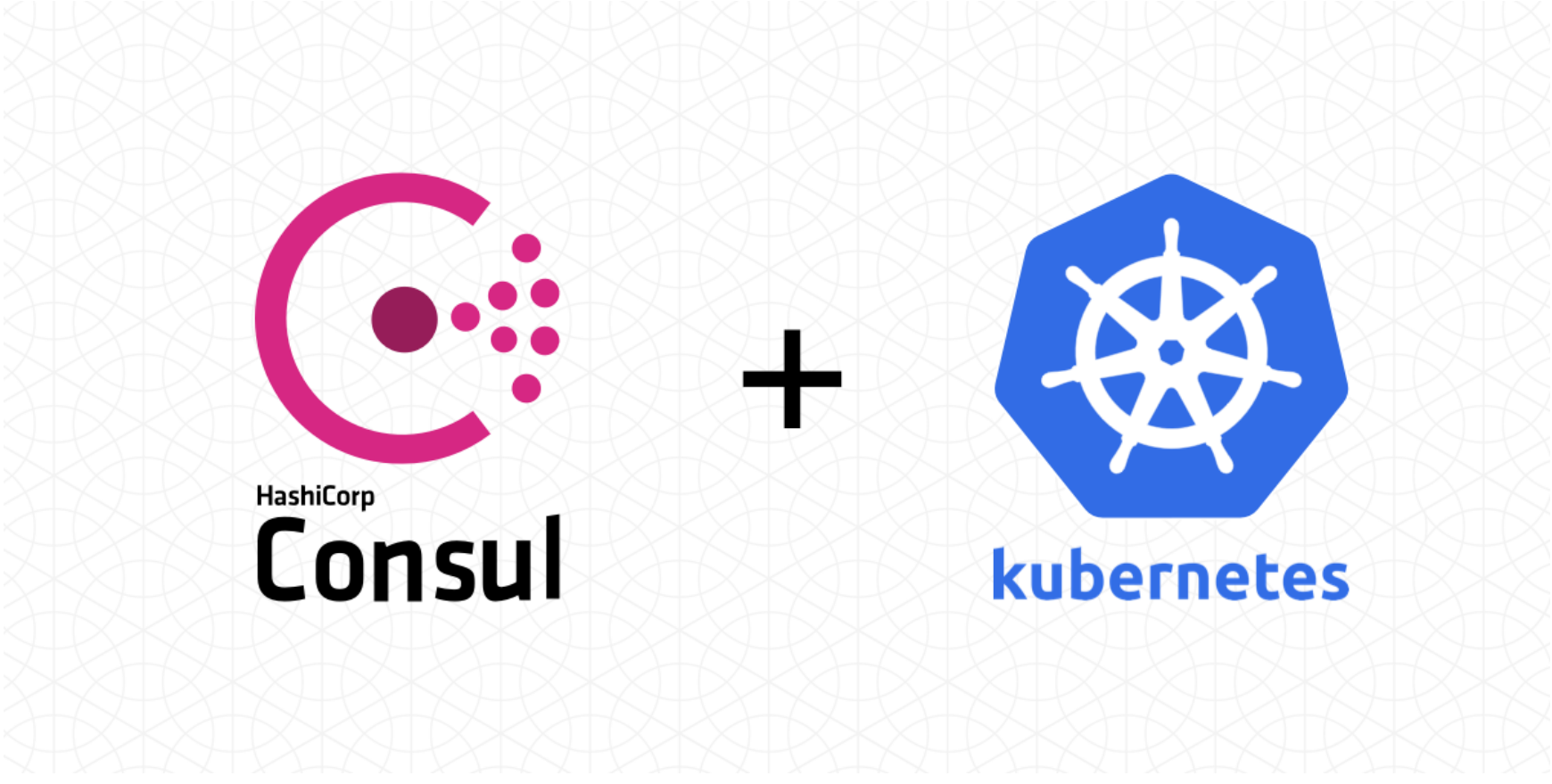


Understanding Consul in K8S

Lukluk Santoso

Objectives

- What is kubernetes service
- Discovering services
- Register kubernetes Service to consul
- Consul through the envoy data plan

Kubernetes Service

A Kubernetes Service is an abstraction which defines a logical set of Pods and a policy by which to access them - sometimes called a micro-service.

Note: `each pod assigned a new IP every spawn`

Discovering services

to call another service we can do in a few ways

Internal call :

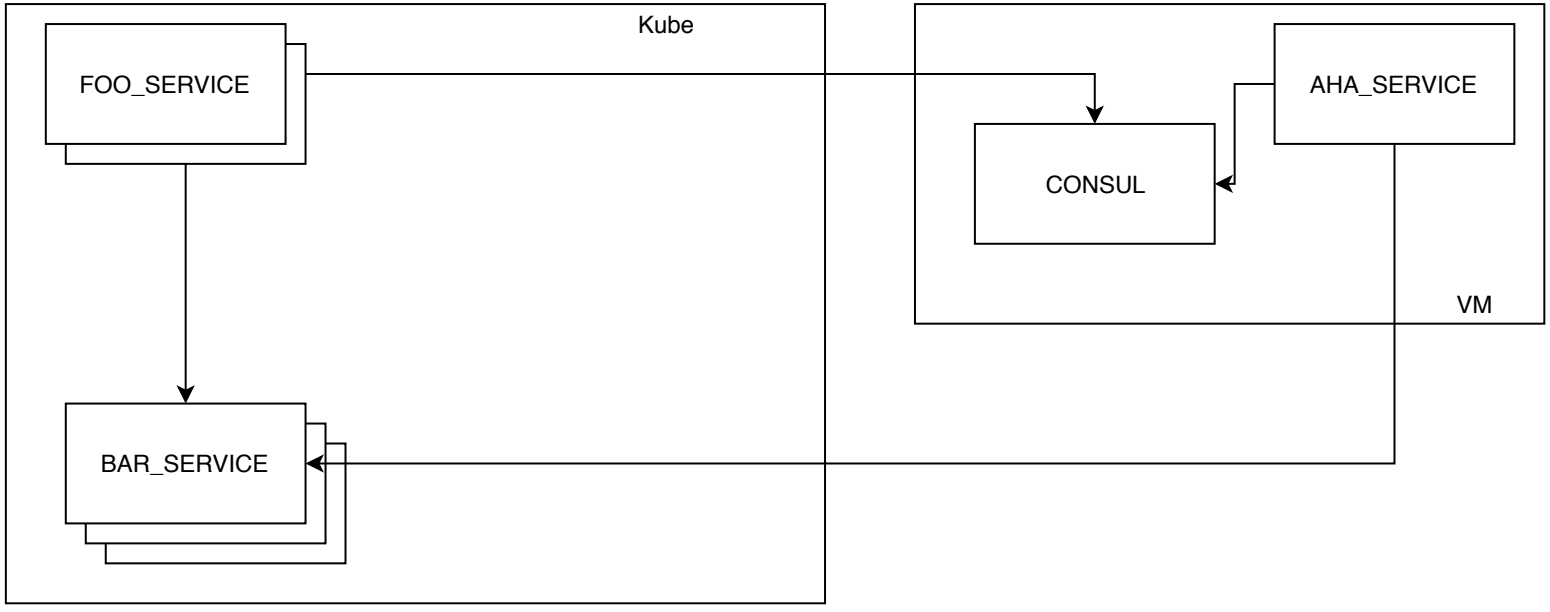
- Consul service discovery
  `FOO_SERVICE_NAME = "FOO"`
- Core DNS / Kube DNS
  `FOO_SERVICE_ADDRESS = "http://foo-svc.namespace:8080"`

External call :

- External IP/domain (LoadBalancer/Ingress)
  `FOO_SERVICE_ADDRESS = "http://10.24.22.100:80"`
  `FOO_SERVICE_ADDRESS = "http://foo-service.demo.com:80"`

Why use Consul for kubernetes ?

- if your architecture is `Hybrid`
- or you are on migration from VM to K8s
- or you using multiple Data Centers

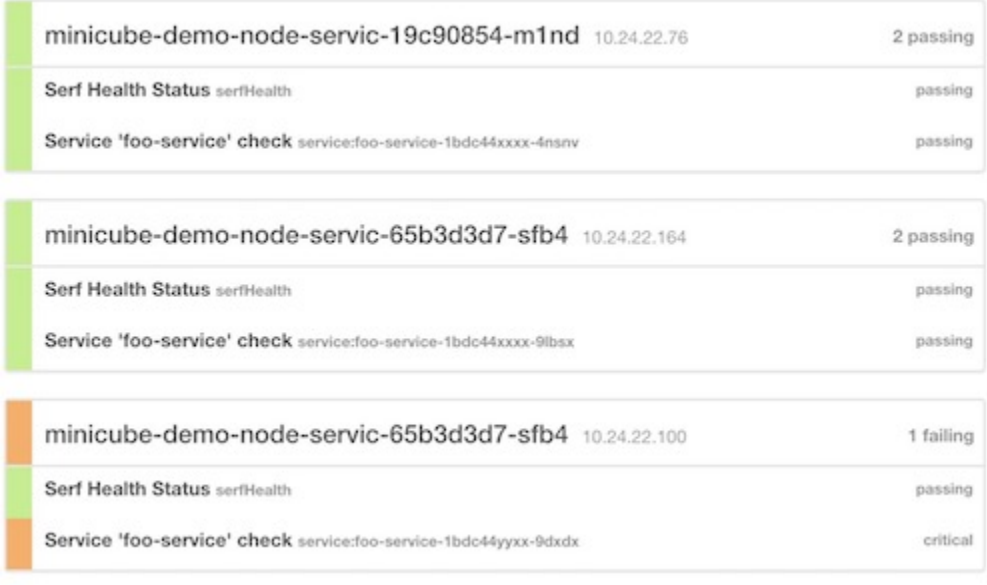


Register k8s Service to consul

Register service to consul is just simple API call,
`/v1/agent/service/register`,
But, I got a few issues in production:

`Kubernetes Pods are mortal`, can be easy to gone, but the record still exists in consul catalog

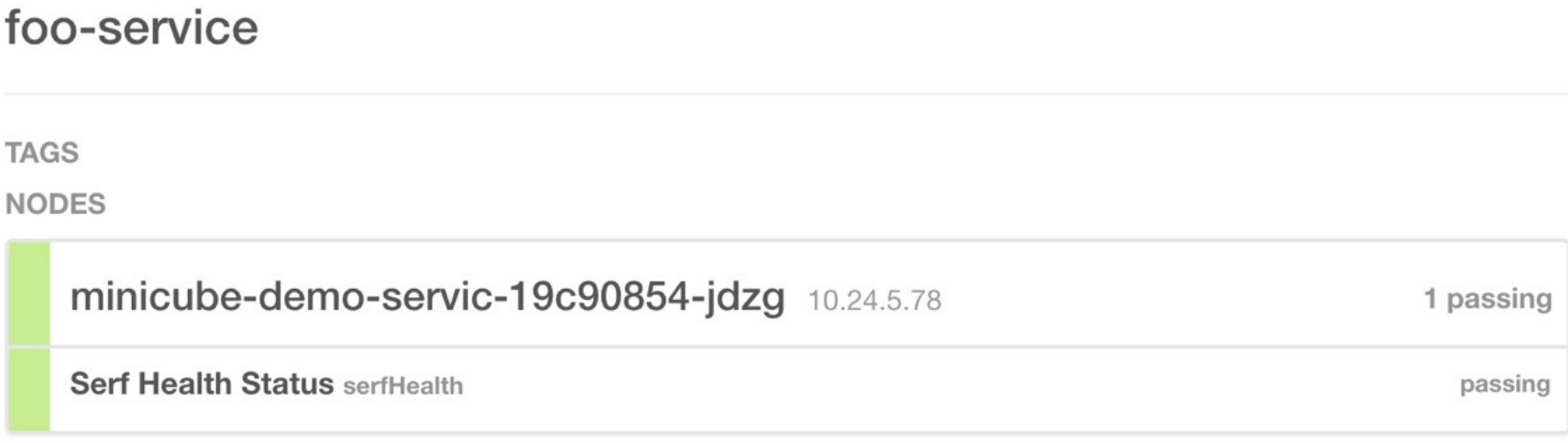
```
$ kubectl get pods | grep foo | awk '{print $1 "\t" $6}'

foo-service-1bdc44xxxx-4nsnv    10.24.22.76
foo-service-1bdc44xxxx-9lbsx    10.24.22.164
```



Failed to deregister due consul server timeout

Some pods on critical status, and need to deregister manually

Service mark as green but in kubernetes not really mean healthy



in VM, usually one instance, one consul agent, one service, and
for K8S, one Node, one consul agent, many services

so Serf Health Status mean , health status of node `NOT SERVICE`

Solutions

1. Register Service Health Check
2. Set DeregisterCriticalServiceAfter
3. Deregister service on shutdown
4. Discover service using `v1/health/service` instead of `v1/catalog/service`, `health/service` have option to get only healthy endpoints

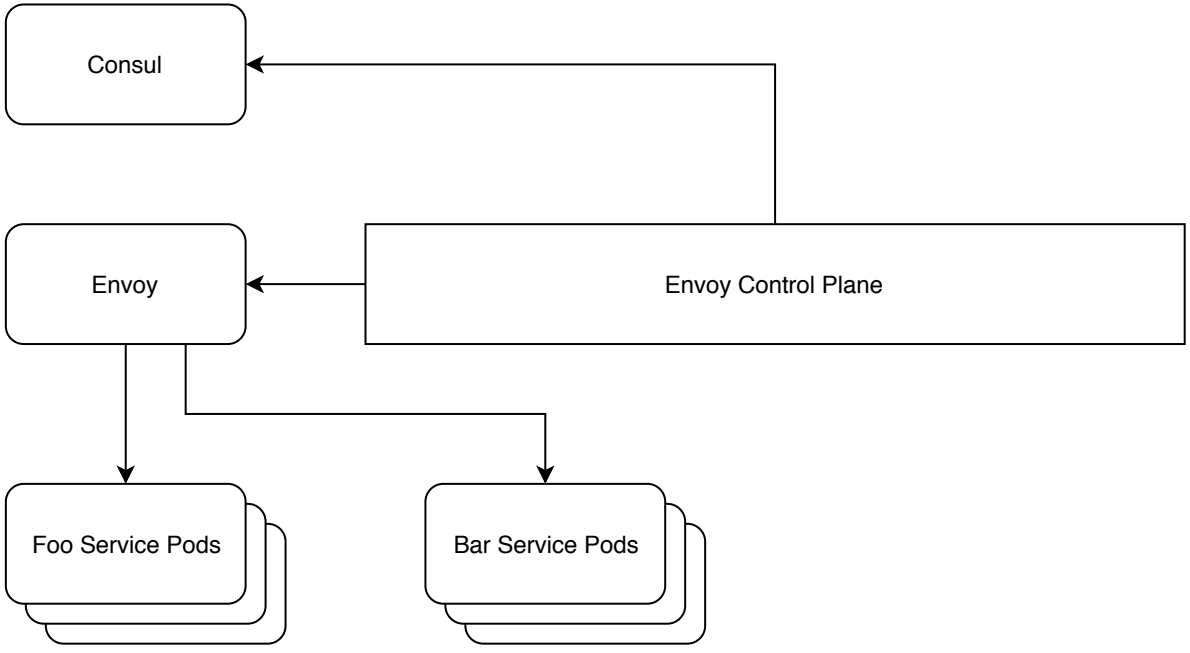
Consul through the env oy control plane

What is Envoy?

is a modern, dynamic, high performance, small footprint edge and service proxy,
in a article called it `programmable edge`,
not like hapropxy and nginx we need re-configure and restart the proxy every upstream changes like IPs , port and trafict weight

so envoy is designed for `cloud-native` applications

Consul used for Discovering service endpoints, to control envoy



one of Control Plane Implementation :

`https://github.com/gojektech/consul-envoy-xds`

Make sure `control plane` only discover healthy endpoints, beacuse by default control plane will discover all endpoints in same `service name`