Kubernetes Hands-on Workshop

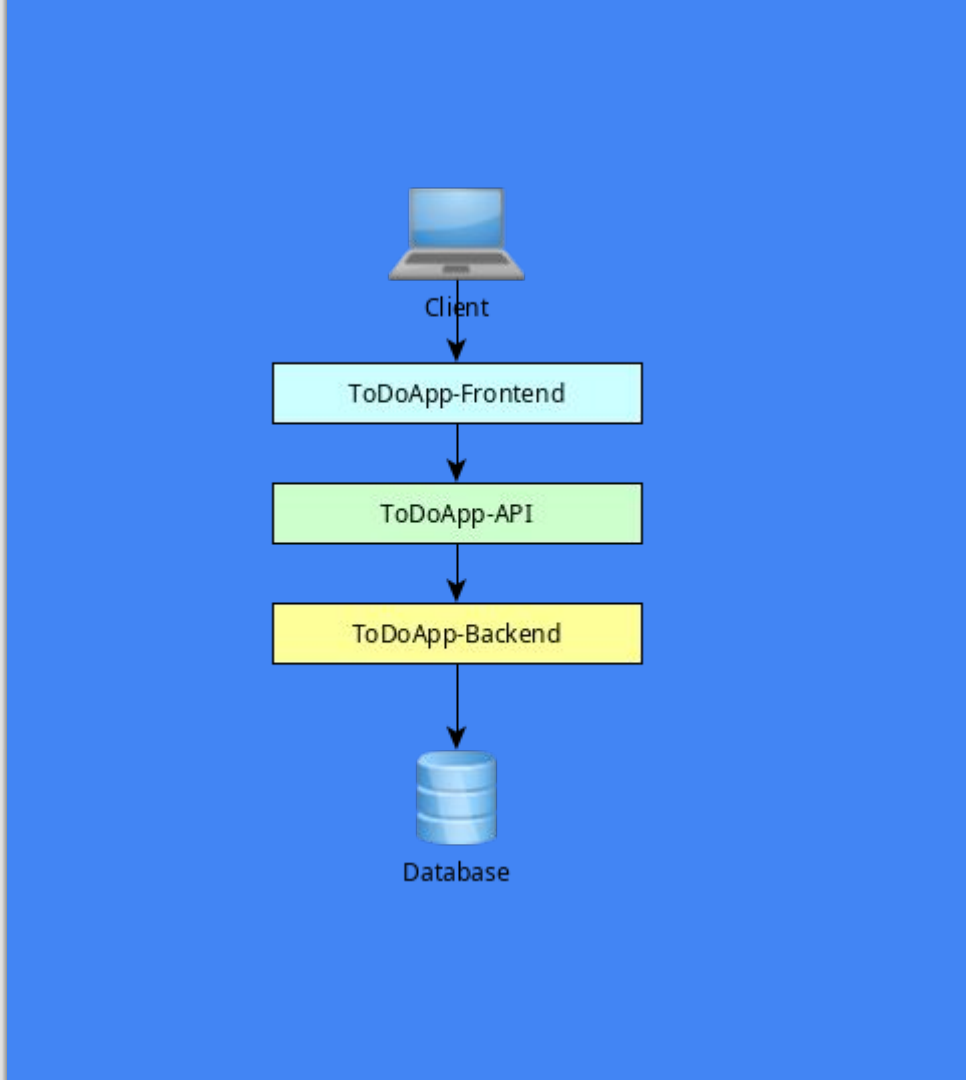
Kanishka Dilshan

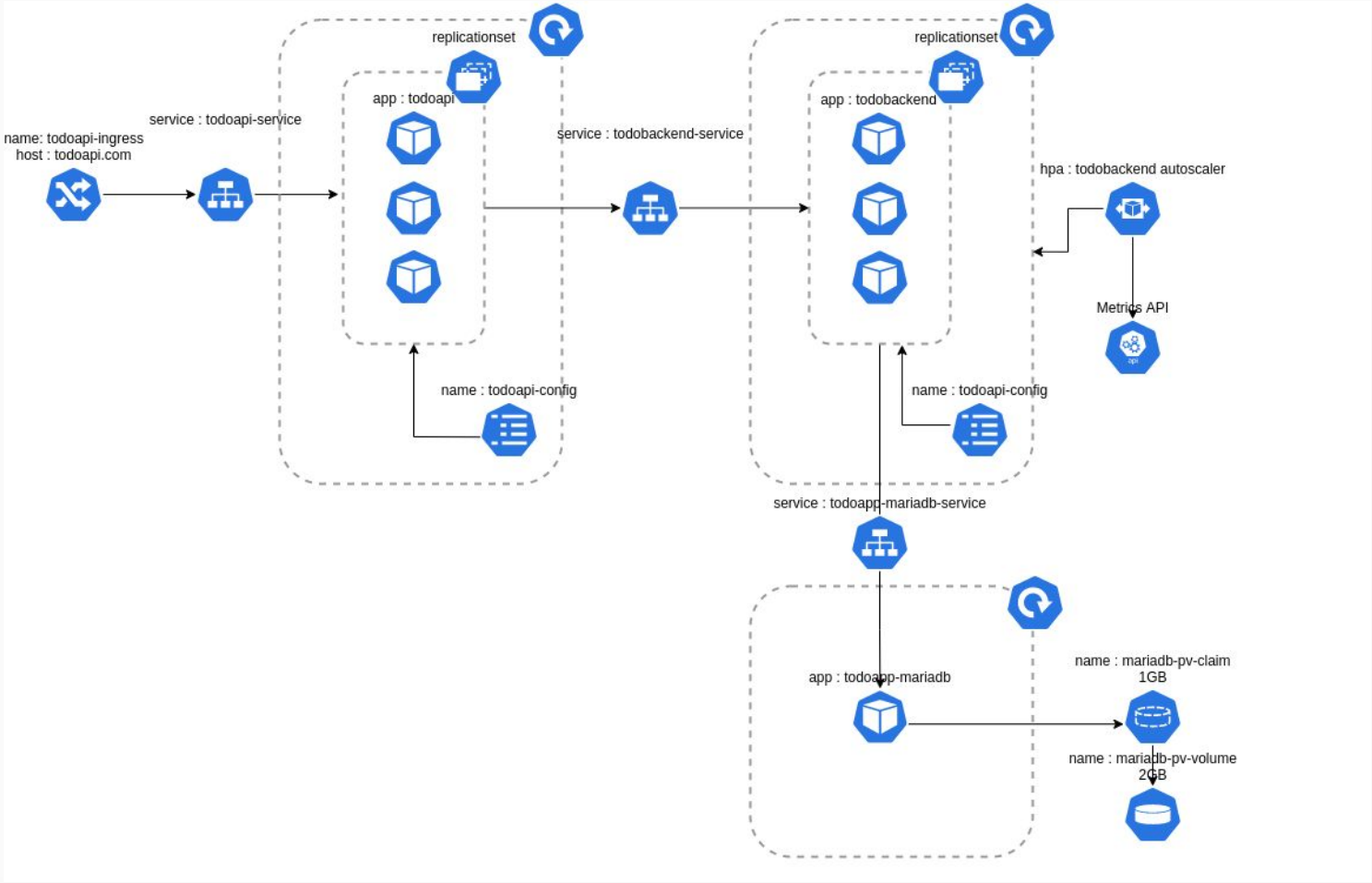
Agenda

- Use case discussion
- Introduction to basic concepts
- Practical session
- Q&A

Use Case

Todo app





TODO App Architecture

Basic Concepts

- Pod
- Replica set
- Horizontal pod autoscaler
- Deployment
- Service
- Ingress / Loadbalancer
- Volumes/Volume claims
- Configmaps

Pod

- Smallest deployable unit
- Group of one or more containers
- Shares storage,network, context between pod containers
- Usage
  - One container - One pod (common)
  - One pod encapsulates multiple pod (ie. sidecar pattern)

ReplicaSet

- Ensures given number of pods are running at a given time
- Recommended to be leveraged via deployments

Horizontal Pod Autoscaler

- Responsible to scale pods in replication controller
- Uses metrics to autoscale pods

Deployment

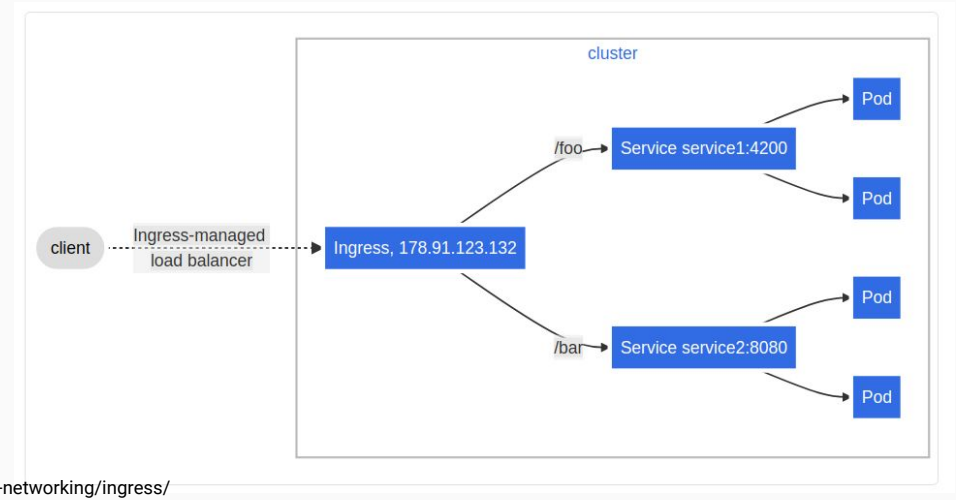
- Declarative way to update Pods/ReplicaSets
- Once declared deployment controller ensures the desired state

Service

- An abstract way to expose an application running on set of pods
- Kubernetes assigns IP/DNS name for set of pods for load balancing
- Service types
  - ClusterIP - exposed via a cluster internal ip
  - NodePort - exposed via each node's IP with an static port
  - LoadBalancer - exposed via external IP (using cloud provider's load balancer)

Ingress

- Ingest HTTP/HTTPS traffic from outside the cluster and routes to services
- Provides routing, load balancing, ssl termination



Source : https://kubernetes.io/docs/concepts/services-networking/ingress/

Volume/ Volume Claim

- Abstracts persistent storage
- Pods can use volumes
- Types
  - Local
  - NFS
  - azureDisk

ConfigMap

- Decouples env specific configurations from container images
- Pods can refer to config maps
- Warning : No security/encryption
- Never store secrets in config maps (use kubernetes Secret instead)

Practical Session

- Preparation
- Define storage
- Database
- Backend / Autoscaler
- Api service
- Ingress
- Verification

Resources

- yaml declarations
  - https://github.com/kdkanishka/todoapp-kube.git

Q&A

Thank you!