CI/CD Pipeline Project

By Michael Hajjar

What is CI/CD

CI/CD stands for Continuous Integration/Continous Delivery and/or Deployment. A team that does not implement CI/CD will have to pass through the following stages when it creates a new software product:

Why we use this?

Product Manager gives details on what he/her wants

Developers Start to write code, testing it and commit it to a version control system

Sent to QA where tests are done against the code to find bugs and sent back to developers if detected

Once QA is done, code is deployed to production by development teams

Automation Initial Notes

Minikube creates kubernetes cluster
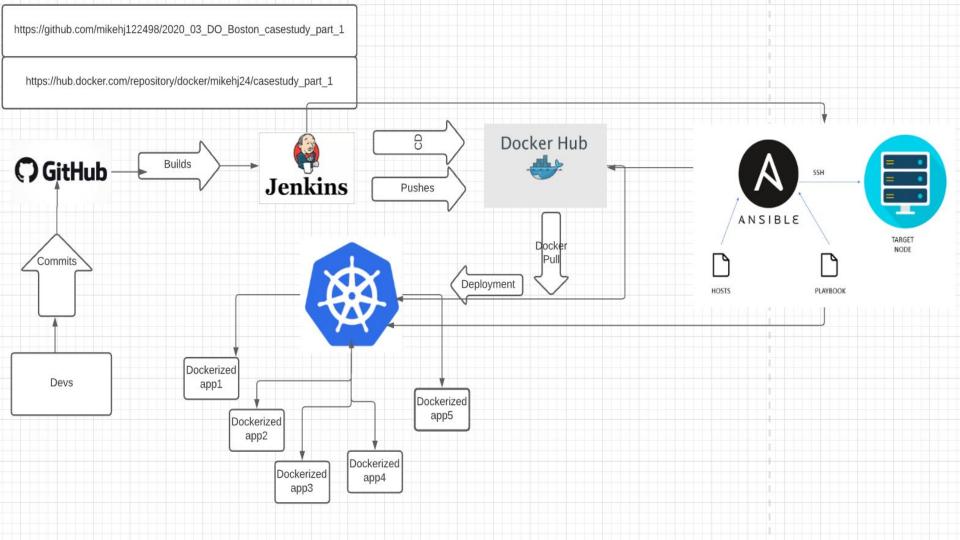
Yaml configuration file for Kubernetes in jenkins
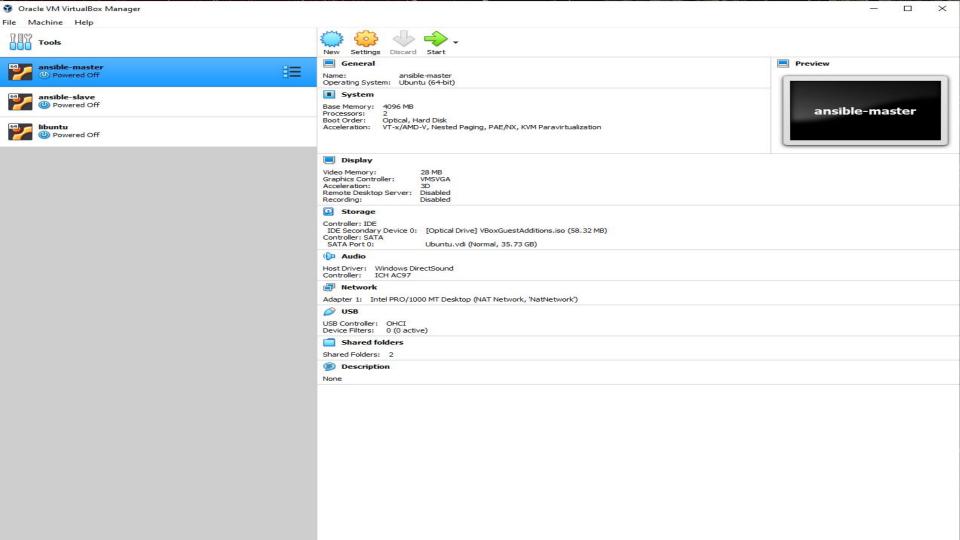
Docker file

Delete everything, 1 command will reset everything
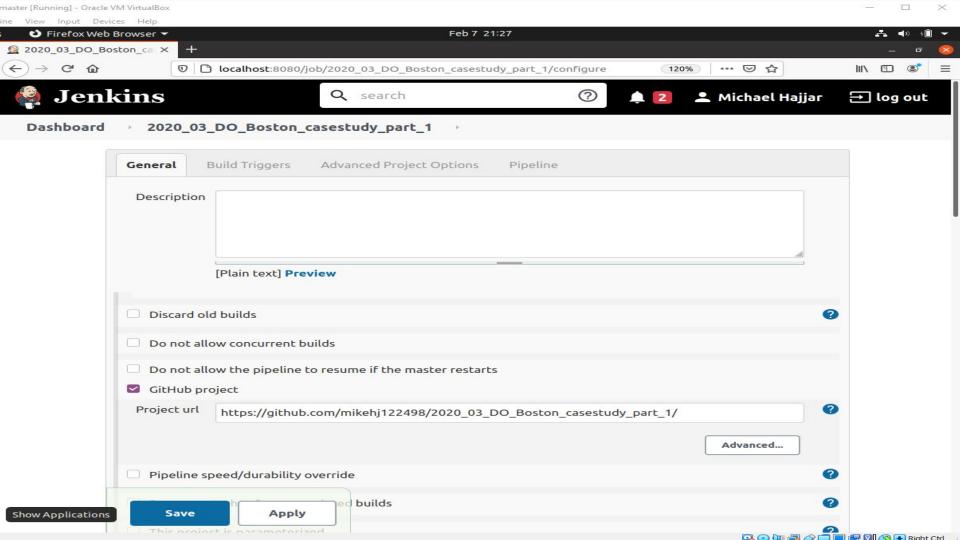
Vagrant creation file creates the virtual machines with 3 nodes

Last step Ansible

https://github.com/mikehj122498/2020_03_DO_Boston_casestudy_part_1

https://hub.docker.com/repository/docker/mikehj24/casestudy_part_1

GitHub

Builds

Jenkins

CD

Pushes

Docker Hub

ANSIBLE

SSH

TARGET NODE

HOSTS

PLAYBOOK

Commits

Docker Pull

Deployment

Devs

Dockerized app1

Dockerized app2

Dockerized app3

Dockerized app4

Dockerized app5

Oracle VM VirtualBox Manager

File Machine Help

Tools

	New	Settings	Discard	Start

ansible-master
Powered Off

ansible-slave
Powered Off

libuntu
Powered Off

General
Name: ansible-master
Operating System: Ubuntu (64-bit)

System
Base Memory: 4096 MB
Processors: 2
Boot Order: Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX, KVM Paravirtualization

Display
Video Memory: 28 MB
Graphics Controller: VMSVGA
Acceleration: 3D
Remote Desktop Server: Disabled
Recording: Disabled

Storage
Controller: IDE
  IDE Secondary Device 0:   [Optical Drive] VBoxGuestAdditions.iso (58.32 MB)
Controller: SATA
  SATA Port 0:   Ubuntu.vdi (Normal, 35.73 GB)

Audio
Host Driver: Windows DirectSound
Controller: ICH AC97

Network
Adapter 1:   Intel PRO/1000 MT Desktop (NAT Network, 'NatNetwork')

USB
USB Controller: OHCI
Device Filters: 0 (0 active)

Shared folders
Shared Folders: 2

Description
None

Preview

ansible-master

```
FROM python:3.7-alpine
RUN mkdir /app
WORKDIR /app
ADD . /app/
RUN pip install -r requirements.txt
EXPOSE 8080
CMD ["python", "/app/web.py"]
```

Ubuntu Software

[Read 7 lines]

^G Get Help   ^O Write Out   ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos
^X Exit   ^R Read File   ^\ Replace   ^U Paste Text ^T To Spell   ^ Go To Line
> minikube-v1.17.0.iso.sha256: 65 B / 65 B [----------------] 100

ine   View   Input   Devices   Help

Firefox Web Browser ▾   Feb 7 21:27

2020_03_DO_Boston_ca ×   +

localhost:8080/job/2020_03_DO_Boston_casestudy_part_1/configure   120%

Jenkins   search   ?   🔔 **2**   👤 **Michael Hajjar**   ⤓ **log out**

Dashboard   ▸   **2020_03_DO_Boston_casestudy_part_1**   ▸

| General | Build Triggers | Advanced Project Options | Pipeline |

Description

[Plain text] **Preview**

☐ Discard old builds   ?

☐ Do not allow concurrent builds   ?

☐ Do not allow the pipeline to resume if the master restarts
☑ GitHub project   ?

Project url   https://github.com/mikehj122498/2020_03_DO_Boston_casestudy_part_1/   ?

Advanced...

☐ Pipeline speed/durability override   ?

builds   ?

Show Applications   **Save**   **Apply**

This project is parameterized   ?

General   **Build Triggers**   Advanced Project Options   Pipeline

☐ Build after other projects are built   ❓

☐ Build periodically   ❓

☐ GitHub Branches

☐ GitHub Pull Requests   ❓

☐ GitHub hook trigger for GITScm polling   ❓

☑ Poll SCM   ❓

Schedule

```
H/2 * * * *
```
                                                                          ❓

Would last have run at Sunday, February 7, 2021 at 9:27:37 PM Eastern Standard Time; would next run at Sunday, February 7, 2021 at 9:27:37 PM Eastern Standard Time.

☐ Ignore post-commit hooks   ❓

☐ Disable this project   ❓

☐ Quiet period   ❓

☐ Trigger builds remotely (e.g., from scripts)   ❓

Save   Apply
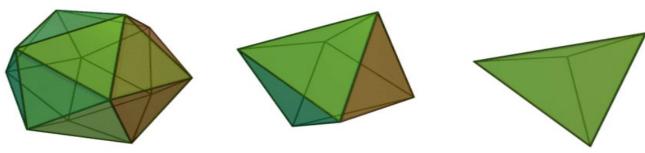
```
pipeline {
    agent any
    environment {
        DOCKER_HUB_REPO = "mikehj24/casestudy_part_1"
        CONTAINER_NAME = "casestudy_part_1"
        STUB_VALUE = "200"
        REGISTRY_CREDENTIAL = "dockerhub"
    }


    stages {

        stage('Build') {
            steps {
                //  Building new image
                sh 'rm -rf 2020_03_DO_Boston_casestudy_part_1'
                sh 'git clone https://github.com/mikehj122498/2020_03_DO_Boston_casestudy_part_1.git'
                sh 'cd 2020_03_DO_Boston_casestudy_part_1'
                // create new Docker repo image
                sh 'docker build -t mikehj24/casestudy_part_1:latest .'
            }
        }

        stage('Publish'){
            steps{
                //  Pushing Image to Repository
                    sh 'docker push mikehj24/casestudy_part_1:latest'
                    echo "Image built and pushed to repository"
            }
        }


        stage('Deployment with Kubernetes') {
            steps {
                script{
                    sh 'ansible-playbook playbook.yml'
                }
            }
        }
    }
}
```

DockerCon Live is coming this May 27th! Sign up to learn more. ✕

docker hub   Search for great content (e.g., mysql)   Explore   Repositories   Organizations   Get Help ▾   mikehj24 ▾

Repositories / mikehj24 / casestudy_part_1

Using 0 of 1 private repositories. Get more

General   Tags   Builds   Collaborators   Webhooks   Settings

🌐 mikehj24 / **casestudy_part_1**

This repository does not have a description ✎

🕐 Last pushed: 4 days ago

Docker commands   **Public View**

To push a new tag to this repository,

```
docker push mikehj24/casestudy_part_1:tagname
```

Tags and Scans

This repository contains 1 tag(s).

🛡 VULNERABILITY SCANNING - DISABLED
Enable

Recent builds

Link a source provider and run a build to see build results here.

TAG	OS	PULLED	PUSHED
🟢 latest	🐧	a few seconds ago	4 days ago

See all

Readme ❶ ✎

Repository description is empty. Click here to edit.

The quickest of brown foxes.

Workloads

Workload Status ▲

Deployments

Pods

Replica Sets

Deployments

	Name	Namespace	Labels	Pods	Created ↑	Images	
✅	kubernetes-deployment-app	default	-	5 / 5	29 minutes ago	mikehj24/casestudy_part_1	⋮

1 – 1 of 1 |<   <   >   >|

Pods

	Name	Namespace	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created ↑	
✅	kubernetes-deployment-app-56ff98c545-4dfz5	default	app: kubernetes-app pod-template-hash: 56ff98c545	minikube	Running	0	-	-	3 minutes ago	⋮
✅	kubernetes-deployment-app-56ff98c545-jm8kw	default	app: kubernetes-app pod-template-hash: 56ff98c545	minikube	Running	0	-	-	3 minutes ago	⋮
✅	kubernetes-deployment-app-56ff98c545-6rmq7	default	app: kubernetes-app pod-template-hash: 56ff98c545	minikube	Running	0	-	-	3 minutes ago	⋮
✅	kubernetes-deployment-app-56ff98c545-p9klw	default	app: kubernetes-app pod-template-hash: 56ff98c545	minikube	Running	0	-	-	3 minutes ago	⋮
✅	kubernetes-deployment-app-56ff98c545-vffzm	default	app: kubernetes-app pod-template-hash: 56ff98c545	minikube	Running	0	-	-	3 minutes ago	⋮

1 – 5 of 5 |<   <   >   >|

Replica Sets

	Name	Namespace	Labels	Pods	Created ↑	Images	
✅	kubernetes-deployment-app-56ff98c545	default	app: kubernetes-app pod-template-hash: 56ff98c545	5 / 5	3 minutes ago	mikehj24/casestudy_part_1	⋮
✅	kubernetes-deployment-app-6fd58c97d5	default	app: kubernetes-app pod-template-hash: 6fd58c97d5	0 / 0	5 minutes ago	mikehj24/casestudy_part_1	⋮
✅	kubernetes-deployment-app-6567787dfc	default	app: kubernetes-app pod-template-hash: 6567787dfc	0 / 0	29 minutes ago	mikehj24/casestudy_part_1	⋮

1 – 3 of 3 |<   <   >   >|

Service

Services

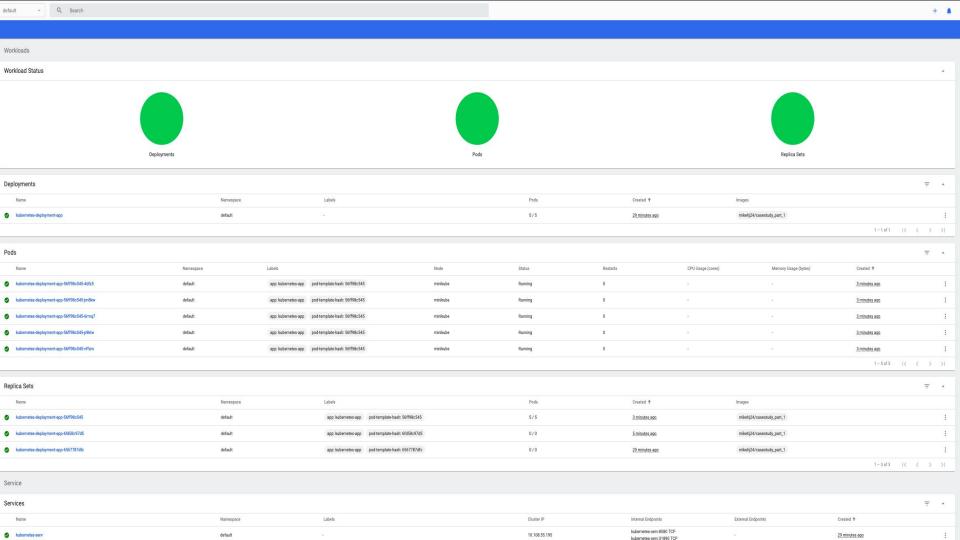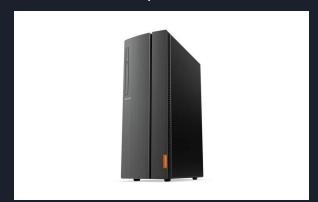|	Name	Namespace	Labels	Cluster IP	Internal Endpoints	External Endpoints	Created ↑
✅	kubernetes-serv	default	-	10.108.55.195	kubernetes-serv:8080 TCP kubernetes-serv:31890 TCP	-	29 minutes ago

How far did I get

Minikube started to have hardware limitations in implementing kubernetes cluster

Struggled with ansible -playbook

Things that could have been better
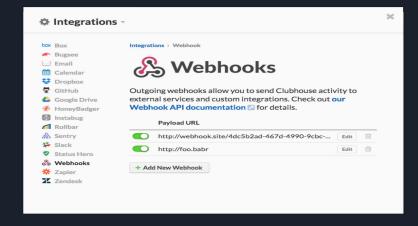
AMD Ryzen 3 3200G X

Intel Core i5-8th gen

"Sick of being Sick"

Things that could have been better part 2

The End

Thank You for watching!