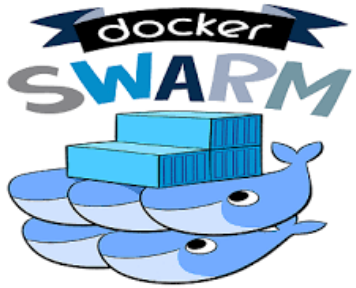
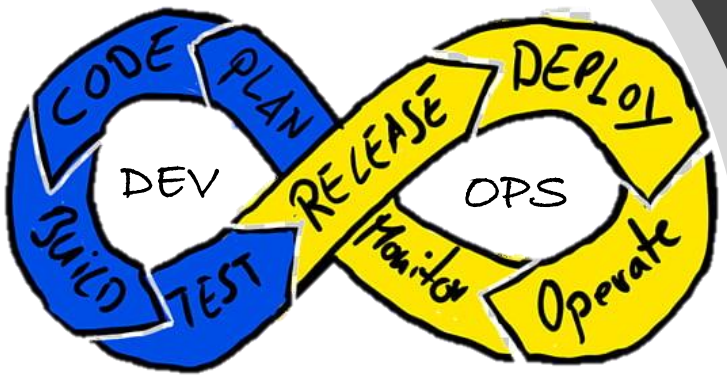


LNCT SM
GROUP OF COLLEGES
"WORKING TOWARDS BEING THE BEST"

Lakshmi Narain College of Technology

Department of Information Technology



AUTOMATION CICD 2.0

Made by:-

Shubham Raikwar

0107IT171106

Problem Statement

In any newly started company, if they need to update there running software they have a large amount of down-time, because they have to manually update the software this may require a huge amount man hour, and MONEY or to manage:-

Dev Team

- Dev
- Programmer
- Tester

Tasks

- Coding
- Testing
- Packaging

Looking

- For changes

Ops Team

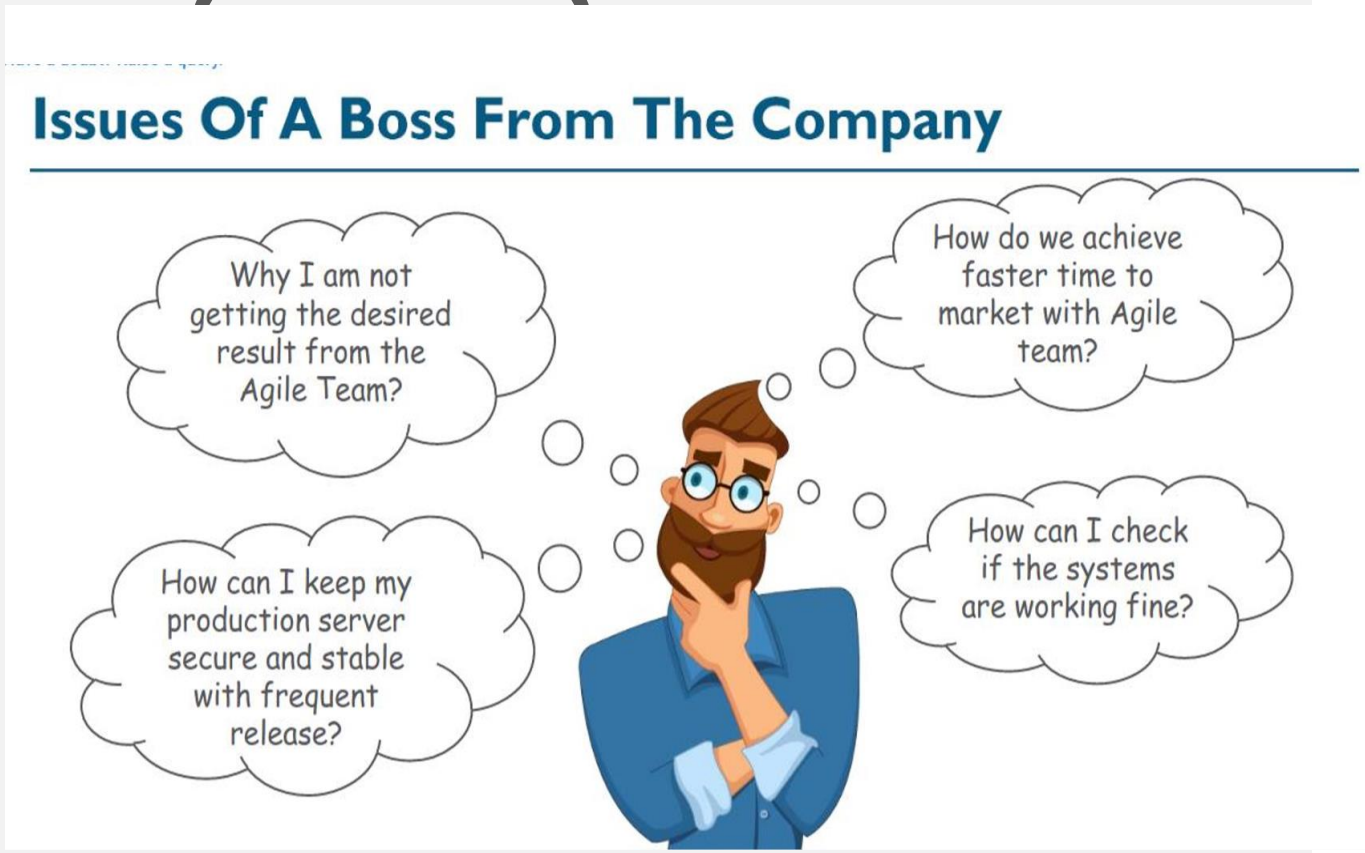
- Sys admin Admin
- Network Admin
- DB AdmiTasks

Tasks

- Servers
- Services
- Network Access Login

Looking

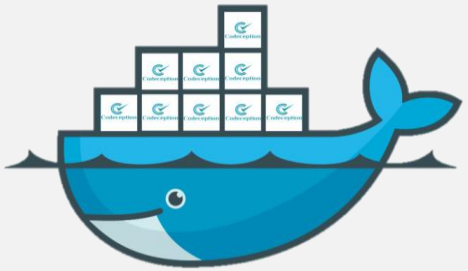
- For stability



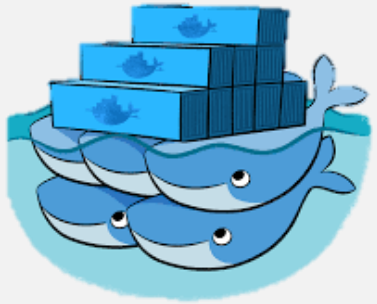
SO!!! how to overcome the GAP between these two teams

TECHNOLOGY STACK

- Docker
- Docker-Swarm
- Linux
- Jenkins
- GitHub
- A.W.S.

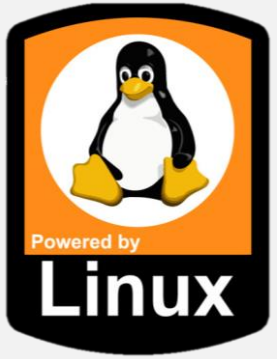


❖ Docker

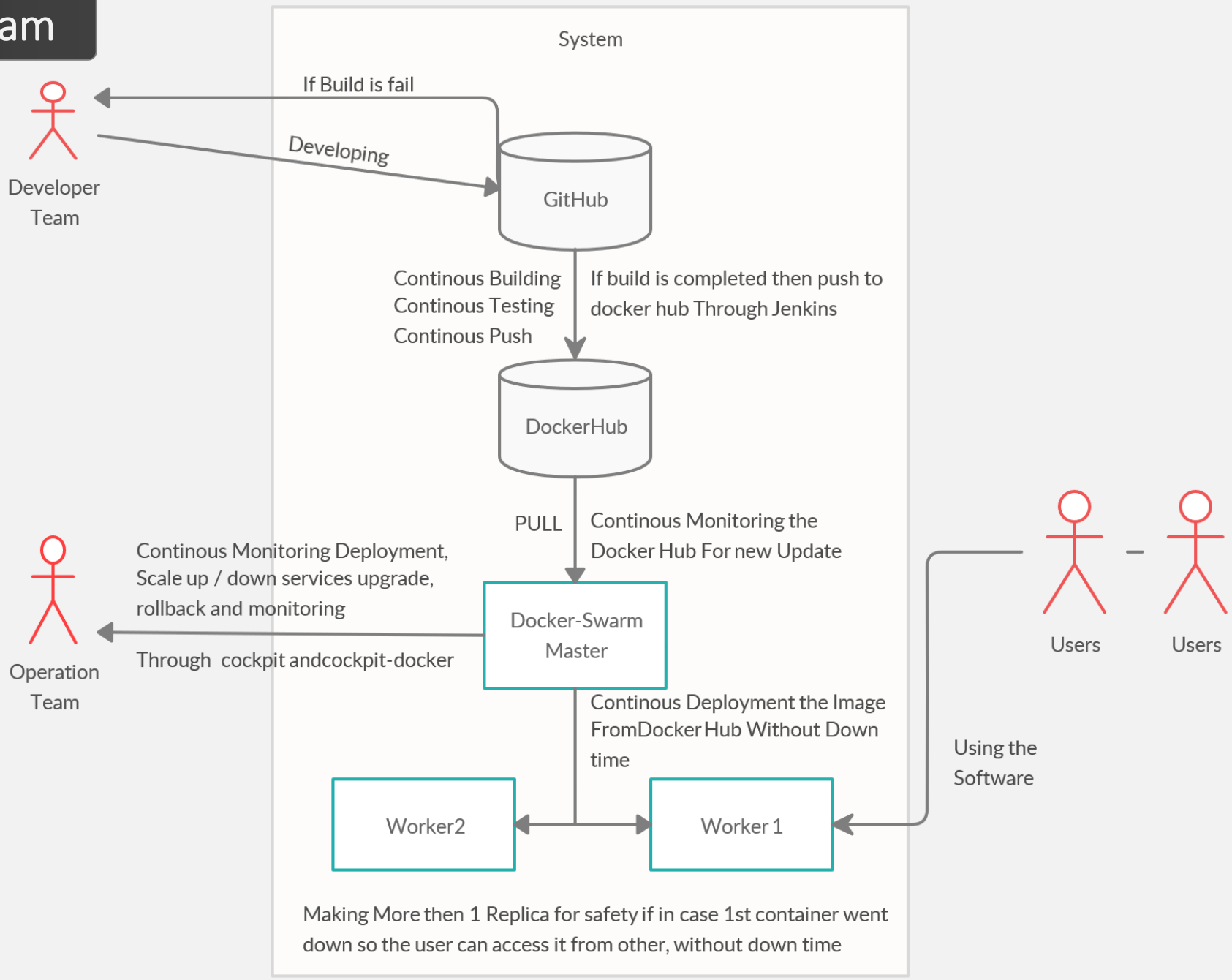


❖ Docker-Swarm

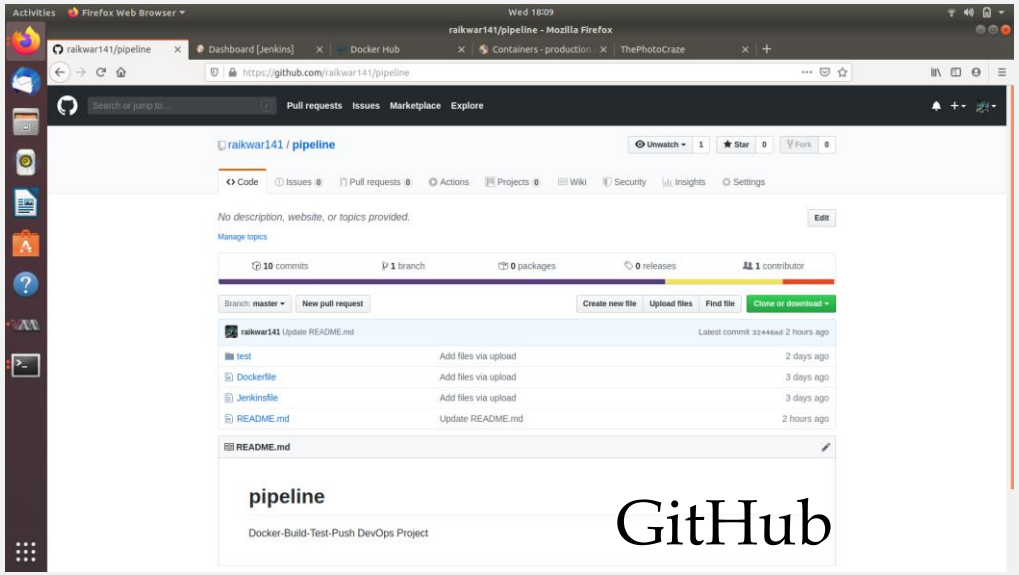
Jenkins



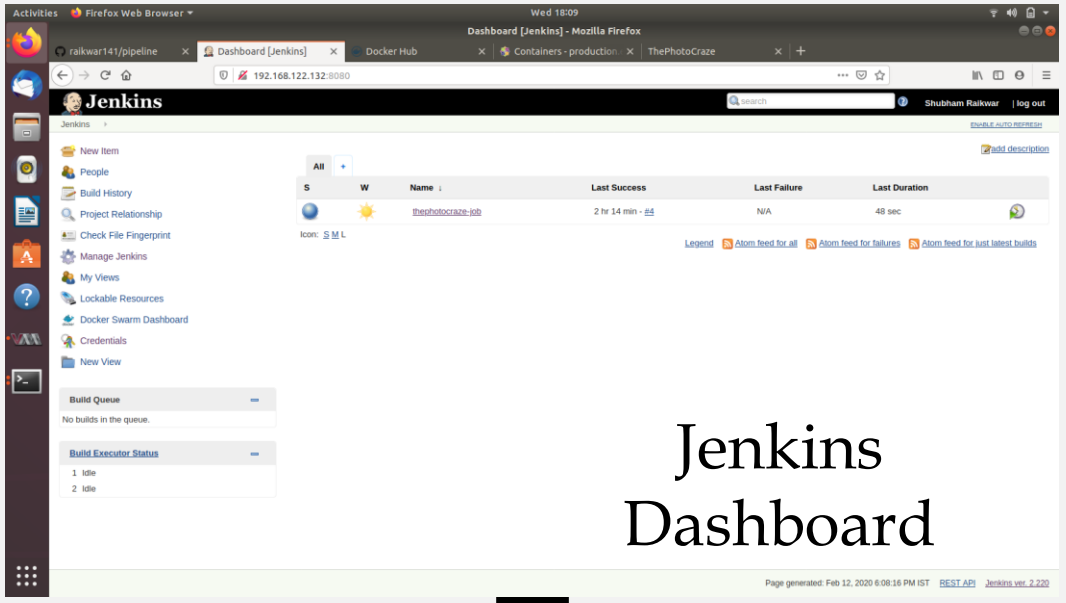
Use Case Diagram



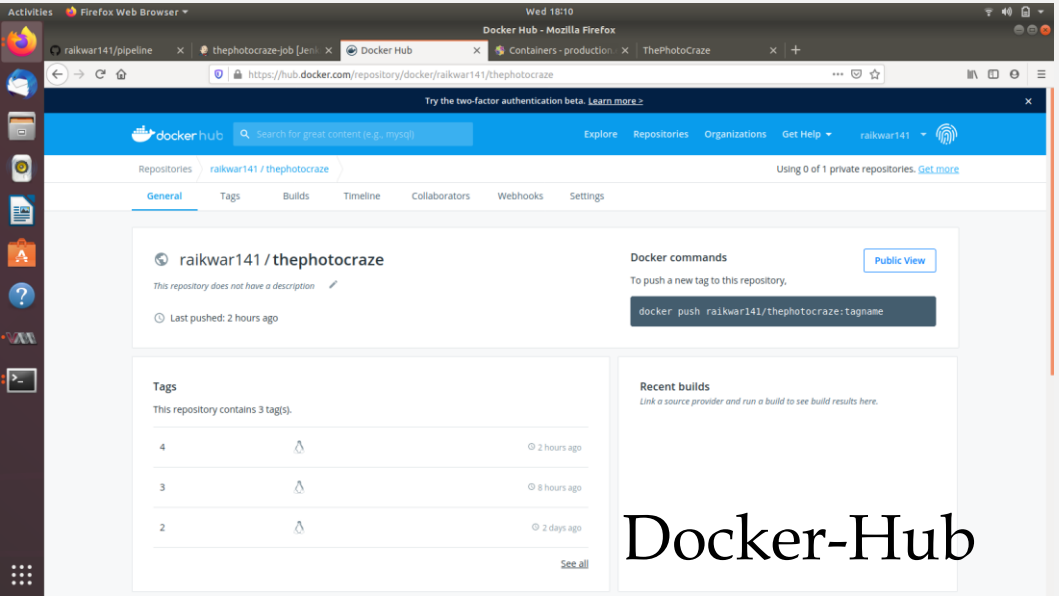
PROCESSES:-



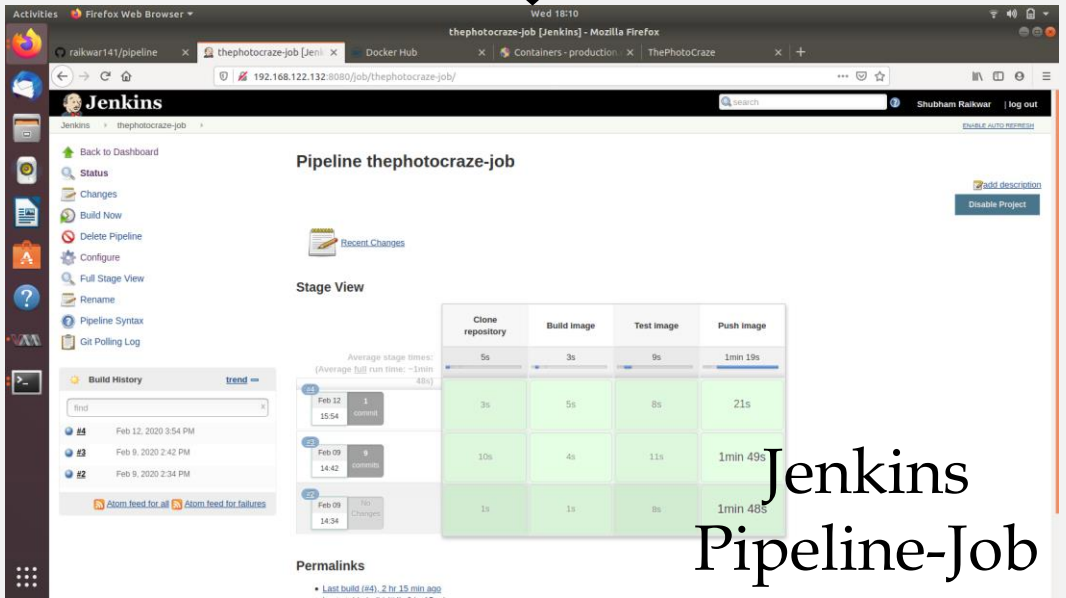
GitHub



Jenkins Dashboard

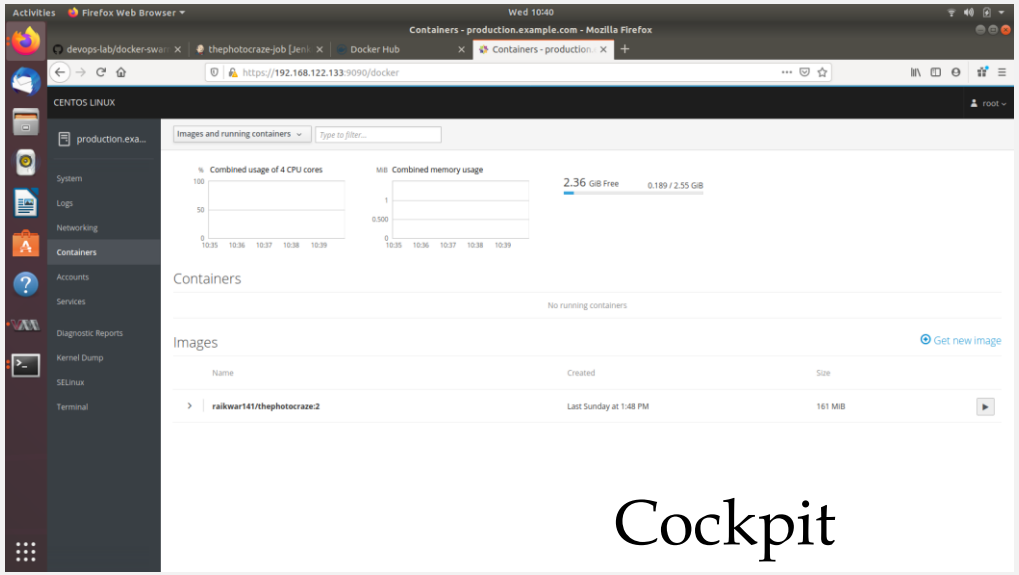


Docker-Hub



Jenkins Pipeline-Job

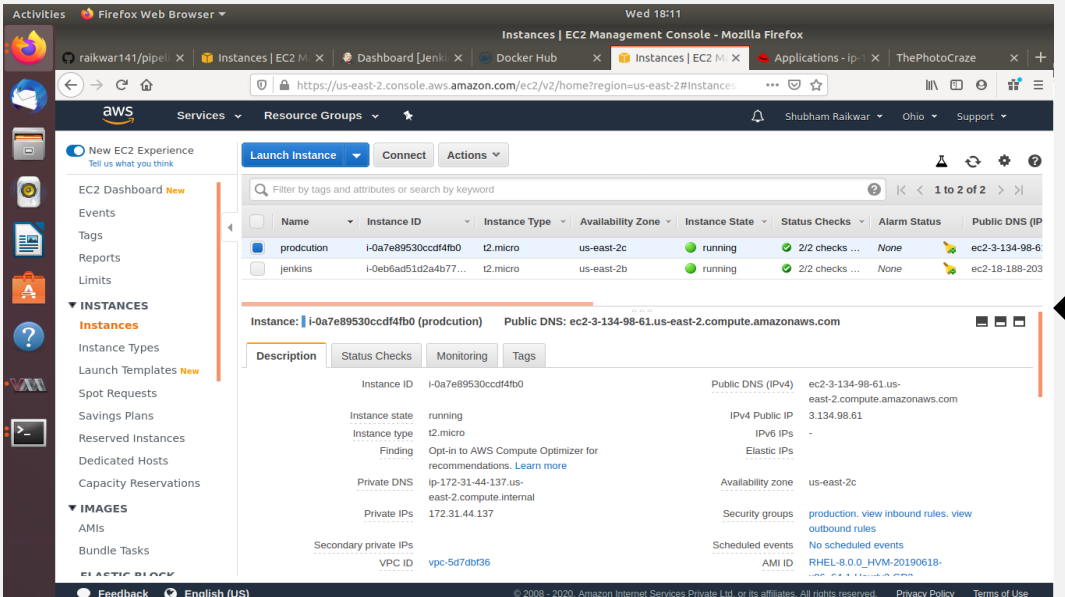
PROCESSES:-

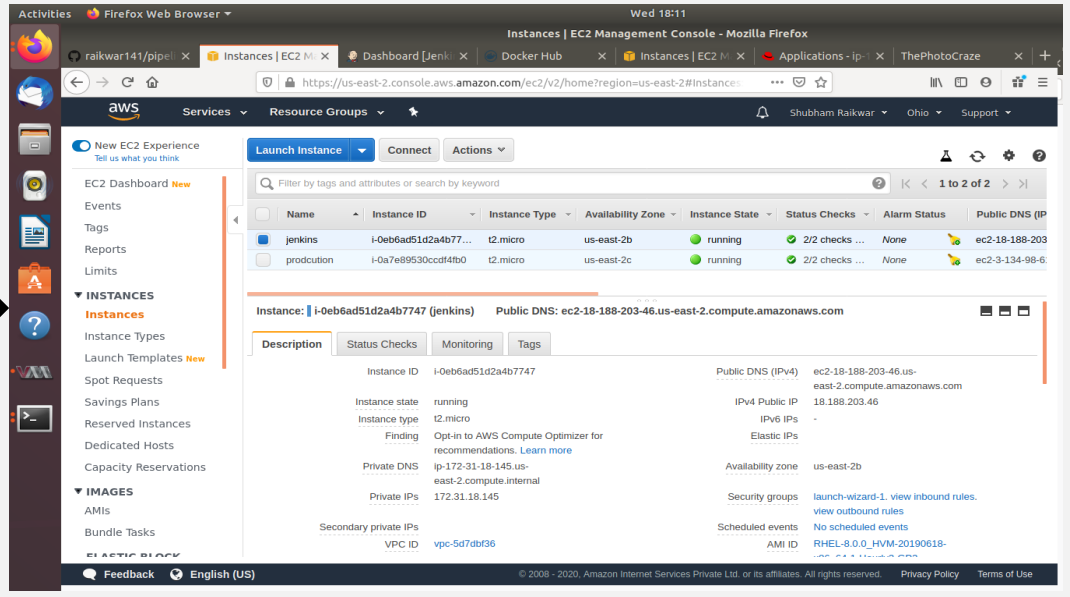


Cockpit

Software

AWS Acc.





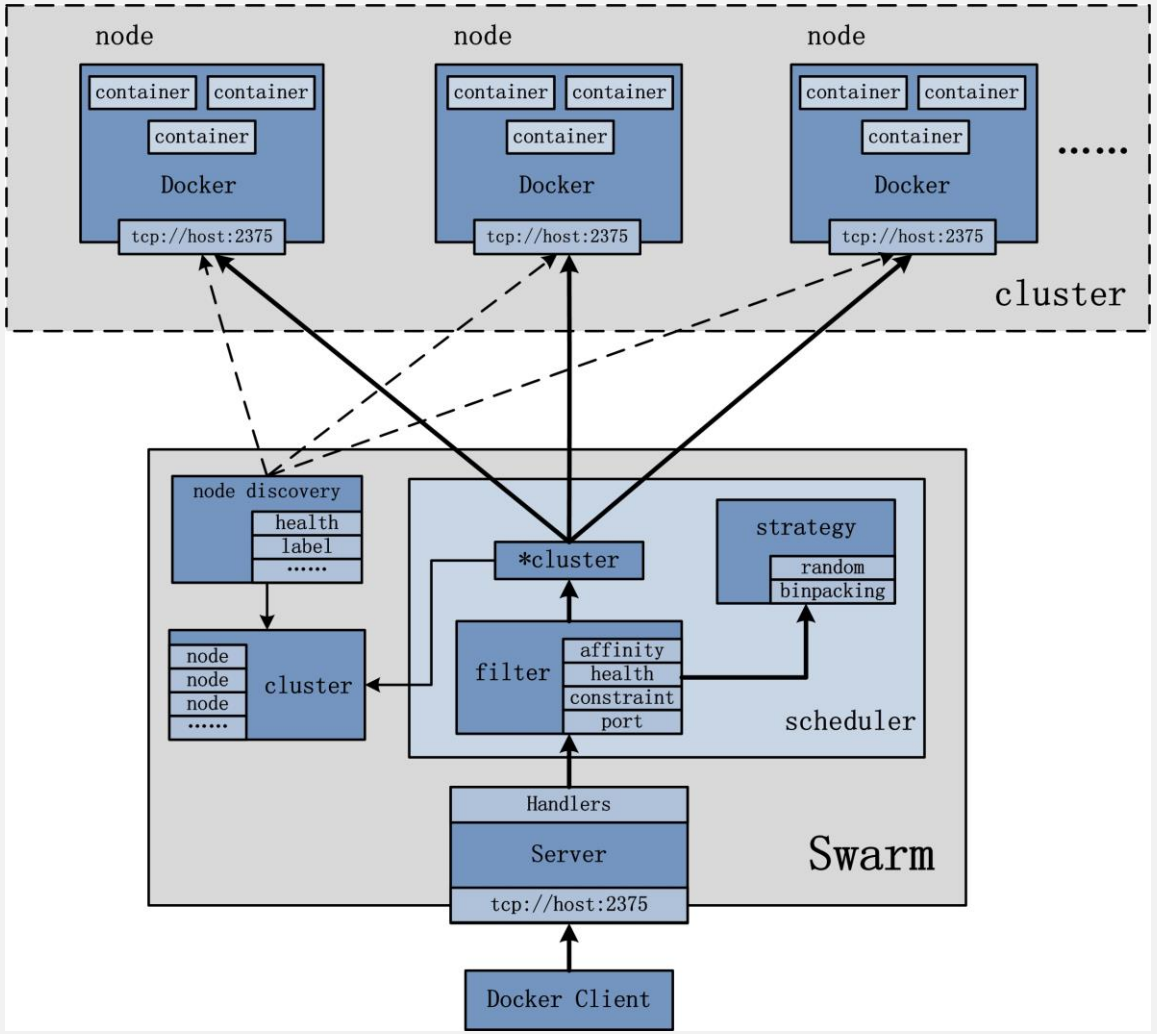
What is Docker & Docker Swarm

Docker is a set of platform as a service products that use OS-level virtualization to deliver software in packages called containers.

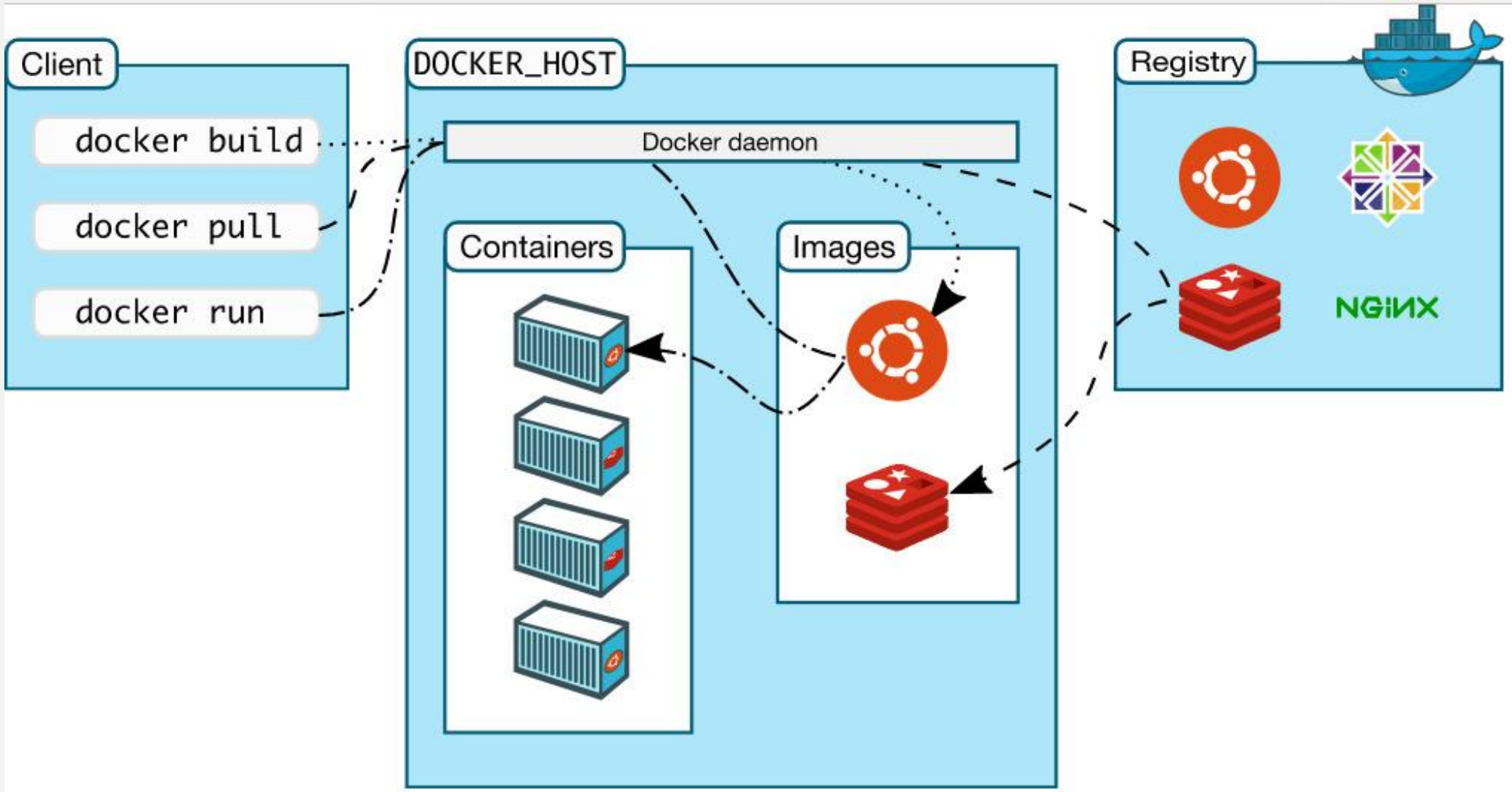
A **Docker Swarm** is a group of either physical or virtual machines that are running the **Docker** application and that have been configured to join together in a cluster. **Docker swarm** is a container orchestration tool, meaning that it allows the user to manage multiple containers deployed across multiple host machines

How does it work?

- **Docker** is basically a container engine to create containers on top of an operating system and automates application deployment on the container.
- A **swarm** consists of multiple **Docker** hosts which run in **swarm** mode and act as managers and workers **Docker works** to maintain that desired state. For instance, if a worker node becomes unavailable, **Docker** schedules that node's tasks on other nodes.

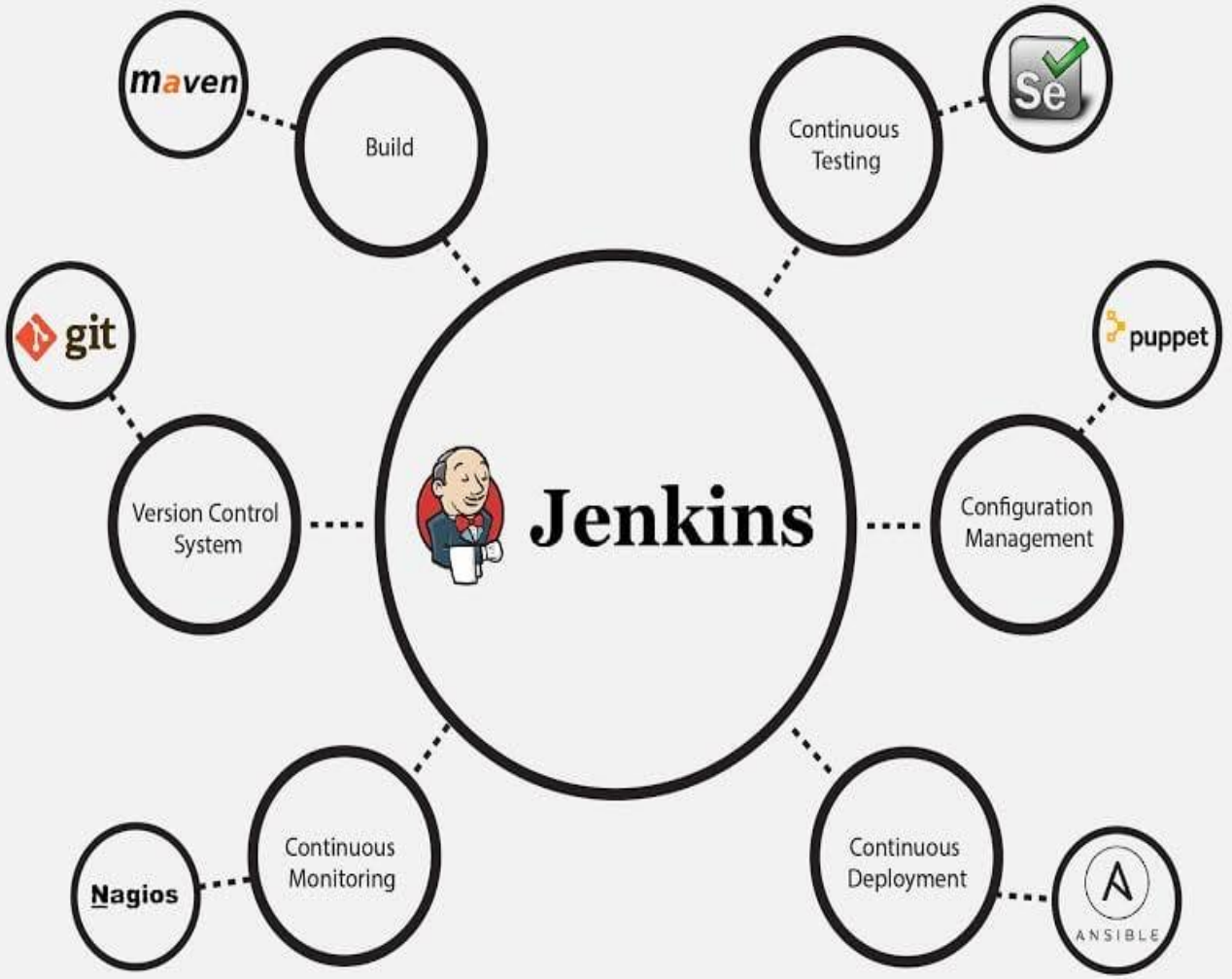


How Docker Swarm Work:-



What is Jenkins?

Jenkins is a **free and open source automation server** written in Java. Jenkins helps to automate the non-human part of the software development process, with continuous integration and facilitating technical aspects of continuous delivery. It is a server-based system that runs in servlet containers such as Apache Tomcat.



How does it work?

Jenkins is an open source automation tool written in Java with plugins built for Continuous Integration purpose. **Jenkins is** used to build and test your software projects continuously making it easier for developers to integrate changes to the project, and making it easier for users to obtain a fresh build

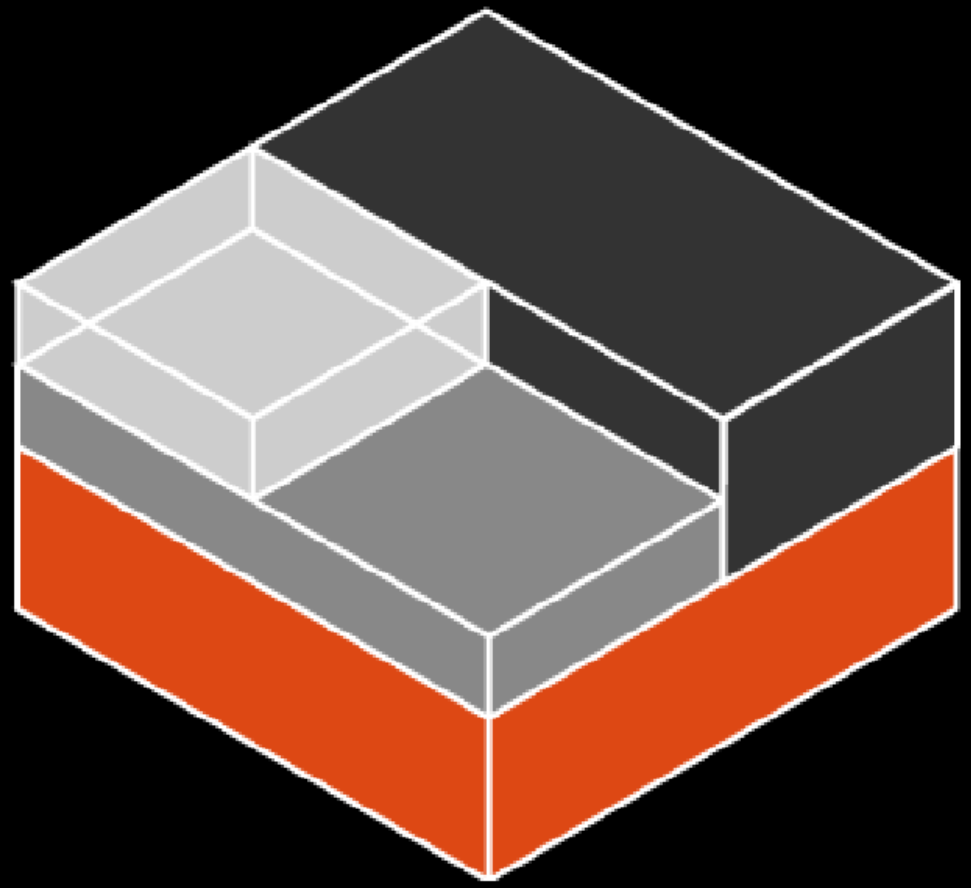
What is a Container?

A standardized unit of software

A container is a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another. A Docker container image is a lightweight, standalone, executable package of software that includes everything needed to run an application: code, runtime, system tools, system libraries and settings.

Docker containers that run on Docker Engine are:

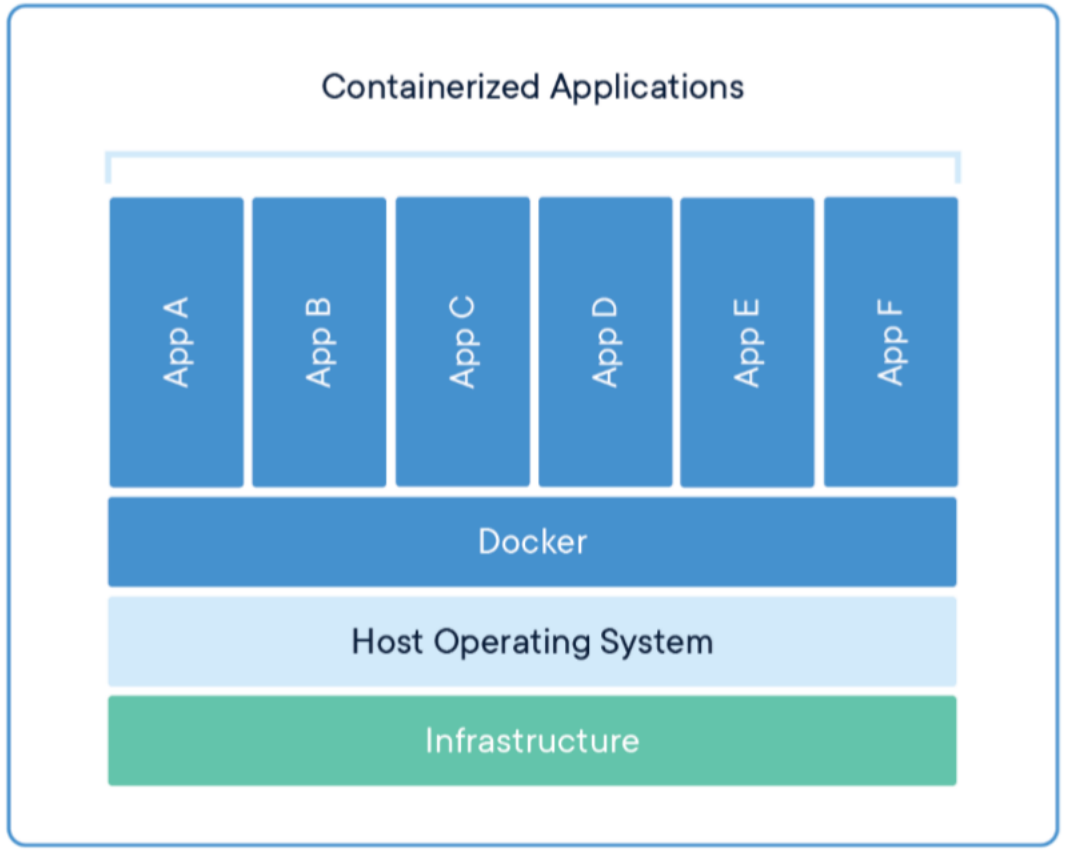
- **Standard:** Docker created the industry standard for containers, so they could be portable anywhere
- **Lightweight:** Containers share the machine's OS system kernel and therefore do not require an OS per application, driving higher server efficiencies and reducing server and licensing costs
- **Secure:** Applications are safer in containers and Docker provides the strongest default isolation capabilities in the industry

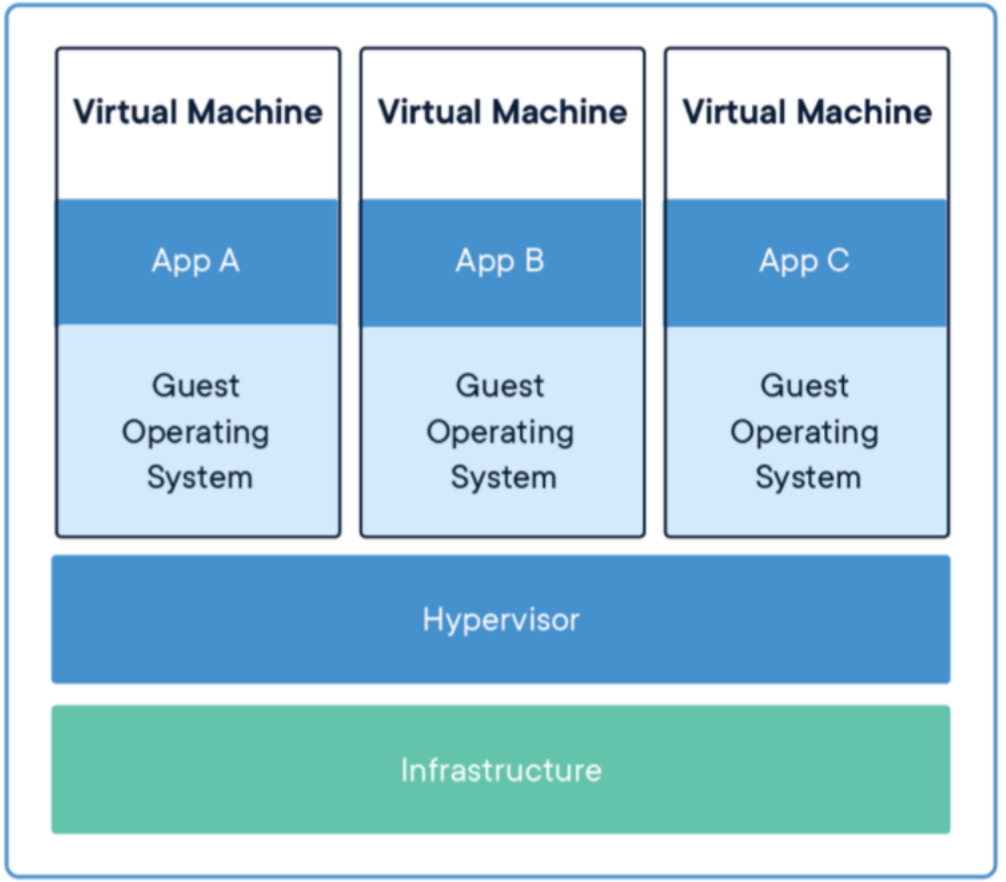


LXD:- THE LINUX CONTAINER HYPERVISOR for ubuntu

Comparing Containers and Virtual Machines

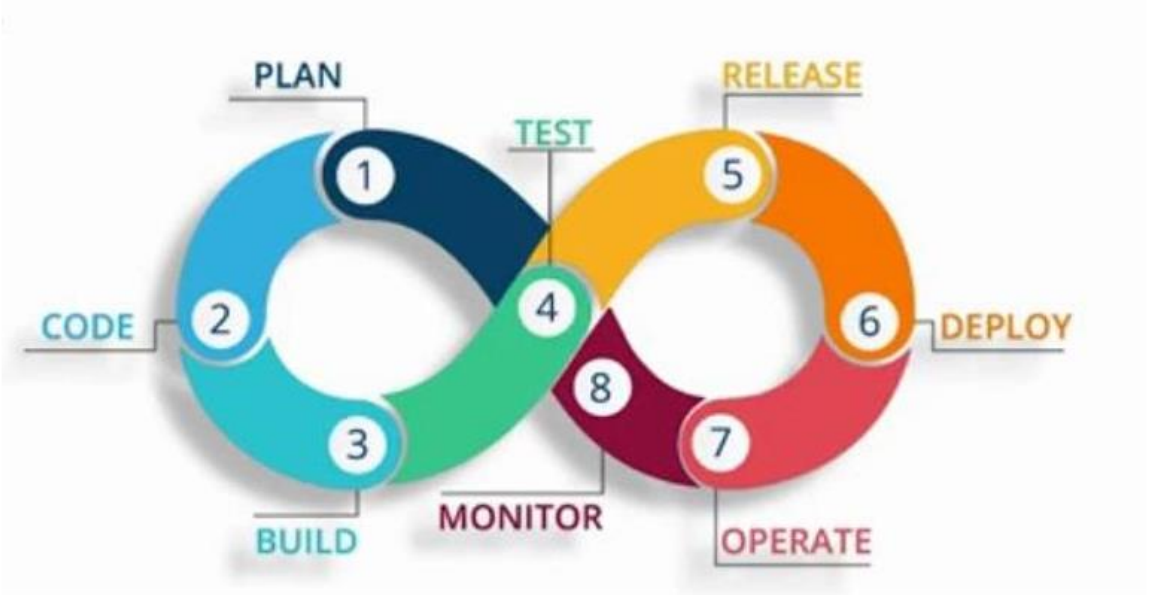
Containers and virtual machines have similar resource isolation and allocation benefits, but function differently because containers virtualize the operating system instead of hardware. Containers are more portable and efficient.





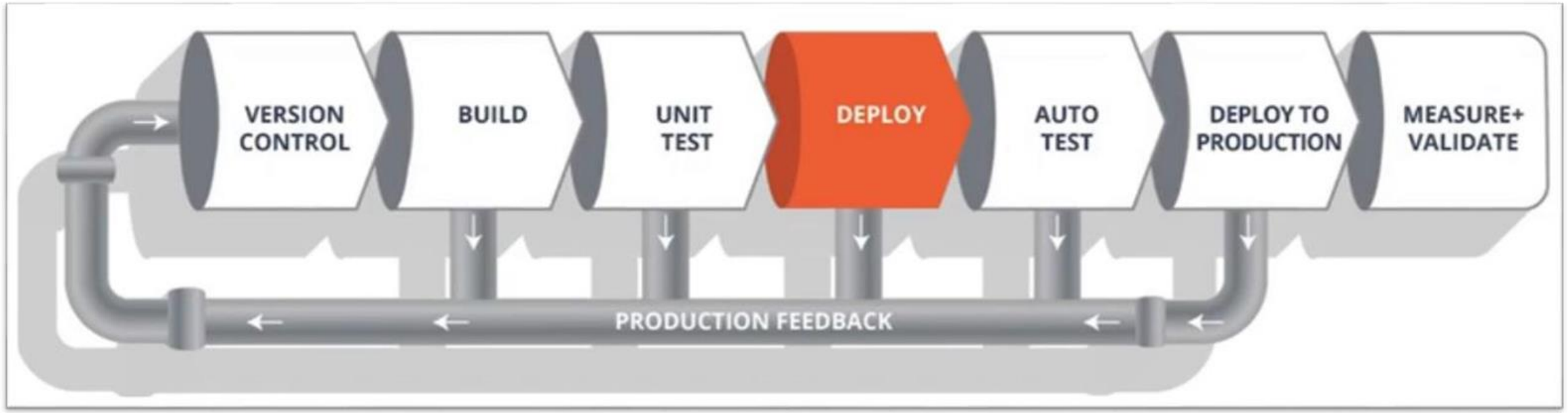
What does DevOps Do?

- Integrates developers and operations teams
- Improves collaboration and productivity by:
  - Automating infrastructure
  - Automating workflows
  - Continuously measuring application performance

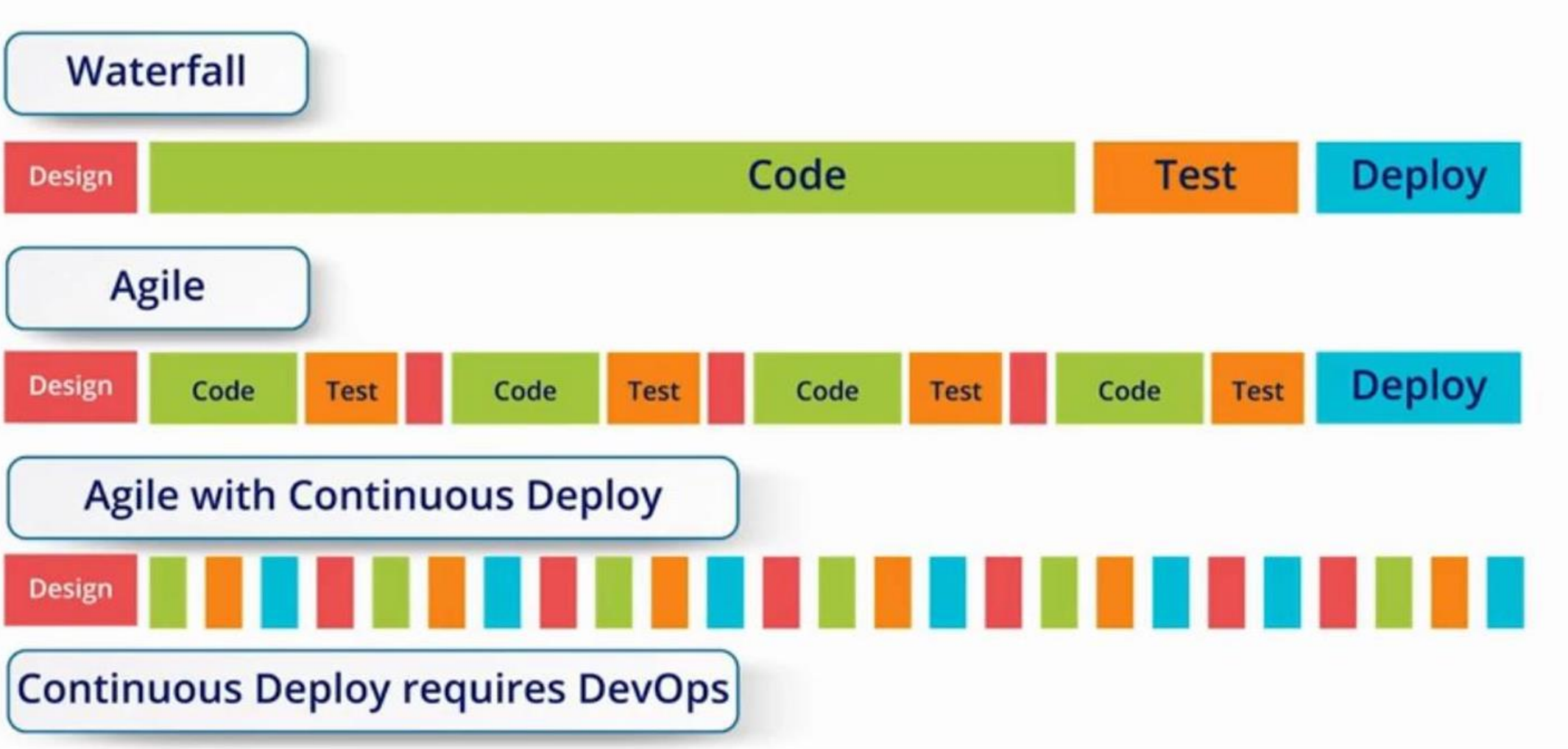


IN SHORT DEVOPS IS A STATE OF MIND

Continuous Integration And Continuous Deployment Pipelines



Agile Vs Waterfall Vs DevOps



FUTURE SCOPE

Use of **KUBERNETES** to automate continuous monitoring.

Thank You

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