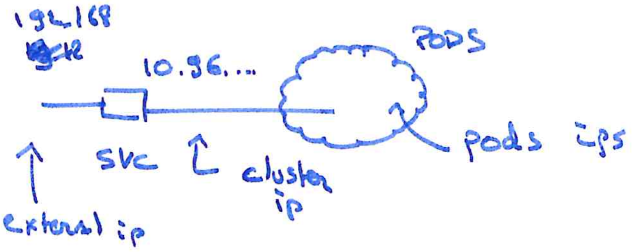
LB

Load balancer: is not a component of kubernetes but is a 3rd party component. We will use MetalLB

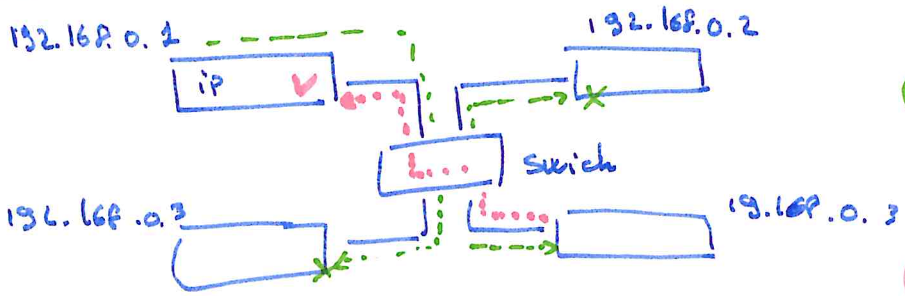
metal LB protocols: The idea



But what if ... the external ip .... is not "owned" by any machine? and instead is balanced over many of them?

metal LB and L2

ARP protocol in 30 seconds — Address Resolution Protocol



1) .1 wants to communicate with .3
2) .1 sent a broadcast (L2) asking who is .3
3) .3 answers with his macaddress

Idea! we run a Pod on every node, these pods elect one among them and This pod is in charge of answering arp requests for selected ip!

Once the comunication between our app and the "winner" node starts kubeproxy Does its magic and redirect the traffic.

if the node breaks another will take over.

⚠ This is not a real LB. We are bottle necked by the fact that all the traffic has to pass trough a SINGLE NODE! This is very good Failover mechanism!!

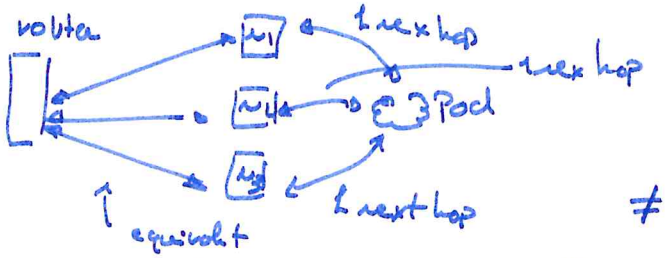
obs #LB svc can advertise on ≠ nodes, but 1 node = 1 svc

Can we Do Better?

Yes we can use BGP (Border Gateway Protocol) and running our own AS (Autonomous System).

In this case each node connects to the routers and advertises it's directly to them showing ALL the routes as equivalent (in distance Hops to the final service)

[the only ≠ thing is the next hop



to the same service

≠ connections are then routed differently!!

This solution works only if your router support multipath. This is true LOAD BALANCing.

- no... BGP is for another course.

Installing LB.

Installing a package is Literally apply a set of yaml charts.

→ this will ① ADD custom resources to/an API to our kubernetes
② Deploy some pods to offer the new service!
⚠ these pods, more often than not will work at a system level!!

→ then we need to config the new application!!

→ notice ≠ API
→ and kind (new kind, not in kubernetes)

→ test this application :-)
(also asp!)

Something Spicy: Enable url with Ingress ~~Ingress~~ Gateway
(is 2023, not 2019)

Goal
Goal: expose 1 IP to the internet and serve many different websites/services behind it.

Request flow

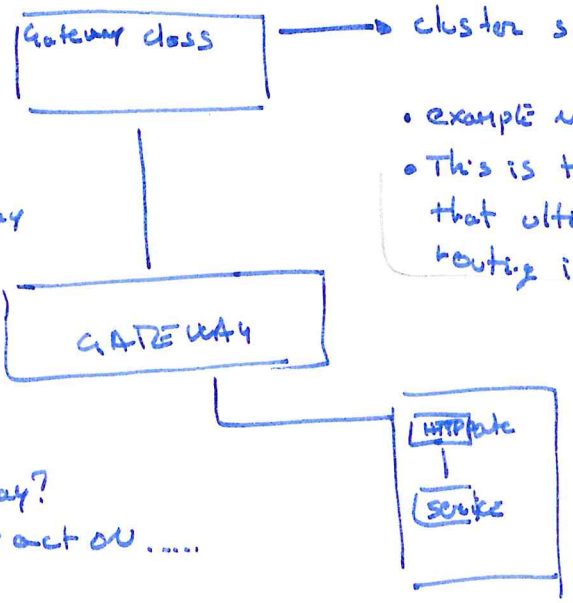
① •) client asks for weave.example.com
② •) DNS RESOLVE QUERY & returns IP (one or
③ •) client send a request to the Gateway IP addre
④ •) The Gateway is a reverse proxy that matches according to HTTP routes where to send the pkg
↳ optionally the proxy can alter the request
⑤ •) send the request to the svc that will provide to pass it to a pod.

~o—

Practical example:
1 Gateway 1 company !!
Every Gateway can only reside the rules of that company.

Idea is the same as storage class but for networking

EXPLOSION of The Gateway!



• cluster operator.
is an instance of a Gateway class, with Specialized Policies
Decided by who Defined this resource
→ which namespaces can use this Gateway?
• which url can they act on .....
• which ports.

• Application Developer,
→ can ADD rules to the Gateway (for example split traffic 90% on appV1 10% on appV2 to test