Why is k8 special?

- **Github (37,578★)**

- **1693 contributors**

Backed up by :

- **Google, RedHat, CoreOS, Cloud Native Computing Foundation**

- **Cloud providers AWS, GCLOUD, AZURE**

- **10/15 years of R&D in Google (Borg, Omega)**

k8 features

- **Horizontal scaling**
- **Automated rollouts and rollbacks**
- **Self healing**
- **Service discovery and load balancing**
- **Secret and configuration management**
- **Better server utilization (less money goes to aws)**

Abstracts the hardware layer

LoadBalancers | Routes | DNS

Kubernetes

Application

Storage

Machine

Network

EBS

NFS

GFS

VM

PHYSICAL

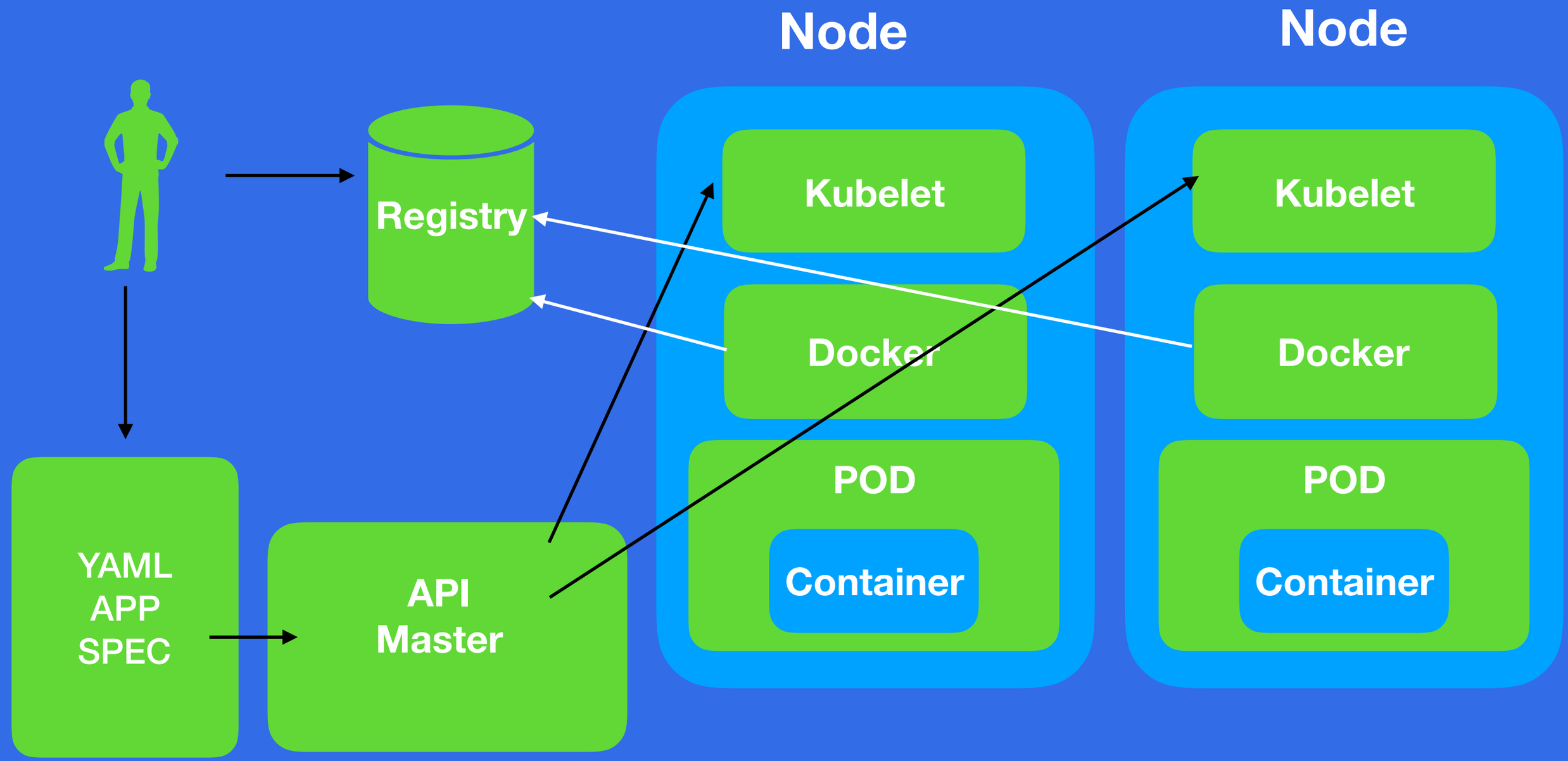
L2

L3

Infrastructure

k8 architecture

pods/apps running on k8



k8 basic objects

- **Everything in k8 is a declarative configuration object (RESTfull API object)**

k8 uses them to represent the state of a cluster:

- **Pod - a group of one or more containers**
- **Service - gives your pods a stable IP**
- **Volume - storage and configuration for the pods**
- **Nodes - VM or physical machine**

k8 high-level objects controllers

- **ReplicaSet**
- **Deployment (important)**
- **StatefulState (PetSets)**
- **DaemonSet**
- **Job**

Whats a pod anyway?

Pod is group of containers

Containers run under the same Network and UTS namespace (same hostname and net. interface)

Run under the same IPC namespace

Containers in a pod share the same IP address (localhost) and port space

Pods can be seen as very very light VM-s

Basic objects for an app

- **Deployment object**

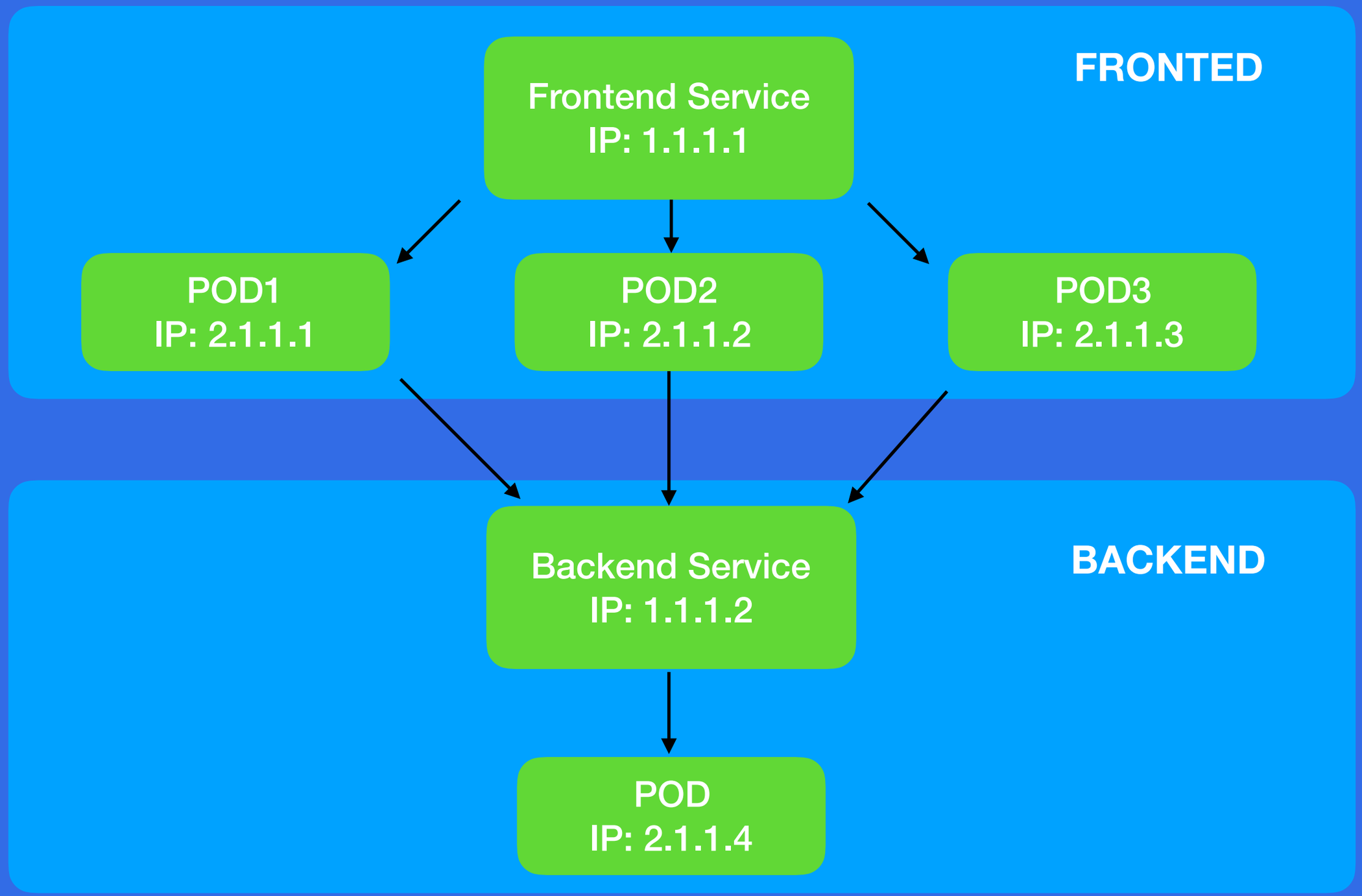
  generate the pods with a label, and keeps them alive

- **Service object**

  Grouping object that gives you a stable IP (virtual IP) for the pods that have a certain LABEL

- **(Config map - app configuration file)**

Services in k8



Deployment controller

Drives current state towards the desired state

app: televendcloud
replicas: 1

NODE 1

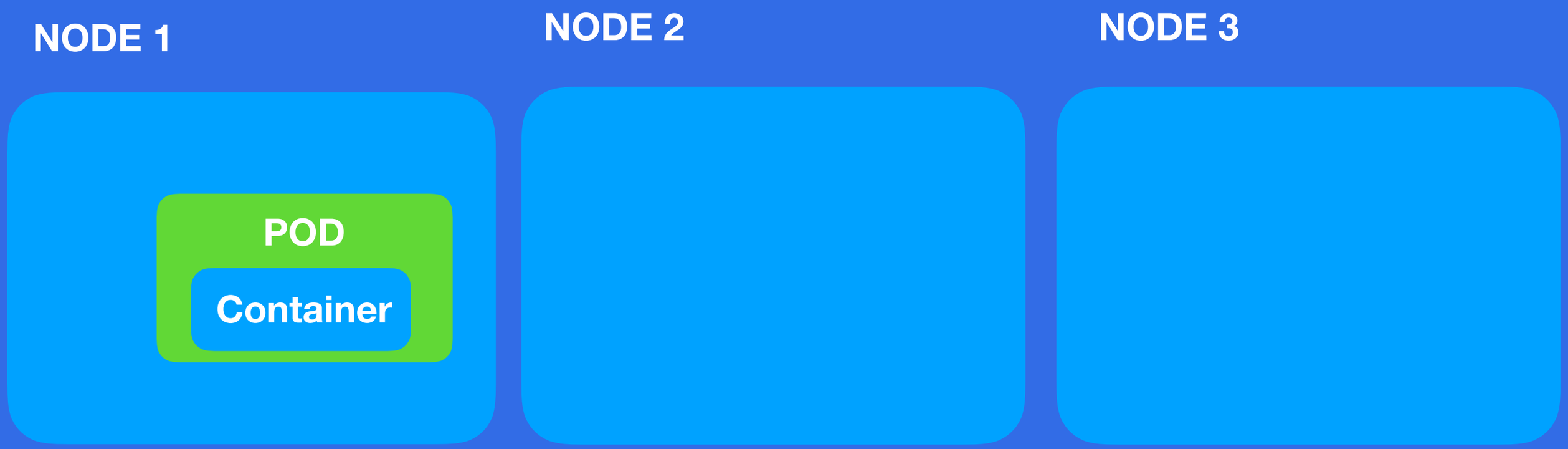
NODE 2

NODE 3

Deployment controller

Drives current state towards the desired state

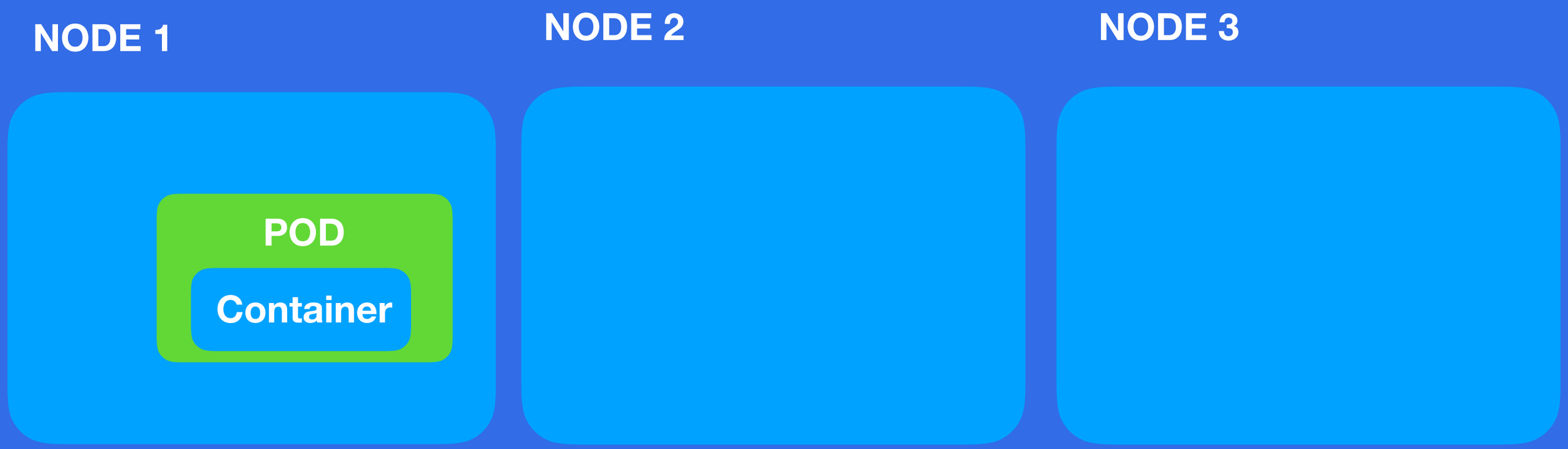
app: televendcloud
replicas: 1



Deployment controller

Drives current state towards the desired state

app: televendcloud
replicas: 3



Deployment controller

Drives current state towards the desired state

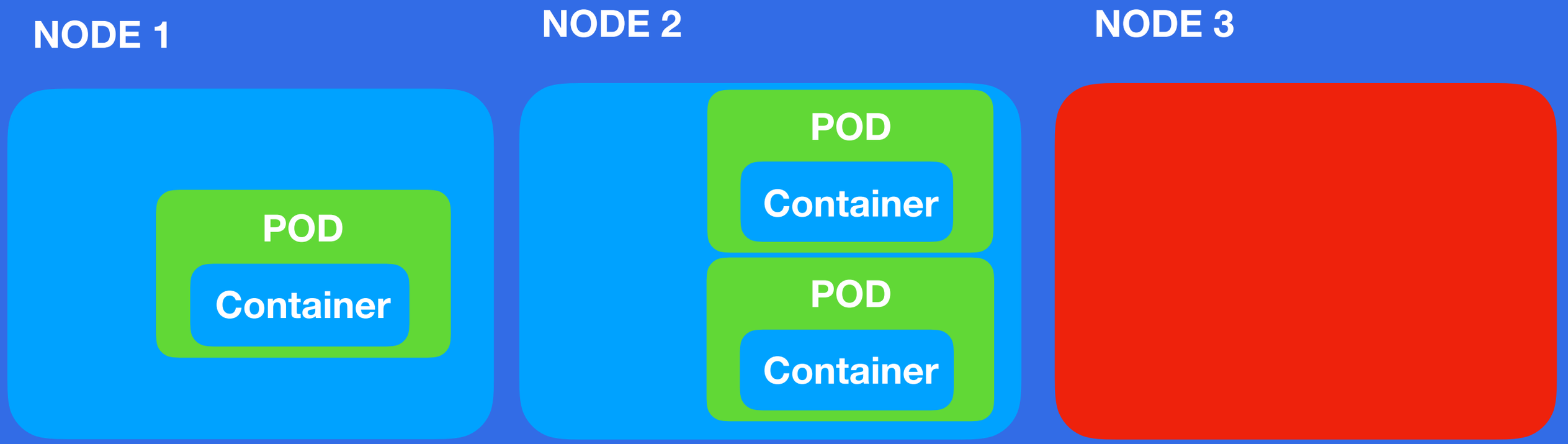
app: televendcloud
replicas: 3

Deployment controller

Drives current state towards the desired state

app: televendcloud
replicas: 3

Deployment controller

Drives current state towards the desired state

app: televendcloud
replicas: 3