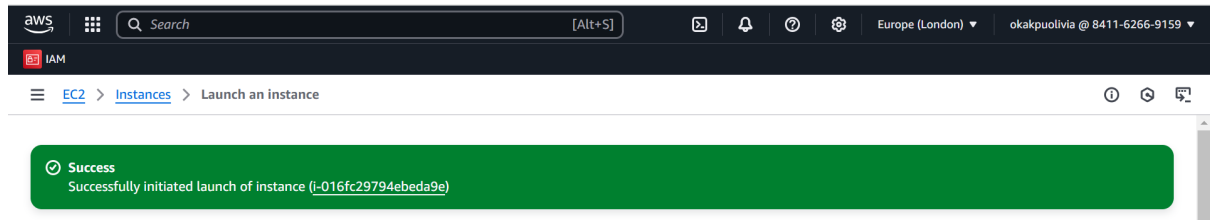
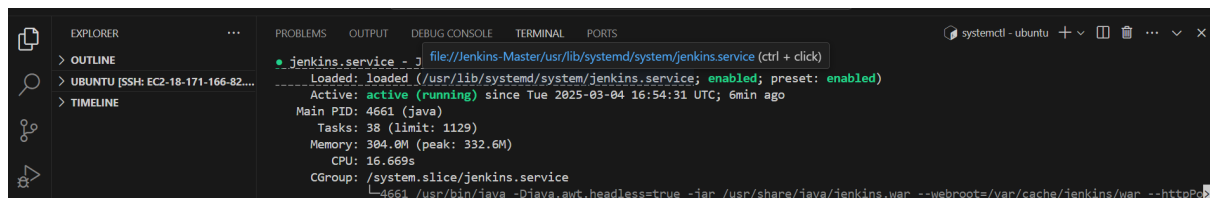


Automating CI/CD with Jenkins, Docker, ArgoCD, and AWS EKS

Jenkins-Master Instance launched in AWS Console



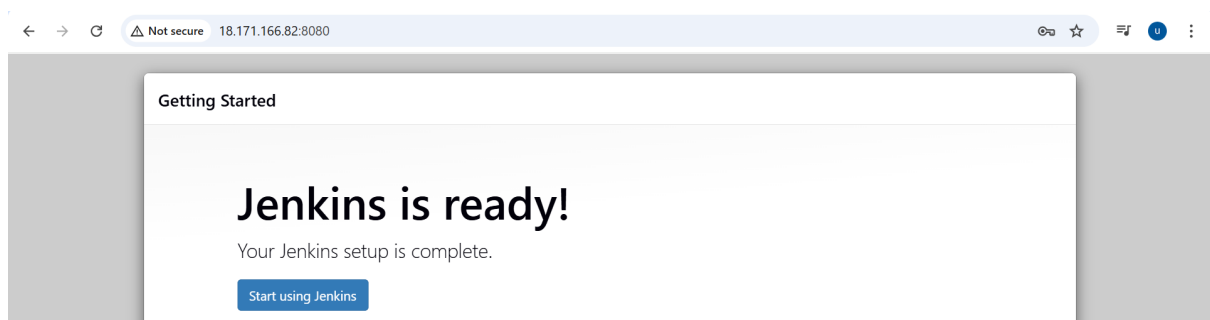
Jenkins is active and running on the Jenkins-Master Server



Jenkins-Master accessed on the web browser:8080



Jenkins setup complete



Jenkins-Agent Launched on Console

The screenshot shows the AWS IAM console with a green success banner at the top stating: "Success Successfully initiated launch of instance (i-016fc29794ebda9e)". Below this, the "Instances" page is displayed, showing a table of EC2 instances. The "Jenkins-Agent" instance is highlighted in blue, indicating it is in a "Running" state.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
Jenkins-Master	i-02f2ebc8b4ad2ce04	Running	t2.micro	2/2 checks passed	View alarms +	eu-west-2a	ec2-18-171
Jenkins-Agent	i-016fc29794ebda9e	Running	t2.micro	2/2 checks passed	View alarms +	eu-west-2a	ec2-18-175

Jenkins-Agent Nodes integrated with the Jenkins-Master

The screenshot shows the Jenkins dashboard with the "Nodes" page selected. The "Nodes" section displays a table of nodes, including the "Jenkins-Agent" node. The "Jenkins-Agent" node is shown as "last checked" with a response time of 43 ms. The "Build Queue" section shows "No builds in the queue." and the "Build Executor Status" section shows "Jenkins-Agent" with a status of "0/2".

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	3.28 GiB	0 B	3.28 GiB	0ms
	Jenkins-Agent	Linux (amd64)	In sync	10.18 GiB	0 B	10.18 GiB	42ms
last checked		52 ms	52 ms	53 ms	49 ms	49 ms	43 ms

Test Pipeline executed (Hello World)

The screenshot shows the Jenkins Pipeline Overview page for "Build #1". The pipeline is shown as a sequence of steps: "Start" -> "Hello" -> "End". The "Hello" step is highlighted with a green checkmark, indicating successful completion. The "Details" section shows the following information:

- Manually run by Olivia Okakpu
- Started 18 sec ago
- Queued 36 ms
- Took 4.4 sec

The pipeline is executing on the Jenkins-Agent (Connection successful)

Status

</> Changes

Console Output

Edit Build Information

Delete build '#1'

Timings

Pipeline Overview

Pipeline Console

Restart from Stage

Replay

Pipeline Steps

✓ Console Output

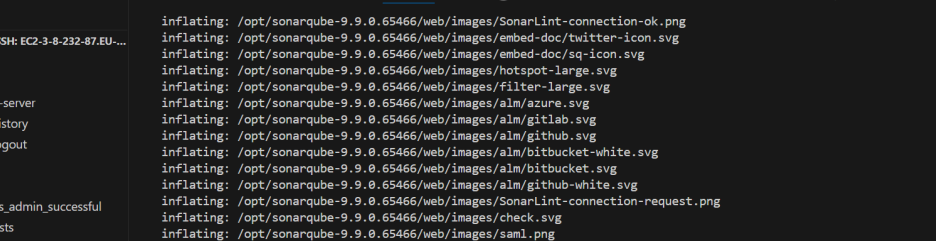
Download

Copy

View as plain text

```
Started by user Olivia Okakpu
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins-Agent in /home/ubuntu/workspace/Test
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello World
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

SonarQube active (running) on the CLI



The screenshot shows a terminal window with the following content:

```
File Edit Selection View Go Run ... ubuntu [SSH: ec2-3-8-232-87.eu-west-2.compute.amazonaws.com]
EXPLORER PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
> OUTLINE
  > UBUNTU [SSH: EC2-3-8-232-87.EU-...
    .cache
    .ssh
    .vscode-server
    .bash_history
    .bash_logout
    .bashrc
    .profile
    sudo_as_admin_successful
    .wget-hsts
    sonarqube-9.9.0.65466.zip
    sonarqube-9.9.0.65466.zip.1
  inflating: /opt/sonarqube-9.9.0.65466/web/images/SonarLint-connection-ok.png
  inflating: /opt/sonarqube-9.9.0.65466/web/images/embed-doc/twitter-icon.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/embed-doc/sq-icon.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/hotspot-large.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/filter-large.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/azure.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/gitlab.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/github.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/bitbucket-white.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/bitbucket.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/alm/github-white.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/SonarLint-connection-request.png
  inflating: /opt/sonarqube-9.9.0.65466/web/images/check.svg
  inflating: /opt/sonarqube-9.9.0.65466/web/images/saml.png
  • sonar.service - SonarQube service
    --- Loaded: loaded (/etc/systemd/system/sonar.service; enabled; preset: enabled)
    --- Active: active (running) since Thu 2025-03-06 19:54:08 UTC; 35s ago
    Main PID: 8003 (java)
    Tasks: 117 (limit: 9365)
    Memory: 1.2G (peak: 1.2G)
    CPU: 1min 4.097s
    CGroup: /system.slice/sonar.service
            └─8003 java -Xms8m -Xmx32m --add-exports=java.base/jdk.internal.ref=ALL-UNNAMED --add-opens=java.base/java.lang=ALL-UNNAMED
            └─8045 /usr/lib/jvm/temurin-17-jdk-amd64/bin/java -XX:+UseG1GC -Djava.io.tmpdir=/opt/sonarqube/temp -XX:ErrorFile=/opt/sonarqube/log/hs_err_pid18181.log
            └─8181 /usr/lib/jvm/temurin-17-jdk-amd64/bin/java -Djava.awt.headless=true -Dfile.encoding=UTF-8 -Djava.io.tmpdir=/opt/sonarqube/temp

Mar 06 19:54:08 ip-172-31-7-119 systemd[1]: Starting sonar.service - SonarQube service...
Mar 06 19:54:08 ip-172-31-7-119 sonar.sh[7980]: /usr/bin/java
Mar 06 19:54:08 ip-172-31-7-119 sonar.sh[7980]: Starting SonarQube...
Mar 06 19:54:08 ip-172-31-7-119 sonar.sh[7980]: Started SonarQube.
Mar 06 19:54:08 ip-172-31-7-119 systemd[1]: Started sonar.service - SonarQube service.
~
~
~
~
~
> TIMELINE
```

Database and Credentials setup for SonarQube via CLI

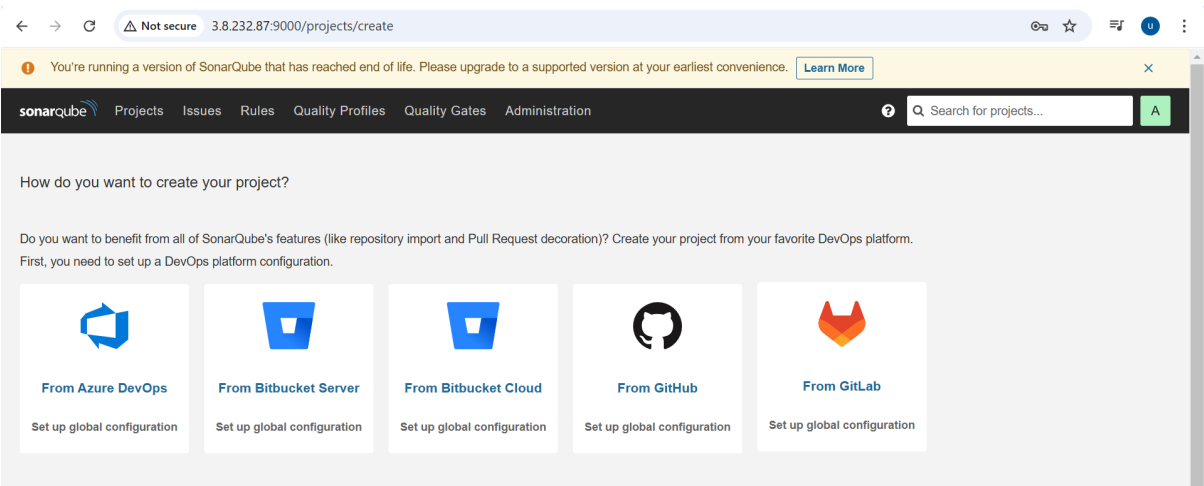
```
.bashrc
.profile
.sudo_as_admin_successful
.wget-hsts

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - ubuntu

Executing: /usr/lib/systemd/systemd-sysv-install enable postgresql
ubuntu@ip-172-31-7-119:~$ sudo systemctl enable postgresql
Synchronizing state of postgresql.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable postgresql
ubuntu@ip-172-31-7-119:~$ sudo passwd postgres
New password:
Retype new password:
passwd: password updated successfully
ubuntu@ip-172-31-7-119:~$ su - postgres
postgres@ip-172-31-7-119:~$ createuser sonar
postgres@ip-172-31-7-119:~$ psql
psql (17.4 (Ubuntu 17.4-1.pgdg24.04+2))
Type "help" for help.

postgres=# ALTER USER sonar WITH ENCRYPTED password 'sonar';
ALTER ROLE
postgres=# CREATE DATABASE sonarqube OWNER sonar;
CREATE DATABASE
postgres=# grant all privileges on DATABASE sonarqube to sonar;
GRANT
postgres=# \q
postgres@ip-172-31-7-119:~$ exit
logout
ubuntu@ip-172-31-7-119:~$
```

SonarQube accessed and logged in via port 9000 through the web browser



SonarQube Analysis ran successfully

register-app-1-ci - Stage View

	Declarative: Checkout SCM	Declarative: Tool Install	Cleanup Workspace	Checkout from SCM	Build Application	Test Application	SonarQube Analysis
Average stage times: (full run time: ~44s)	3s	353ms	670ms	1s	13s	6s	26s
#1 02:48 2	5s	396ms	764ms	2s	10s	6s	26s
#2 17:55 No Changes	780ms	310ms	576ms	1s	16s	6s	

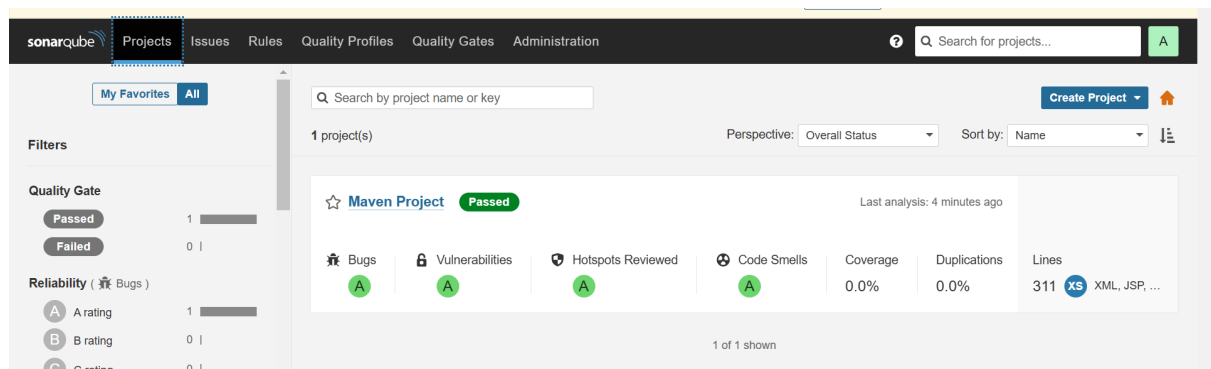
Quality gate stage ran successfully

```
← → ↻ ⚠ Not secure 18.171.166.82:8080/job/register-app-1-ci/5/console ☆ ⚙ 0 ⋮

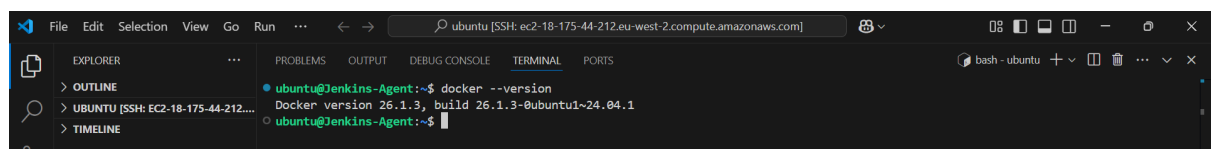
Dashboard > register-app-1-ci > #5

[Pipeline] {
[Pipeline] waitForQualityGate
Checking status of SonarQube task 'AZVumQVTnhYDKoAi4cbT' on server 'sonarqube-server'
SonarQube task 'AZVumQVTnhYDKoAi4cbT' status is 'IN_PROGRESS'
SonarQube task 'AZVumQVTnhYDKoAi4cbT' status is 'SUCCESS'
SonarQube task 'AZVumQVTnhYDKoAi4cbT' completed. Quality gate is 'OK'
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

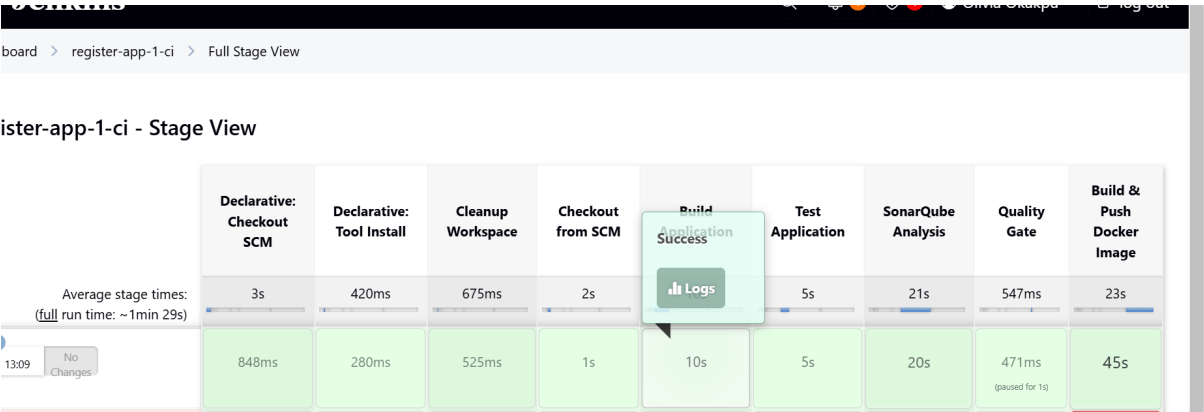
SonarQube Dashboard



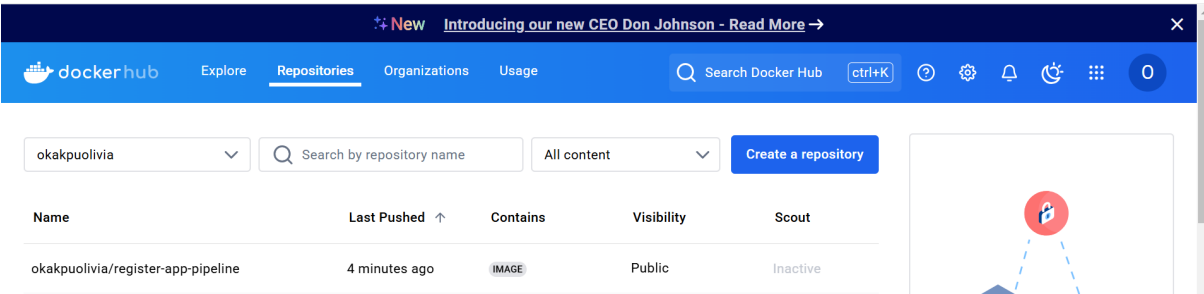
Docker installation was successful



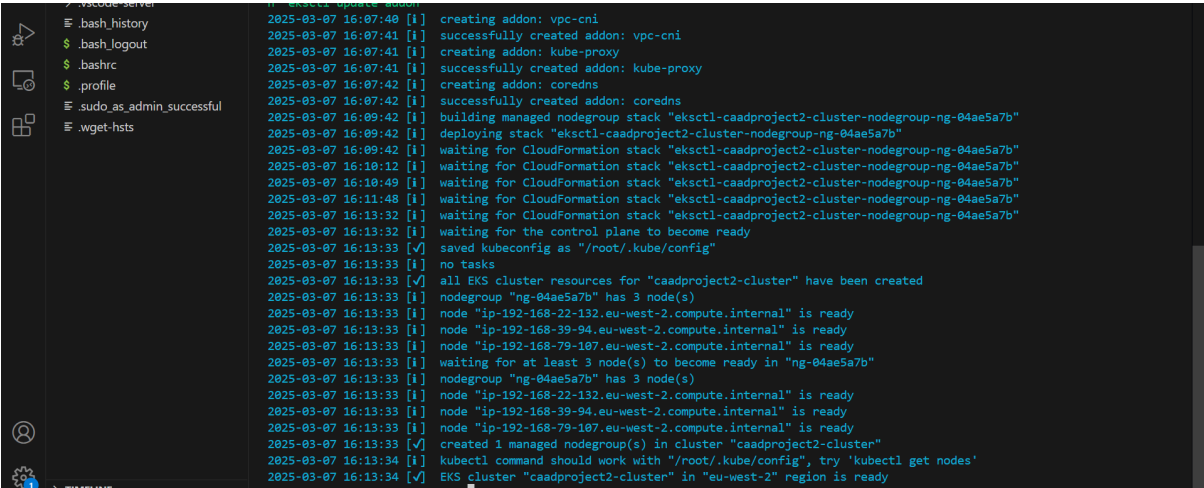
Build and Push Docker Image stage ran successfully



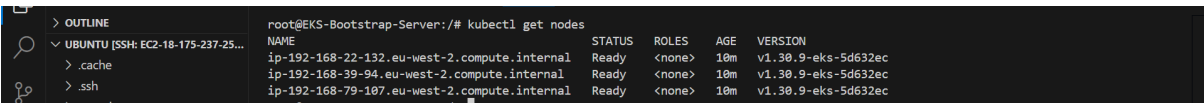
Pipeline success- Image pushed to DockerHub



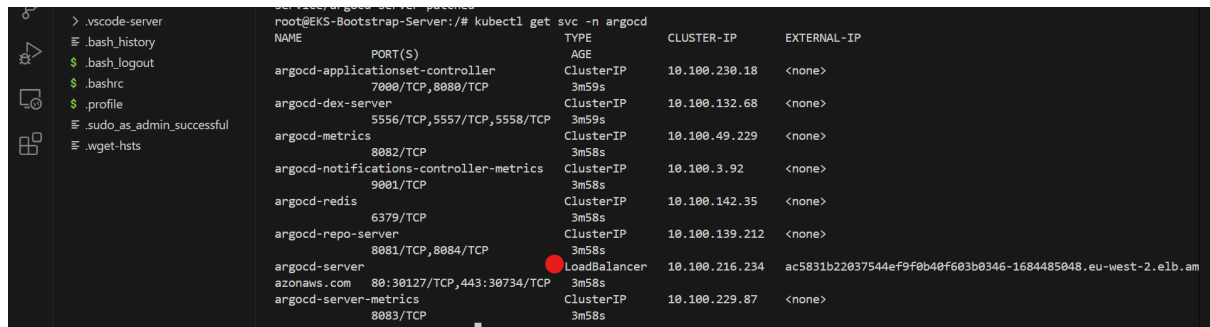
Created EKS Cluster and nodes on the CLI



Nodes showing on the CLI



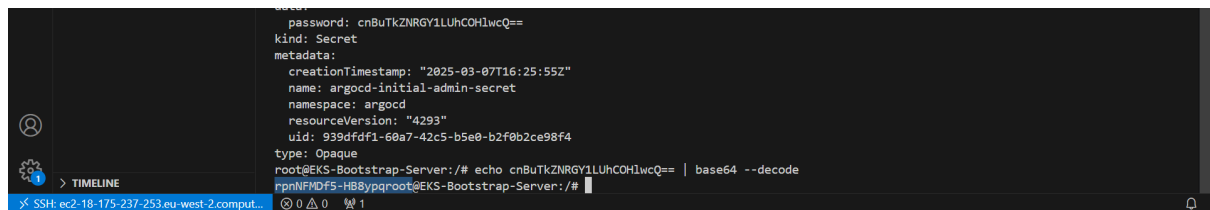
Load Balancer in AgroCD namespace



```
> .vscode-server
bash_history
bash_logout
bashrc
profile
sudo_as_admin_successful
wget-hsts
```

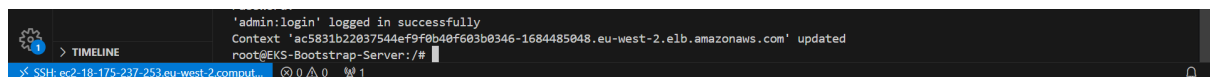
NAME	PORT(S)	TYPE	CLUSTER-IP	EXTERNAL-IP
argocd-applicationset-controller	7000/TCP,8080/TCP	ClusterIP	10.100.230.18	<none>
argocd-dex-server	5556/TCP,5557/TCP,5558/TCP	ClusterIP	10.100.132.68	<none>
argocd-metrics	8082/TCP	ClusterIP	10.100.49.229	<none>
argocd-notifications-controller-metrics	9001/TCP	ClusterIP	10.100.3.92	<none>
argocd-redis	6379/TCP	ClusterIP	10.100.142.35	<none>
argocd-repo-server	8081/TCP,8084/TCP	ClusterIP	10.100.139.212	<none>
argocd-server	80:30127/TCP,443:30734/TCP	LoadBalancer	10.100.216.234	ac5831b22037544ef9f0b40f603b0346-1684485048.eu-west-2.elb.am
amazonaws.com	80:30127/TCP,443:30734/TCP	ClusterIP	10.100.216.234	<none>
argocd-server-metrics	8083/TCP	ClusterIP	10.100.229.87	<none>

AgroCD login credentials decoded



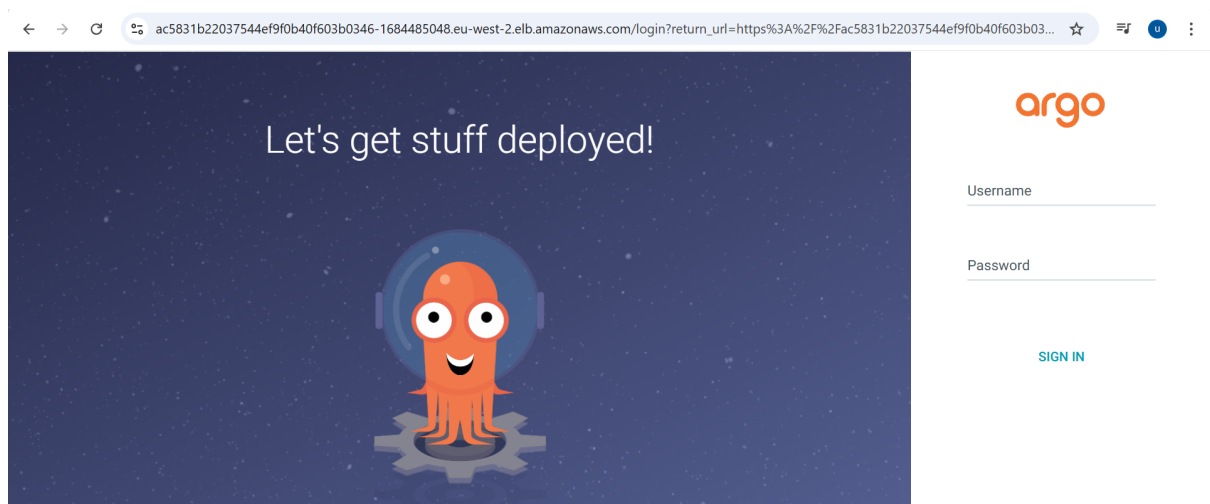
```
password: cnBuTkZNRGY1LUhCOHlwcQ==
kind: Secret
metadata:
  creationTimestamp: "2025-03-07T16:25:55Z"
  name: argocd-initial-admin-secret
  namespace: argocd
  resourceVersion: "4293"
  uid: 939dfdf1-60a7-42c5-b5e0-b2f0b2ce98f4
type: Opaque
root@EKS-Bootstrap-Server:~# echo cnBuTkZNRGY1LUhCOHlwcQ== | base64 --decode
rpnNFMDF5-HB8ypqroot@EKS-Bootstrap-Server:~#
```

Login success on the CLI

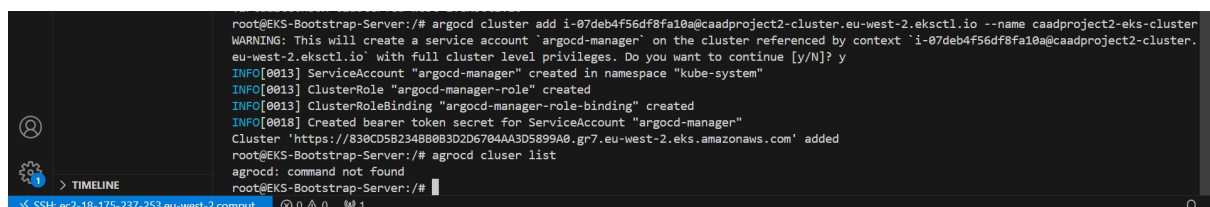


```
'admin:login' logged in successfully
Context: 'ac5831b22037544ef9f0b40f603b0346-1684485048.eu-west-2.elb.amazonaws.com' updated
root@EKS-Bootstrap-Server:~#
```

Accessed AgroCD using load balancer URL

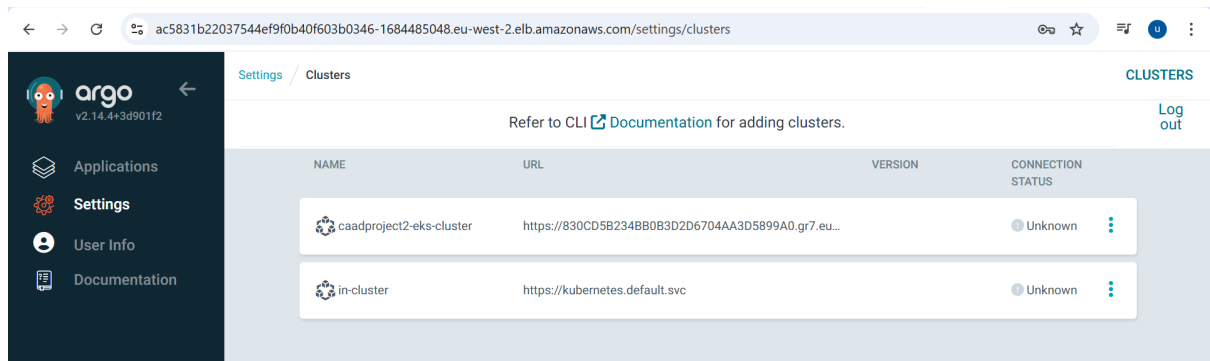


EKS cluster added to AgroCD via CLI



```
root@EKS-Bootstrap-Server:~# argocd cluster add i-07deb4f56df8fa10a@caadproject2-cluster.eu-west-2.eksctl.io --name caadproject2-eks-cluster
WARNING: This will create a service account 'argocd-manager' on the cluster referenced by context 'i-07deb4f56df8fa10a@caadproject2-cluster.eu-west-2.eksctl.io' with full cluster level privileges. Do you want to continue [y/N]? y
INFO[0013] ServiceAccount "argocd-manager" created in namespace "kube-system"
INFO[0013] ClusterRole "argocd-manager-role" created
INFO[0013] ClusterRoleBinding "argocd-manager-role-binding" created
INFO[0018] Created bearer token secret for ServiceAccount "argocd-manager"
Cluster 'https://930CD50234B8083D2D6704AA3D5899A0.gr7.eu-west-2.eks.amazonaws.com' added
root@EKS-Bootstrap-Server:~# argocd cluster list
argocd: command not found
root@EKS-Bootstrap-Server:~#
```

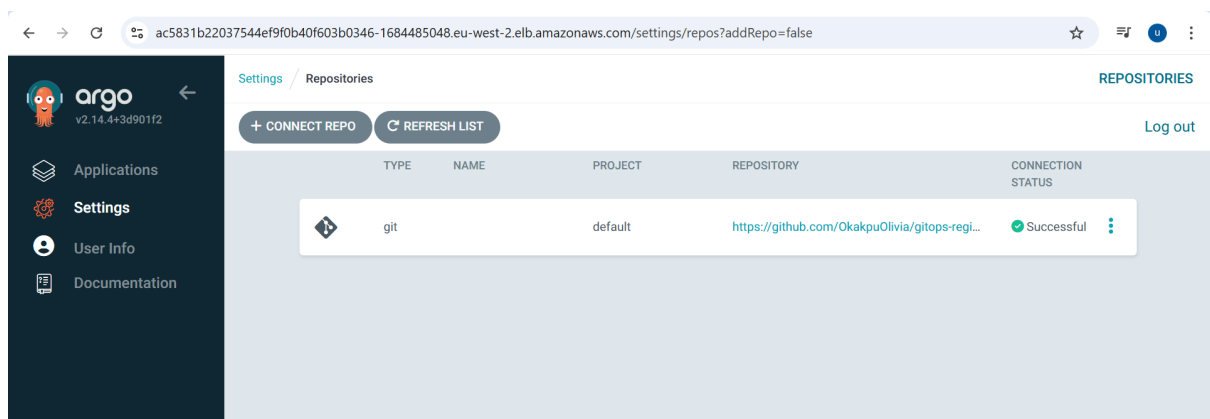
Cluster successfully added and visible on the ArgoCD dashboard



The screenshot shows the ArgoCD dashboard's 'Clusters' page. The left sidebar contains the Argo logo and navigation links for Applications, Settings, User Info, and Documentation. The main content area has a header with 'Settings / Clusters' and a 'Log out' button. Below the header, there is a message: 'Refer to CLI [Documentation](#) for adding clusters.' A table lists the clusters:

NAME	URL	VERSION	CONNECTION STATUS
caadproject2-eks-cluster	https://830CD5B234BB0B3D2D6704AA3D5899A0.gr7.eu...		Unknown
in-cluster	https://kubernetes.default.svc		Unknown

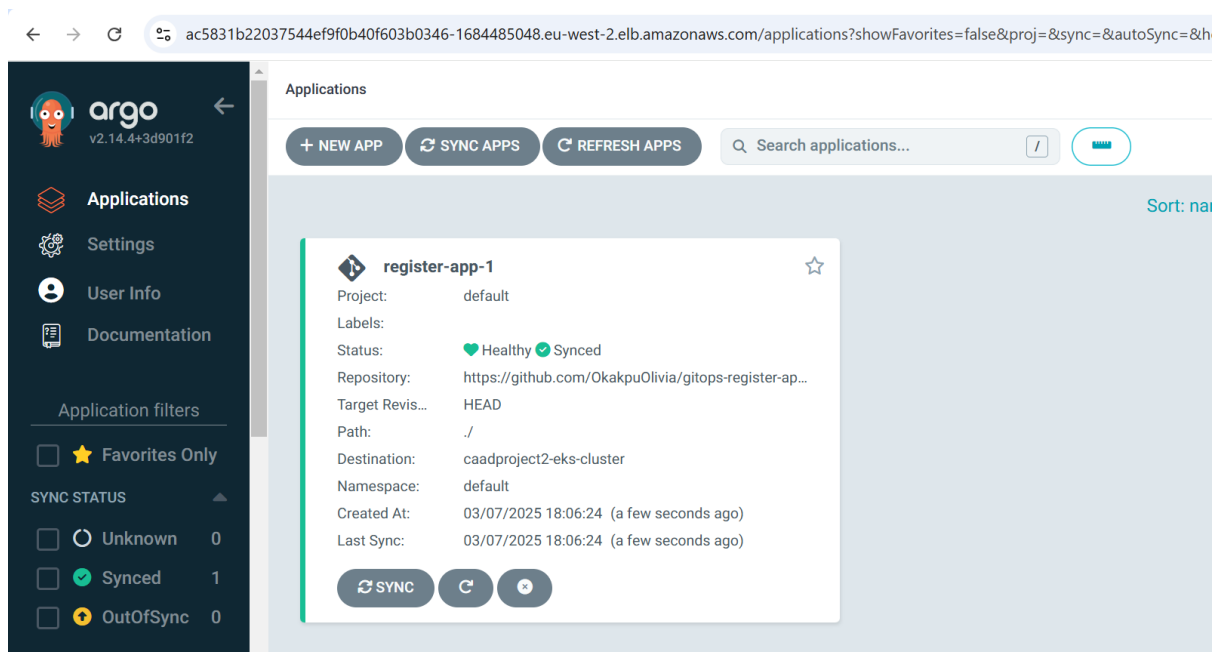
Github repository successfully connected



The screenshot shows the ArgoCD dashboard's 'Repositories' page. The left sidebar is the same as the previous screenshot. The main content area has a header with 'Settings / Repositories' and a 'Log out' button. Below the header, there are buttons for '+ CONNECT REPO' and 'REFRESH LIST'. A table lists the repositories:

TYPE	NAME	PROJECT	REPOSITORY	CONNECTION STATUS
git		default	https://github.com/OkakpuOlivia/gitops-regi...	Successful

Application created on EKS cluster



The screenshot shows the ArgoCD dashboard's 'Applications' page. The left sidebar contains the Argo logo and navigation links for Applications, Settings, User Info, and Documentation. The main content area has a header with 'Applications' and buttons for '+ NEW APP', 'SYNC APPS', and 'REFRESH APPS'. Below the header, there is a search bar and a 'Sort: name' dropdown. A card for the application 'register-app-1' is displayed:

register-app-1

Project: default

Labels:

Status: Healthy Synced

Repository: https://github.com/OkakpuOlivia/gitops-register-ap...

Target Revis... HEAD

Path: /

Destination: caadproject2-eks-cluster

Namespace: default

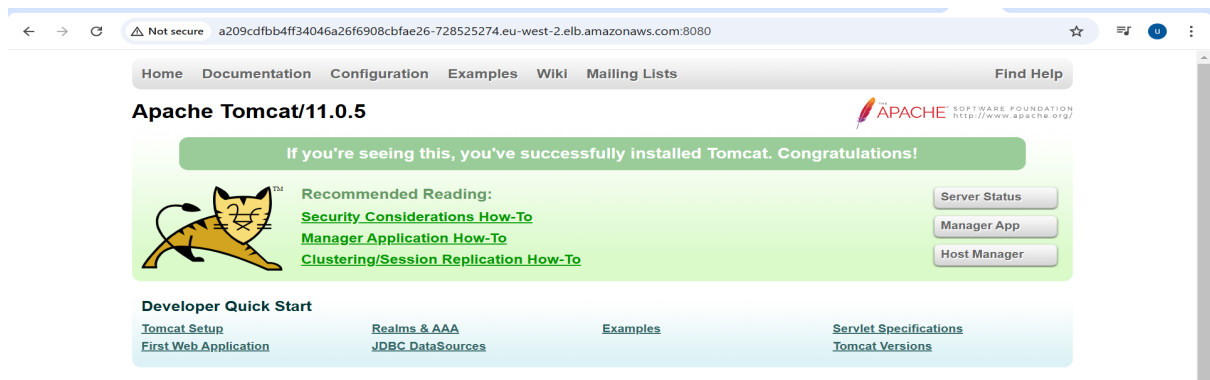
Created At: 03/07/2025 18:06:24 (a few seconds ago)

Last Sync: 03/07/2025 18:06:24 (a few seconds ago)

Kubernetes External DNS for Load Balancer

```
File Edit Selection View Go Run ... < -> ubuntu [SSH: ec2-18-175-237-253.eu-west-2.compute.amazonaws.com]
EXPLORER
  > OUTLINE
  > UBUNTU [SSH: EC2-18-175-237-253.eu-west-2.compute.amazonaws.com]
    > .cache
    > .ssh
    > .vscode-server
    > .bash_history
    > .bash_logout
    > .bashrc
    > .profile
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS 1
root@EKS-Bootstrap-Server:~# kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
register-app-deployment-cc9f9fc57-6h2s7 1/1     Running   0           2m
register-app-deployment-cc9f9fc57-gq872 1/1     Running   0           2m
root@EKS-Bootstrap-Server:~# kubectl get svc
NAME                                TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)
kubernetes                         ClusterIP    10.100.0.1       <none>            443/TCP
register-app-service                LoadBalancer 10.100.53.122    a209cdfbb4ff34046a26f6908cbfae26-728525274.eu-west-2.elb.amazonaws.com 8080:31450/TCP
P 3m4s
```

Apache Tomcat accessed using Load Balancer DNS:8080



Application accessed using Load Balancer DNS:8080/webapp

← → ↻ Not secure a209cdfbb4ff34046a26f6908cbfae26-728525274.eu-west-2.elb.amazonaws.com:8080/webapp/#

New user Register for DevOps Learning at Virtual TechBox Youtube Channel

Please fill in this form to create an account.

Enter Name
Enter mobile
Enter Email
Password
Repeat Password

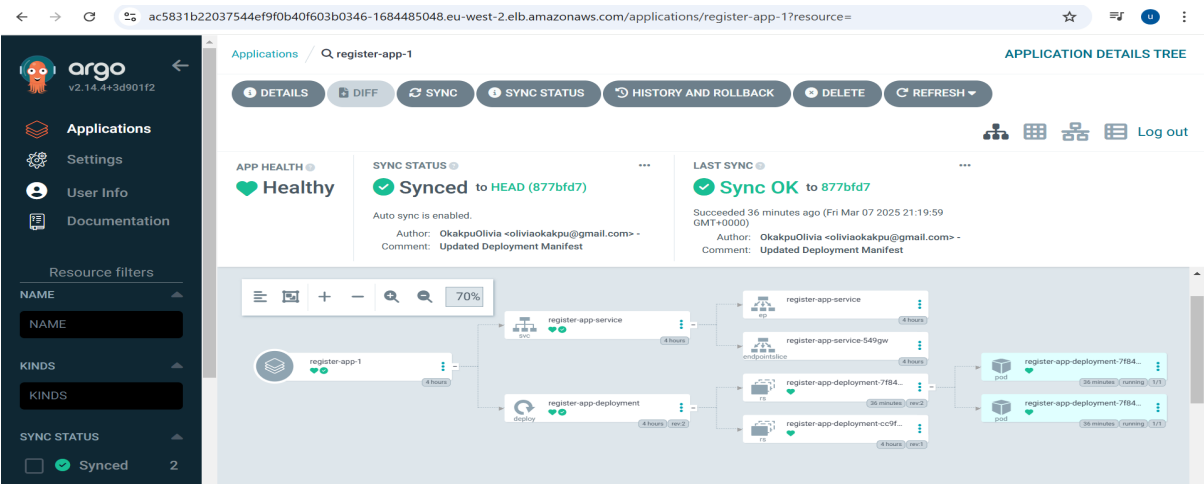
By creating an account you agree to our [Terms & Privacy](#).

Already have an account? [Sign in](#).

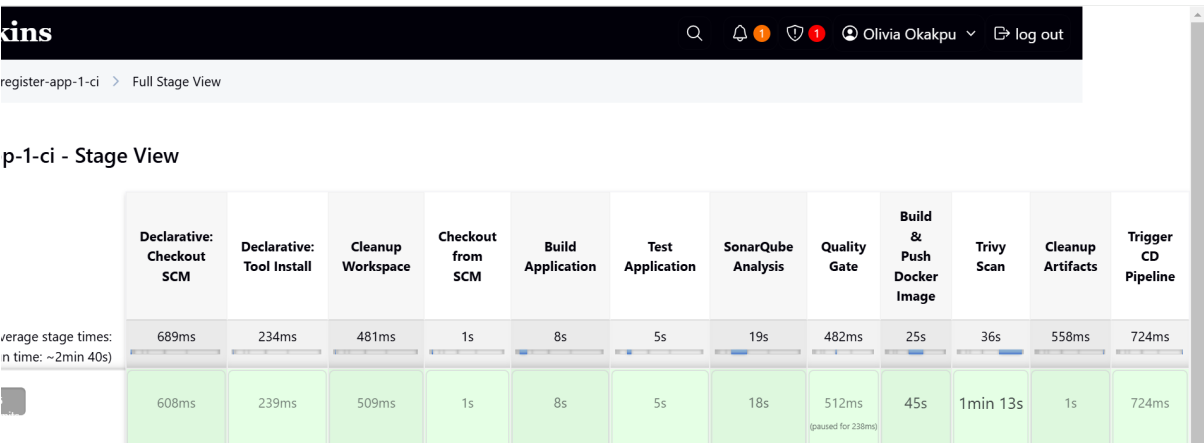
Thank You

Happy Learning. See You Again.

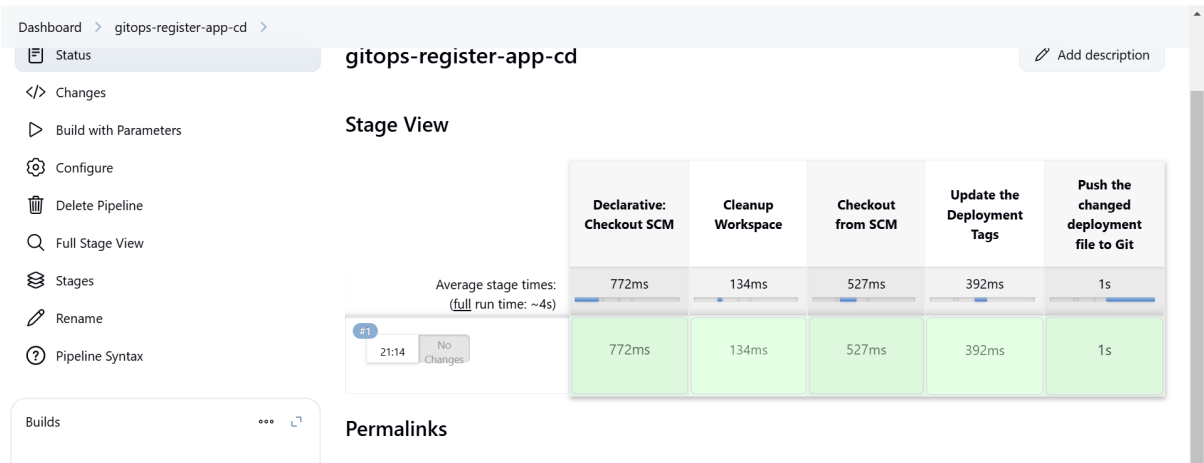
Health and sync status are both confirmed as OK in AgroCD app



CI trigger for (gitops-resregister-app) CD job was successful



The CD trigger was successful, and the pipeline executed without issues



Verified the latest version of the image on DockerHub to confirm the update after the successful CI/CD execution

okakpuolivia/register-app-pipeline

Last pushed 9 minutes ago • Repository size: 233.8 MB

[Add a description](#) [i](#)

[Add a category](#) [i](#)

General

Tags

Image Management BETA

Collaborators

Webhooks

Settings

Tags

This repository contains 3 tag(s).

Tag	OS	Type	Pulled	Pushed
latest		Image	less than 1 day	9 minutes
1.0.0-13		Image	less than 1 day	9 minutes
1.0.0-11		Image	less than 1 day	about 8 hours

[See all](#)

Docker commands

To push a new tag to this repository:

```
docker push okazpuolivia/register-app-pipeline:tagname
```

Automated builds

Manually pushing images to Docker Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions. [Read more about automated builds](#)

Upgrade

Instances used in executing the project

aws

Search

[Alt+S]

Europe (London)

okakpuolivia @ 8411-6266-9159

EC2

Instances

Instances (7)

Find Instance by attribute or tag (case-sensitive)

All states

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Publ
<input type="checkbox"/>	SonarQube	i-0761e79ce0a24act0	Running	t3.large	3/3 checks passec	View alarms +	eu-west-2a	ec2-
<input type="checkbox"/>	Jenkins-Master	i-02f2ebc8b4ad2ce04	Running	t2.micro	2/2 checks passec	View alarms +	eu-west-2a	ec2-
<input type="checkbox"/>	Jenkins-Agent	i-016fc29794ebeda9e	Running	t2.micro	2/2 checks passec	View alarms +	eu-west-2a	ec2-
<input type="checkbox"/>	EKS-Bootstrap-Server	i-07deb4f56df8fa10a	Running	t2.micro	2/2 checks passec	View alarms +	eu-west-2a	ec2-
<input type="checkbox"/>	caadproject2-cluster-...	i-0a55880f23bb148dd	Running	t2.small	2/2 checks passec	View alarms +	eu-west-2a	ec2-
<input type="checkbox"/>	caadproject2-cluster-...	i-044e52d6399bb5932	Running	t2.small	2/2 checks passec	View alarms +	eu-west-2c	ec2-
<input type="checkbox"/>	caadproject2-cluster-...	i-0e8f67df8db2b5c62	Running	t2.small	2/2 checks passec	View alarms +	eu-west-2b	ec2-

Github Repository

<https://github.com/OkakpuOlivia/register-app-1.git>

<https://github.com/OkakpuOlivia/gitops-register-app.git>