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Velocity

CONFERENCE

BUILD RESILIENT SYSTEMS AT SCALE

容器化新型研发运维体系

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velocity.oreilly.com.cn

#velocityconf

Google SRE 07-14

- YouTube
 - Video transcoding, streaming, storage
(> 1PB/month)
Your cat video will be processed.
 - Global CDN network
(> 10K nodes, peaking 10Tbps egress).
View cat video everywhere!

Google SRE 07-14

- Google Cloud Platform
 - Machine lifecycle management
(> X clusters globally, > Y machines)

Broke and fix thousands of machines every day.

- Borg , Omega
(> X million jobs scheduled every week)

Coding.net 的成长之路



Feature Team



Application

Coding.net 的成长之路



Feature Team



Feature Team



Application

Coding.net 的成长之路



Feature Team



Feature Team



Feature Team



Monolithic Application



Deployment
(Test + Build + Deploy)



Ops Team

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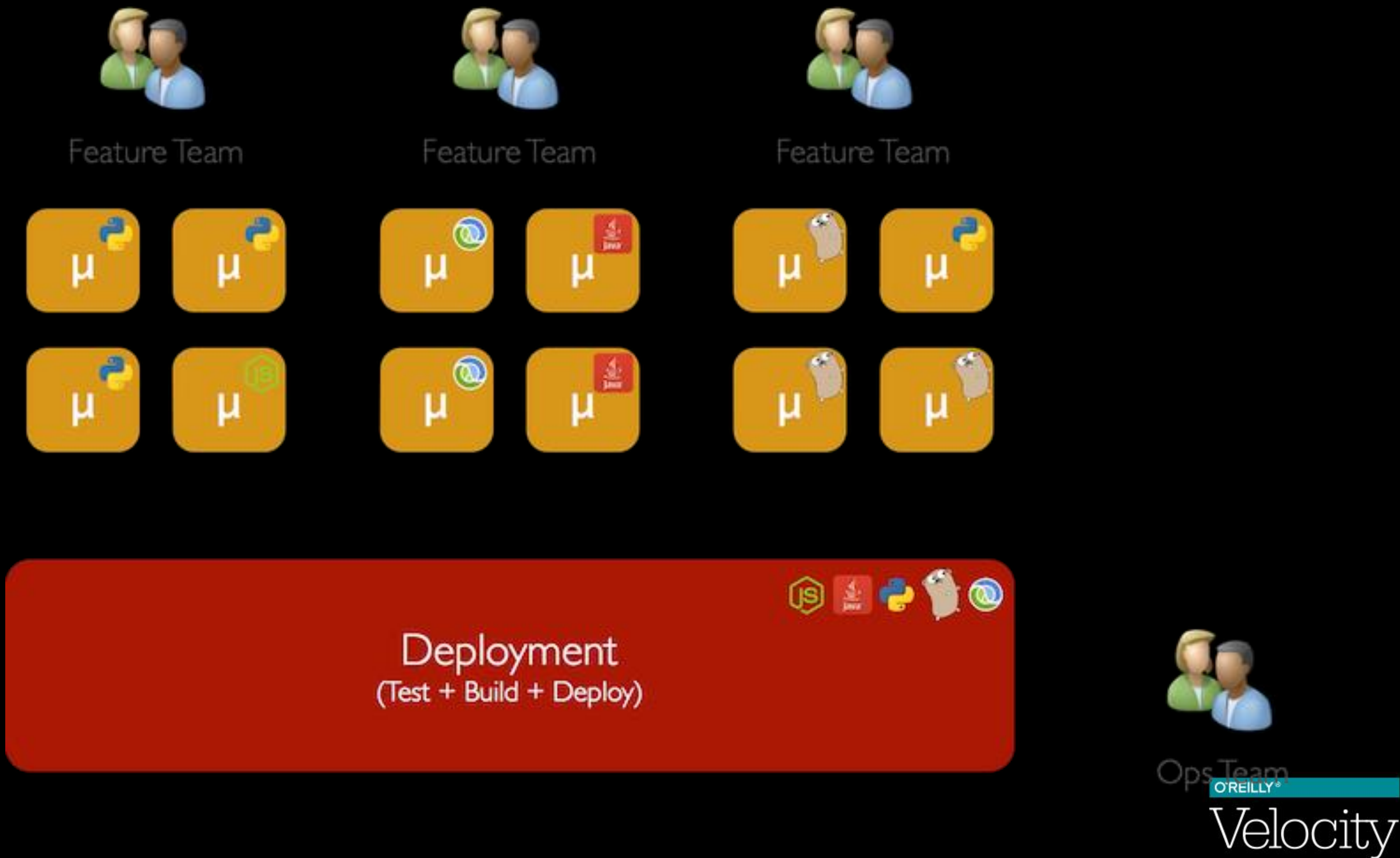
Velocity

#velocityconf

微服务架构

- Indirect coupling between functionally unrelated components caused by shared dependencies (e.g. a common database).
- Fragility - A bug committed to one functional area could take everything down.
- Ownership - boundaries between functional areas and shared components were fuzzy, with quality suffering as a result.
- Engineering velocity going down, fast.

微服务架构

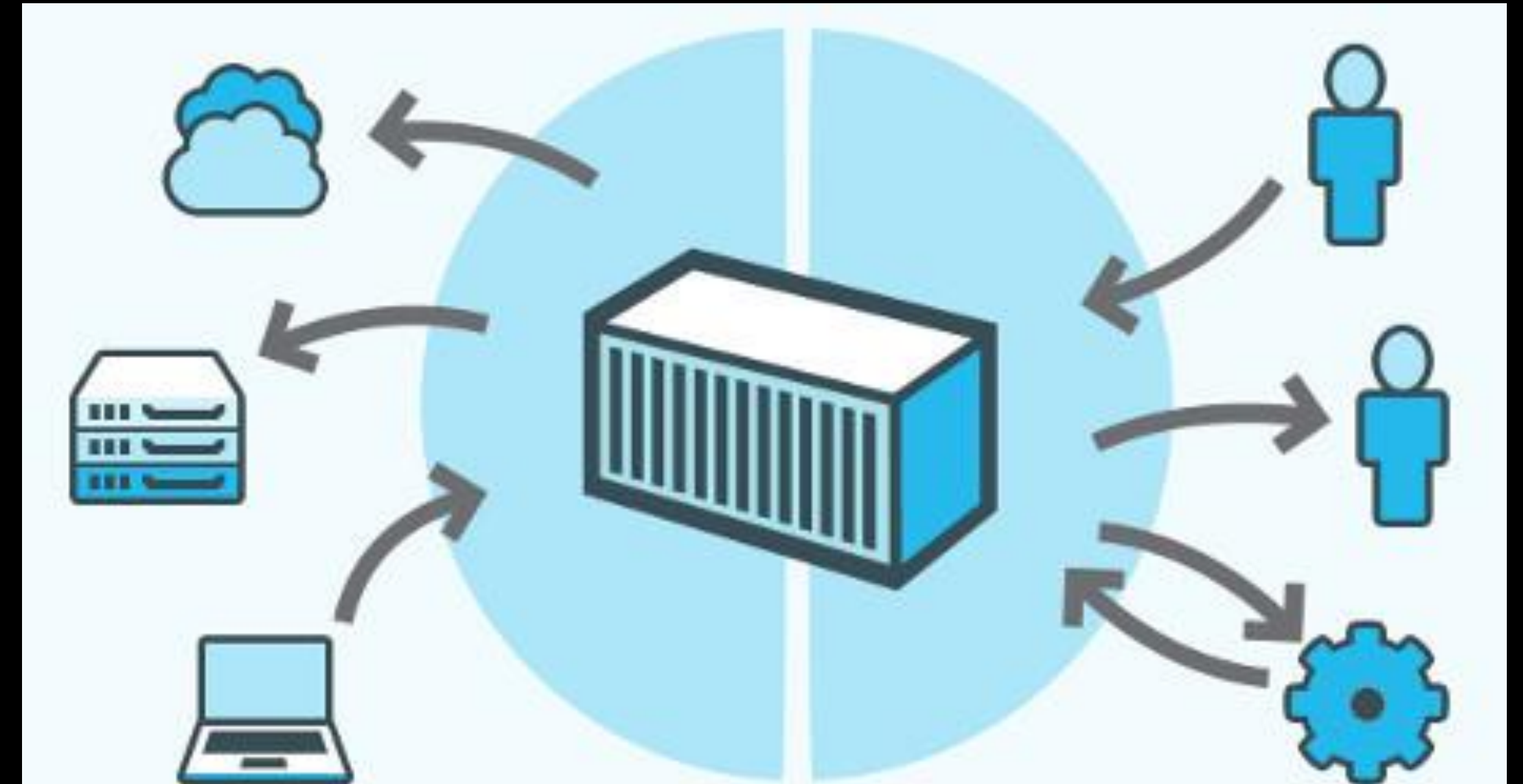


微服务带来的问题: Ops overload

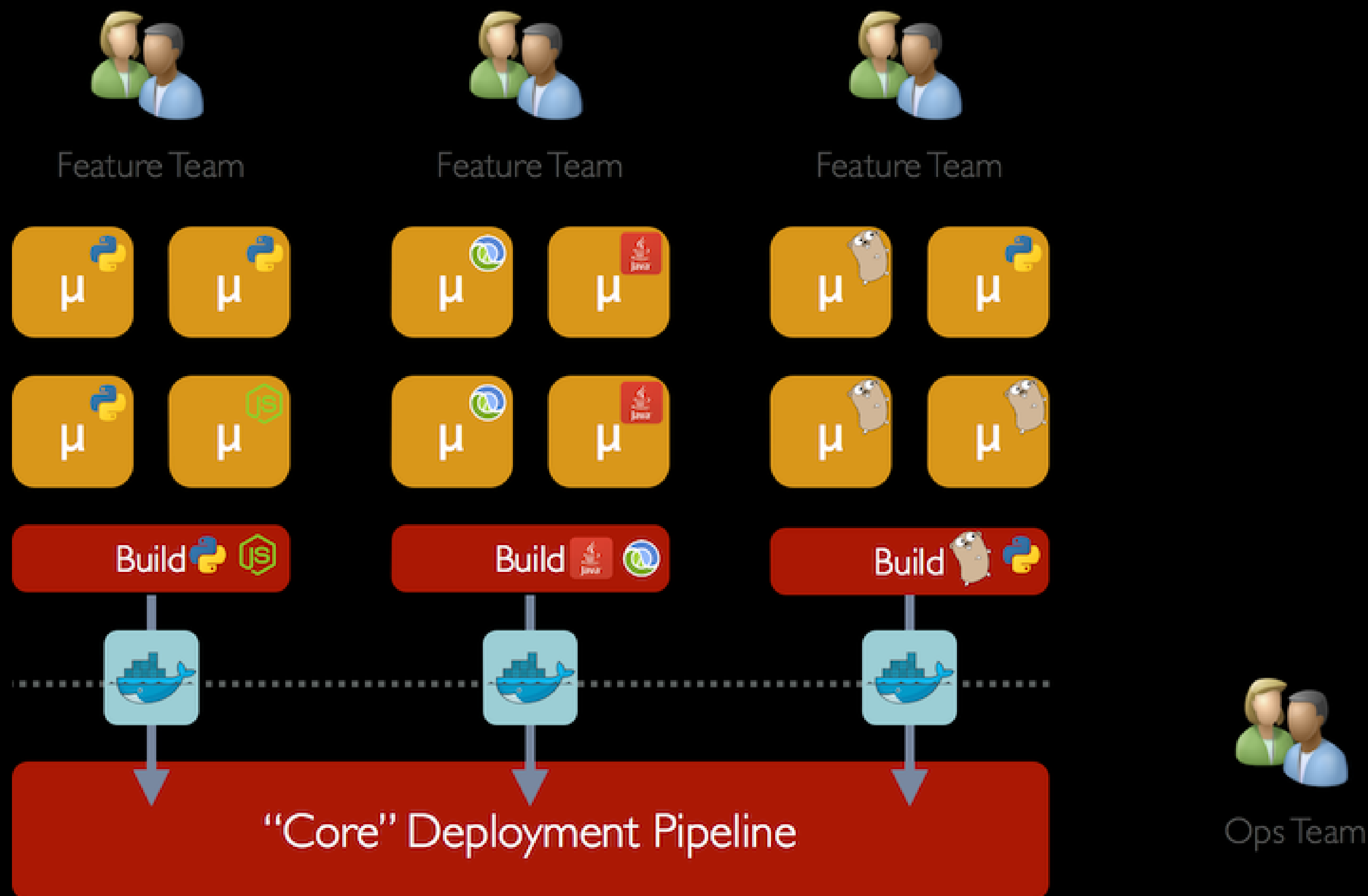
- Ops Team overwhelmed with new technologies they need to figure out how to deploy and support.
- Complexity they need to manage increases quickly and their productivity starts to fall as context-switching increases, and understandably there is pushback as delays are introduced.
- In other words, with everything needing to go through an overloaded Ops Team, the cost of deploying a new service was high.

Docker

- Self Sufficient packaging
- Universal API between Host / App
- Foundation for common infrastructure



Coding.net 新研发运维体系



Docker 新世界运维角色的定义和挑战

- Resource management
- Deal with large, complex micro services graph.
- Service Discovery/Load balancing
- Common Infrastructure

Resource Management

■ Pets:

- *The servers in today's data center are like puppies – they've got names and when they get sick, everything grinds to a halt while you nurse them back to health*
- **webserver.prod.coding.net**



■ Cattle:

- *is a system for managing your servers like cattle – you number them, and when they get sick and you have to shoot them in the head, the herd can keep moving.*
- **host31.prod.coding.net**



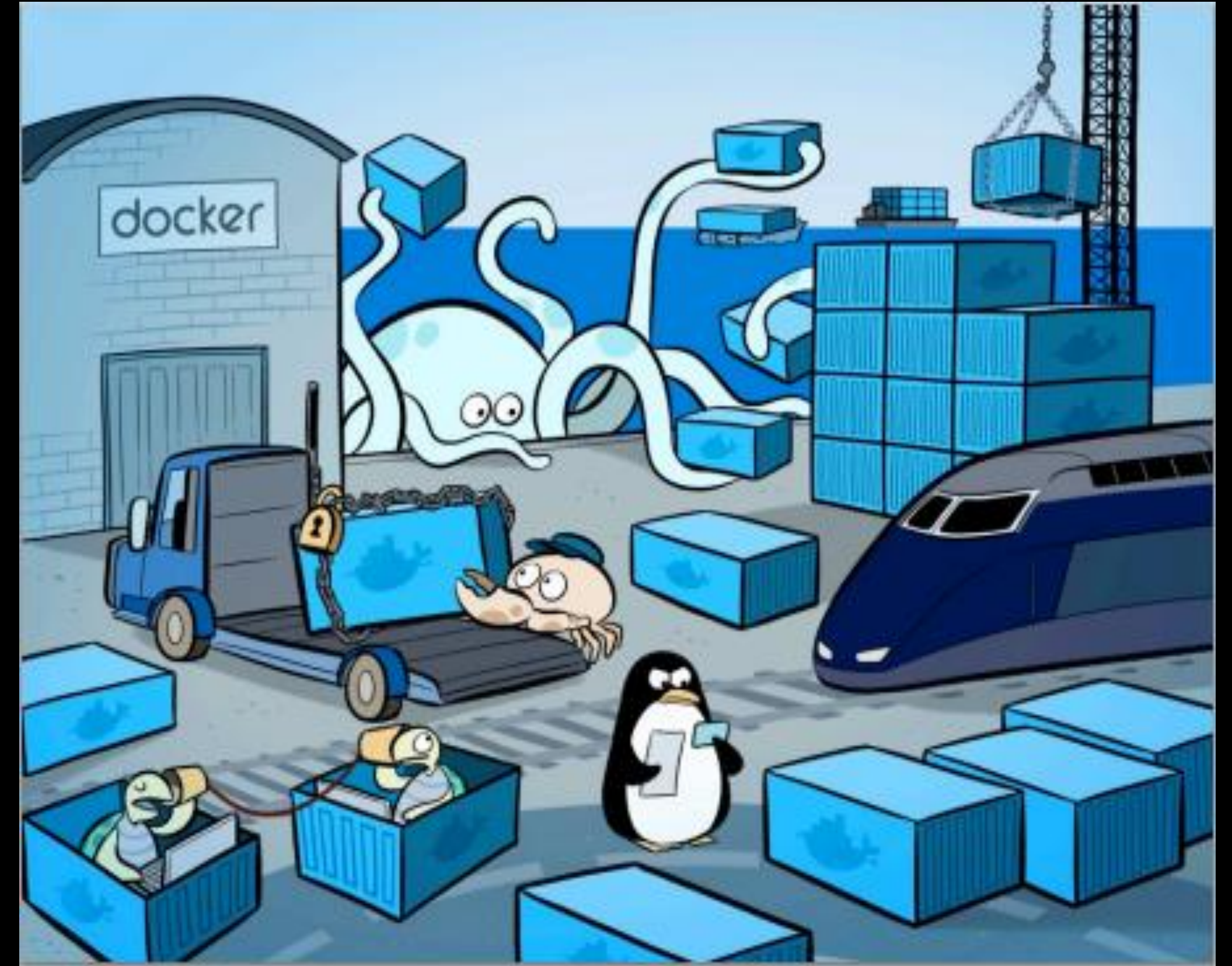
Resource Management

- Fully automatic cluster management is not mature yet.
- We have local dependencies (Surprises!)
- Some boxes are not yet movable.



生产环境：代码化！

```
jobs : <
  name: "app"
  image: "app:20150812.1"
  host: "host-1"
>
jobs : <
  name: "app-backend"
  image: "app-backend:Y"
  host: "host-2"
>
...
```



生产环境：代码化！

```
$ go run stack.go up
```

Job: app

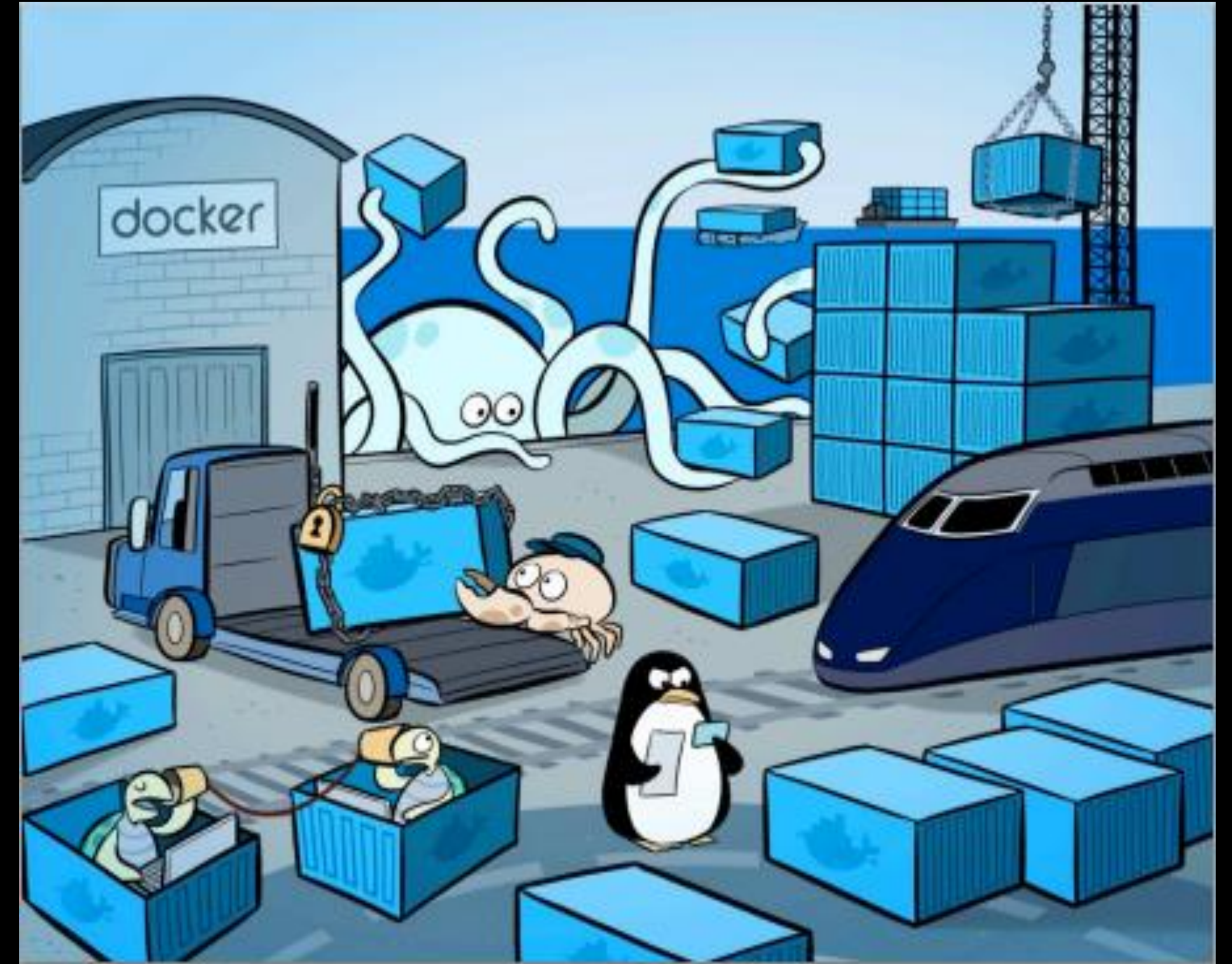
Image: app:20150812.1

State: [/app_20150812.1_0]: Up 1 s

Job: app-backend

Image: app-backend:Y

State: [/app-backend_Y_0]: Up 1 s



Box up and move

- Consul + HAProxy: Hub-And-Spoke gateway

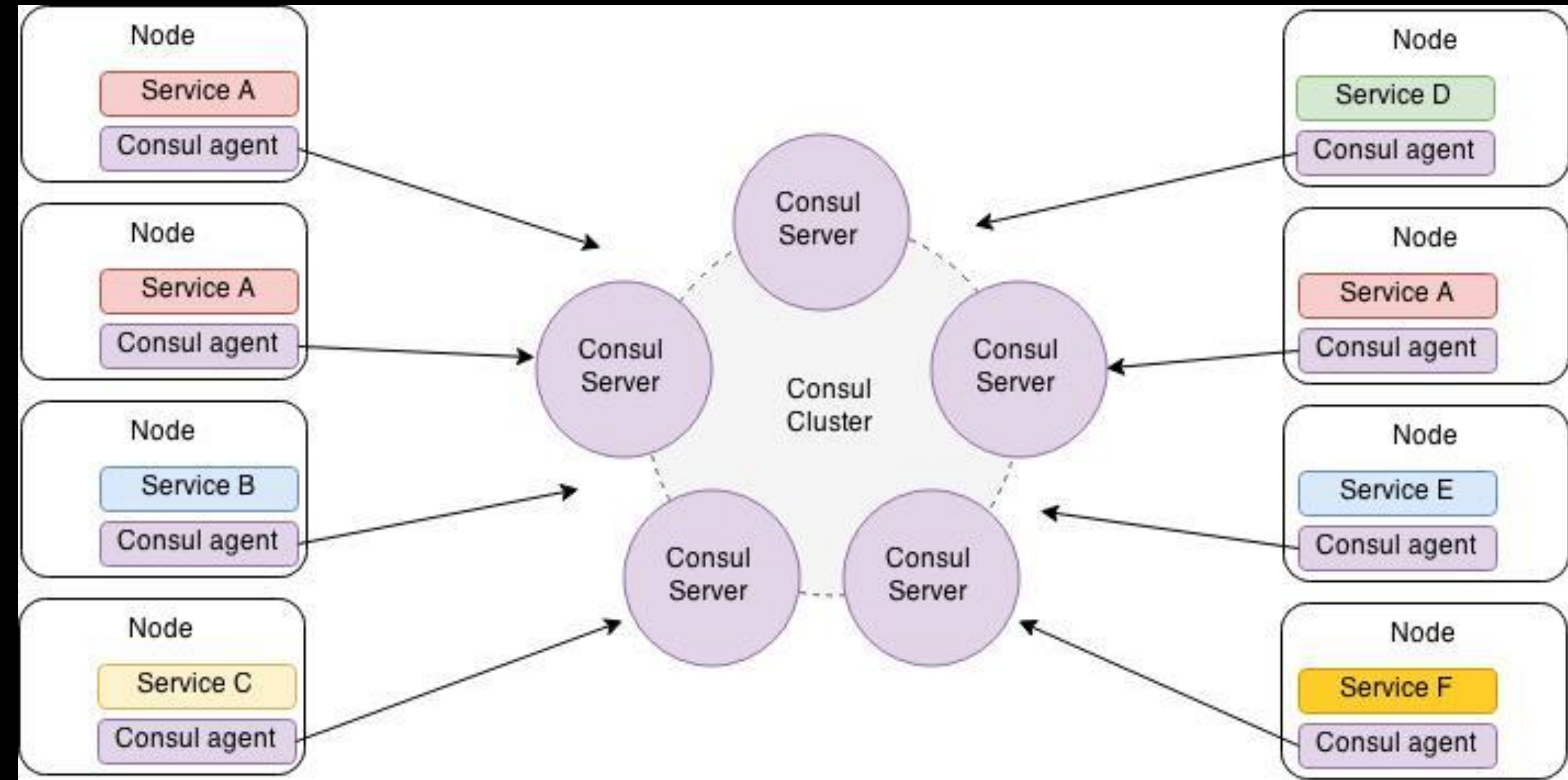
- Old way:

- App1 -> App2
- --target=1.2.3.4:1111

- New way:

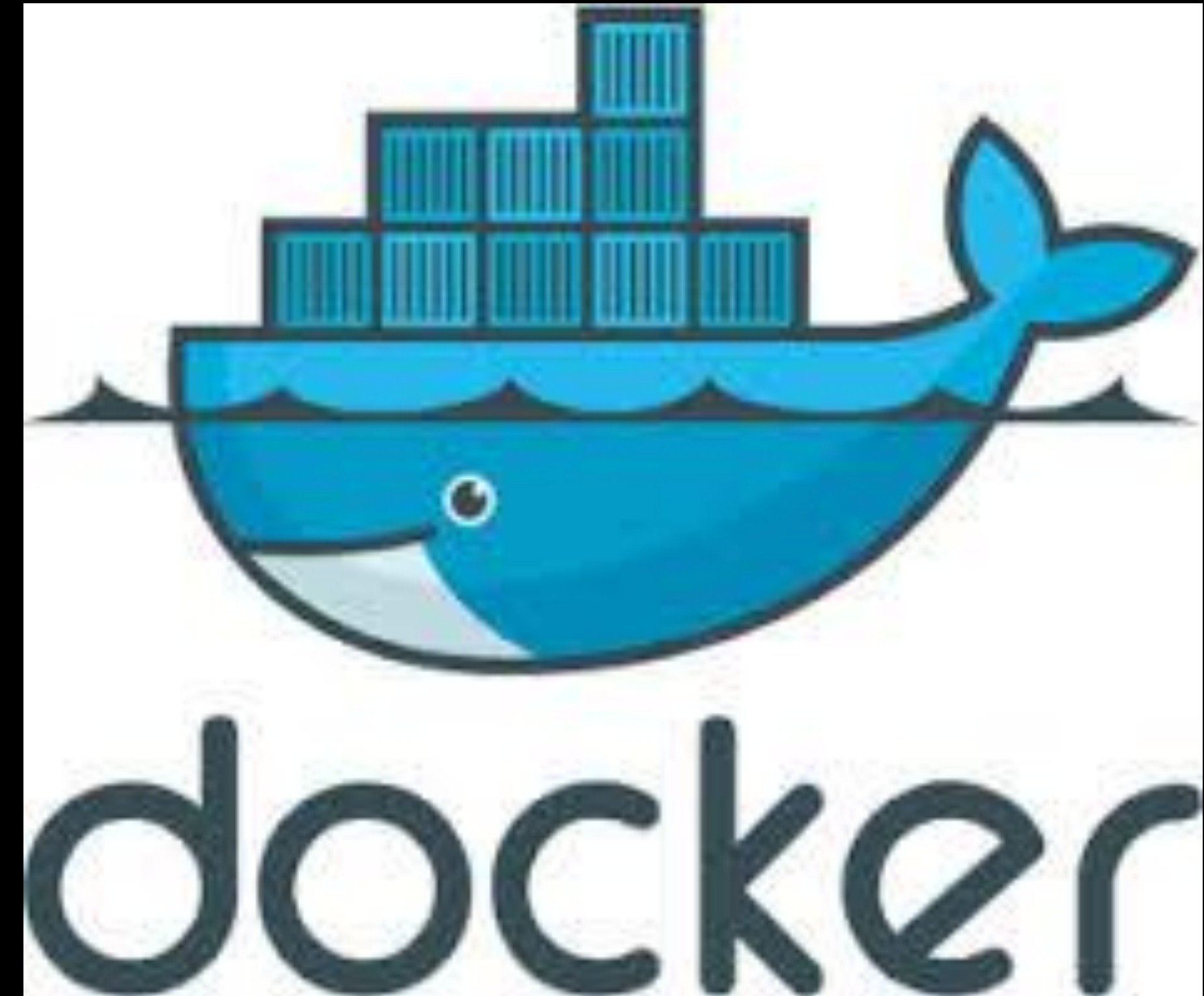
- App1 -> App2
- --target=app2.jobs.coding.net:1111

- Freedom!

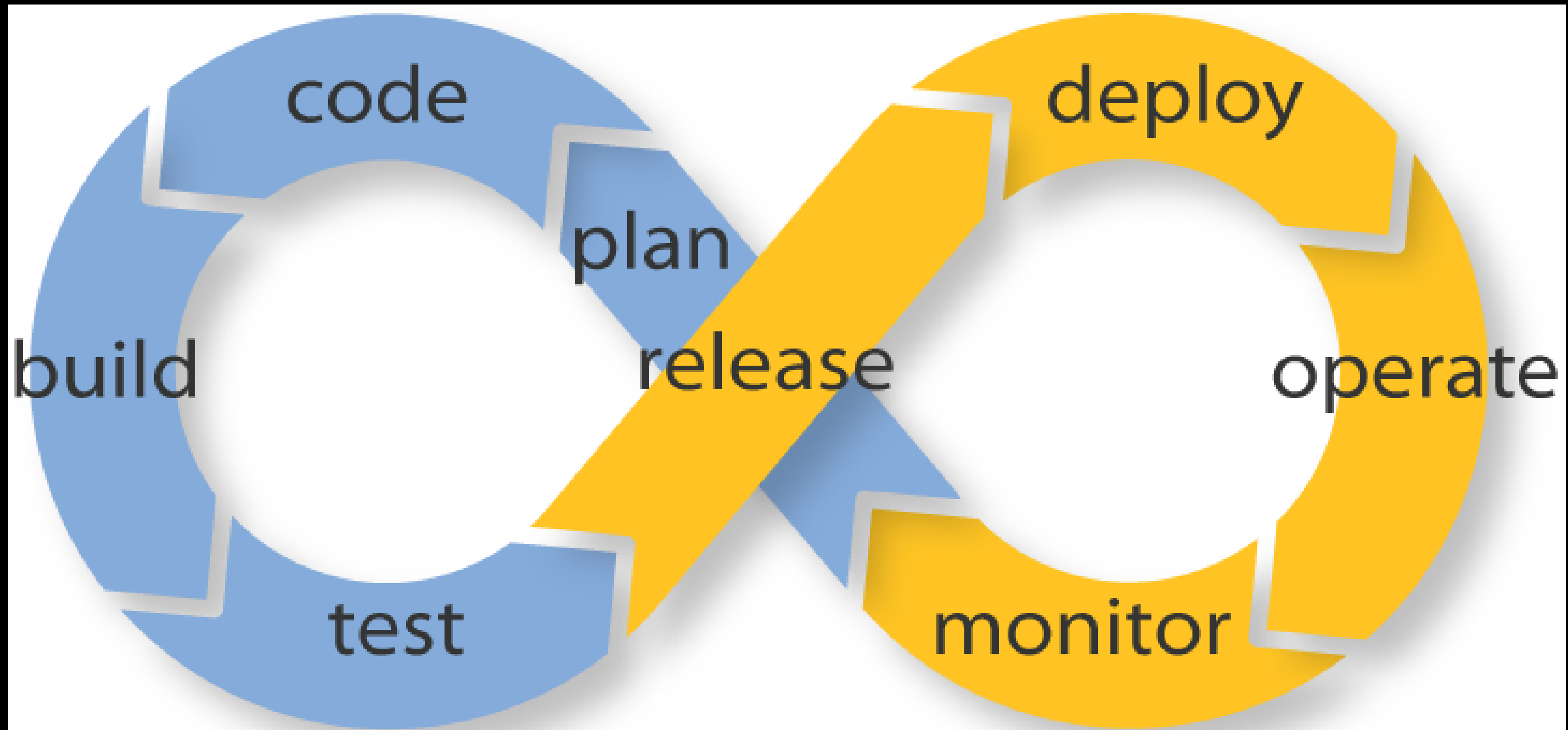


容器化: Steps to glory

- 第一步: Boxing app
- 第二步: Moving boxes
- 第三步: More redundant boxes!



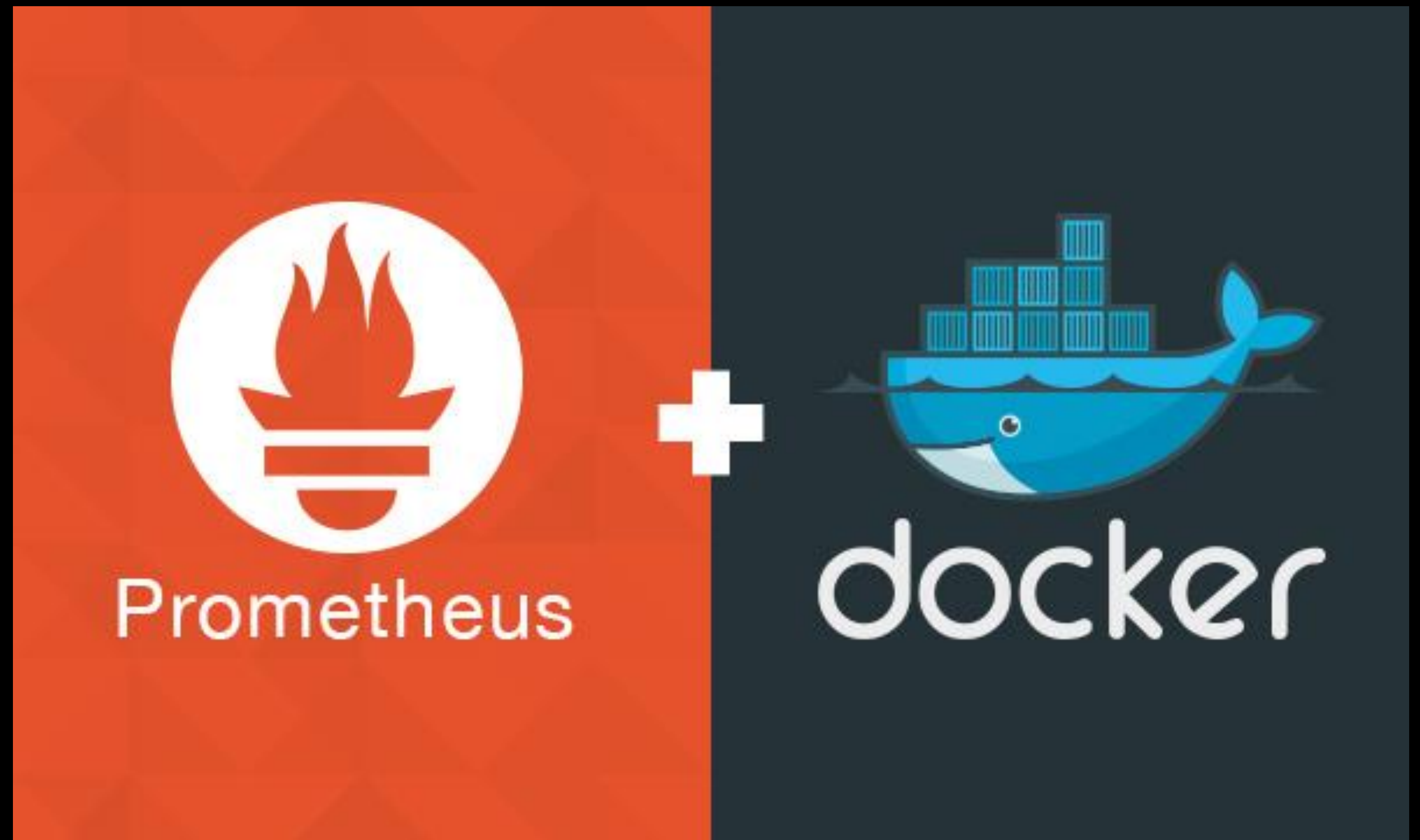
Devops 理念推动新的运维需求



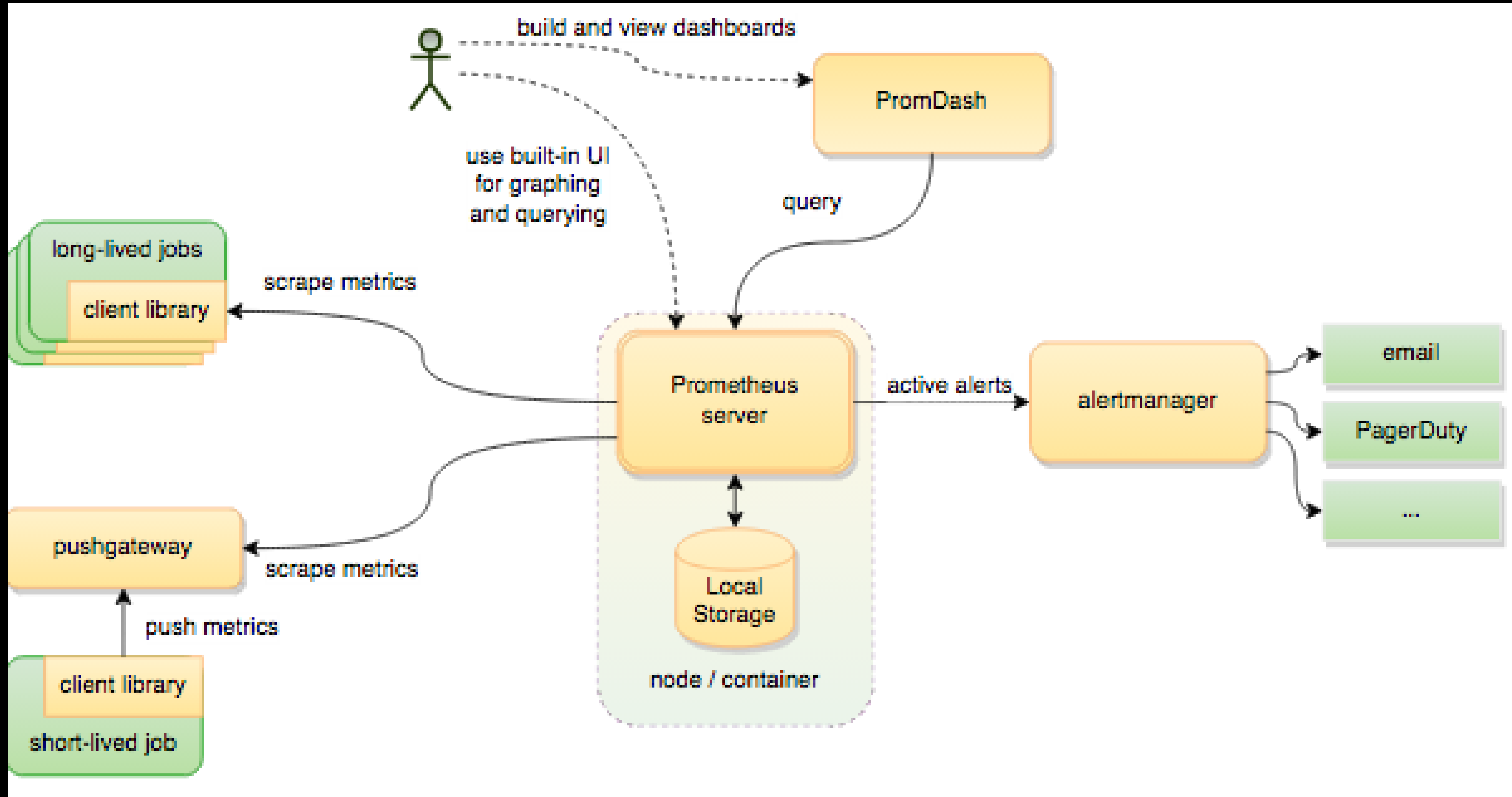
Endless Possibilities: DevOps can create an infinite loop of release and feedback for all your code and deployment targets.

Common Infra: Monitoring

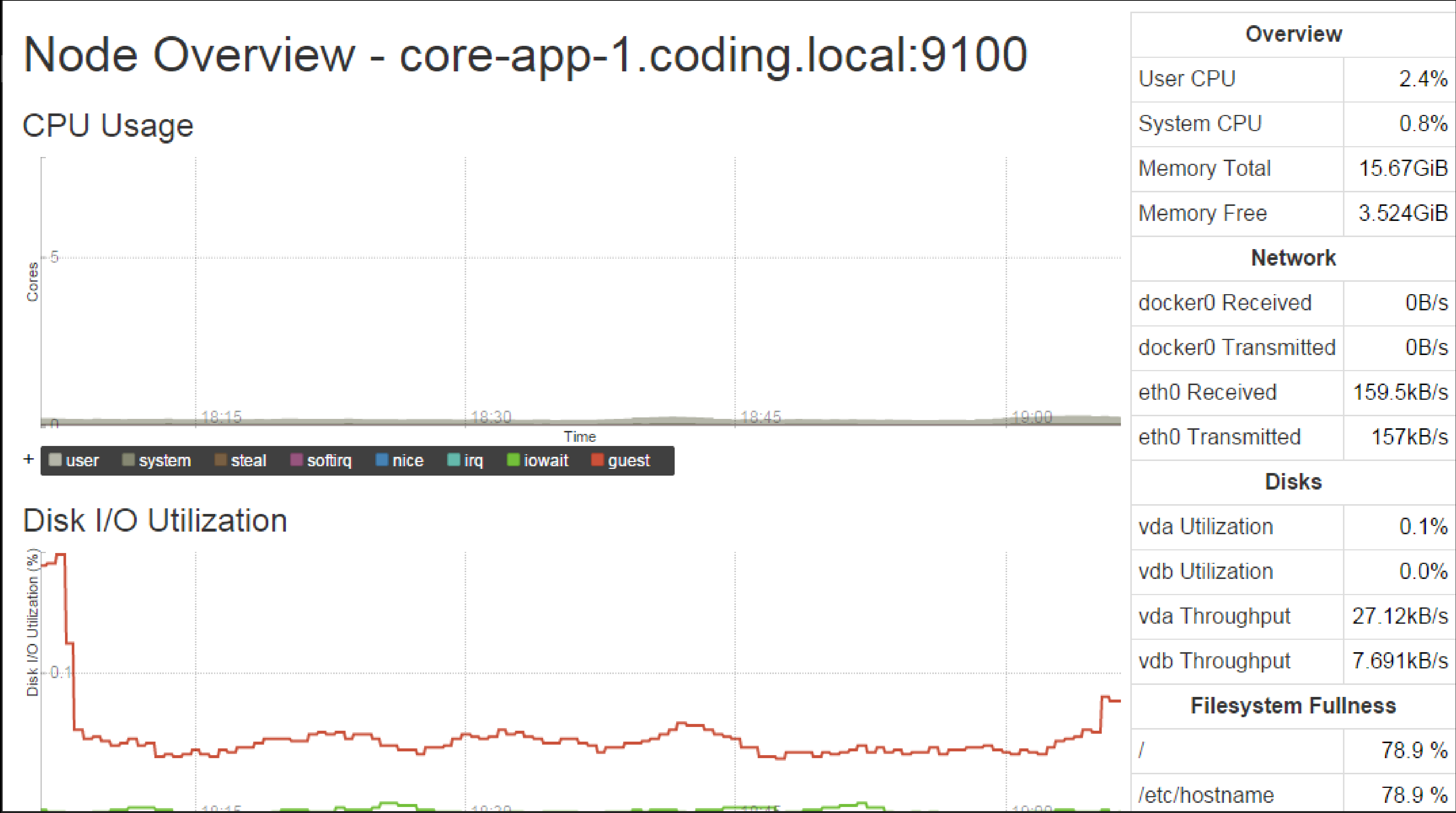
- Universal monitoring for *all* container running in cluster.
- Common API for metrics reporting/scraping
- Templated dashboard / alert.



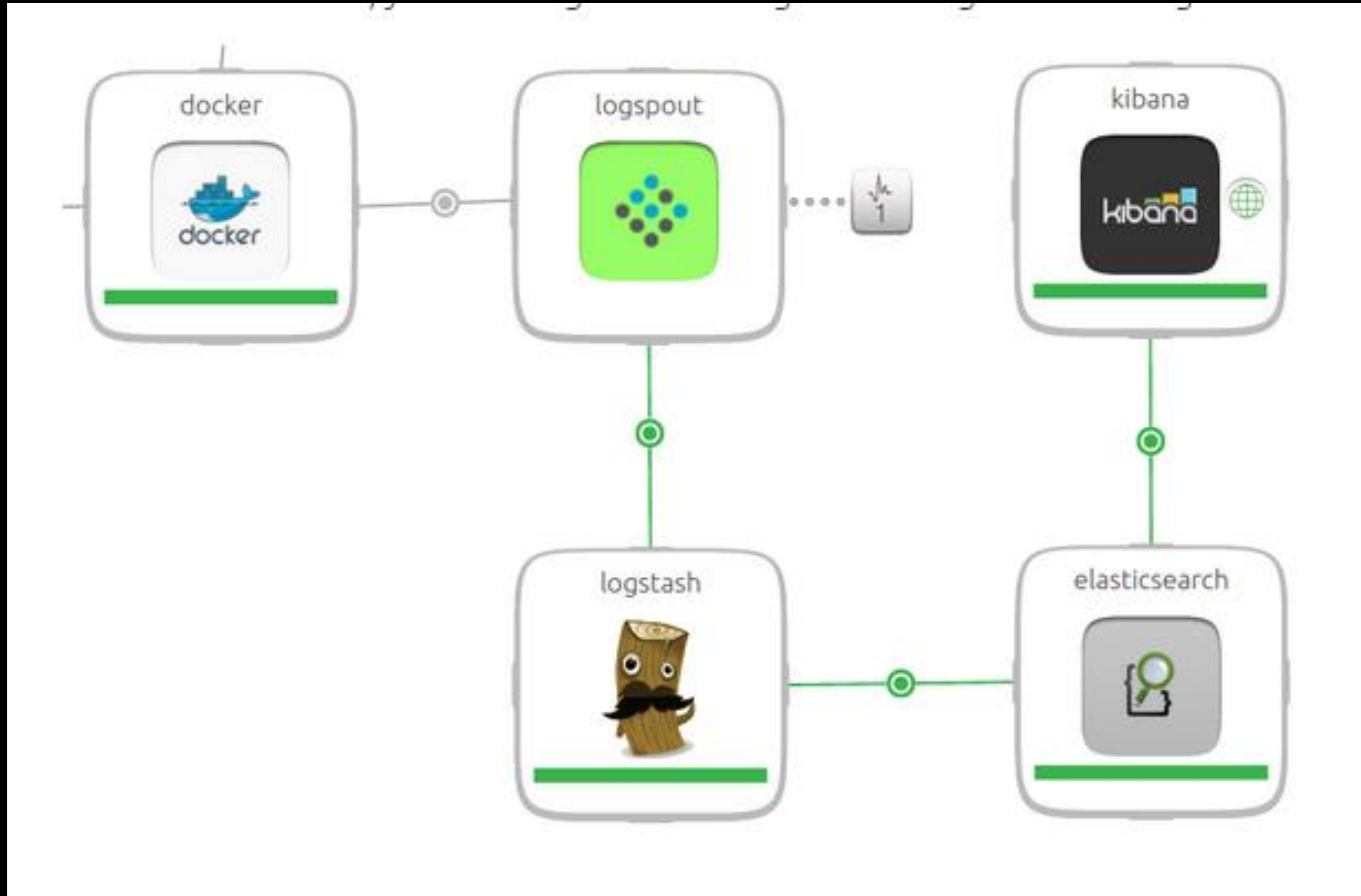
Prometheus Architecture



Templated Pretty graphs

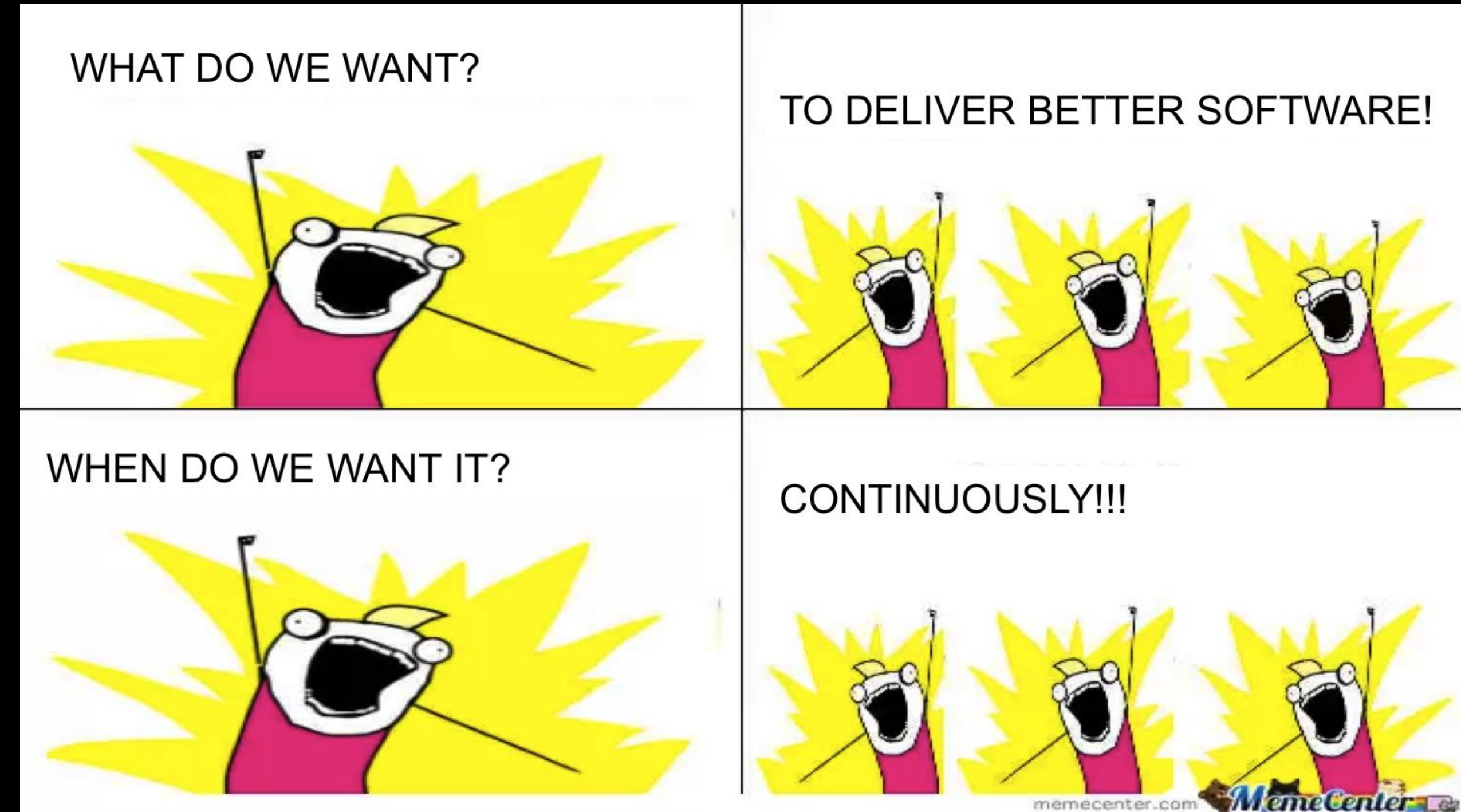


Common Infra: Log Analysis



运维研发体系的终极目标

- Dev to Prod
- Self-service deployment tool
- Push on Green



Q & A



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