Spinnaker – manage cluster and also manage deployment.

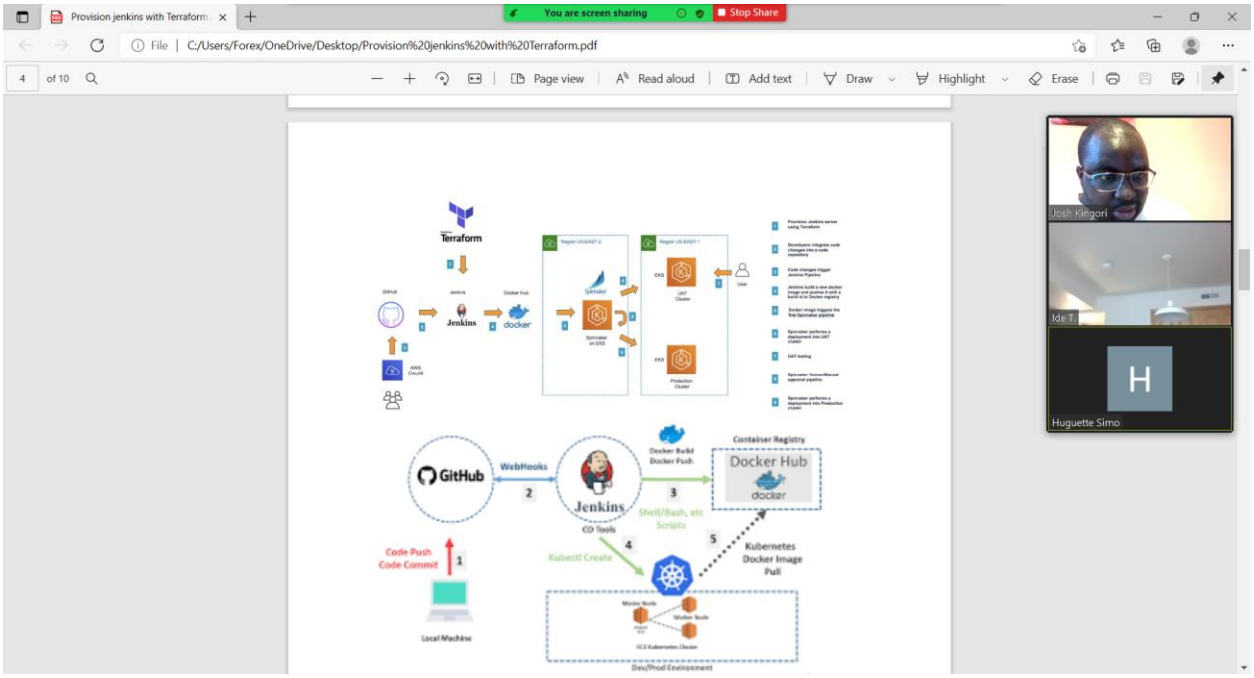
This software is used to manage **immutable applications**

Example

It does not change – docker images, example ubuntu, centos

Pods are immutable – images

Mutable applications –ansible



EKS – elastic Kubernetes services

Jenkins

CI Server – Continuous Integration Server bamboo

Why Jenkins – open source, easy to install, has over 1000 plugins

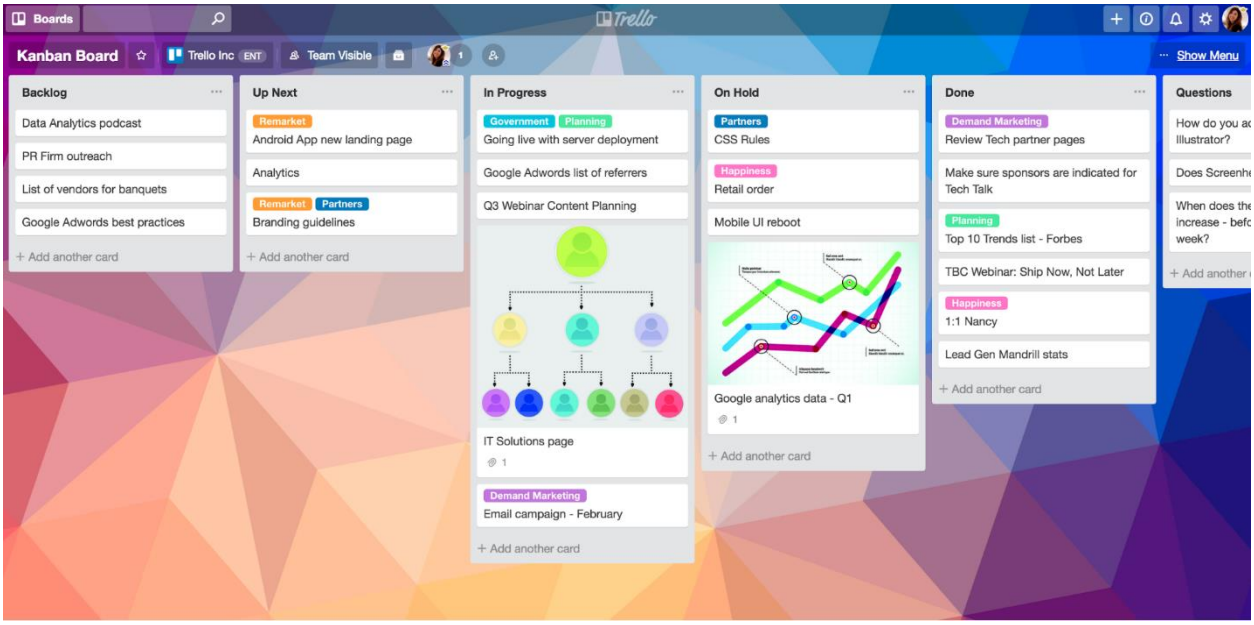
(Slack, GitHub, Docker, Build Pipeline) available.

Slack in Devop pipeline

Jira is the entire software

Confluence – part of jira where you create the documents

Kanban boards – this is part of jira where you create the plan and execute the activities



Pull Request - when pull request is approved the new code is merged to the master repo remote. This is on dev

Source Code Management - github , bitbucket (storages)

VCS – git bash, manages the changes happening in the Source Code

Change request - merging or making changes that will be deployed from dev environment to the operation

Servicenow – software we use to manage the change requests

Three types of change requests

1. Normal – A first time changes that we need to define the policies. There are no initial policies on how to fix this. Management needs to come together. More time is needed – 2 weeks
2. Emergency – this very urgent and can't wait – mostly they are changes affecting the production
3. Standard – it is a change that is not in a rush. This is a regular change that has a predictable way of implementing it. 3-5 days

Operation

Operating the application and monitoring how it is going to work. Monitoring team (Nagios, Splunk (premise environment) Prometheus & Grafana (immutable application), EFK/ELK [Elasticsearch + Fluentd + Kibana (immutable applications)]

Build team – build the servers

Configuration team – Ansible to configure the servers

Network team – ip address – submit the ticket to the network team

Monitoring team -

Security team -

Prod team - – I support the production team

QA team -

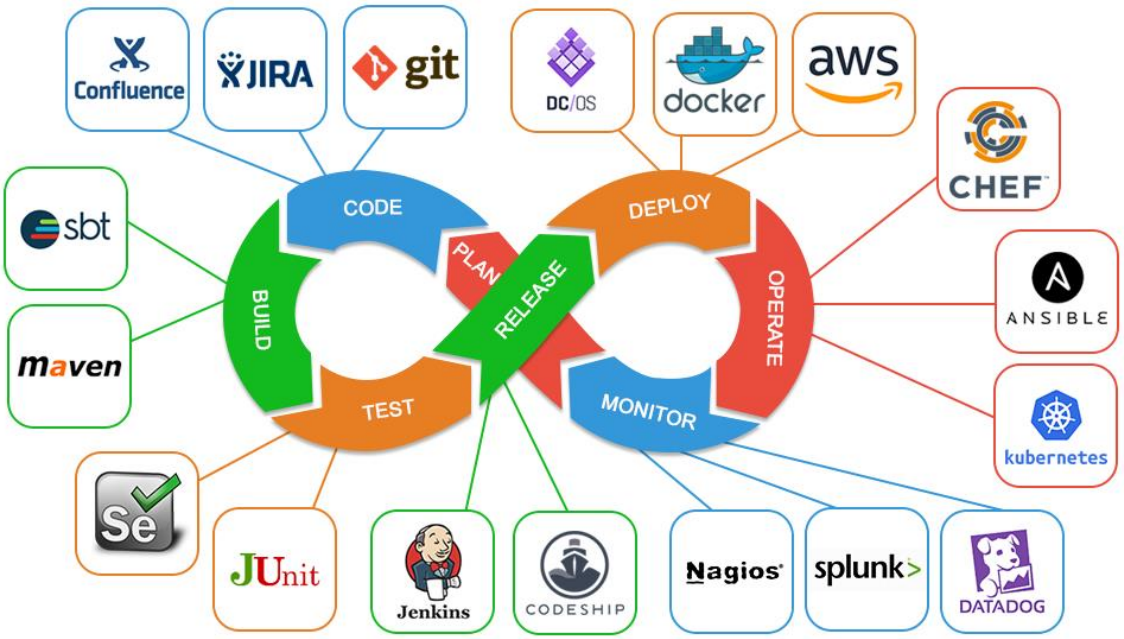
Dev team – I support the QA team

Production

Users Acceptance Testing (UAT) – Production – We have servers in the production and these servers are used to test how the application will perform as if it already deployed to the end user. Will it be able to handle the traffic out there? We are testing this with real time data.

QA – testing environment (testing for the formation of the code. We are making sure the code does not have username and passwords and is written in a format that is understandable by the members of the team) - dummy data

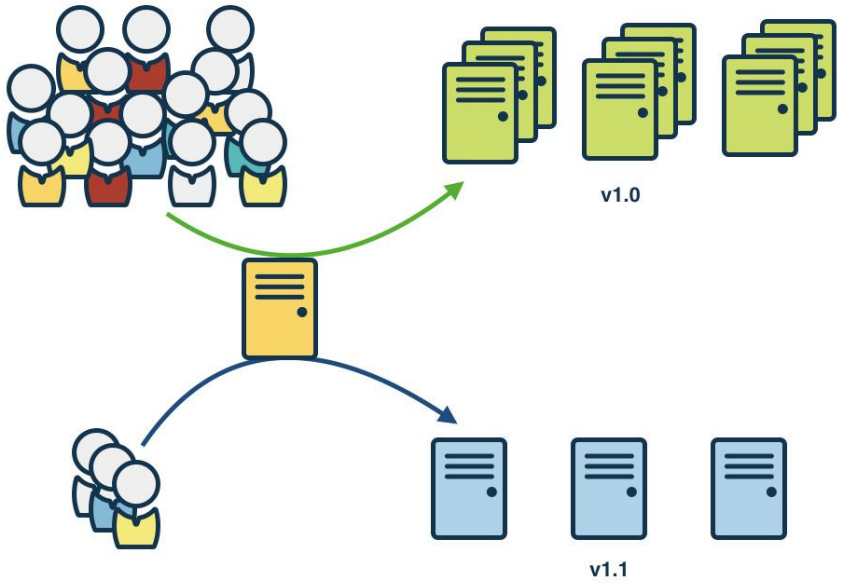
Dev – developers are (code is manufactured) / plan – dummy

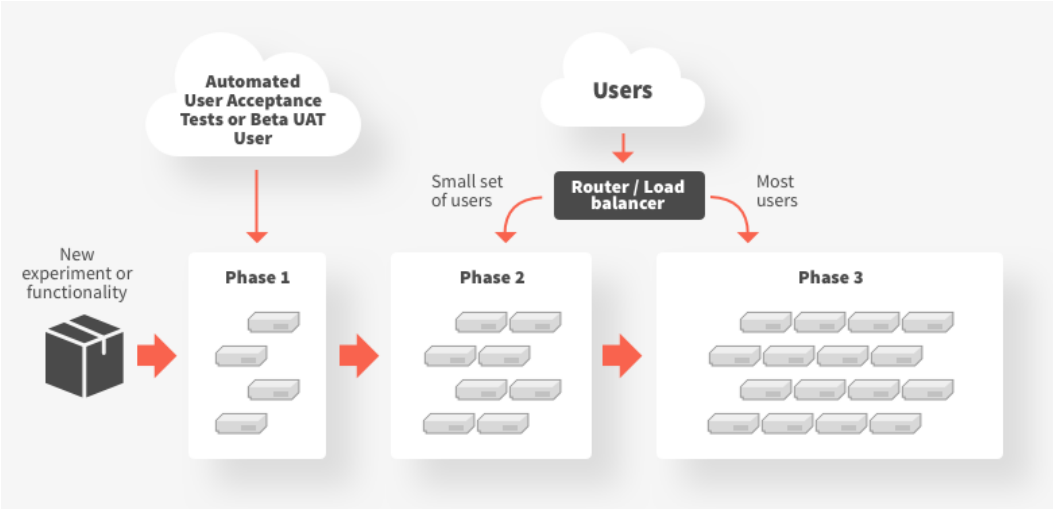


Spinnaker provides automated release, built-in deployment, and supports **blue/green deployment** out of the box. Cluster management and manifestation/deployment management. Immutable applications.

Types of deployments

- Canary Deployment – is a deployment strategy where we deploy the changes to a small set of set of servers before we can deploy to the rest of the servers.





50 pods – node

Canary deployment strategy – 5 pods and test with real time data (updates will work perfectly fine)

Second phase

15 pods – update the changes

Third Phase

40 pods

Fourth Phase

10 pods

- Rolling update

  10 pods in a node – Auto service Geico

  1 2 3 4 5 6 7 8 9 10

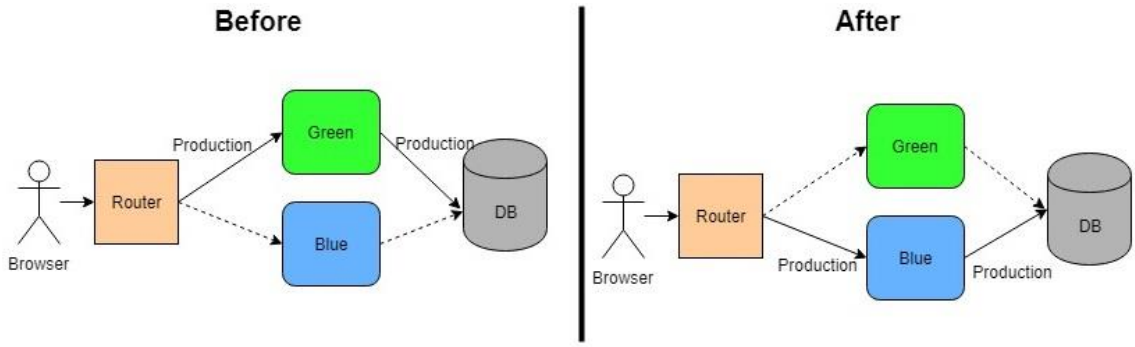
  Create an updated pod 1

Destroy the existing pod 1

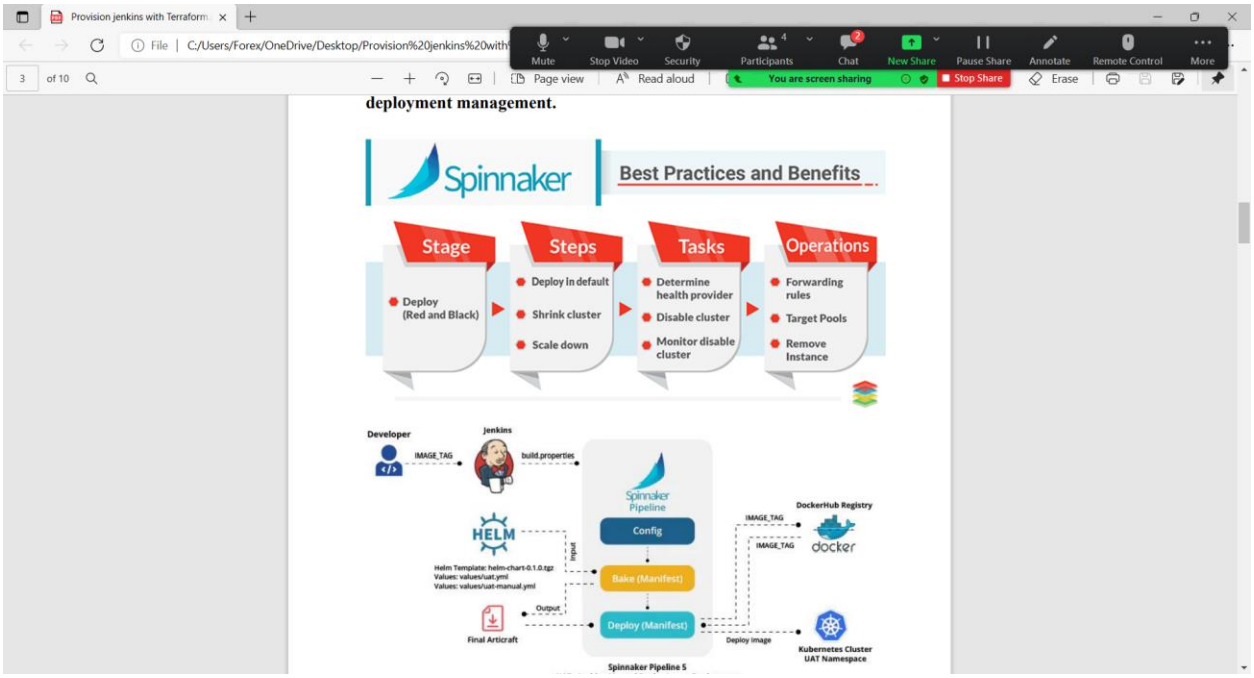
Create an updated version of pod 2
Destroy the existing pod 2

Max available - 1
Max- unavailable – 1
Manifestation is going to create 1 and destroy 1

- Blue/green strategy –
  Spinnaker provides automated release, built-in deployment, and supports **blue/green deployment** out of the box.



No downtime strategy in the company – Uber - $100 million dollars



Spinnaker – open source – **cluster management and manage the deployment manifestation**

Activities that spinnaker accomplishes

Immutable application – these are applications that do not change.

- Deploy
- Scale down
- Monitor cluster
- Health checks the cluster

Deploy the image from Jenkins to Prod cluster.

Ansible to deploy the image to the cluster - Mutable and also immutable applications.

- Deployment manifestation (main manifest) – this is the deployment for your application.
- Service manifestation – exposing the pods to the end user (load balancer)
- Config manifestation – contains the source of data and the source of monitoring tools (variables for the cluster). It is not advisable to put data tier in the cluster
- Secret manifestation – contains the username and the password for the variables (DBA, Monitoring tool)

Ingres is like a route table and is used to direct the traffic to the appropriate service

Resume Points for Terraform

- Provisioning/Building of continuous integration server (Jenkins) on AWS using terraform
- Installed git, Apache Maven, and docker using bash script on Jenkins provisioned on AWS using terraform.
- Automated the provisioning of AWS infrastructures using resources such as EC2, VPC, Subnets etc
- Automated the process of versioning and changing of the AWS infrastructures
- safely and efficiently using terraform.
- Experienced in troubleshooting errors resulting from configuration files during the init, plan, apply stages.
- Automated the AWS infrastructure clean-up using the terraform.
- Experienced in creating declarative configurations files to automate the provisioning of resources on AWS, such as, Vpc, EC2, Subnets, using terraform.

Decommission the servers on (premise & cloud) Terraform destroy -auto-approve

Ansible

Experienced in automating AWS resources such as EC2 using Ansible and this recently Boto3 makes it easy to integrate your Python application**)**