**Cloud Native Buildpacks**

**What is CNBs?**

* The CNB project was initiated by Pivotal and Heroku in January 2018 and joined the Cloud Native Computing Foundation (CNCF) as an Apache-2.0 licensed project in October 2018.
* Cloud Native Buildpacks (CNBs) **transform your application source code into container images** that can run on any cloud.
* With buildpacks, organizations can concentrate the knowledge of container build best practices within a specialized team, **instead of having application developers across the organization individually maintain their own Dockerfiles**.
* This makes it easier to know what is inside application images, enforce security and compliance requirements, and perform upgrades with minimal effort and intervention.

**Why CNBs?**

* Control - Balanced control between App Devs and Operators.
* Compliance - Ensure apps meet security and compliance requirements.
* Maintainability - Perform upgrades with minimal effort and intervention.

**Features of CNBs:**

* It auto-detects your code's programming language and its version
* Advanced Caching
* Images can be built directly from application source without additional instructions.
* Supports more than one programming language family.
* Image contains only what is necessary.
* Leverage production-ready buildpacks maintained by the community.

**Deploy NodeJS application using Cloud Native Builpacks**

**Pre-requisites:**

* AWS account
* An Ubuntu EC2 machine t2.micro (t2.micro is ok, if you are using simple application)
* Docker installed

**Steps:**

* Update your machine

sudo apt update

* Install docker

sudo apt install docker.io -y

* Provide permission to ubuntu user to docker group

sudo usermod -aG docker $USER && newgrp docker

* Install pack utility to build image

sudo add-apt-repository ppa:cncf-buildpacks/pack-cli

sudo apt-get update

sudo apt-get install pack-cli

* Clone your code

git clone https://github.com/DevMadhup/node-todo-cicd.git

* Go inside the directory

cd node-todo-cicd

* Remove Dockerfile and docker-compose file to make sure we are not using it for building the image.

rm -rv Dockerfile

rm -rv docker-compose.yaml

* Run the following command to get the pack builder

pack build suggest

* Copy the google builder and paste in the below command

pack build --builder=<your-builder-from-above-command> node-app

 > [!Note] > This build will take some time be patient.

* After build, check images

docker images

* Run the image as a container

docker run -itd --name nodeapp -p 8000:8000 node-app

Note

This application runs on port 8000, that's why we mentioned 8000 in the above command

* Open port 8000 from the security groups and access your application

http://<public-ip>:8000

Congratulations!!! you have deployed and application using Cloud Native Buildpacks.