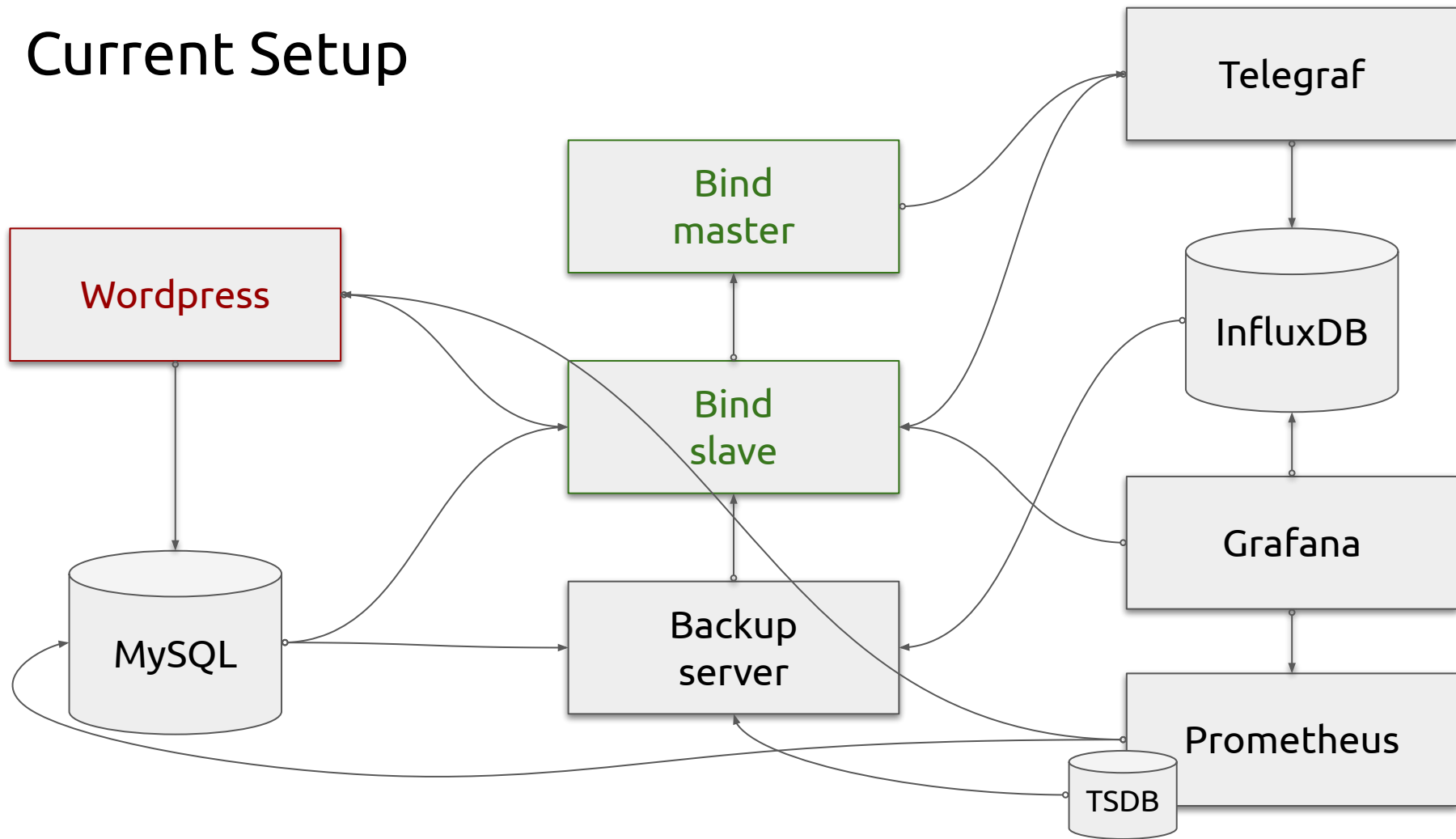


ICA0002: IT Infrastructure Services

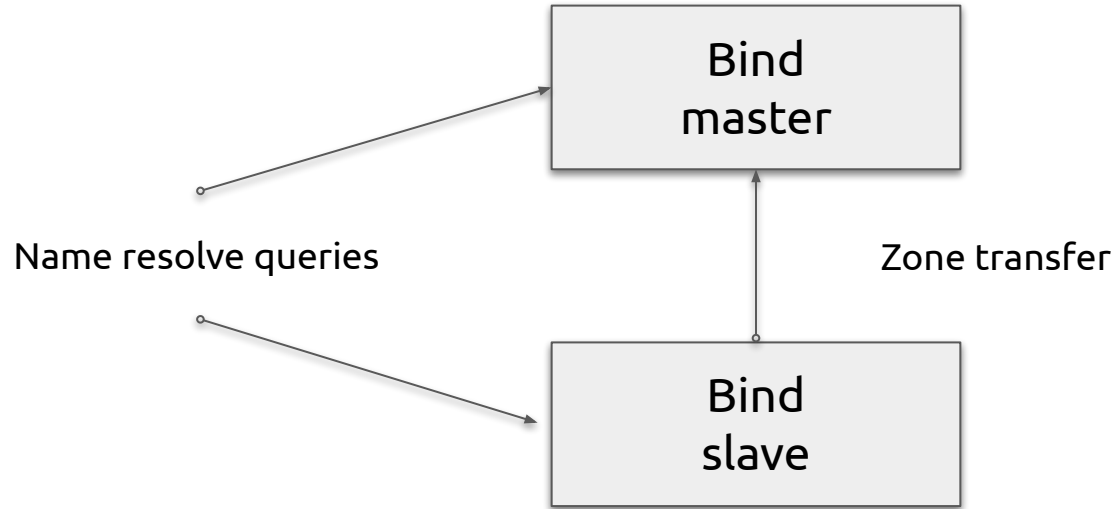
Load balancing

Roman Kuchin
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2019

Current Setup

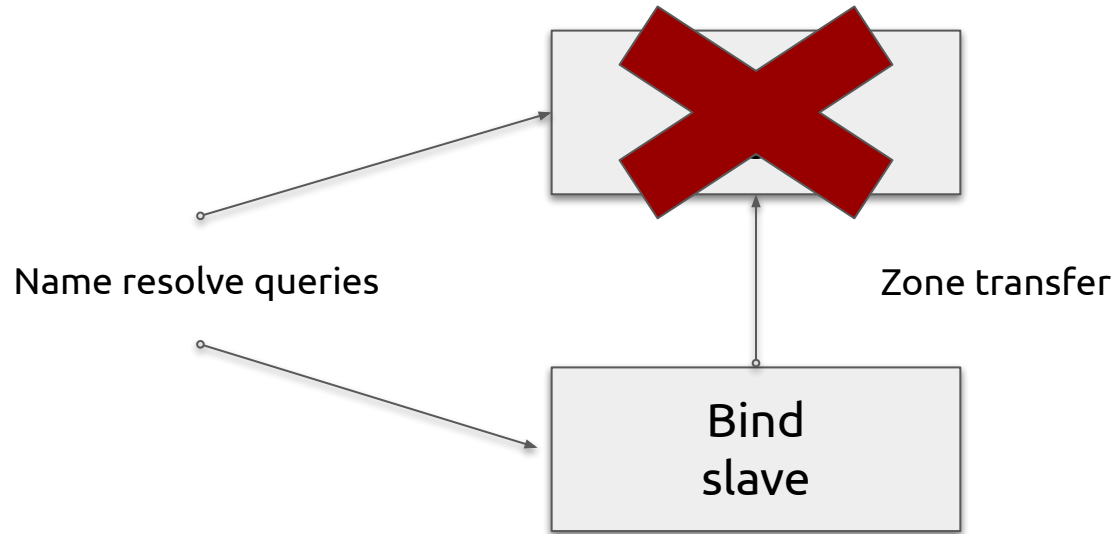


Nameserver redundancy



```
$ host ns.mydomain  
ns.mydomain has address 11.22.33.11  
ns.mydomain has address 11.22.33.12
```

Nameserver redundancy



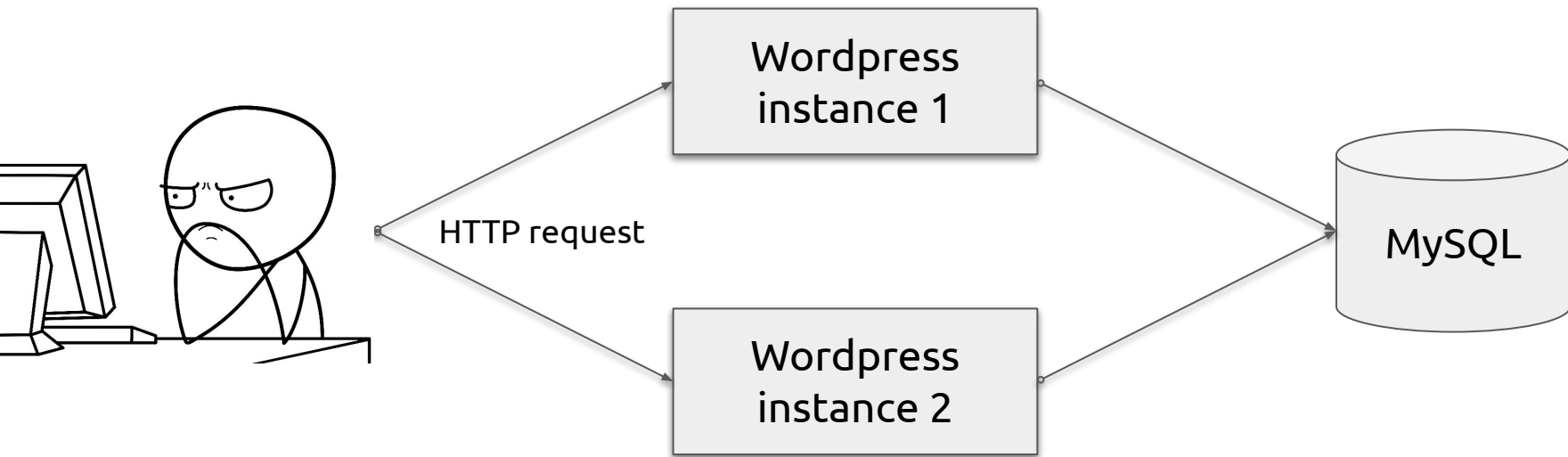
```
$ host ns.mydomain
ns.mydomain has address 11.22.33.11 ← will not respond
ns.mydomain has address 11.22.33.12
```

Nameserver redundancy

DNS based load balancing: `ns.mydomain` record is resolved to 2 different IPs
(also called round-robin DNS)

- Client queries the nameserver on the first IP
- If response is not received in time, client queries the the next IP
- And so on, until the response is received
- If not -- name resolution fails

Webserver redundancy: round-robin DNS



```
$ host www.mydomain  
www.mydomain has address 11.22.33.81  
www.mydomain has address 11.22.33.82
```

Webserver redundancy: round-robin DNS

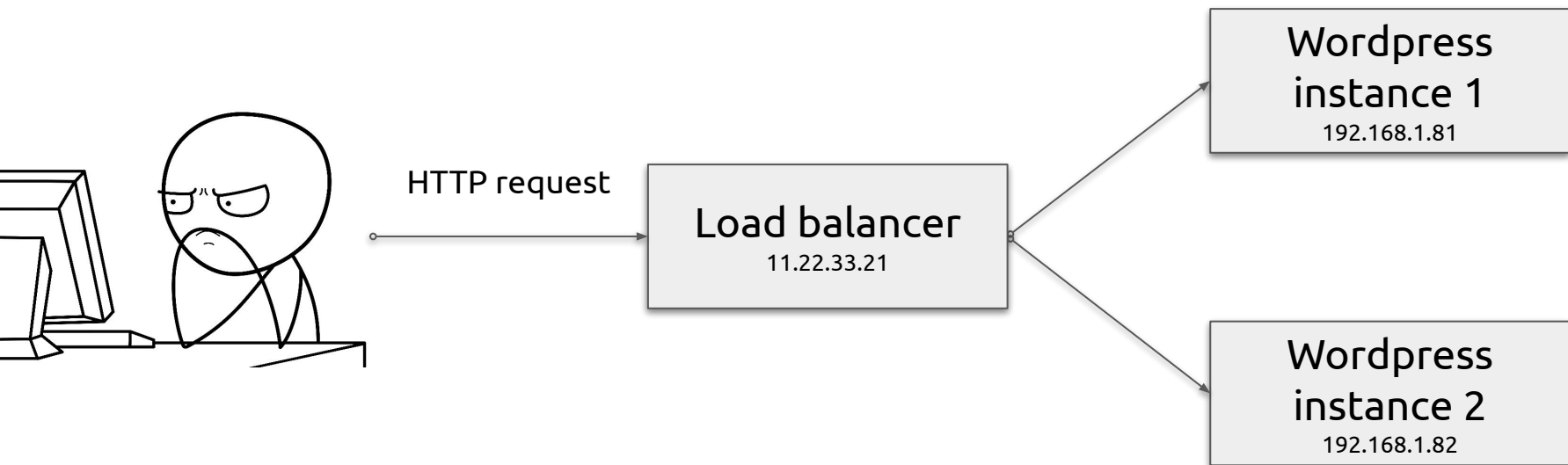
Pros:

- Easy to implement
- No additional software/hardware required

Cons:

- DNS caching
- No service health checks (IP may resolve but the service itself is down)
- **The client should support this**

Server-side load balancing



```
$ host www.mydomain  
www.mydomain has address 11.22.33.21
```


Server-side load balancing

Pros:

- Service health and utilization checks
- Load **balancing**, not just distribution

Cons:

- Additional software, hardware (\$\$\$) or cloud service required
- Another component that needs to be highly available

Server-side load balancing

Hardware

- Appliances by Barracuda, Cisco, F5 Networks etc.

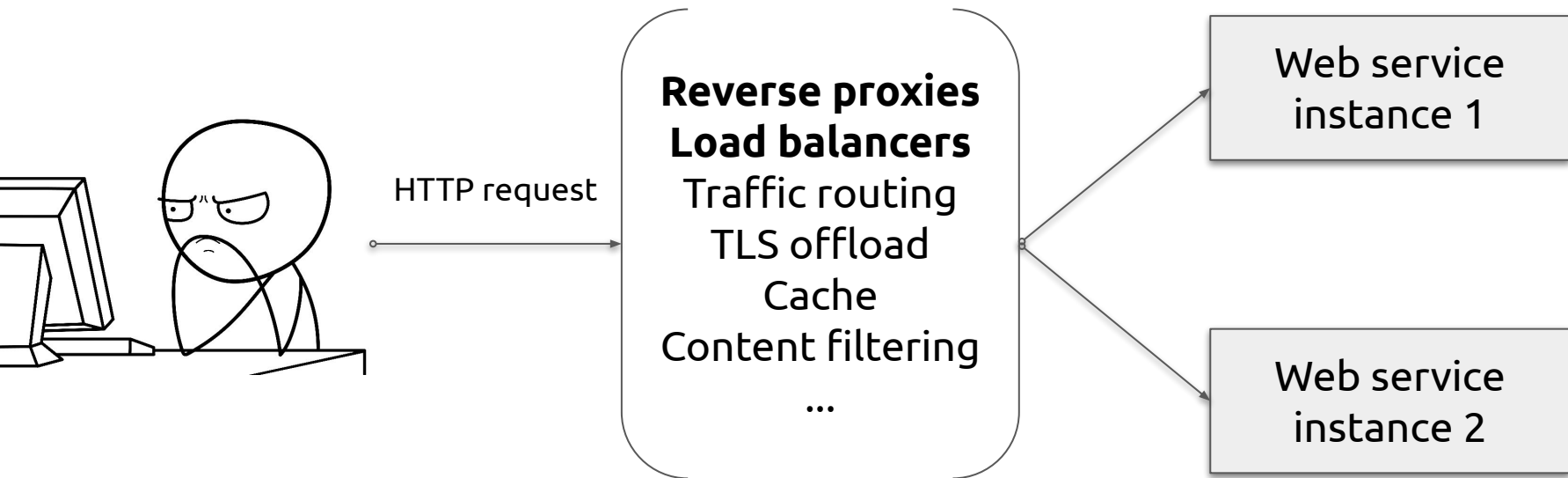
Cloud based

- Most cloud providers and IaaS platforms
- Every CDN

Software

- HAProxy, Nginx, Traefik etc.

Server-side load balancing and more



Demo time!

Server-side load balancing: HAProxy vs Nginx



- **Both are fine for simple load balancing**
- If you want something more advanced, check the docs and choose wisely
- HAProxy is solely a proxy, Nginx is also a web server

Possible advise (very holy-war'ish)

- If you **already use** Nginx and need a simple load balancer, go on with Nginx
- If you don't have any load-balancing capable service yet, start with HAProxy

Questions?