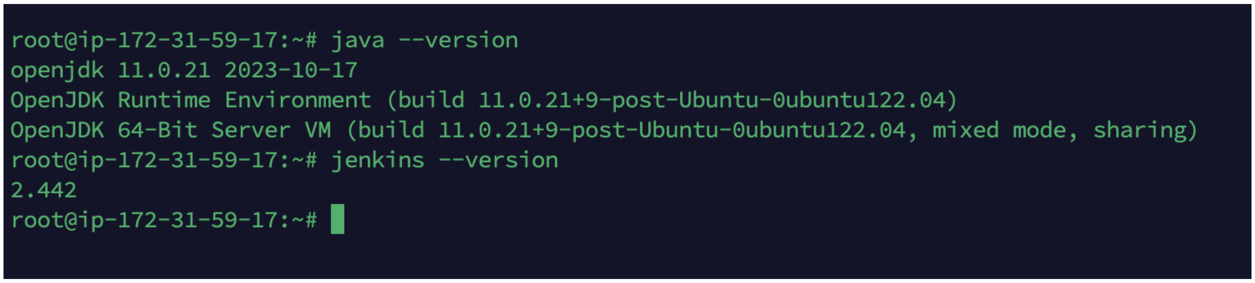
End-to-End CI/CD Pipeline Implementation on AWS with Jenkins, Docker, Kubernetes, and ArgoCD

Manikandan Muthukumaran

1) EC2 Instance & Jenkins Setup

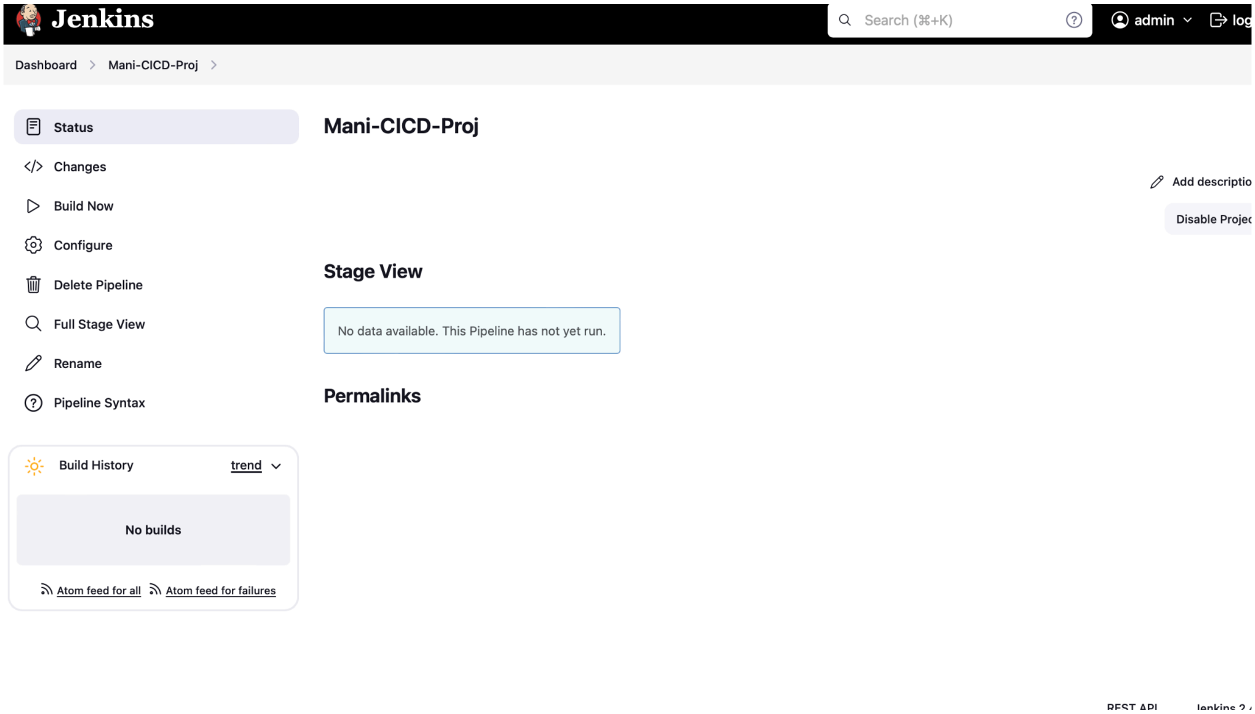
- Created an EC2 instance with a T2 micro configuration for optimal performance.
- Installed Java OpenJDK on the EC2 instance.
- Installed Jenkins for CI/CD pipeline management.
- Retrieved Jenkins initial password from the 'var' folder.



```
root@ip-172-31-59-17:~# java --version
openjdk 11.0.21 2023-10-17
OpenJDK Runtime Environment (build 11.0.21+9-post-Ubuntu-0ubuntu122.04)
OpenJDK 64-Bit Server VM (build 11.0.21+9-post-Ubuntu-0ubuntu122.04, mixed mode, sharing)
root@ip-172-31-59-17:~# jenkins --version
2.442
root@ip-172-31-59-17:~# 
```

2) Jenkins Pipeline Creation:

- Created a Jenkins pipeline using source code (jenkins script) from a public GIT repository for a Spring Boot application.
- Installed Docker Pipeline plugin in Jenkins.
- Installed SonarQube Scanner plugin



Mani-CICD-Proj

Stage View

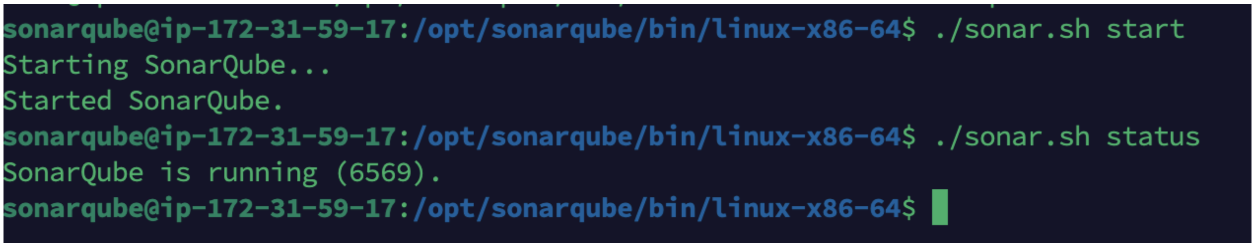
No data available. This Pipeline has not yet run.

Permalinks

No builds

3) SonarQube Setup:

- Started SonarQube and checked it on port 9000.
- Obtained a key from SonarQube and added it to global credentials in Jenkins.
- Installed Docker on the EC2 instance.
- Granted permissions to the 'ubuntu' and 'jenkins' users to access Docker and containers.
- Restarted Jenkins.

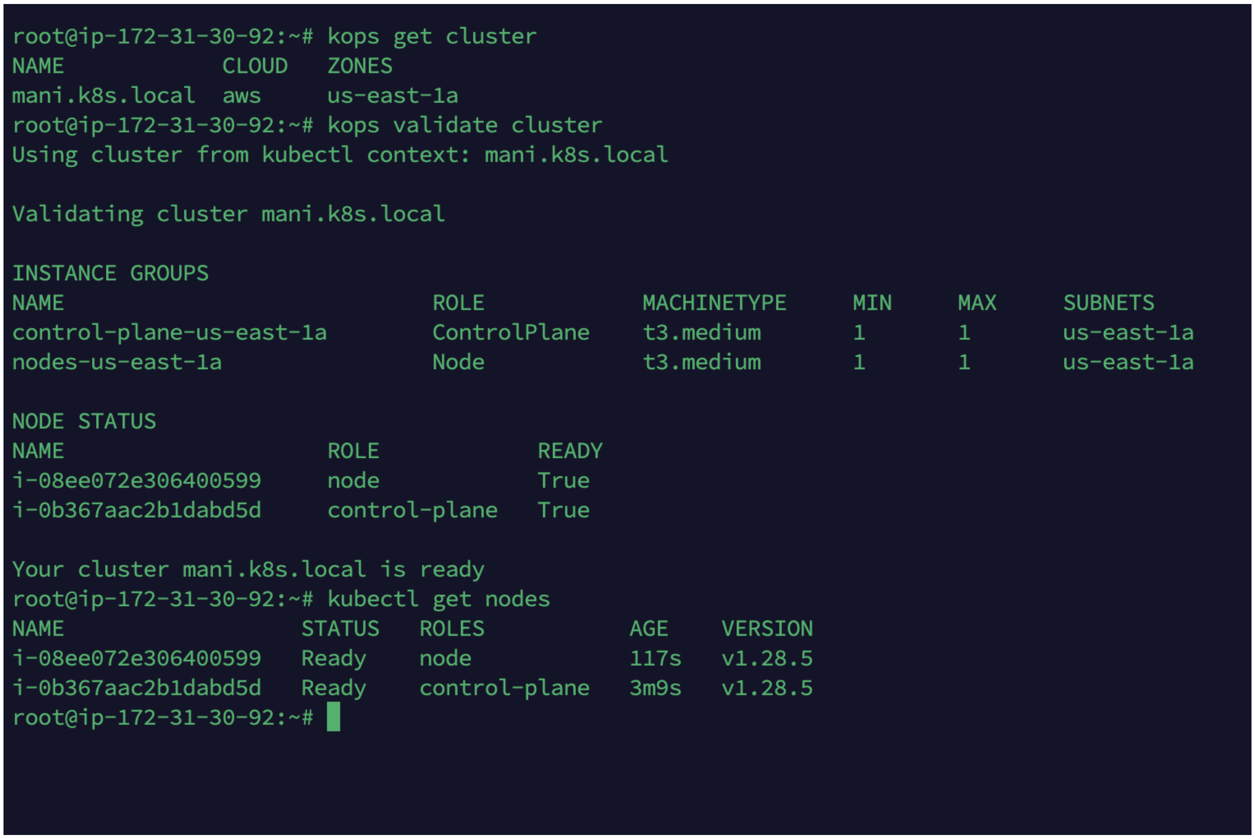


```
sonarqube@ip-172-31-59-17:/opt/sonarqube/bin/linux-x86-64$ ./sonar.sh start
Starting SonarQube...
Started SonarQube.
sonarqube@ip-172-31-59-17:/opt/sonarqube/bin/linux-x86-64$ ./sonar.sh status
SonarQube is running (6569).
sonarqube@ip-172-31-59-17:/opt/sonarqube/bin/linux-x86-64$
```

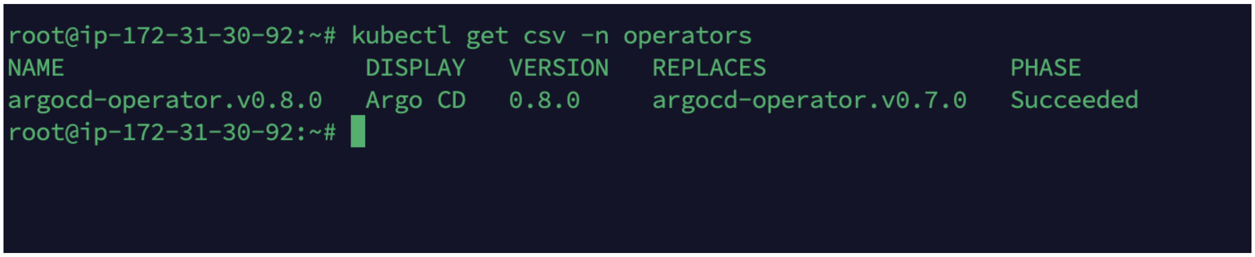
4) Kubernetes Cluster Setup:

- Installed a Kubernetes cluster using Kops.
- Installed kubectl and started the Kubernetes cluster named 'mani.k8s.local

- Installed the ArgoCD operator.
- Deployed ArgoCD from OperatorHub.io.



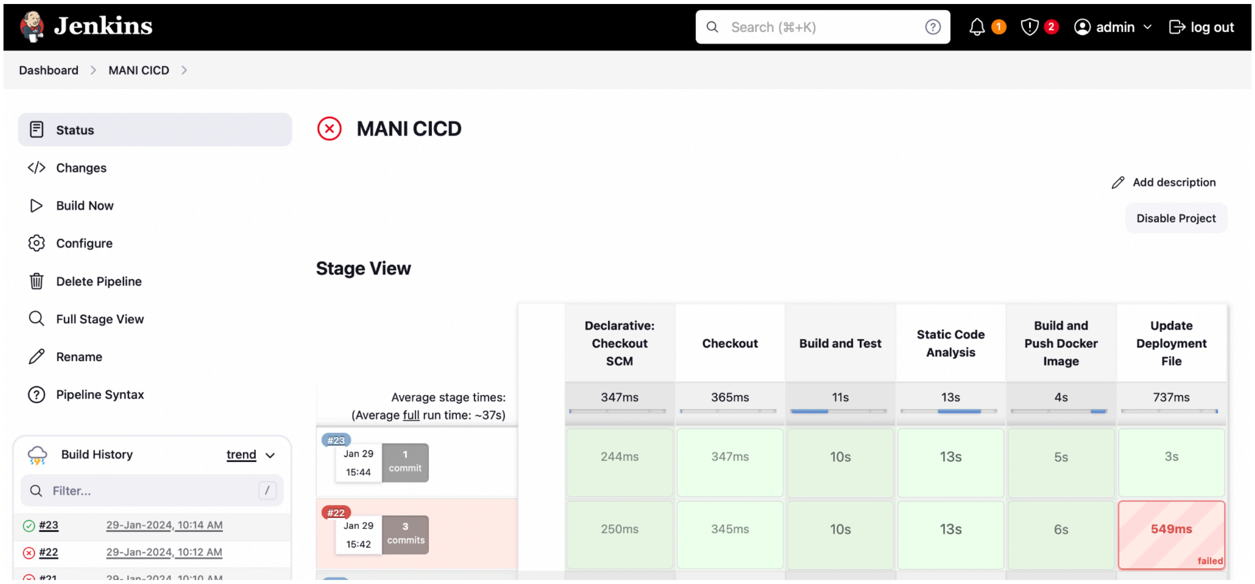
```
root@ip-172-31-30-92:~# kops get cluster
NAME            CLOUD   ZONES
mani.k8s.local  aws     us-east-1a
root@ip-172-31-30-92:~# kops validate cluster
Using cluster from kubectl context: mani.k8s.local

Validating cluster mani.k8s.local

INSTANCE GROUPS
NAME                            ROLE            MACHINETYPE     MIN     MAX     SUBNETS
control-plane-us-east-1a        ControlPlane    t3.medium       1       1       us-east-1a
nodes-us-east-1a                Node            t3.medium       1       1       us-east-1a

NODE STATUS
NAME                    ROLE            READY
i-08ee072e306400599     node            True
i-0b367aac2b1dabd5d     control-plane   True

Your cluster mani.k8s.local is ready
root@ip-172-31-30-92:~# kubectl get nodes
NAME                    STATUS   ROLES           AGE    VERSION
i-08ee072e306400599     Ready    node            117s   v1.28.5
i-0b367aac2b1dabd5d     Ready    control-plane   3m9s   v1.28.5
root@ip-172-31-30-92:~#
```



```
root@ip-172-31-30-92:~# kubectl get csv -n operators
NAME                      DISPLAY   VERSION   REPLACES                 PHASE
argocd-operator.v0.8.0    Argo CD   0.8.0     argocd-operator.v0.7.0   Succeeded
root@ip-172-31-30-92:~#
```

'.

5) Successfully Automated Deployment with Script Execution"



MANI CICD

Stage View

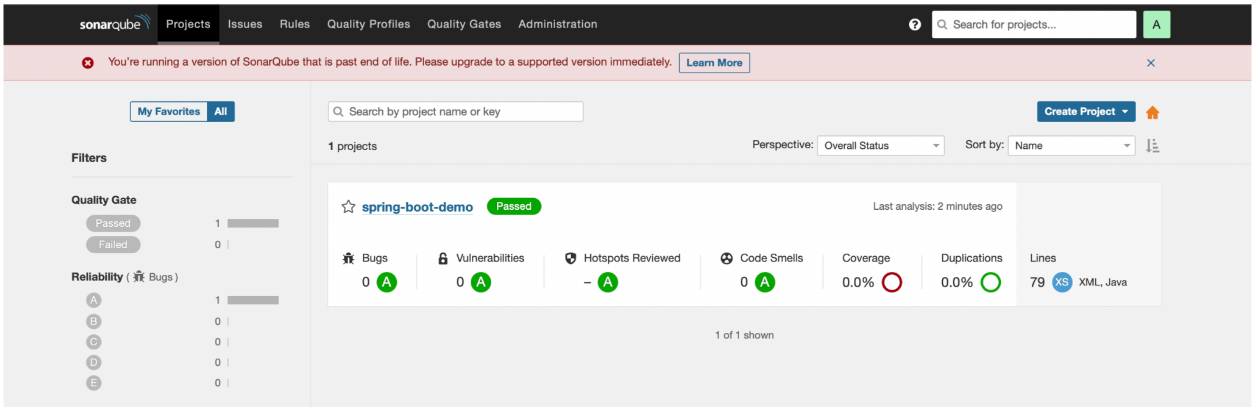
Average stage times:
(Average full run time: ~37s)

	Declarative: Checkout SCM	Checkout	Build and Test	Static Code Analysis	Build and Push Docker Image	Update Deployment File
	347ms	365ms	11s	13s	4s	737ms
#23 Jan 29 15:44 1 commit	244ms	347ms	10s	13s	5s	3s
#22 Jan 29 15:42 3 commits	250ms	345ms	10s	13s	6s	549ms failed

Build History trend

Filter...

#23	29-Jan-2024, 10:14 AM
#22	29-Jan-2024, 10:12 AM



You're running a version of SonarQube that is past end of life. Please upgrade to a supported version immediately. Learn More

1 projects

Perspective: Overall Status

Sort by: Name

Filters

Quality Gate

Passed	1
Failed	0

Reliability (Bugs)

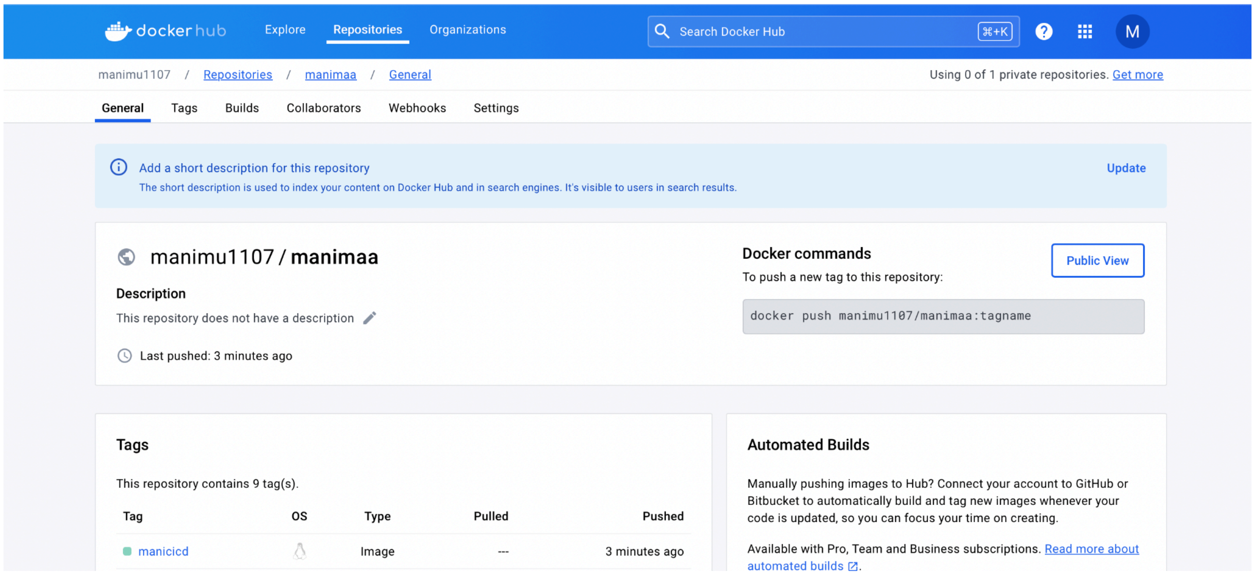
A	1
B	0
C	0
D	0
E	0

spring-boot-demo Passed

Last analysis: 2 minutes ago

Bugs	Vulnerabilities	Hotspots Reviewed	Code Smells	Coverage	Duplications	Lines
0 A	0 A	– A	0 A	0.0%	0.0%	79 XS XML, Java

1 of 1 shown



manimu1107 / Repositories / manimaa / General

Using 0 of 1 private repositories. Get more

Add a short description for this repository

The short description is used to index your content on Docker Hub and in search engines. It's visible to users in search results.

manimu1107 / manimaa

Description

This repository does not have a description

Last pushed: 3 minutes ago

Docker commands

To push a new tag to this repository:

```
docker push manimu1107/manimaa:tagname
```

Tags

This repository contains 9 tag(s).

Tag	OS	Type	Pulled	Pushed
manicicd		Image	---	3 minutes ago

Automated Builds

Manually pushing images to 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.

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