MODERN INFRASTRUCTURE

KUBERNETES

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KUBERNETES BACKGROUND

- google project, exposed in 2014
- derived from Borg (internal container platform google)
- reference to star trek #7 of 9
- helmsman/captain
- written in go lang

WHAT IS IT

1 picture > 1000 words?

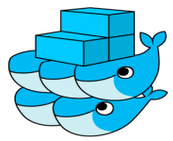
DRILLING DOWN

LAYER 6

Dev workflow/ opinionated structures

LAYER 5

Orchestration/ scheduling

LAYER 4

Container engine


LAYER 3

Operating systems

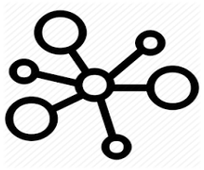


LAYER 2

virtual infrastructure

LAYER 1

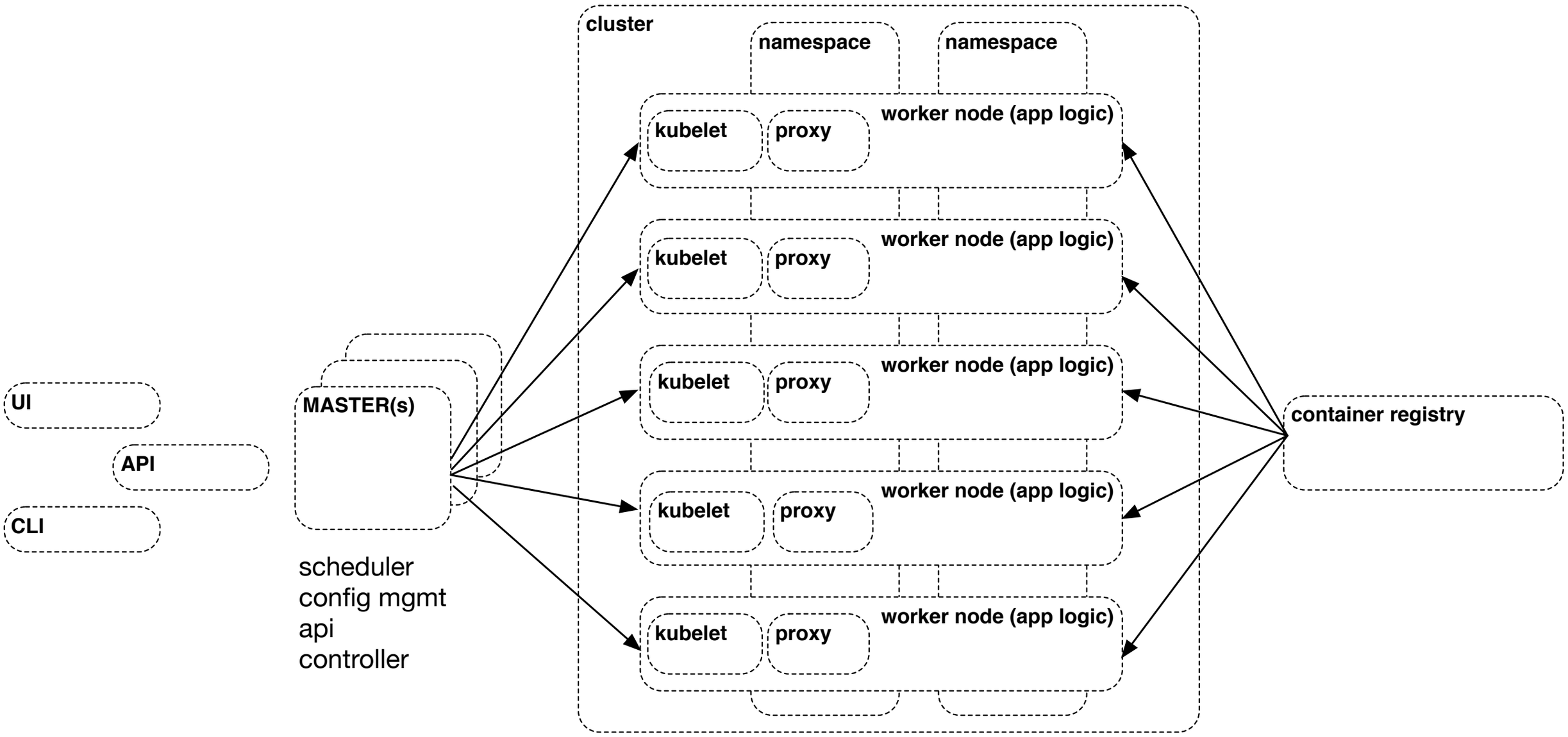
Physical infrastructure


WHAT PROBLEMS DOES IT SOLVE

- containers/ microservices exciting but introduces new problems
  - mesh of services/ apps (orachestration/ naming needed)
  - flexibility needed in scaling
  - self healing
  - intelligent scheduling
  - automated rollouts/ rollbacks
  - secret and config management

KUBERNETES ARCHITECTURE



Focus is on APPS not on INFRA

KEY CONCEPTS

optimal decoupling with the following components

- Namespaces
- Nodes
- Workloads
  - Cronjobs, Deamon sets. Jobs
  - Deployments
  - Pods
  - Replica sets, Replication Controllers
- Discovery and LoadBalancing
  - Ingress
  - Services
    - ClusterIP
    - NodePort
    - LoadBalancer
- Persistant Volumes
- Storage Class
- Kubernetes volume plugins
  - Remote storage; Azure FS/GluserFS/ NFS
  - Empheral Storage; Emptydir/ Secrets/ConfigMap
  - Local Storage