Lecture 6 — 18th Oct 2025

Kubernetes Intro

- Container Orchestration: Kubernetes schedules and manages containers, ensuring they run in a reliable and scalable manner.
- Automated Scaling: It can automatically scale applications up or down based on demand.
- Load Balancing: Kubernetes can distribute traffic across multiple containers for high availability.
- Self-Healing: It detects and replaces failed containers to maintain application health.
- Rollouts and Rollbacks: Kubernetes facilitates controlled updates and rollbacks of application versions.
- Resource Management: It efficiently allocates computing resources to containers.

Architecture

→ master - slave architecture

Detailed

- Pod is encapsulation of one or more containers.

- IP addresses NOT used for referencing PODS → "Labels" are used.
  & ↓
  "Annotations".

- Self-Creating → min _pods → replica set controller

$= 5$

→ rollbacks

– knofe . yaml .

⇒ Types of : Service
Bind → Deployment

Volumes

"Define the size of storage using
"kind : Persistent Volume"
↓
and the claim the piece of it using
"kind : Persistent Volume Claim"

for upcoming kubernetes assgn

– Use gcp.
– setup local using "minikube"
– more advanced → "kind".

→ install "kubectl".

1. Creating namespace → similar to IAM
   → a team has a "ns" and only works with that.