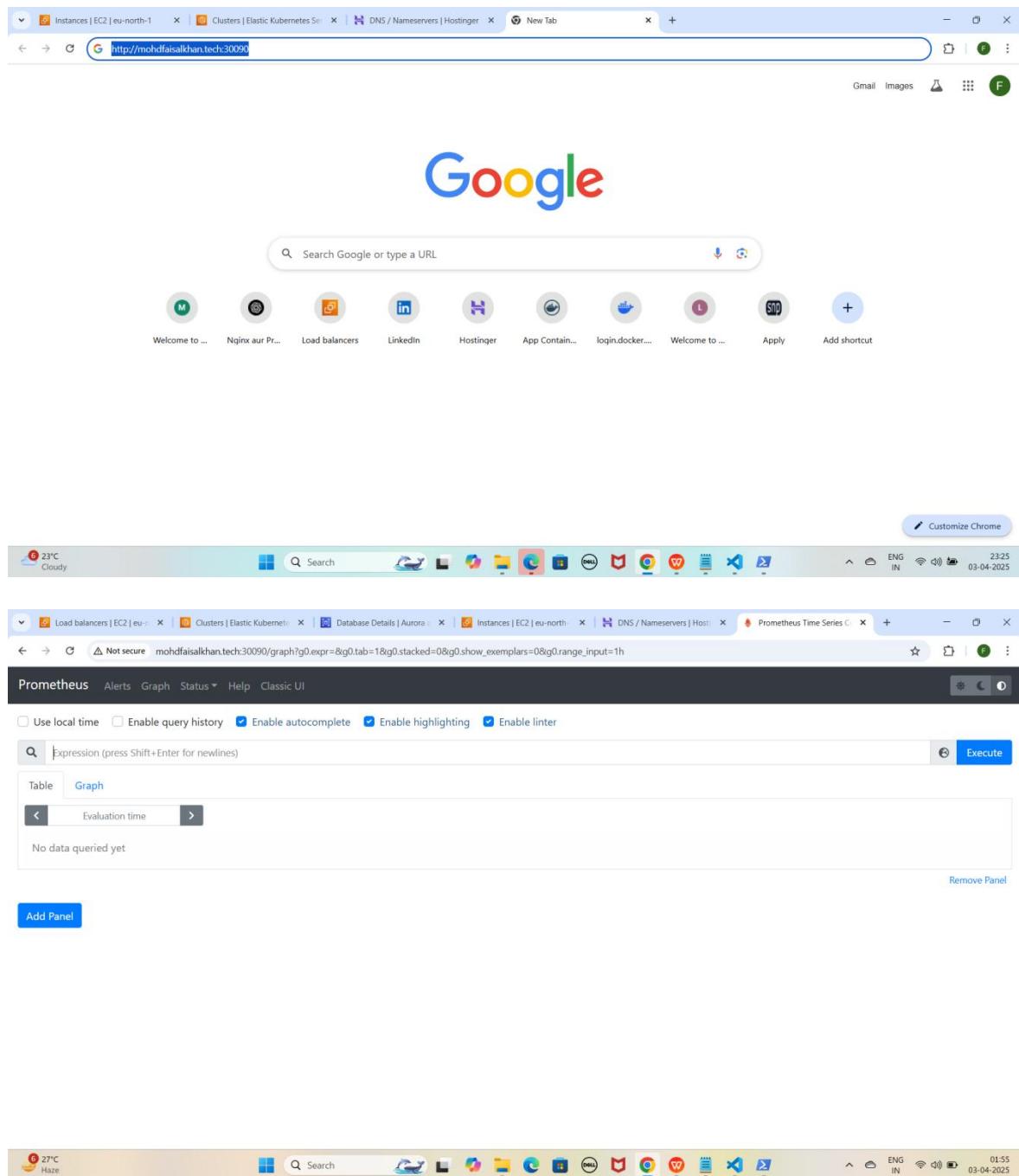
Ab kyunki **Prometheus, Loki, aur Grafana bhi NodePort se expose** ho chuke hain, isliye **ye bhi same domain name se access ho sakte hain**

Step 1 : Websites Ko Domain Name Se Access Karna

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

- **Prometheus:** <http://mohdfaiskhan.tech:30090>

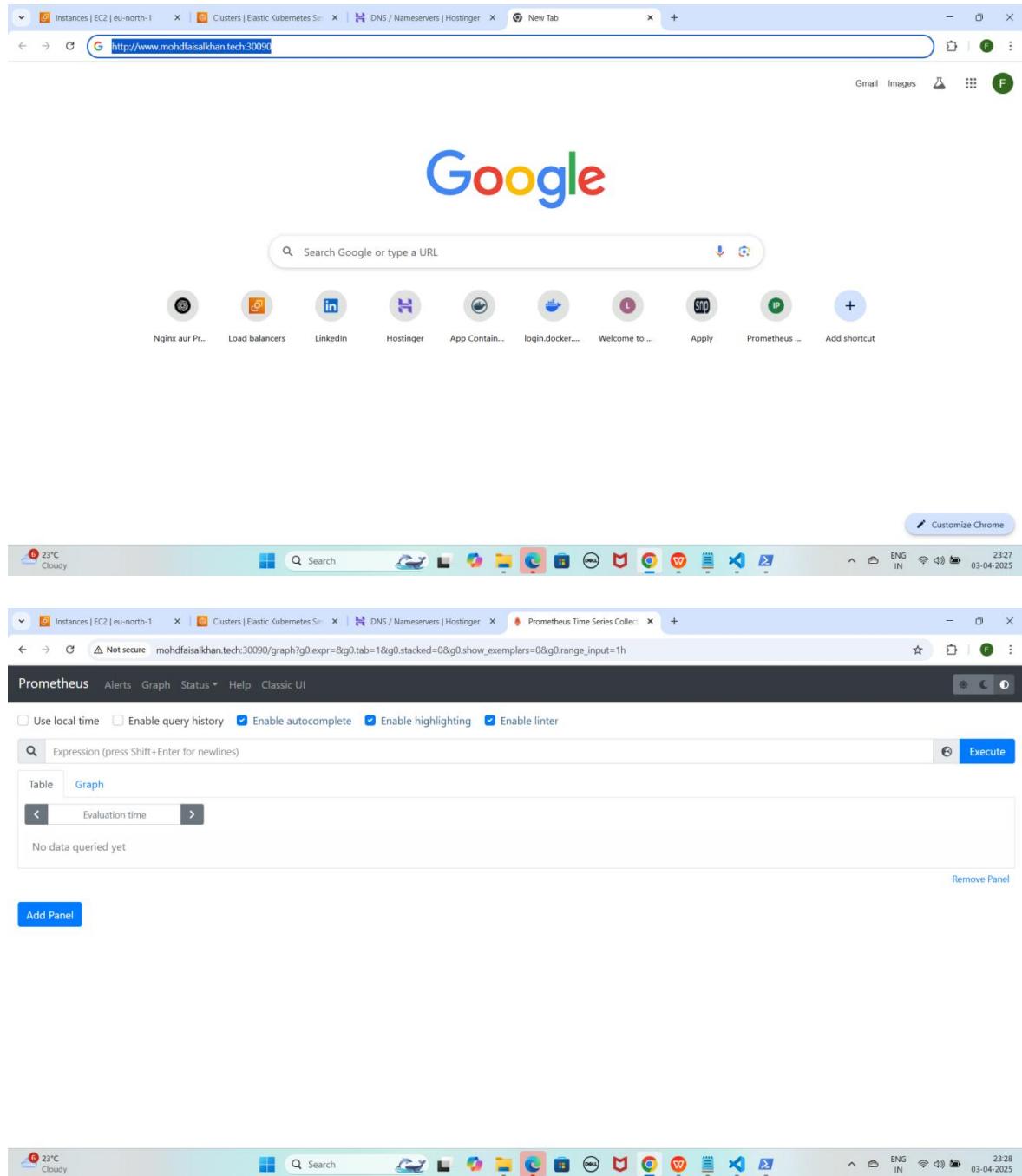
YE KUCH ISTARHA LAGEGA



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

- **Prometheus:** <http://www.mohdfaiskhan.tech:30090>

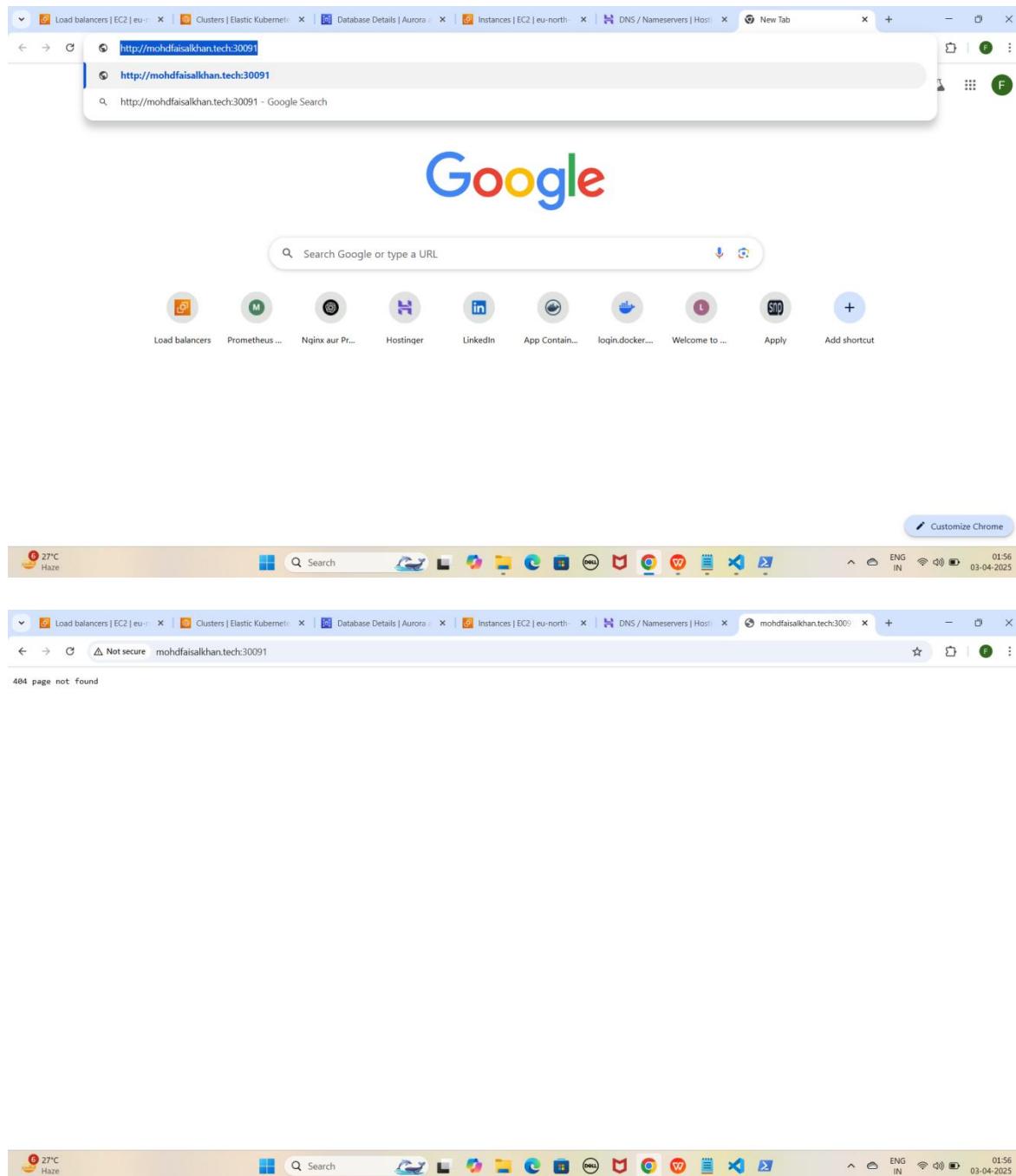
YE KUCH ISTARHA LAGEGA



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

- **Loki:** <http://mohdfaiskhan.tech:30091>

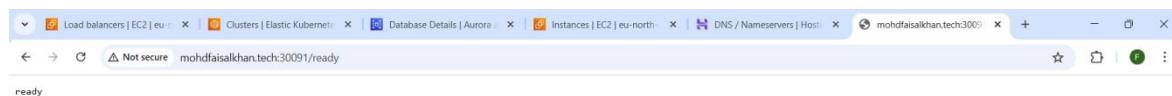
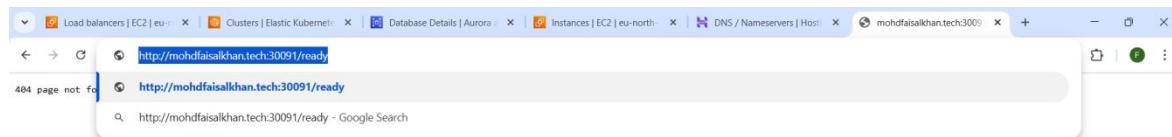
YE KUCH ISTARHA LAGEGA



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

<http://mohdfaiskhan.tech:30091/ready>

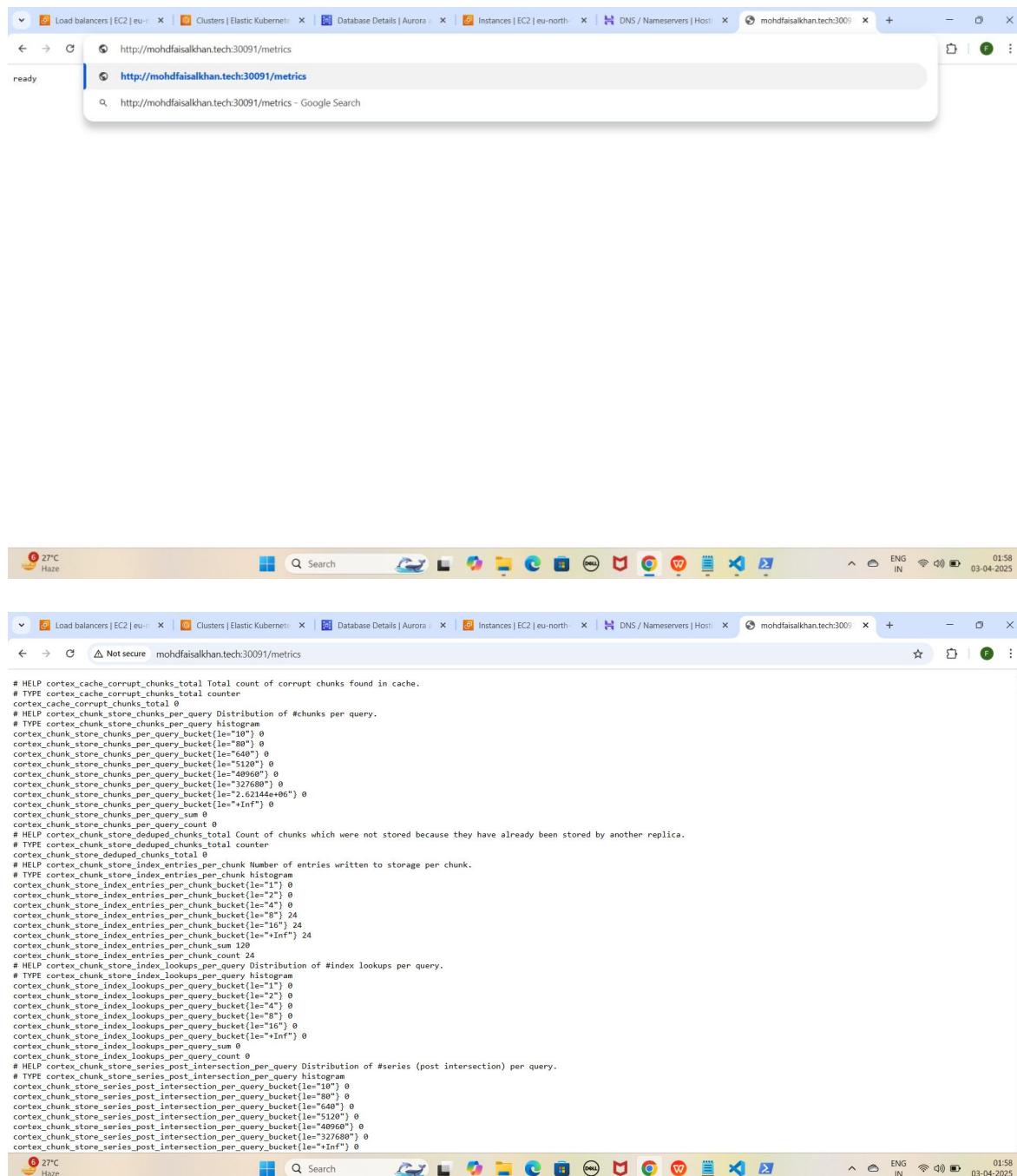
YE KUCH ISTARHA LAGEGA



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 hogा.

<http://mohdfaikhan.tech:30091/metrics>

YE KUCH ISTARHA LAGEGA



```

# HELP cortex_cache_corrupt_chunks_total Total count of corrupt chunks found in cache.
# TYPE cortex_cache_corrupt_chunks_total counter
cortex_cache_corrupt_chunks_total 0

# HELP cortex_chunk_store_chunks_per_query Distribution of #chunks per query.
# TYPE cortex_chunk_store_chunks_per_query histogram
cortex_chunk_store_chunks_per_query_bucket{le="10"} 0
cortex_chunk_store_chunks_per_query_bucket{le="80"} 0
cortex_chunk_store_chunks_per_query_bucket{le="640"} 0
cortex_chunk_store_chunks_per_query_bucket{le="5120"} 0
cortex_chunk_store_chunks_per_query_bucket{le="40960"} 0
cortex_chunk_store_chunks_per_query_bucket{le="327680"} 0
cortex_chunk_store_chunks_per_query_bucket{le="2.048M"} 0
cortex_chunk_store_chunks_per_query_bucket{le="16M"} 0
cortex_chunk_store_chunks_per_query_sum 0

# 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_index_entries 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"} 24
cortex_chunk_store_index_entries_per_chunk_bucket{le="16"} 24
cortex_chunk_store_index_entries_per_chunk_bucket{le="Inf"} 24
cortex_chunk_store_index_entries_per_chunk_sum 128
cortex_chunk_store_index_entries_per_chunk_count 24

# 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"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="2"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="4"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="8"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="16"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="Inf"} 0
cortex_chunk_store_index_lookups_per_query_sum 0
cortex_chunk_store_index_lookups_per_query_count 0

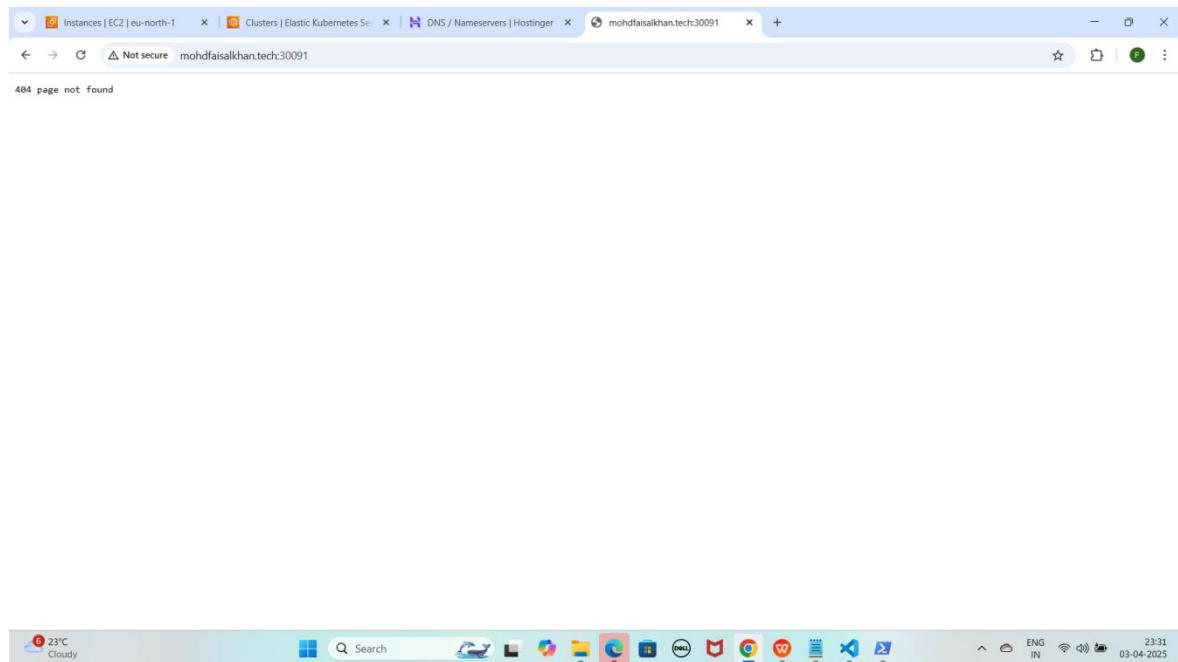
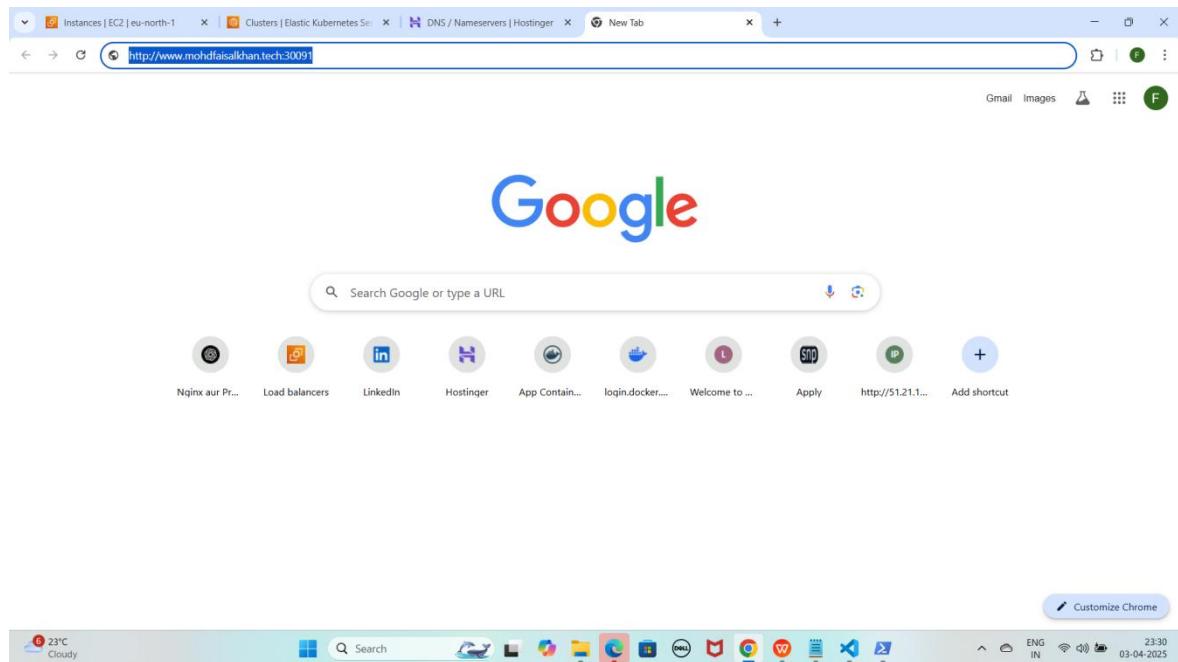
# HELP cortex_chunk_store_series_post_intersection_per_query Distribution of #series (post intersection) per query.
# TYPE cortex_chunk_store_series_post_intersection_per_query histogram
cortex_chunk_store_series_post_intersection_per_query_bucket{le="10"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="80"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="640"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="5120"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="40960"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="327680"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="16M"} 0

```

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

- **Loki:** <http://www.mohdfaiskhan.tech:30091>

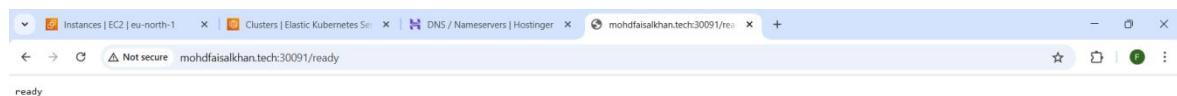
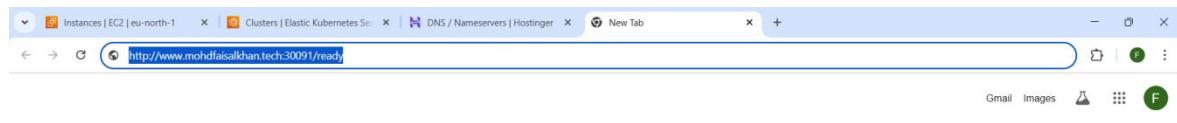
YE KUCH ISTARHA LAGEGA



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

<http://www.mohdfaiskhan.tech:30091/ready>

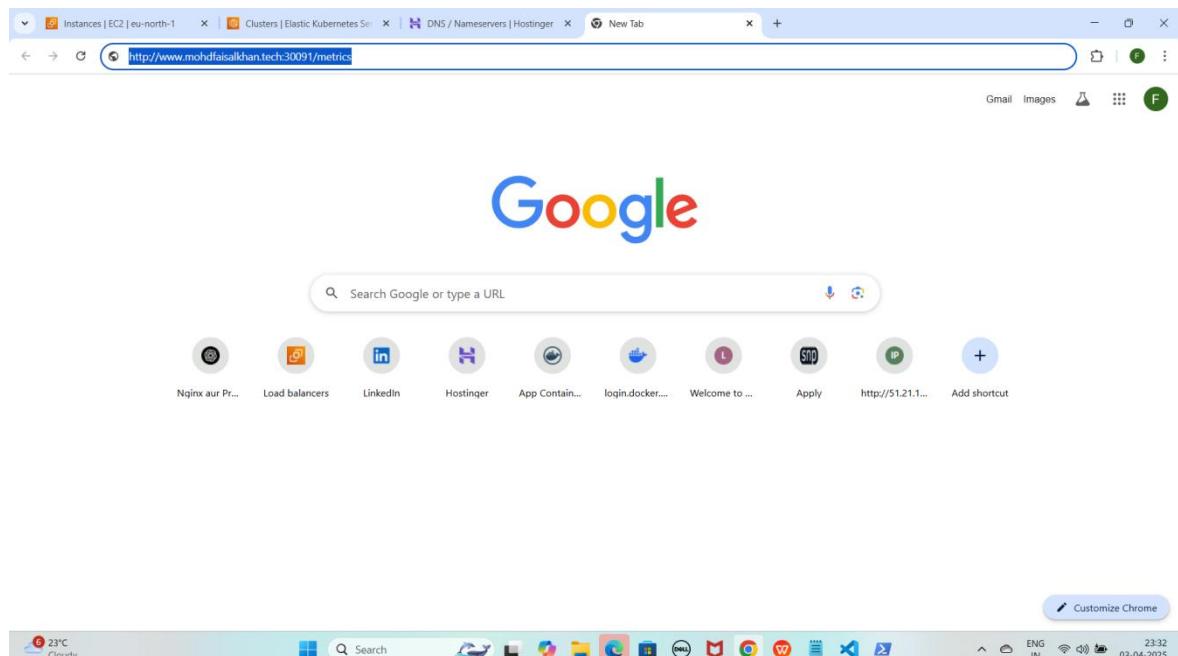
YE KUCH ISTARHA LAGEGA



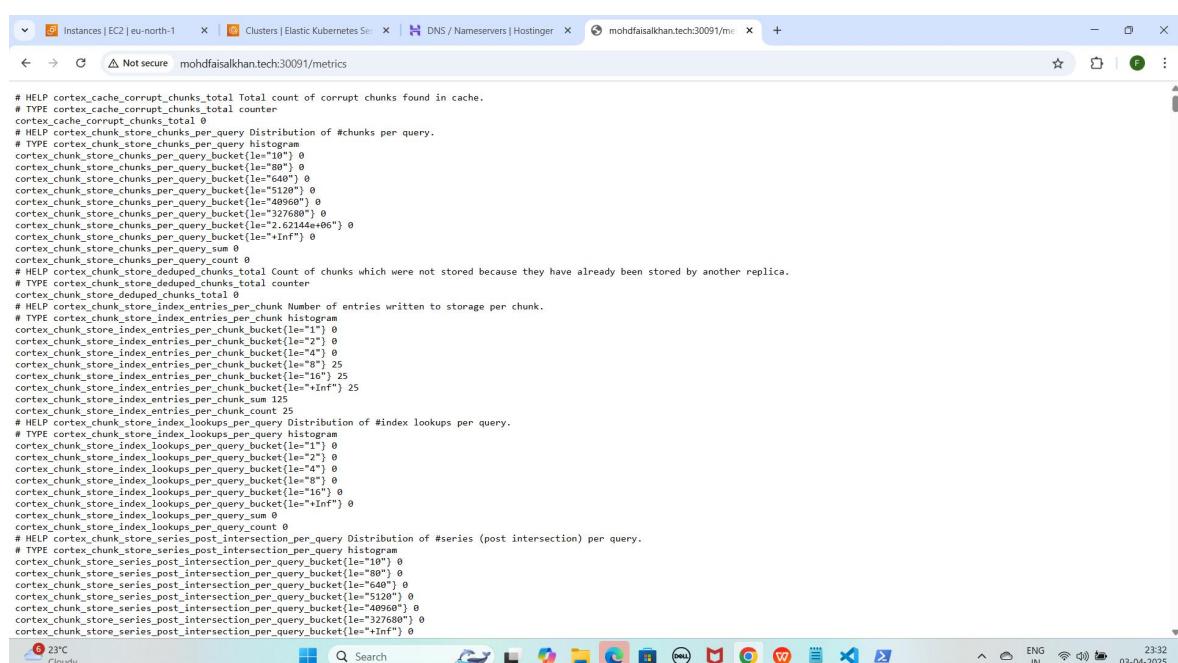
2. Agar aapko ready show karraha hai to iska matlab loki successfully run horaha hai ab loki metrics logs collect karraha hai check karne ke liye /metrics run kariye jaise ki mere case me kuch aisa hogा.

<http://www.mohdfaikhan.tech:30091/metrics>

YE KUCH ISTARHA LAGEGA



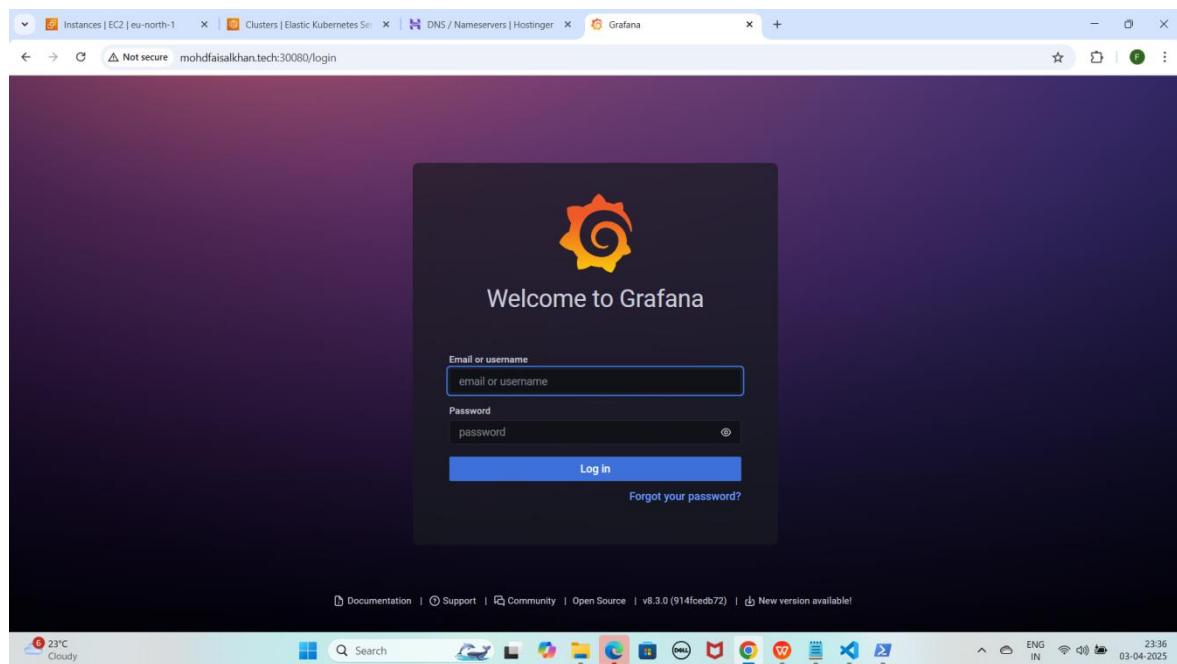
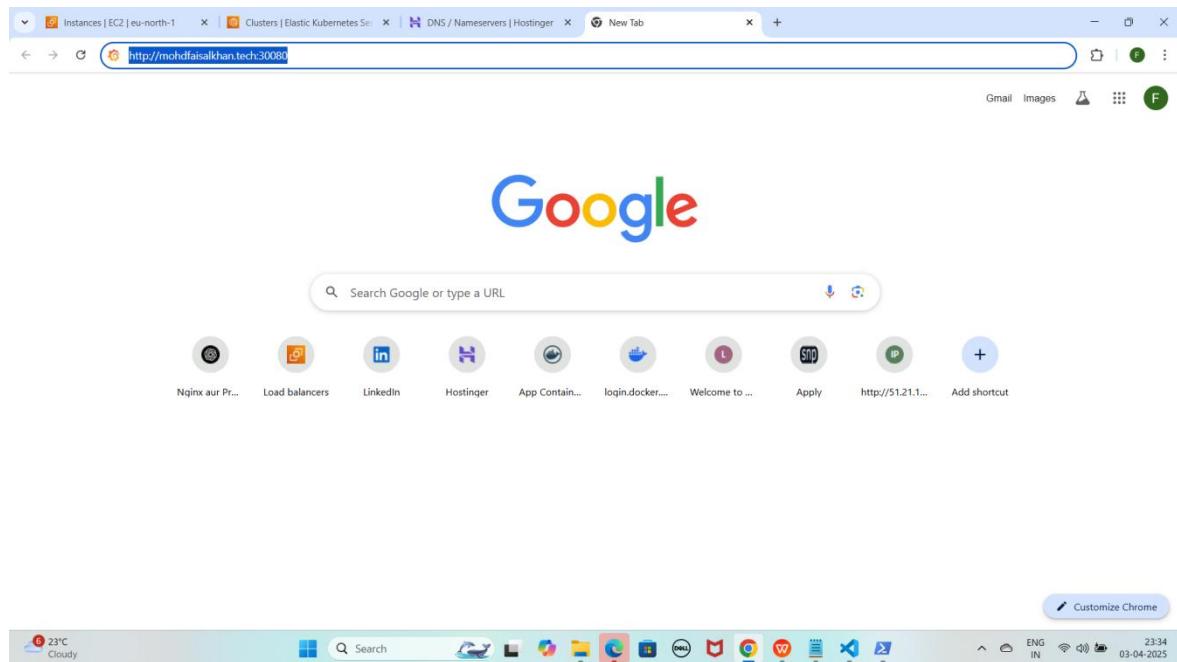
```
# HELP cortex_cache_corrupt_chunks_total Total count of corrupt chunks found in cache.
# TYPE cortex_cache_corrupt_chunks_total counter
cortex_cache_corrupt_chunks_total 0
# HELP cortex_chunk_store_chunks_per_query Distribution of #chunks per query.
# TYPE cortex_chunk_store_chunks_per_query histogram
cortex_chunk_store_chunks_per_query_bucket{le="10"} 0
cortex_chunk_store_chunks_per_query_bucket{le="80"} 0
cortex_chunk_store_chunks_per_query_bucket{le="640"} 0
cortex_chunk_store_chunks_per_query_bucket{le="5120"} 0
cortex_chunk_store_chunks_per_query_bucket{le="40960"} 0
cortex_chunk_store_chunks_per_query_bucket{le="327680"} 0
cortex_chunk_store_chunks_per_query_bucket{le="2.04844e+06"} 0
cortex_chunk_store_chunks_per_query_bucket{le="+Inf"} 0
cortex_chunk_store_chunks_per_query_sum 0
cortex_chunk_store_chunks_per_query_count 0
# 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_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"} 25
cortex_chunk_store_index_entries_per_chunk_bucket{le="16"} 25
cortex_chunk_store_index_entries_per_chunk_bucket{le="Inf"} 25
cortex_chunk_store_index_entries_per_chunk_sum 125
cortex_chunk_store_index_entries_per_chunk_count 25
# 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"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="2"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="4"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="8"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="16"} 0
cortex_chunk_store_index_lookups_per_query_bucket{le="Inf"} 0
cortex_chunk_store_index_lookups_per_query_sum 0
cortex_chunk_store_index_lookups_per_query_count 0
# 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"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="80"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="640"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="5120"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="40960"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="327680"} 0
cortex_chunk_store_series_post_intersection_per_query_bucket{le="+Inf"} 0
```

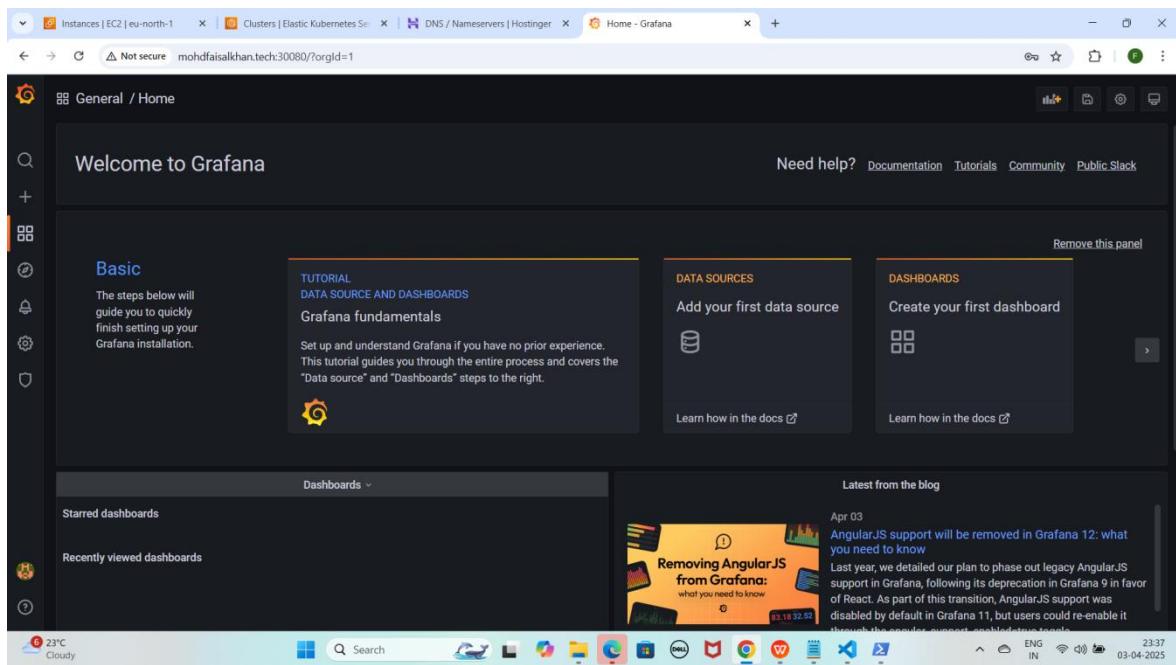
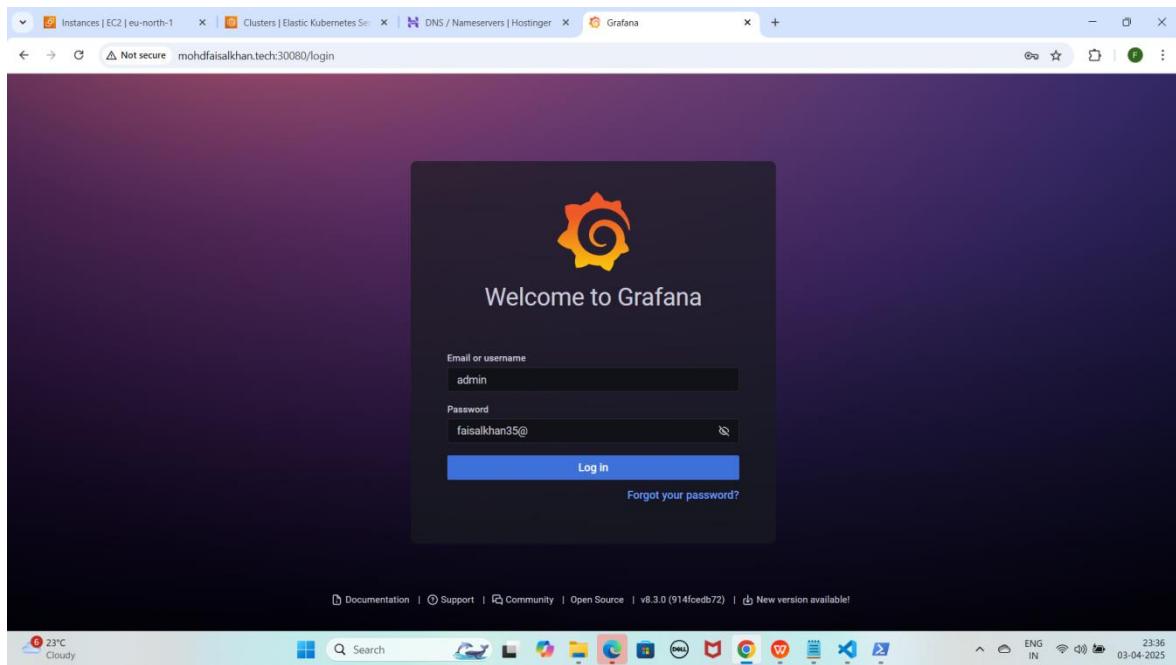


5. Apni Grafana application ko Domain Name aur NodePort ke saath access karo.

- **Grafana:** <http://mohdfaiskhan.tech:30080>

YE KUCH ISTARHA LAGEGA



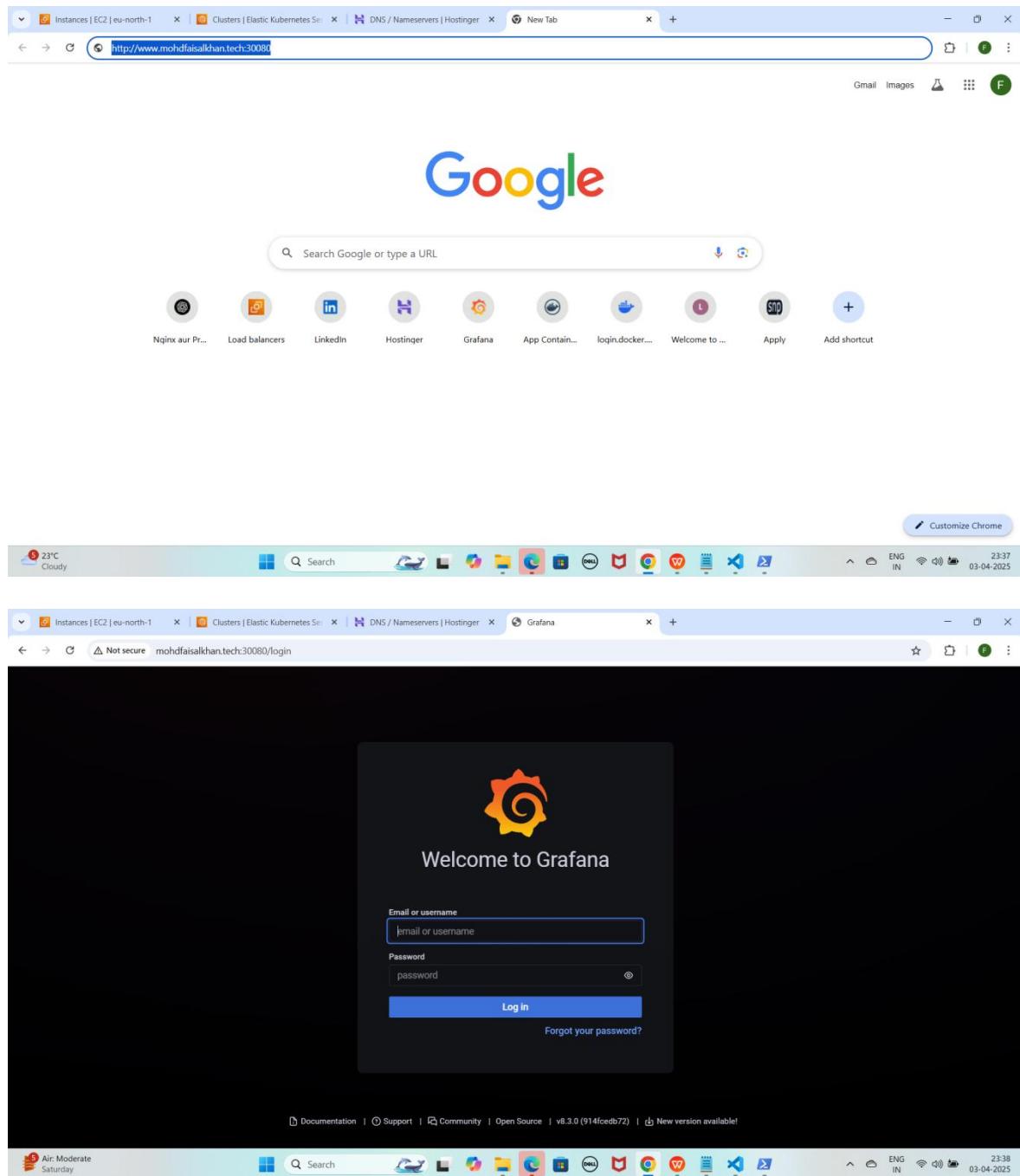


NOTE : Ye wahi password hai jo humne first time Grafana ki Public IP ko NodePort ke saath access karte waqt use kiya tha.

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

- **Grafana:** <http://www.mohdfaiskhan.tech:30080>

YE KUCH ISTARHA LAGEGA



The screenshot shows a browser window with the URL mohdfaiskhan.tech:30080/login. The title bar includes tabs for 'Instances | EC2 | eu-north-1', 'Clusters | Elastic Kubernetes Set...', 'DNS / Nameservers | Hostinger', and 'Grafana'. The main content is the 'Welcome to Grafana' login screen with a yellow sun logo. The form has 'Email or username' set to 'admin' and 'Password' set to 'faisalkhan35@'. A blue 'Log In' button is visible, along with a 'Forgot your password?' link. Below the form, the footer links include 'Documentation', 'Support', 'Community', 'Open Source', 'v6.3.0 (914fcedb72)', and 'New version available!'. The system tray at the bottom shows icons for Air Moderate Saturday, a search bar, and various application icons.

The screenshot shows a browser window with the URL mohdfaiskhan.tech:30080/. The title bar includes tabs for 'Instances | EC2 | eu-north-1', 'Clusters | Elastic Kubernetes Set...', 'DNS / Nameservers | Hostinger', and 'Home - Grafana'. The main content is the 'Welcome to Grafana' dashboard with a dark theme. It features a sidebar with icons for General, Home, Dashboards, Data Sources, Plugins, and Help. The main area has sections for 'Basic' (with a 'Get Started' button), 'TUTORIAL' (with 'DATA SOURCE AND DASHBOARDS' and 'Grafana fundamentals' links), 'DATA SOURCES' (with 'Add your first data source' and a 'Learn how in the docs' link), and 'DASHBOARDS' (with 'Create your first dashboard' and a 'Learn how in the docs' link). Below these are sections for 'Starred dashboards' and 'Recently viewed dashboards'. A 'Latest from the blog' section shows an article titled 'AngularJS support will be removed in Grafana 12: what you need to know'. The system tray at the bottom shows icons for Air Moderate Saturday, a search bar, and various application icons.

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: XXXXXXXXXXXXXXXXXX

AWS Secret Access Key: XXXXXXXXXXXXXXXXXXXXXXXXX

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
```

