Kubernetes Services

Nigel Poulton

@nigelpoulton www.nigelpoulton.com

- The theory of Services
- Create a Service the iterative way
- Create a Service the declarative way
- Real-world application
- Recap

Kubernetes Services

The Theory

```
$ kubectl get pods
NAME              READY     STATUS    RESTARTS   AGE
hello-rc-1qch1    1/1       Running   0          8d
hello-rc-39q0s    1/1       Running   0          8d
hello-rc-3fr7t    1/1       Running   0          8d
hello-rc-5qzpl    1/1       Running   0          8d
…
```

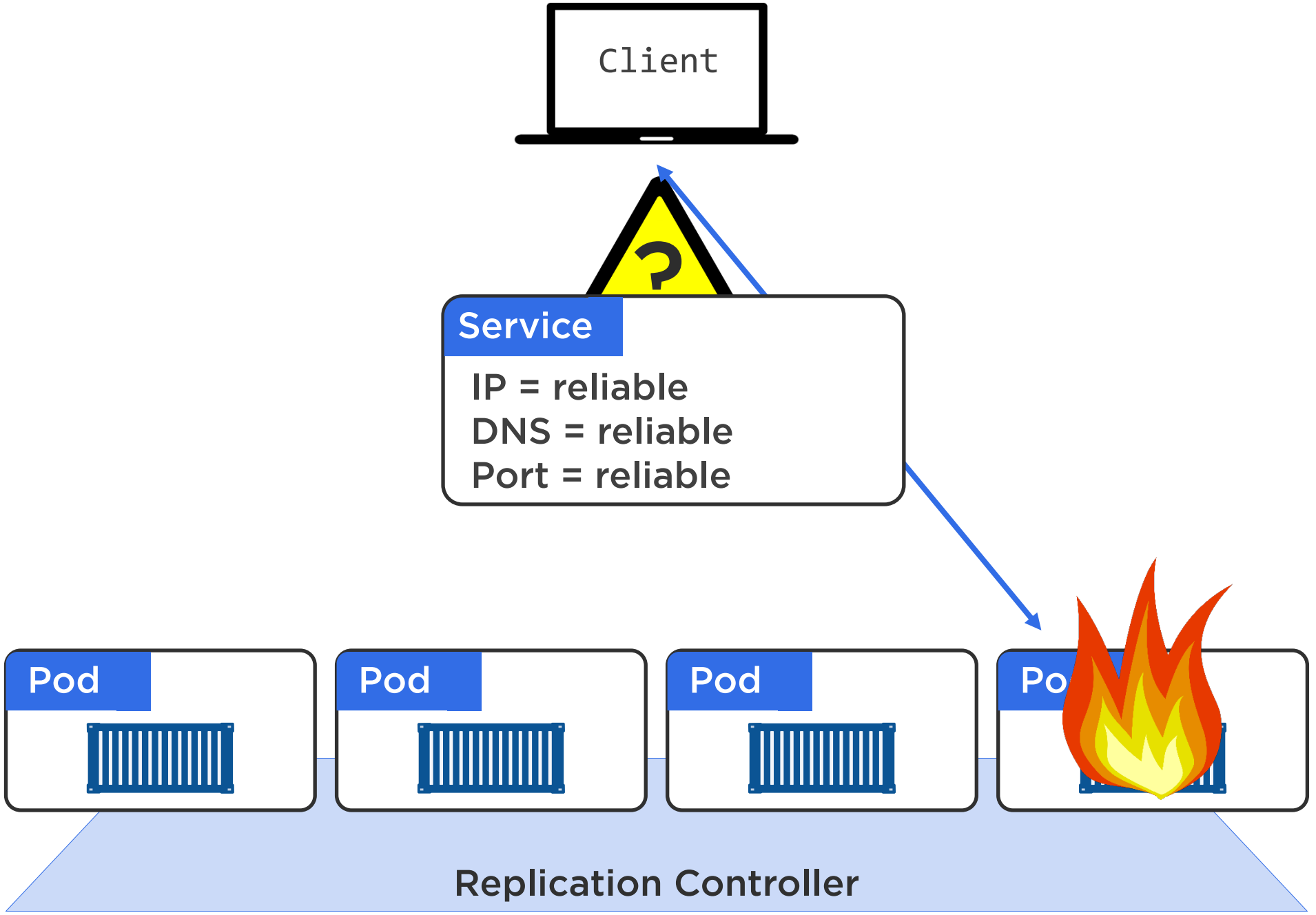
- How do we access our app?
  - From outside the cluster
  - From inside the cluster

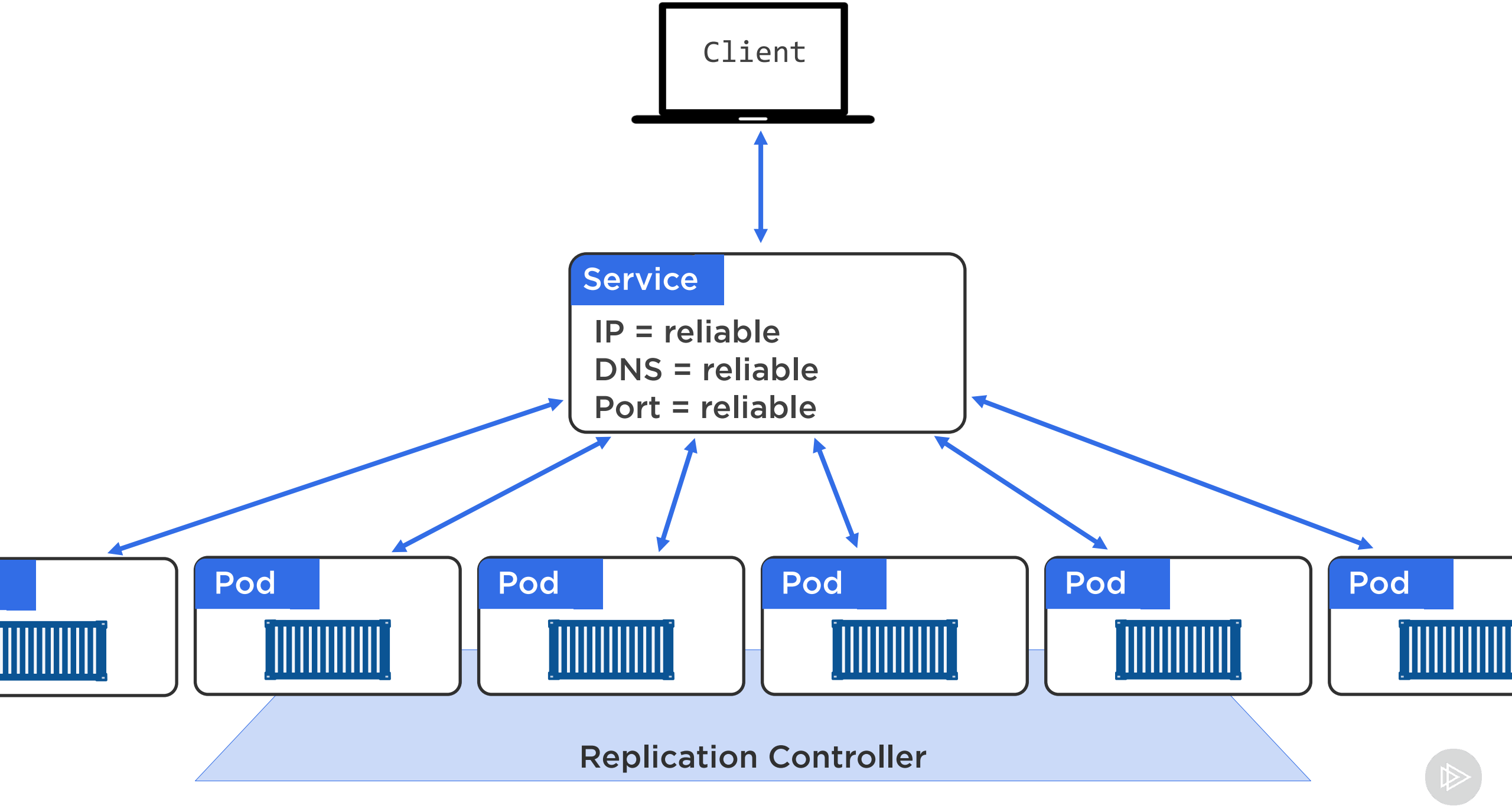
- How do we access our app?
  - From outside the cluster
  - From inside the cluster

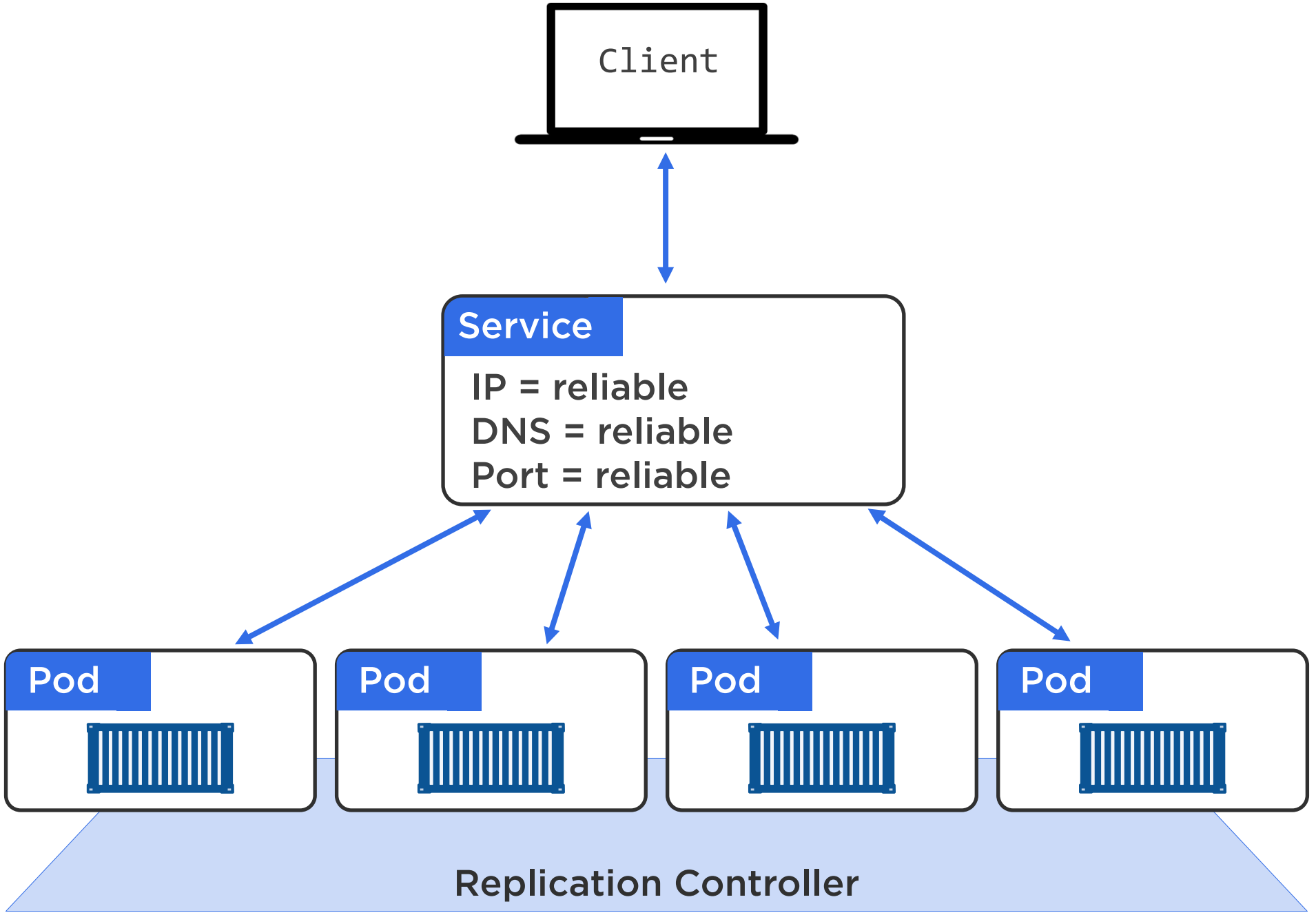
Services:

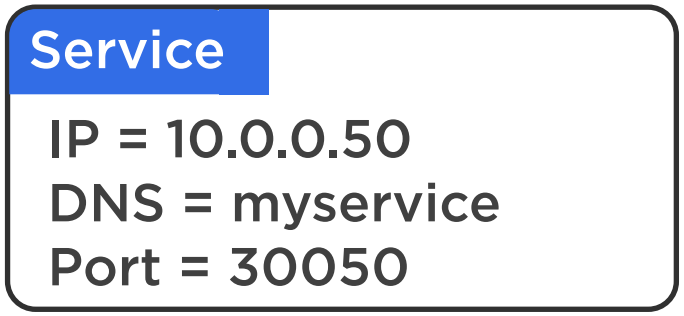
REST objects in the K8s API

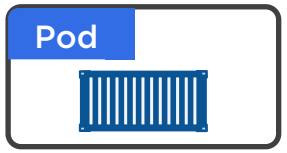
Abstractions

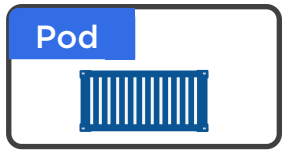

Client
?
Service
IP = reliable
DNS = reliable
Port = reliable
Pod
Pod
Pod
Po
Replication Controller

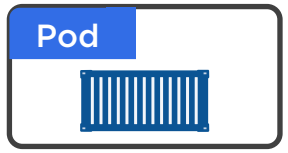

Client
Service
IP = reliable
DNS = reliable
Port = reliable
Pod
Pod
Pod
Pod
Pod
Replication Controller

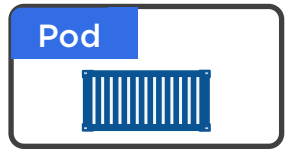

Client
Service
IP = reliable
DNS = reliable
Port = reliable
Pod
Pod
Pod
Pod
Replication Controller

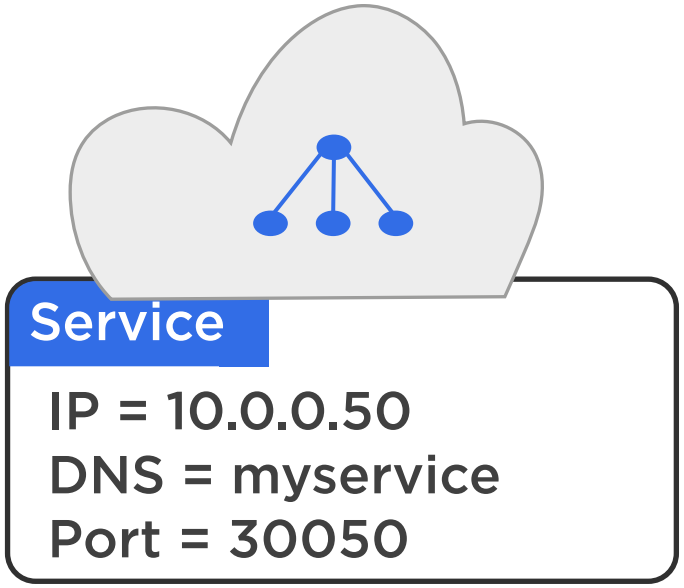

Service
IP = 10.0.0.50
DNS = myservice
Port = 30050

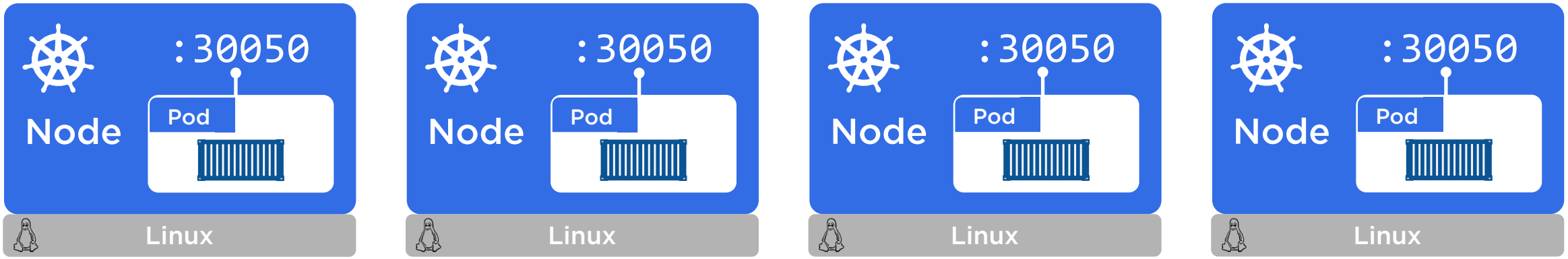

Pod

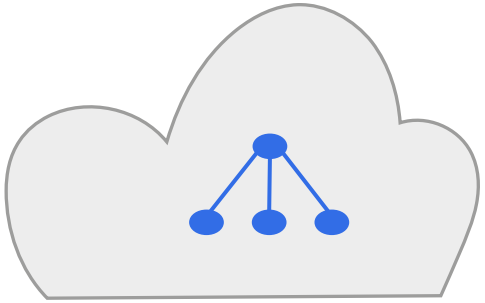

Pod


Pod


Pod


Service
IP = 10.0.0.50
DNS = myservice
Port = 30050


:30050
Pod
Node
Linux
:30050
Pod
Node
Linux
:30050
Pod
Node
Linux
:30050
Pod
Node
Linux

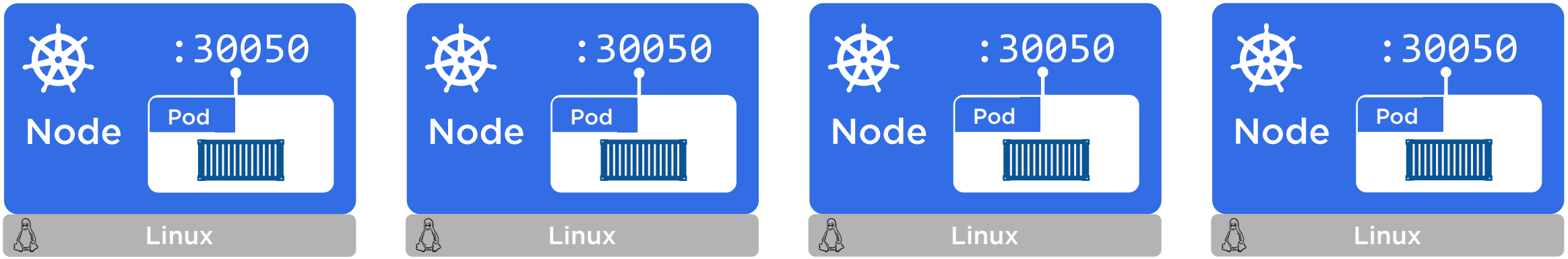


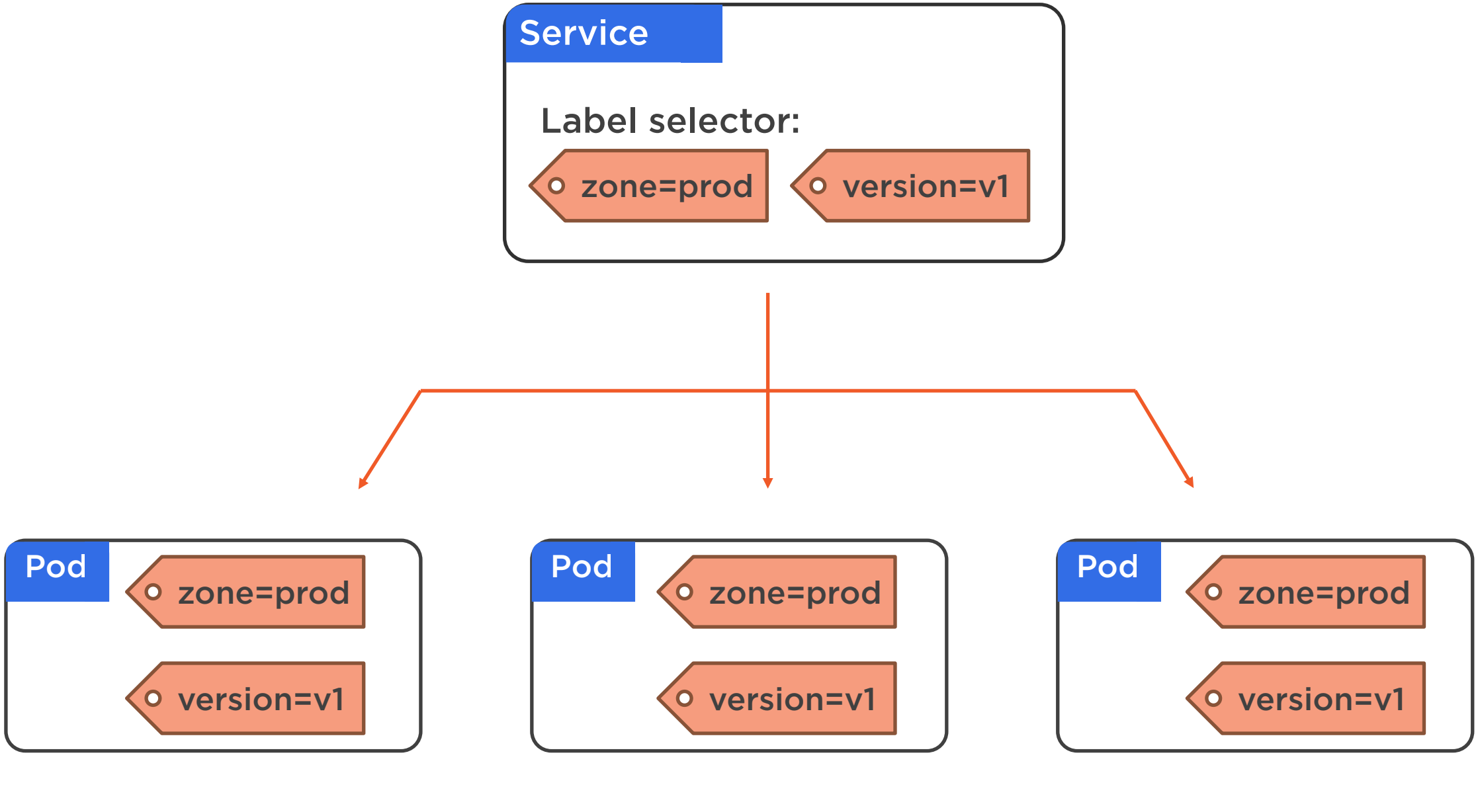
Endpoint

Pod1 IP, Pod2 IP, Pod3 IP,
Pod4 IP....

Service

IP = 10.0.0.50
DNS = myservice
Port = 30050




Service
Label selector:
zone=prod
version=v1
Pod
zone=prod
version=v1
Pod
zone=prod
version=v1
Pod
zone=prod
version=v1

Service Discovery

- DNS based (best)
- Environment variables

ServiceType:

ClusterIP: Stable internal cluster IP

NodePort: Exposes the app outside of the cluster by adding a cluster-wide port on top of ClusterIP

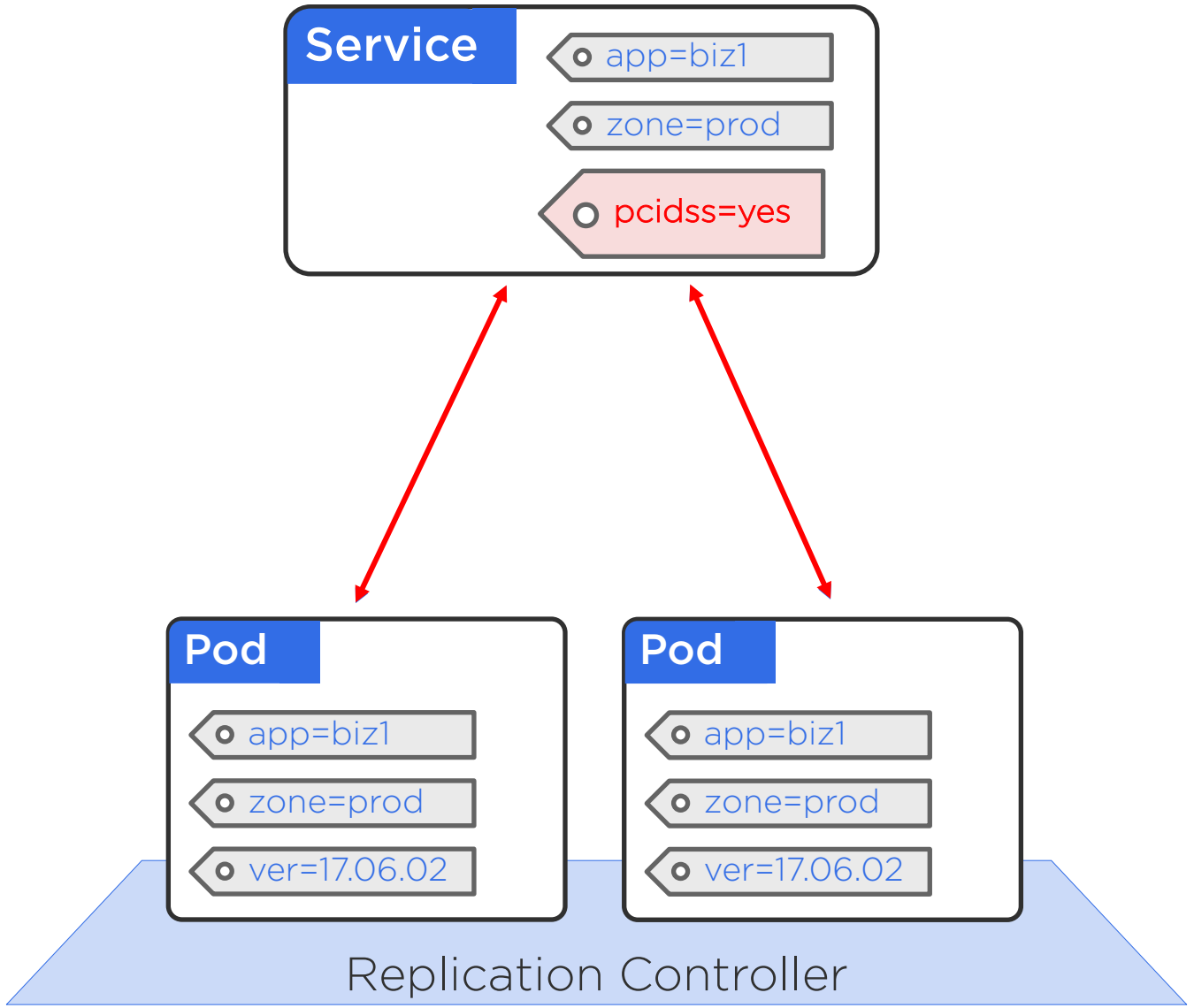
LoadBalancer: Integrates NodePort with cloud-based load balancers

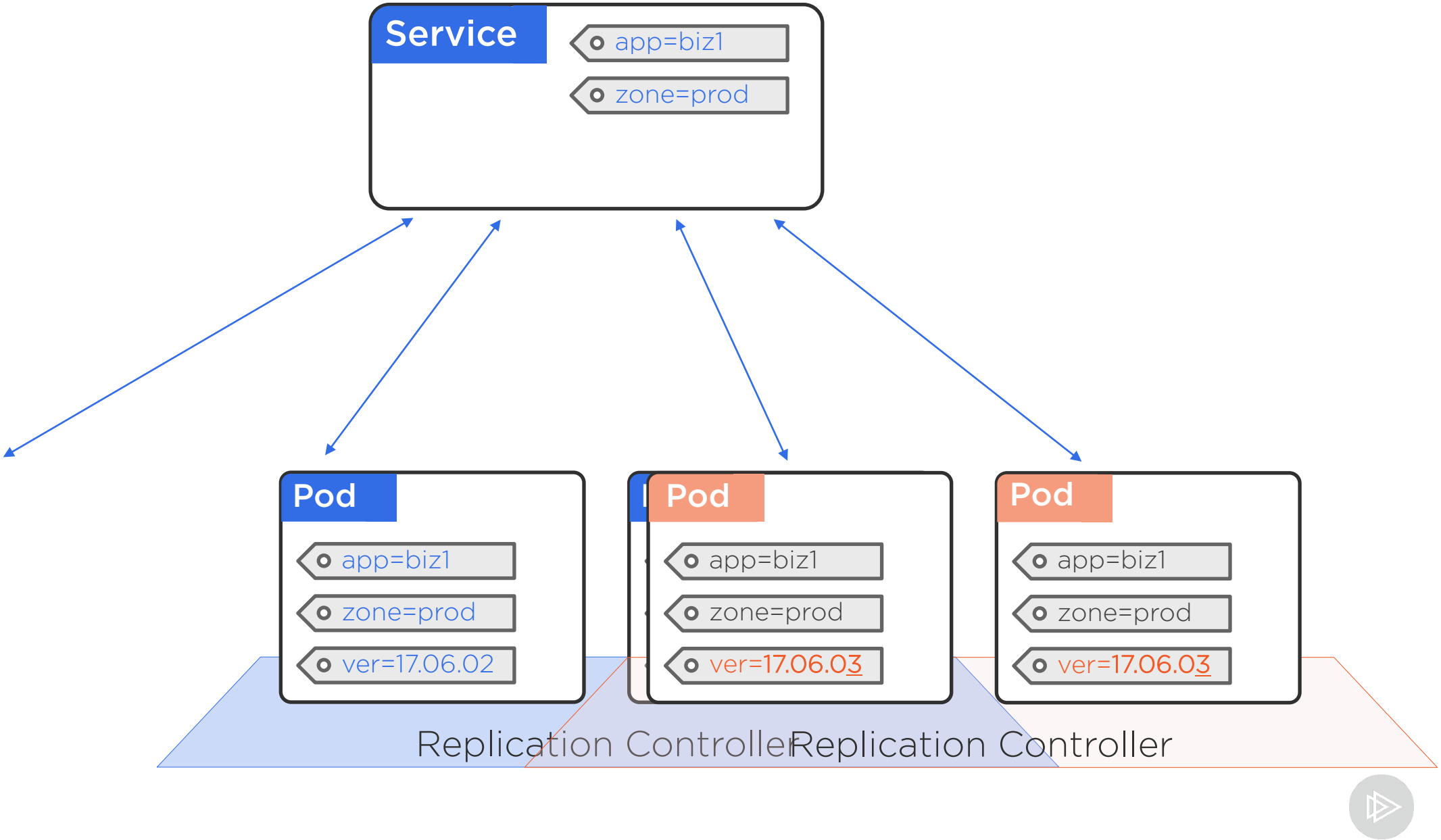
Kubernetes Services

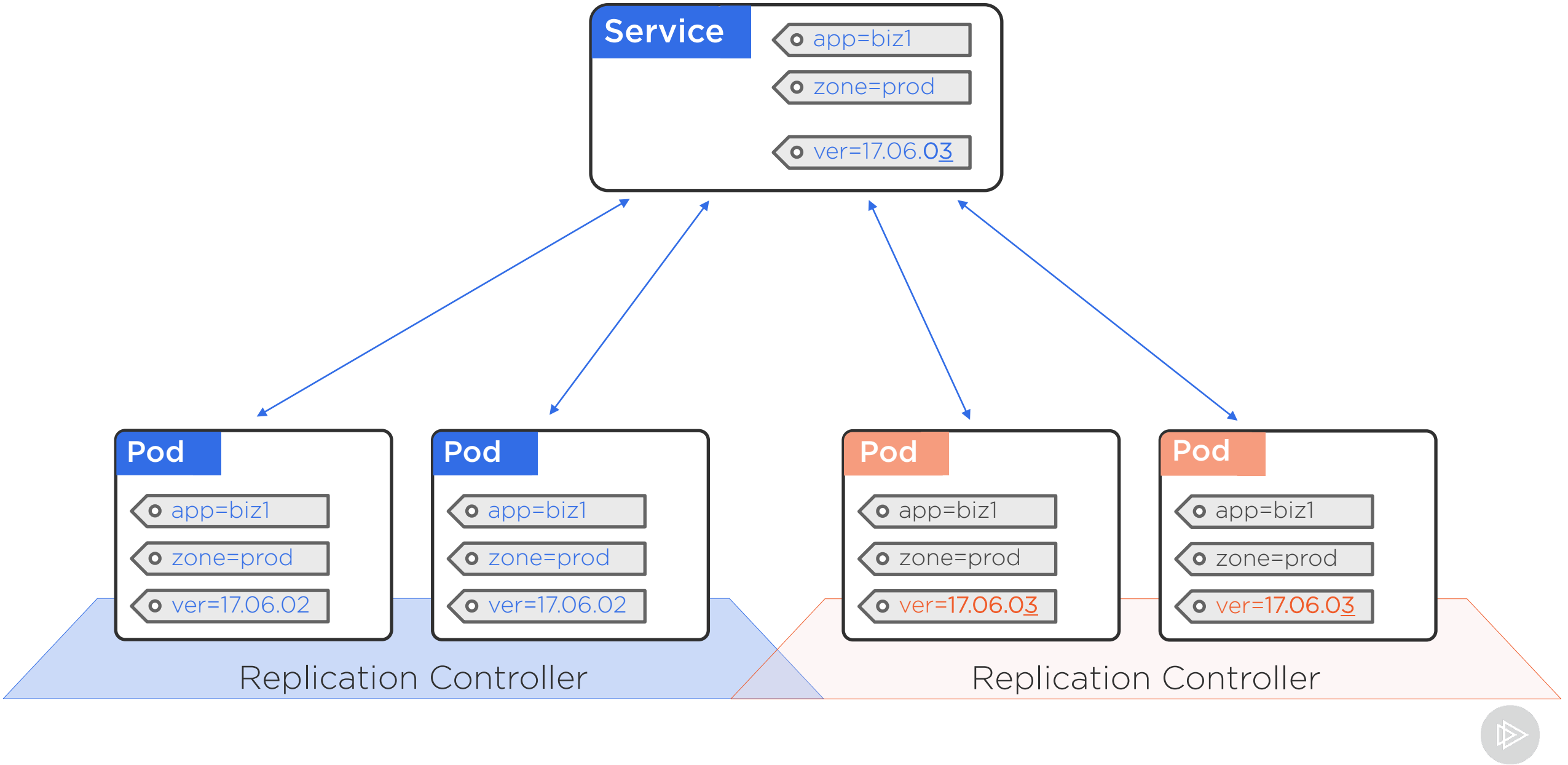
In the real world

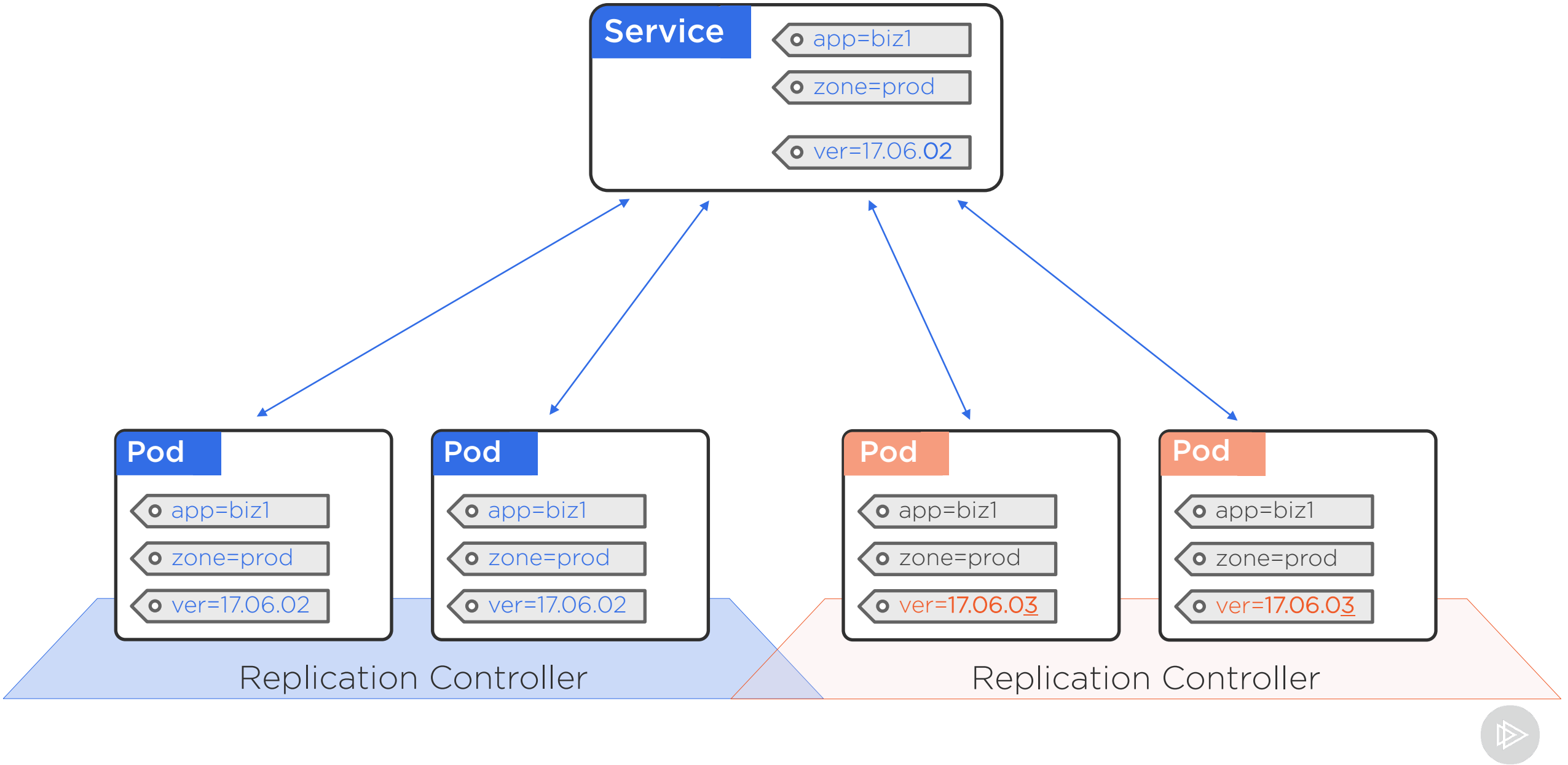
Kubernetes Services

Updating Business Apps


Service
app=biz1
zone=prod
pcidss=yes
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.02
Replication Controller


Service
app=biz1
zone=prod
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.03
Pod
app=biz1
zone=prod
ver=17.06.03
Replication Controller
Replication Controller


Service
app=biz1
zone=prod
ver=17.06.03
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.03
Pod
app=biz1
zone=prod
ver=17.06.03
Replication Controller
Replication Controller


Service
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.02
Pod
app=biz1
zone=prod
ver=17.06.03
Pod
app=biz1
zone=prod
ver=17.06.03
Replication Controller
Replication Controller

Kubernetes Services Summary

Reliable network endpoint

IP address

DNS name

Port

Expose Pods to the outside world

NodePort
Provides a cluster-wide port

LoadBalancer
Integrates with cloud-based load balancers

Coming up...

Kubernetes Deployments