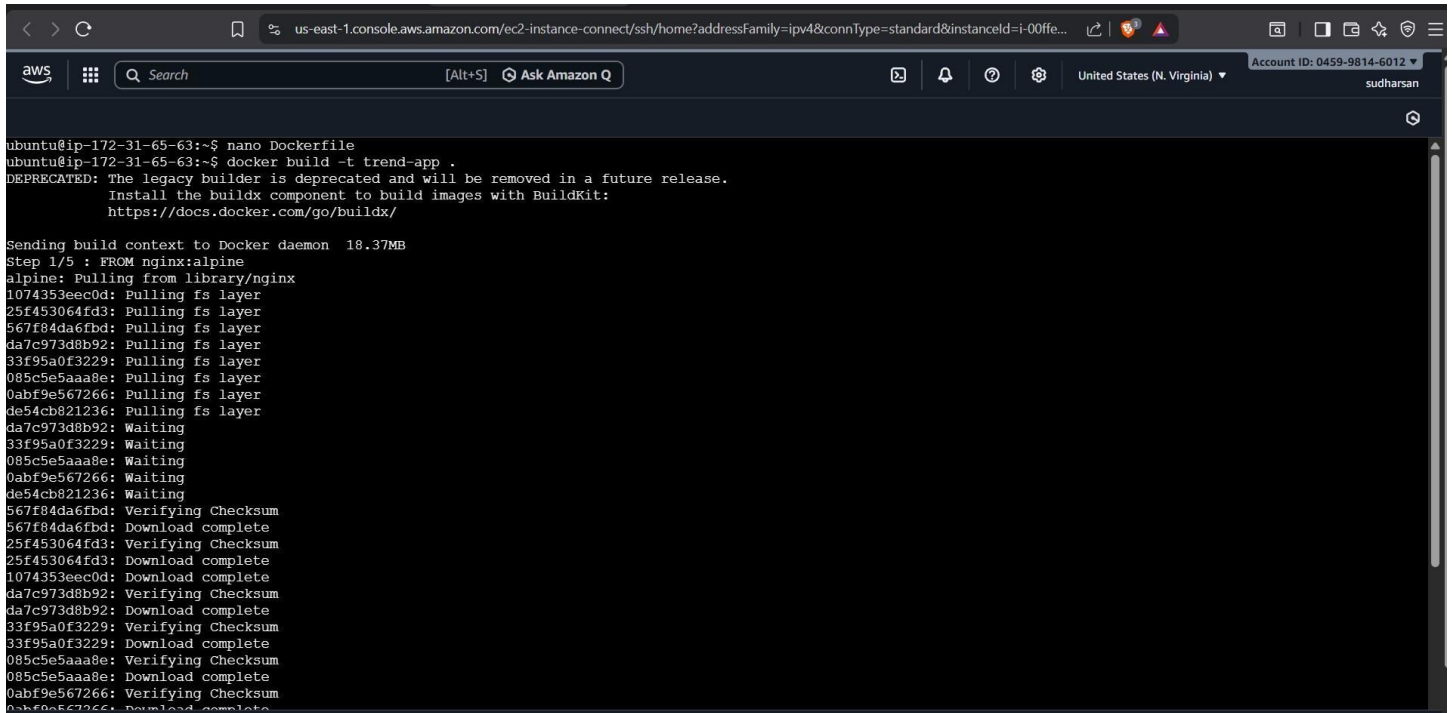


PROJECT - 2

TrendStore

ScreenShots

1] docker build

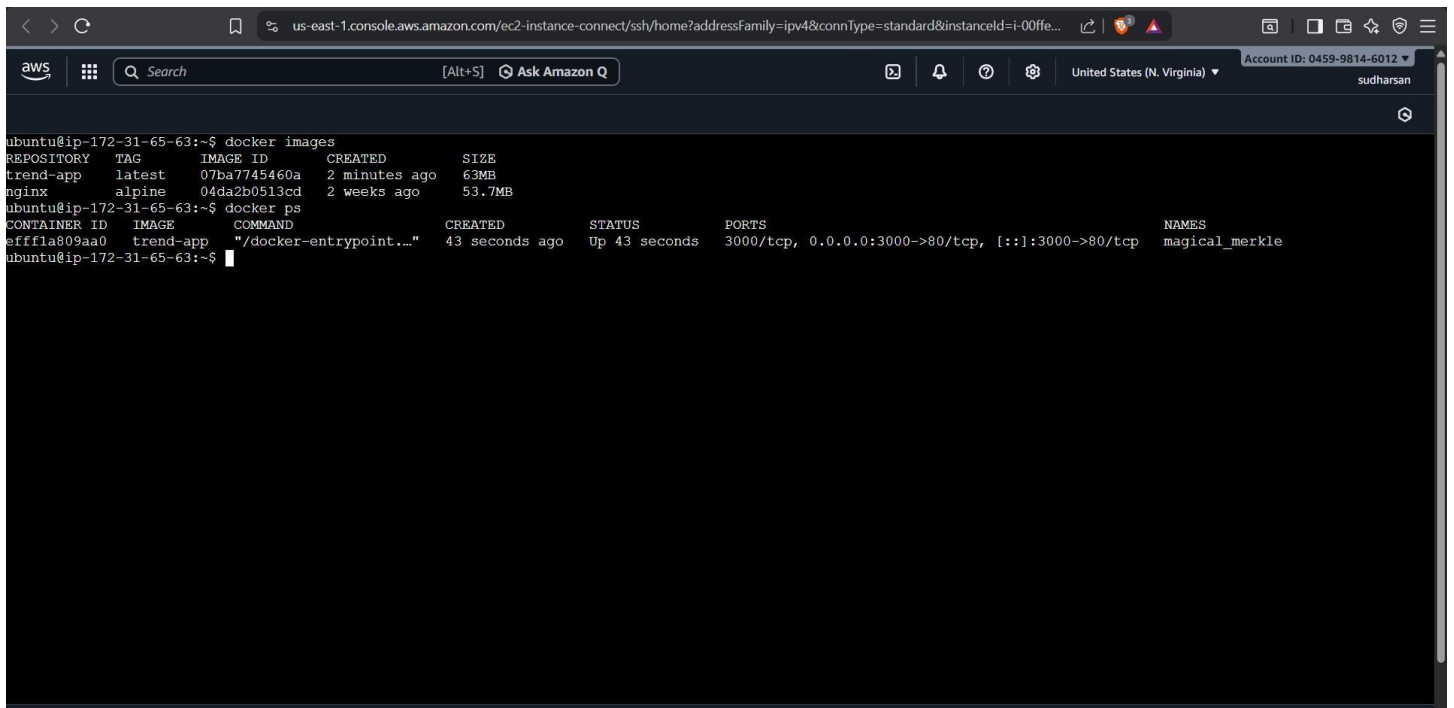


The screenshot shows a terminal window within the AWS Management Console. The user is logged in as 'sudharsan' in the 'United States (N. Virginia)' region. The terminal output shows the execution of 'docker build -t trend-app .' on an Ubuntu instance. The build process starts by pulling the 'nginx:alpine' image from Docker Hub. It then shows the progress of pulling various layers (fs layer) and verifying checksums. The build context is sent to the Docker daemon (18.37MB). The process continues with pulling and verifying checksums for various layers of the 'trend-app' image.

```
ubuntu@ip-172-31-65-63:~$ nano Dockerfile
ubuntu@ip-172-31-65-63:~$ docker build -t trend-app .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
             Install the buildx component to build images with BuildKit:
             https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  18.37MB
Step 1/5 : FROM nginx:alpine
alpine: Pulling from library/nginx
1074353eec0d: Pulling fs layer
25f453064fd3: Pulling fs layer
567f84da6fbd: Pulling fs layer
da7c973d8b92: Pulling fs layer
33f95a0f3229: Pulling fs layer
085c5e5aaa8e: Pulling fs layer
0abf9e567266: Pulling fs layer
de54cb821236: Pulling fs layer
da7c973d8b92: Waiting
33f95a0f3229: Waiting
085c5e5aaa8e: Waiting
0abf9e567266: Waiting
de54cb821236: Waiting
567f84da6fbd: Verifying Checksum
567f84da6fbd: Download complete
25f453064fd3: Verifying Checksum
25f453064fd3: Download complete
1074353eec0d: Download complete
da7c973d8b92: Verifying Checksum
da7c973d8b92: Download complete
33f95a0f3229: Verifying Checksum
33f95a0f3229: Download complete
085c5e5aaa8e: Verifying Checksum
085c5e5aaa8e: Download complete
0abf9e567266: Verifying Checksum
0abf9e567266: Download complete
```

2] docker run (container)



The screenshot shows the same terminal window. The user has run 'docker images' and 'docker ps'. The 'docker images' command shows two images: 'trend-app:latest' (63MB, created 2 minutes ago) and 'nginx:alpine' (53.7MB, created 2 weeks ago). The 'docker ps' command shows one running container with ID 'efffla809aa0', named 'magical_merkle', running the 'trend-app' image. The container is up for 43 seconds and has ports 3000/tcp exposed.

```
ubuntu@ip-172-31-65-63:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
trend-app     latest   07ba7745460a   2 minutes ago  63MB
nginx         alpine   04da2b0513cd   2 weeks ago    53.7MB

ubuntu@ip-172-31-65-63:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS
efffla809aa0   trend-app "/docker-entrypoint..." 43 seconds ago Up 43 seconds 3000/tcp, 0.0.0.0:3000->80/tcp, [::]:3000->80/tcp
ubuntu@ip-172-31-65-63:~$
```

3] docker login and image push

```
command 'docker' from deb podman-docker (4.9.3+ds1-lubuntu0.2)
See 'snap info <snapname>' for additional versions.
ubuntu@ip-172-31-65-63:~$ docker login

USING WEB-BASED LOGIN

Info → To sign in with credentials on the command line, use 'docker login -u <username>'

Your one-time device confirmation code is: ZCZQ-STCM
Press ENTER to open your browser or submit your device code here: https://login.docker.com/activate

Waiting for authentication in the browser...

WARNING! Your credentials are stored unencrypted in '/home/ubuntu/.docker/config.json'.
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/

Login Succeeded
ubuntu@ip-172-31-65-63:~$ docker tag trend-app sudharsanps115/trend-app:latest
ubuntu@ip-172-31-65-63:~$ docker push sudharsanps115/trend-app:latest
The push refers to repository [docker.io/sudharsanps115/trend-app]
f7c2f10b3a21: Pushed
6e7f657a235a: Pushed
e6f611fa5b7f: Mounted from library/nginx
67ea0b046e7d: Mounted from library/nginx
ed5fa8595c7a: Mounted from library/nginx
8ae63eb1f31f: Mounted from library/nginx
b3e3d1bb64d: Mounted from library/nginx
48078b7e3000: Mounted from library/nginx
fd1e40d7f74b: Mounted from library/nginx
7bb20cf5ef67: Mounted from library/nginx
latest: digest: sha256:c7008564f7e8e99c9291093b59cd5c89677b0bd9a86420059f51c4e308d56e5c size: 2407
ubuntu@ip-172-31-65-63:~$
```

4] docker repo dash

The screenshot shows the Docker Hub interface for the repository `sudharsanps115/trend-app`. The page is titled "Repositories / trend-app / General". It shows the repository was last pushed 1 minute ago and has a size of 30.5 MB. The "Tags" section indicates that the repository contains 0 tag(s). The "Repository overview" section is marked as "INCOMPLETE". On the right, there is a "Docker commands" section with a "Public view" button and a code snippet: `docker push sudharsanps115/trend-app:tagname`. The bottom right features a "buildcloud" advertisement for Docker Build Cloud.

5] terraform initialization

```
alternative configurations.

Error: Duplicate provider configuration

on main.tf line 6:
6: provider "aws" {

A default (non-aliased) provider configuration for "aws" was already given at main.tf:1,1-15. If multiple configurations are required, set the "alias" argument for alternative configurations.

ubuntu@ip-172-31-65-63:~$ nano main.tf
ubuntu@ip-172-31-65-63:~$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v6.27.0...
- Installed hashicorp/aws v6.27.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
ubuntu@ip-172-31-65-63:~$ terraform plan
```

6] terraform plan

```
Error: failed to refresh cached credentials, no EC2 IMDS role found, operation error ec2imds: GetMetadata, http response error StatusCode: 404, request to EC2 IMDS failed

ubuntu@ip-172-31-65-63:~$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_iam_instance_profile.profile will be created
+ resource "aws_iam_instance_profile" "profile" {
+   arn                = (known after apply)
+   create_date        = (known after apply)
+   id                 = (known after apply)
+   name               = (known after apply)
+   name_prefix        = (known after apply)
+   path               = "/"
+   role               = "jenkins-role"
+   tags_all           = (known after apply)
+   unique_id          = (known after apply)
}

# aws_iam_role.role will be created
+ resource "aws_iam_role" "role" {
+   arn                = (known after apply)
+   assume_role_policy = jsonencode(
    {
      + Statement = [
        + {
          + Action = "sts:AssumeRole"
          + Effect = "Allow"
        }
      ]
    }
  )
}
```

7] terraform apply

```
ubuntu@ip-172-31-65-63:~$ terraform apply
aws_vpc.vpc: Refreshing state... [id=vpc-0288ca6c9a39da52f]
aws_iam_role.role: Refreshing state... [id=jenkins-role]
aws_iam_instance_profile.profile: Refreshing state... [id=terraform-20260102074717583600000001]
aws_internet_gateway.igw: Refreshing state... [id=igw-0f1894448e66a257c]
aws_subnet.subnet: Refreshing state... [id=subnet-0fa9ff48e4239d6a9]
aws_security_group.sg: Refreshing state... [id=sg-04085f42f6d2falle]
aws_route_table.rt: Refreshing state... [id=rtb-0e89fc786cdf03ea]
aws_route_table_association.rta: Refreshing state... [id=rtbassoc-0195da14a56154a37]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.jenkins will be created
+ resource "aws_instance" "jenkins" {
  + ami                     = "ami-0ecb62995f68bb549"
  + arn                    = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone       = (known after apply)
  + disable_api_stop        = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized           = (known after apply)
  + enable_primary_ipv6     = (known after apply)
  + force_destroy           = false
  + get_password_data       = false
  + host_id                 = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile    = "terraform-20260102074717583600000001"
  + id                     = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle      = (known after apply)
}
```

8] jenkins setup

```
Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-1-12:~$ sudo systemctl status jenkins
sudo: systemctl: command not found
ubuntu@ip-10-0-1-12:~$ sudo systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
   Active: active (running) since Fri 2026-01-02 08:30:00 UTC; 32s ago
     Main PID: 2444 (java)
       Tasks: 49 (limit: 2213)
      Memory: 543.1M (peak: 561.2M)
         CPU: 22.121s
        CGroup: /system.slice/jenkins.service
                └─2444 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]>
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> *****
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> *****
Jan 02 08:29:55 ip-10-0-1-12 jenkins[2444]: [LF]> *****
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.431+0000 [id=38] INFO jenkins.InitReactorRunner$1onAttained: Completed initialization
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.459+0000 [id=30] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
Jan 02 08:30:00 ip-10-0-1-12 systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.740+0000 [id=56] INFO h.m.DownloadService$Downloadable#load: Obtained the updated data
Jan 02 08:30:00 ip-10-0-1-12 jenkins[2444]: 2026-01-02 08:30:00.742+0000 [id=56] INFO hudson.util.Retrier#start: Performed the action check updates serv
lines 1-20/20 (END)
```


9] eks cluster creation with 2 replica

```
ubuntu@ip-172-31-65-63:~$ eksctl version
0.221.0
ubuntu@ip-172-31-65-63:~$ eksctl create cluster --name trend-app --region us-east-1 --nodegroup-name trend-app-node --node-type t3.small --nodes 2 --managed
2026-01-02 08:58:49 [i] eksctl version 0.221.0
2026-01-02 08:58:49 [i] using region us-east-1
2026-01-02 08:58:49 [i] setting availability zones to [us-east-1b us-east-1f]
2026-01-02 08:58:49 [i] subnets for us-east-1b - public:192.168.0.0/19 private:192.168.64.0/19
2026-01-02 08:58:49 [i] subnets for us-east-1f - public:192.168.32.0/19 private:192.168.96.0/19
2026-01-02 08:58:49 [i] nodegroup "trend-app-node" will use "" [AmazonLinux2023/1.32]
2026-01-02 08:58:49 [!] Auto Mode will be enabled by default in an upcoming release of eksctl. This means managed node groups and managed networking add-ons will no longer be created by default. To maintain current behavior, explicitly set 'autoModeConfig.enabled: false' in your cluster configuration. Learn more: https://eksctl.io/usage/auto-mode/
2026-01-02 08:58:49 [i] using Kubernetes version 1.32
2026-01-02 08:58:49 [i] creating EKS cluster "trend-app" in "us-east-1" region with managed nodes
2026-01-02 08:58:49 [i] will create 2 separate CloudFormation stacks for cluster itself and the initial managed nodegroup
2026-01-02 08:58:49 [i] if you encounter any issues, check CloudFormation console or try 'eksctl utils describe-stacks --region=us-east-1 --cluster=trend-app'
2026-01-02 08:58:49 [i] Kubernetes API endpoint access will use default of {publicAccess=true, privateAccess=false} for cluster "trend-app" in "us-east-1"
2026-01-02 08:58:49 [i] CloudWatch logging will not be enabled for cluster "trend-app" in "us-east-1"
2026-01-02 08:58:49 [i] you can enable it with 'eksctl utils update-cluster-logging --enable-types=(SPECIFY-YOUR-LOG-TYPES-HERE (e.g. all)) --region=us-east-1 --cluster=trend-app'
2026-01-02 08:58:49 [i] default addons metrics-server, vpc-cni, kube-proxy, coredns were not specified, will install them as EKS addons
2026-01-02 08:58:49 [i]
2026-01-02 08:58:49 [i] 2 sequential tasks: { create cluster control plane "trend-app",
2026-01-02 08:58:49 [i]   2 sequential sub-tasks: {
2026-01-02 08:58:49 [i]     1 task: { create addons },
2026-01-02 08:58:49 [i]     wait for control plane to become ready,
2026-01-02 08:58:49 [i]   },
2026-01-02 08:58:49 [i]   create managed nodegroup "trend-app-node",
2026-01-02 08:58:49 [i] }
2026-01-02 08:58:49 [i] building cluster stack "eksctl-trend-app-cluster"
2026-01-02 08:58:49 [i] deploying stack "eksctl-trend-app-cluster"
2026-01-02 08:59:19 [i] waiting for CloudFormation stack "eksctl-trend-app-cluster"
```

10] eks dashboard

The screenshot displays the AWS Management Console for the 'trend-app' EKS cluster. The left sidebar shows the navigation menu with 'Amazon Elastic Kubernetes Service' selected. The main content area shows the cluster's status as 'Active' and provides various details and actions.

Cluster info

Item	Value
Status	Active
Kubernetes version	1.32
Support period	Standard support until March 23, 2026
Provider	EKS
Cluster health	0
Upgrade insights	5
Node health issues	0
Capability issues	0

Details

Item	Value
API server endpoint	https://FF1AA0E387079AD9692721D68538EB7F.r7.us-east-1.eks.amazonaws.com
OpenID Connect provider URL	https://oidc.eks.us-east-1.amazonaws.com/id/FF1AA0E387079AD9692721D68538EB7F
Created	20 minutes ago
Cluster ARN	arn:aws:eks:us-east-1:045998146012:cluster/trend
Certificate authority	
Cluster IAM role ARN	arn:aws:iam::045998146012:role/eksctl-trend-app-

11] eks deployment and service(LB)

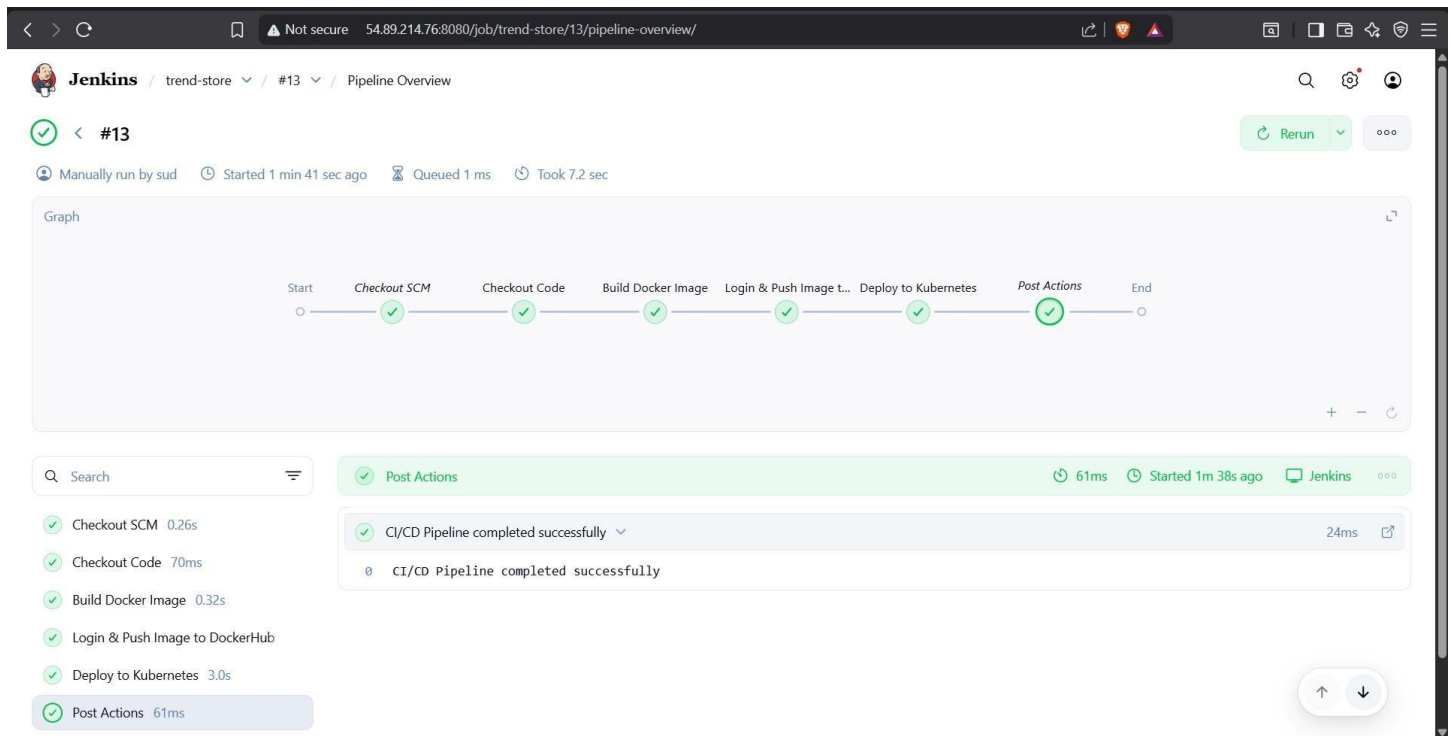
```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-00ffe...
[Alt+S] Ask Amazon Q
United States (N. Virginia) Account ID: 0459-9814-6012 sudharsan

2026-01-02 09:10:23 [i] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:11:01 [i] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:12:16 [i] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:14:15 [i] waiting for CloudFormation stack "eksctl-trend-app-nodegroup-trend-app-node"
2026-01-02 09:14:15 [i] waiting for the control plane to become ready
2026-01-02 09:14:17 [✓] saved kubeconfig as "/home/ubuntu/.kube/config"
2026-01-02 09:14:17 [i] no tasks
2026-01-02 09:14:17 [✓] all EKS cluster resources for "trend-app" have been created
2026-01-02 09:14:17 [i] nodegroup "trend-app-node" has 2 node(s)
2026-01-02 09:14:17 [i] node "ip-192-168-18-58.ec2.internal" is ready
2026-01-02 09:14:17 [i] node "ip-192-168-55-127.ec2.internal" is ready
2026-01-02 09:14:17 [i] waiting for at least 2 node(s) to become ready in "trend-app-node"
2026-01-02 09:14:17 [i] nodegroup "trend-app-node" has 2 node(s)
2026-01-02 09:14:17 [i] node "ip-192-168-18-58.ec2.internal" is ready
2026-01-02 09:14:17 [i] node "ip-192-168-55-127.ec2.internal" is ready
2026-01-02 09:14:17 [✓] created 1 managed nodegroup(s) in cluster "trend-app"
2026-01-02 09:14:17 [i] creating addon: metrics-server
2026-01-02 09:14:19 [i] successfully created addon: metrics-server
2026-01-02 09:14:21 [i] kubectl command should work with "/home/ubuntu/.kube/config", try 'kubectl get nodes'
2026-01-02 09:14:21 [✓] EKS cluster "trend-app" in "us-east-1" region is ready
ubuntu@ip-172-31-65-63:~$ nano Deployment.yaml
ubuntu@ip-172-31-65-63:~$ kubectl apply -f Deployment.yaml
deployment.apps/trend-deployment created
ubuntu@ip-172-31-65-63:~$ nano Service.yaml
ubuntu@ip-172-31-65-63:~$ kubectl apply -f Service.yaml
service/trend-service created
ubuntu@ip-172-31-65-63:~$ kubectl get deployment
NAME READY UP-TO-DATE AVAILABLE AGE
trend-deployment 2/2 2 2 3m14s
ubuntu@ip-172-31-65-63:~$ kubectl get service
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
kubernetes ClusterIP 10.100.0.1 <none> 443/TCP 14m
trend-service LoadBalancer 10.100.1.7 a94af6df62d69453f99b84f089f39faf-1384366194.us-east-1.elb.amazonaws.com 80:31708/TCP 2m1s
ubuntu@ip-172-31-65-63:~$
```

12] jenkins console output

```
54.89.214.76:8080/job/trend-store/13/console
Jenkins / trend-store #13 Console Output
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/trend-store
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
The recommended git tool is: git
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/trend-store/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/sudharsanps115/FINAL-PROJECT.git # timeout=10
Fetching upstream changes from https://github.com/sudharsanps115/FINAL-PROJECT.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/sudharsanps115/FINAL-PROJECT.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision f2e4b868727e8333f7c60dd98ed41ac24e9f0145 (refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f f2e4b868727e8333f7c60dd98ed41ac24e9f0145 # timeout=10
Commit message: "Update Jenkinsfile"
> git rev-list --no-walk f2e4b868727e8333f7c60dd98ed41ac24e9f0145 # timeout=10
[Pipeline] }
```

13] jenkins pipeline overview



14] webhook setup

The image shows the GitHub Webhooks / Manage webhook settings page. The settings are configured for a webhook triggered by the 'push' event. The configuration includes:

- Payload URL:** `http://54.89.214.76:8080/github-webhook/`
- Content type:** `application/json`
- Secret:** (Empty field)
- SSL verification:** ☒ Enable SSL verification (Disable (not recommended))
- Which events would you like to trigger this webhook?**
 - ☒ Just the push event.
 - ☐ Send me everything.
 - ☐ Let me select individual events.

15] prometheus setup

```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-00ffe... Account ID: 0459-9814-6012  
aws Search [Alt+S] United States (N. Virginia) sudhars  
If you understand and want to proceed repeat the command including --classic.  
ubuntu@ip-172-31-65-63:~$ sudo snap install helm --classic  
helm 4.0.4 from Snapcrafters installed  
ubuntu@ip-172-31-65-63:~$ helm repo add prometheus-community https://prometheus-community.github.io/helm-charts  
"prometheus-community" has been added to your repositories  
ubuntu@ip-172-31-65-63:~$ helm repo add grafana https://grafana.github.io/helm-charts  
"grafana" has been added to your repositories  
ubuntu@ip-172-31-65-63:~$ helm repo update  
Hang tight while we grab the latest from your chart repositories...  
...Successfully got an update from the "grafana" chart repository  
...Successfully got an update from the "prometheus-community" chart repository  
Update Complete. Happy Helming!  
ubuntu@ip-172-31-65-63:~$ helm install prometheus prometheus-community/kube-prometheus-stack  
NAME: prometheus  
LAST DEPLOYED: Fri Jan 2 11:35:41 2026  
NAMESPACE: default  
STATUS: deployed  
REVISION: 1  
DESCRIPTION: Install complete  
NOTES:  
kube-prometheus-stack has been installed. Check its status by running:  
  kubectl --namespace default get pods -l "release=prometheus"  
  
Get Grafana 'admin' user password by running:  
  
  kubectl --namespace default get secrets prometheus-grafana -o jsonpath="{.data.admin-password}" | base64 -d ; echo  
  
Access Grafana local instance:  
  
  export POD_NAME=$(kubectl --namespace default get pod -l "app.kubernetes.io/name=grafana,app.kubernetes.io/instance=prometheus" -oname)  
  kubectl --namespace default port-forward $POD_NAME 3000  
  
Get your grafana admin user password by running:
```

16] grafana setup

[illegible]

17] monitoring using prometheus and grafana

