容器化新型研发运维体系

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Coding.net

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

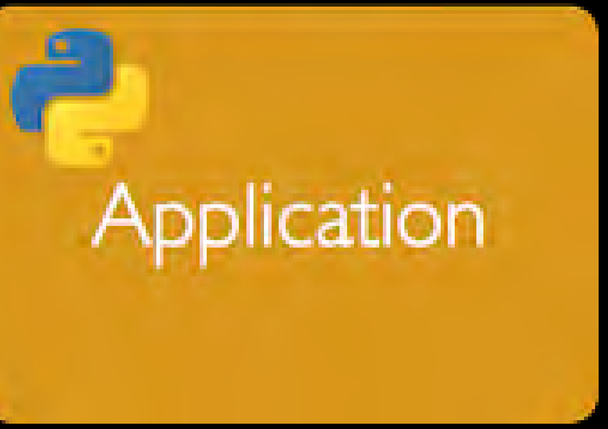
- Google Cloud Platform
  - Machine lifecycle management
    (> X clusters globally, > Y machines)

    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



Coding.net 的成长之路

Feature Team

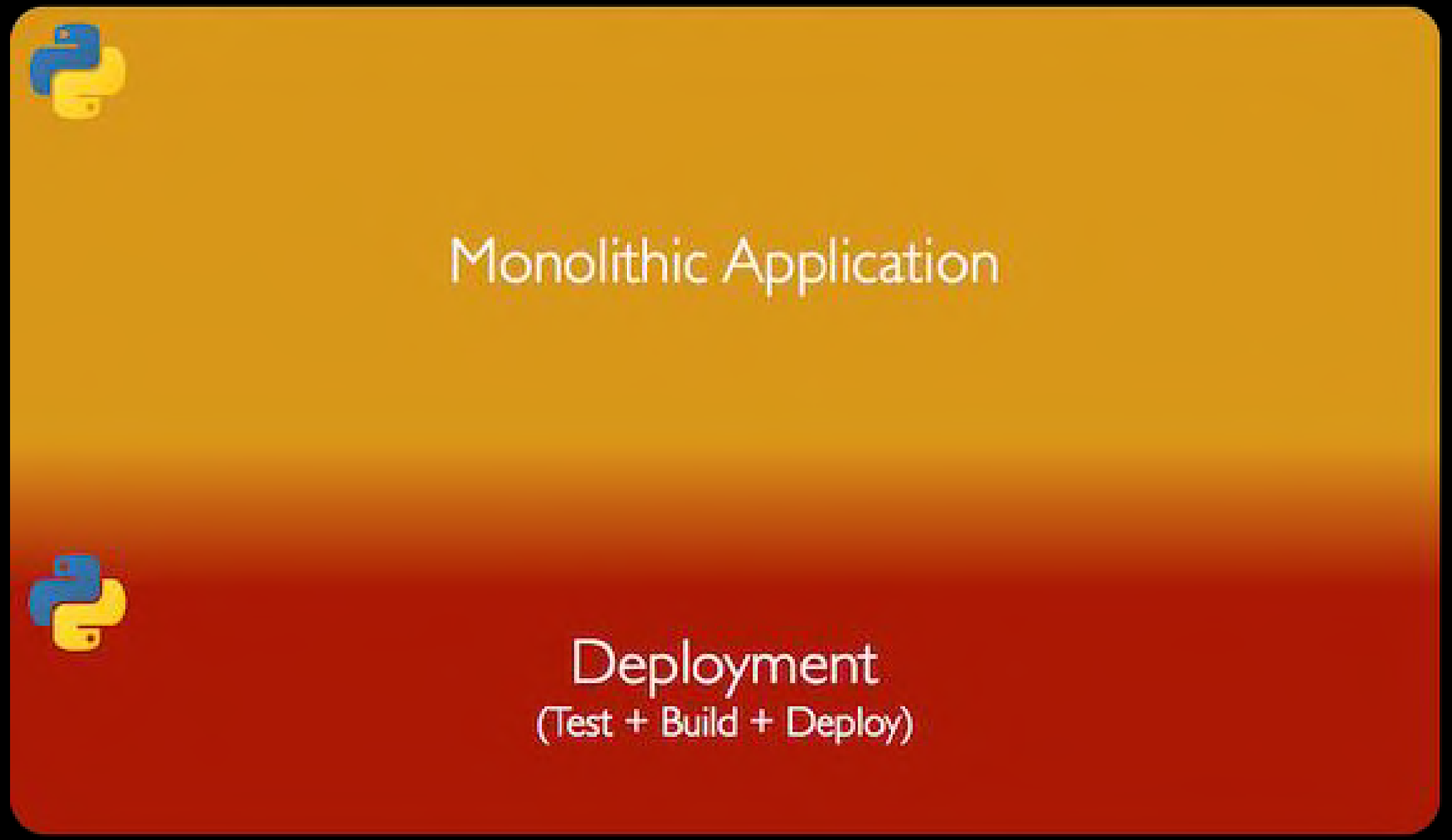
Feature Team

Application

Coding.net 的成长之路



Feature Team　　Feature Team　　Feature Team

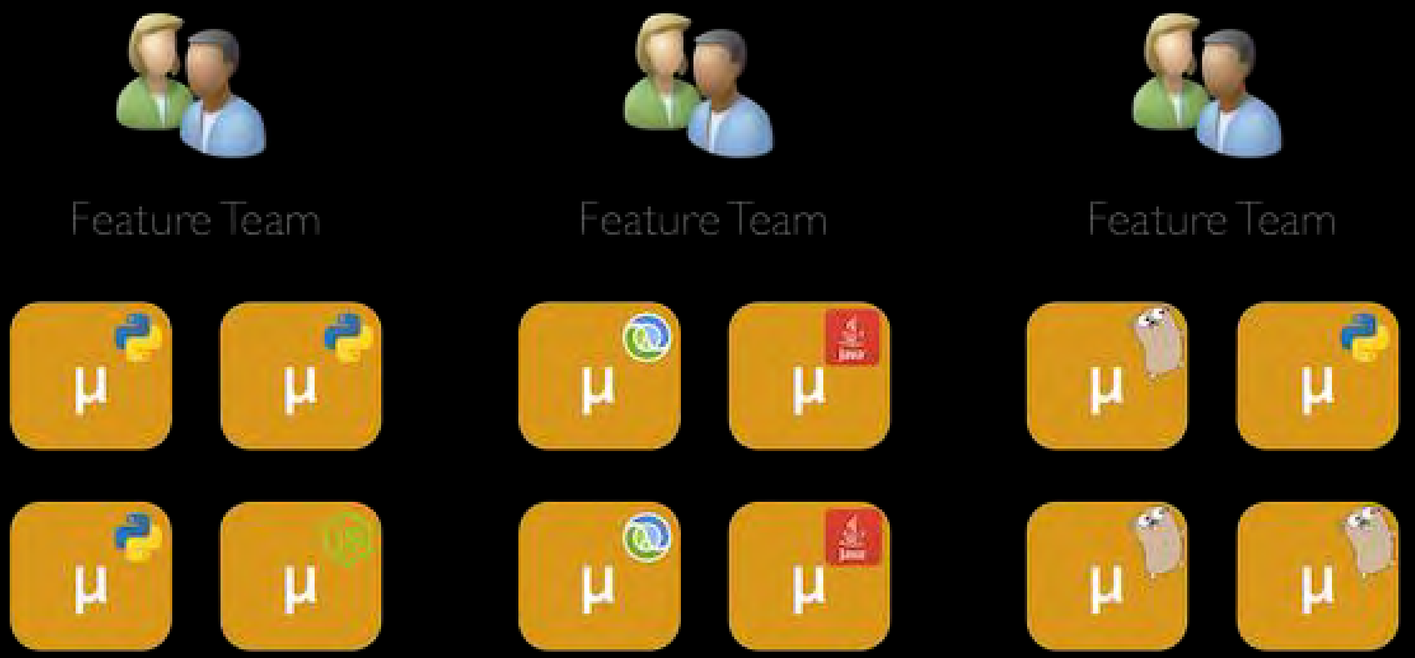


Ops Team

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

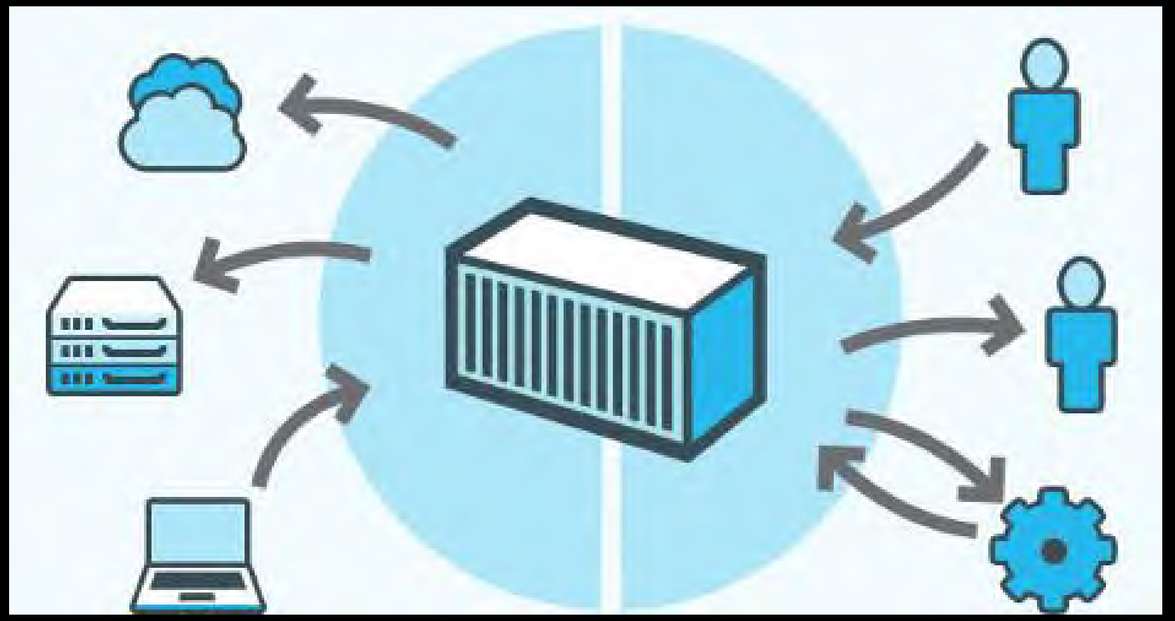

Feature Team
Feature Team
Feature Team
Deployment
(Test + Build + Deploy)
Ops Team

微服务带来的问题：Ops overload

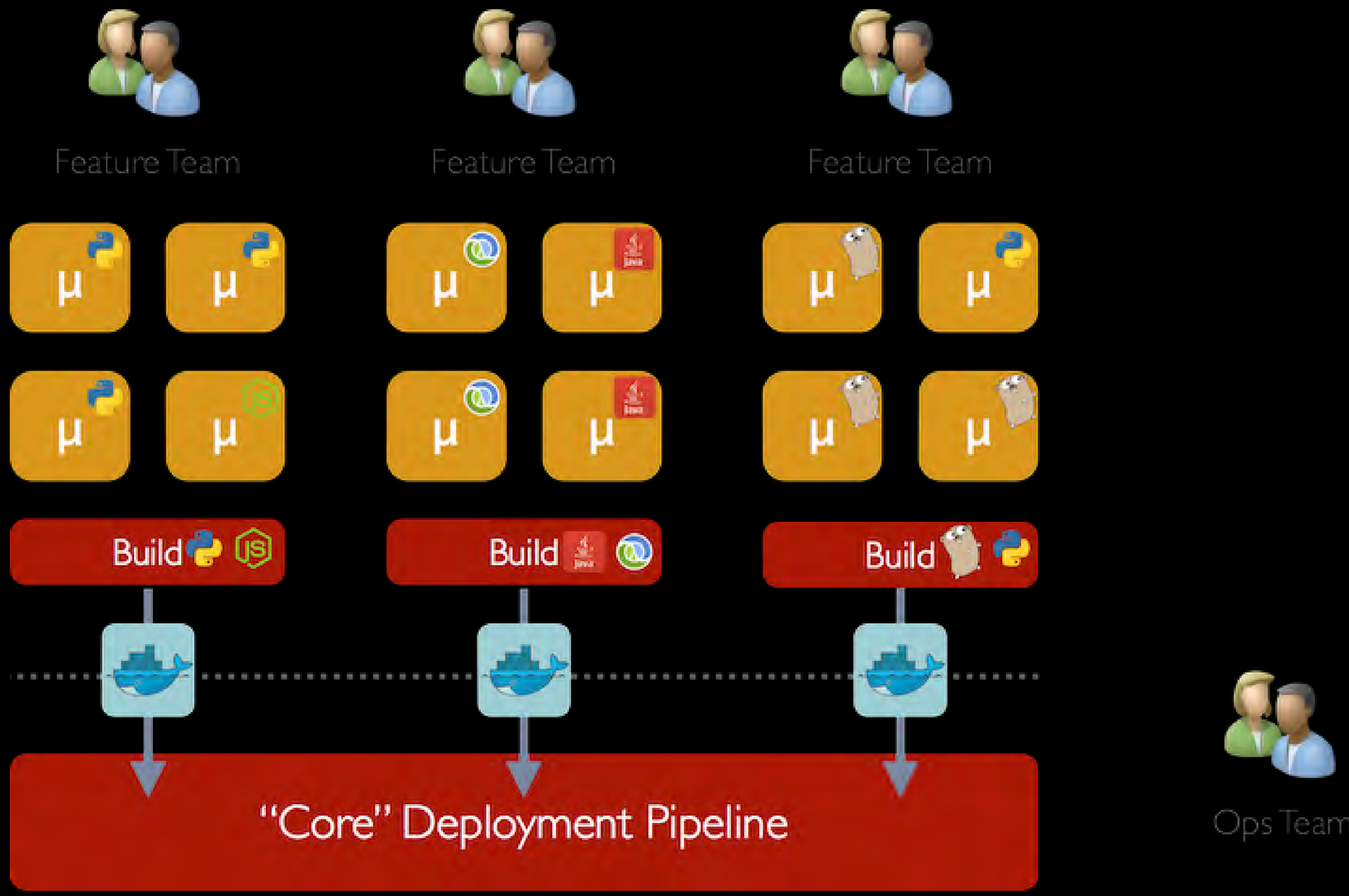
- Ops Team overwhelmed with new technologies they need to figure out how to deploy and support.
- Complexity they need to manage increases quickly and their productivity starts to fall as context-switching increases, and understandably there is pushback as delays are introduced.
- In other words, with 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

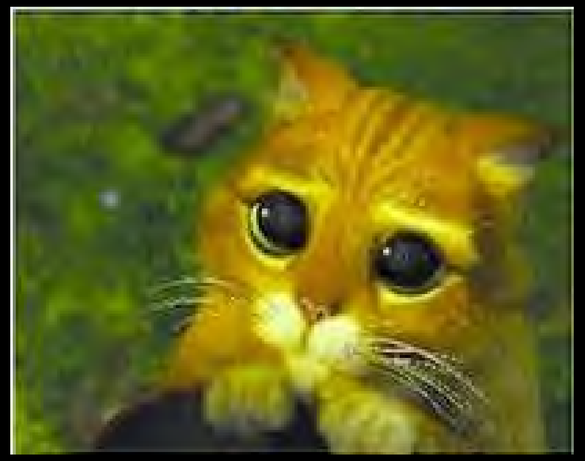


Docker 新世界运维角色的定义和挑战

- 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
```

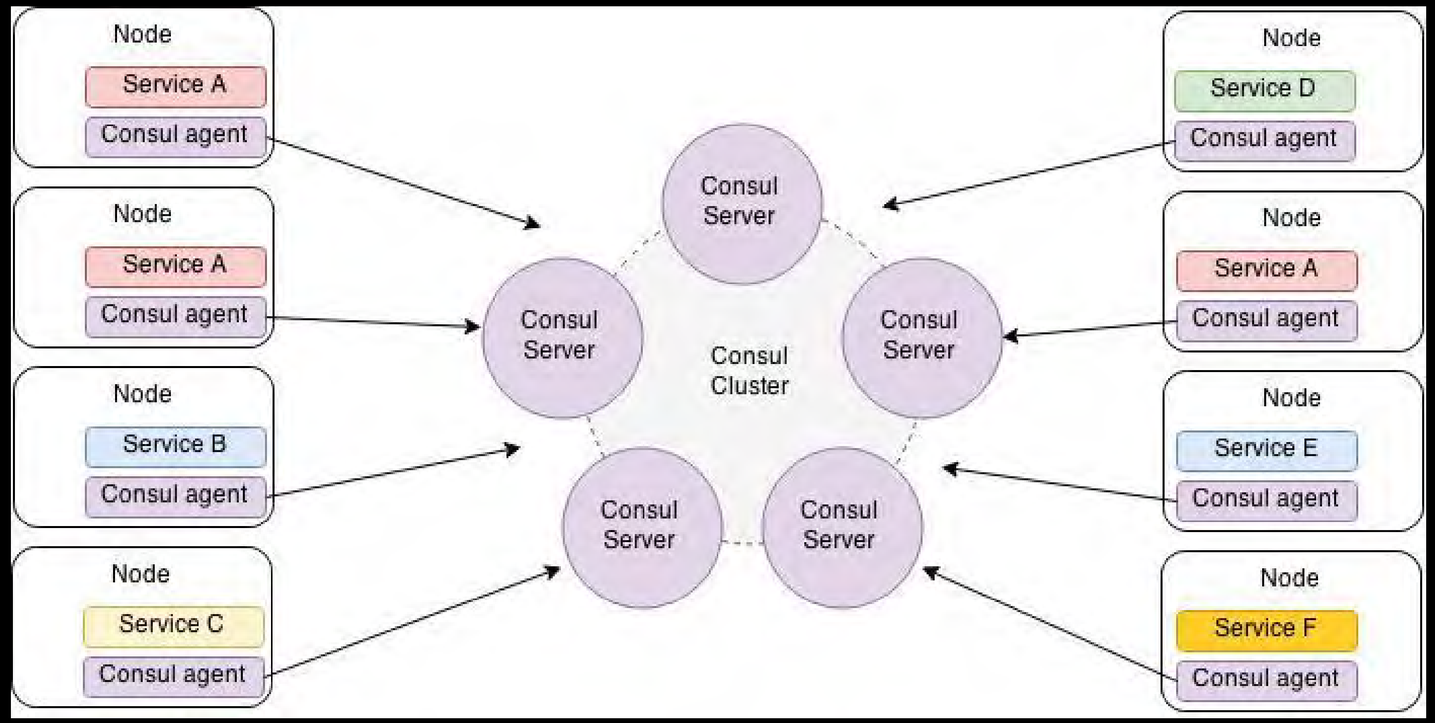
Box up and move

- Consul + HAProxy: Hub-And-Spoke gateway

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

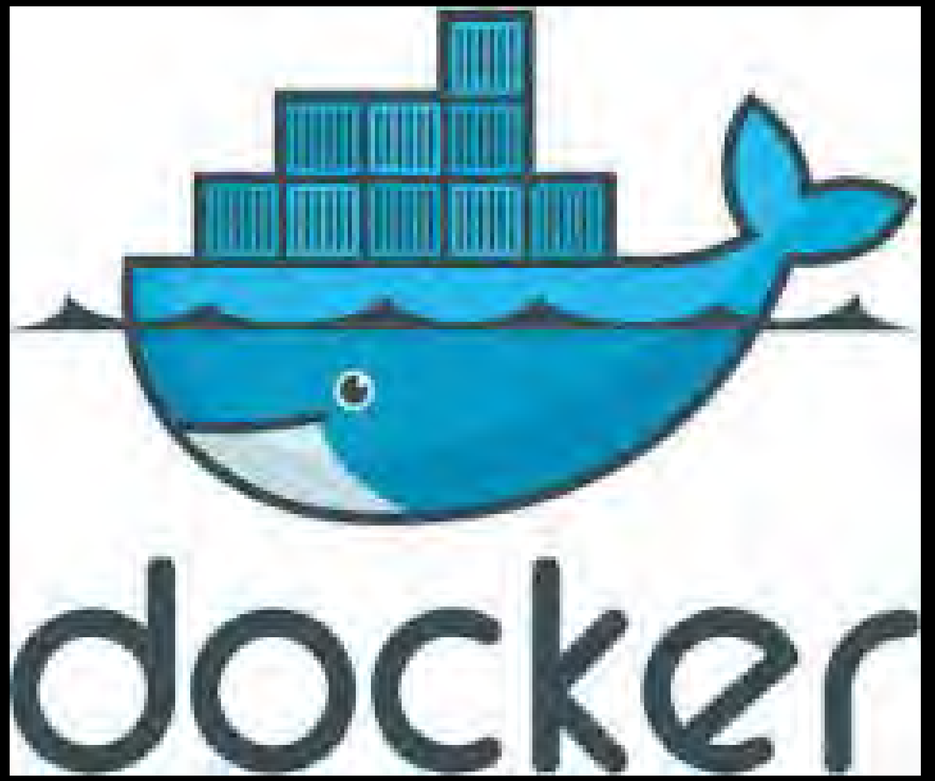
- New way:
  - App1 -> App2
  - --target=app2.jobs.coding.net:1111

- Freedom!

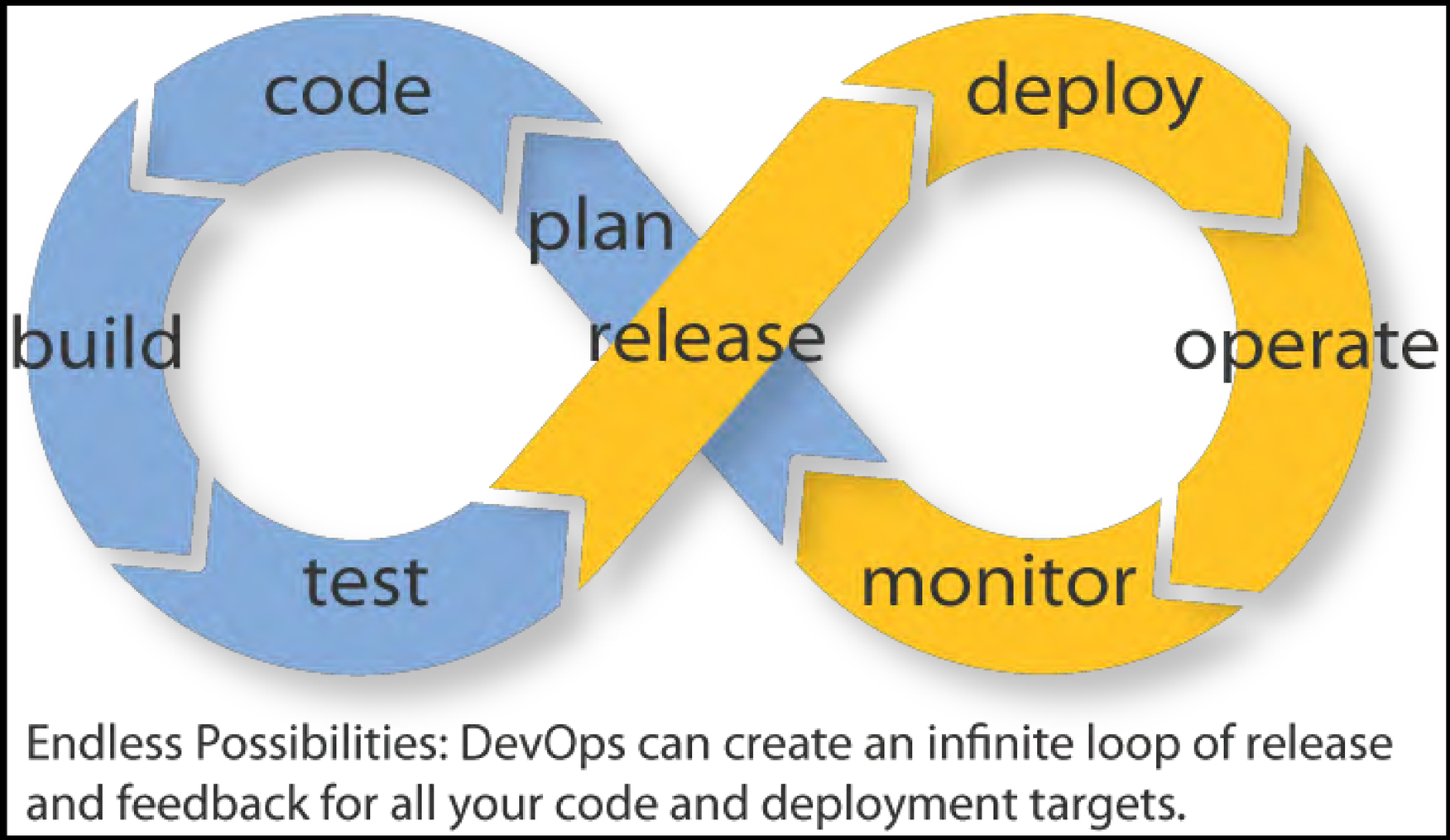


容器化：Steps to glory

- 第一步: Boxing app
- 第二步: Moving boxes
- 第三部: More redundant boxes!



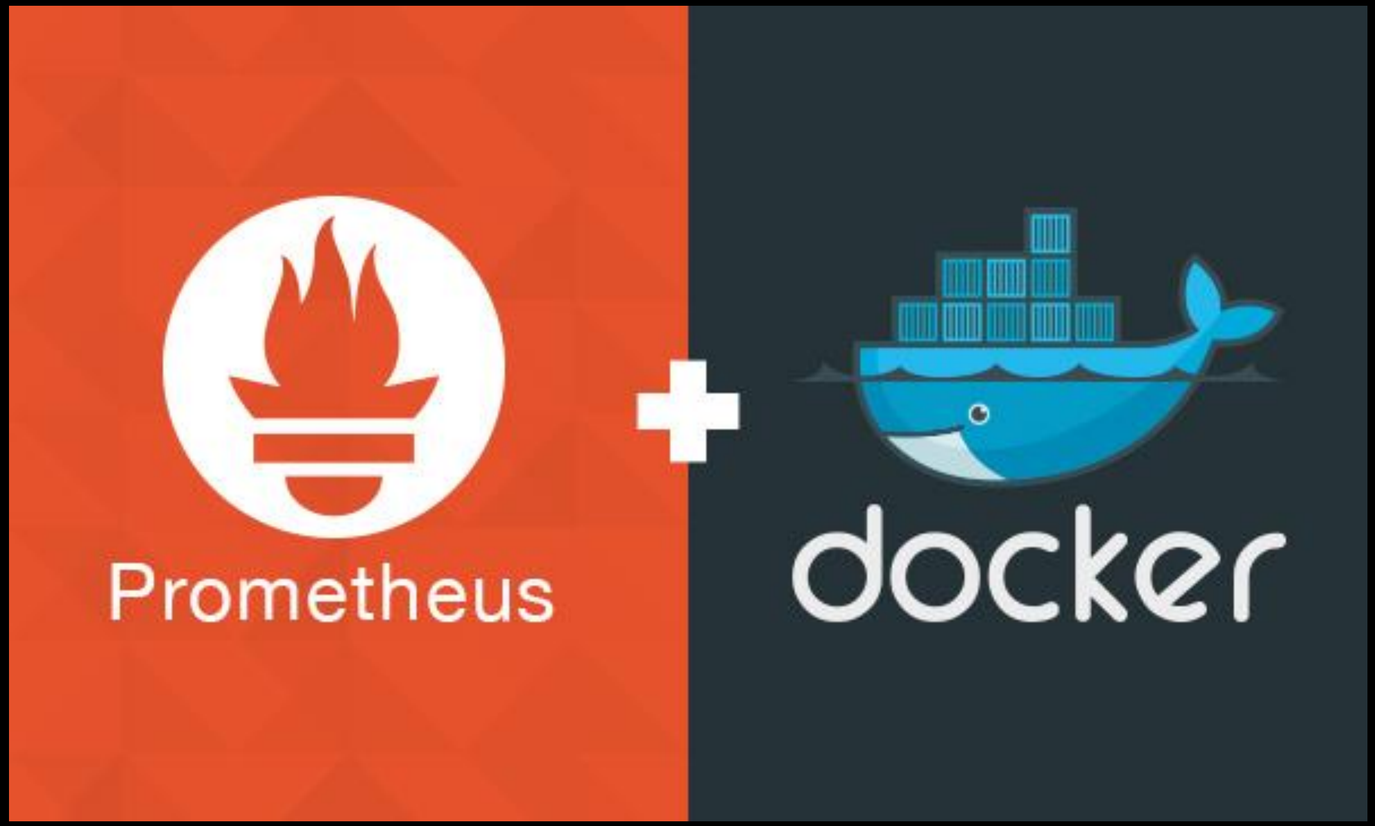
Devops 理念推动新的运维需求



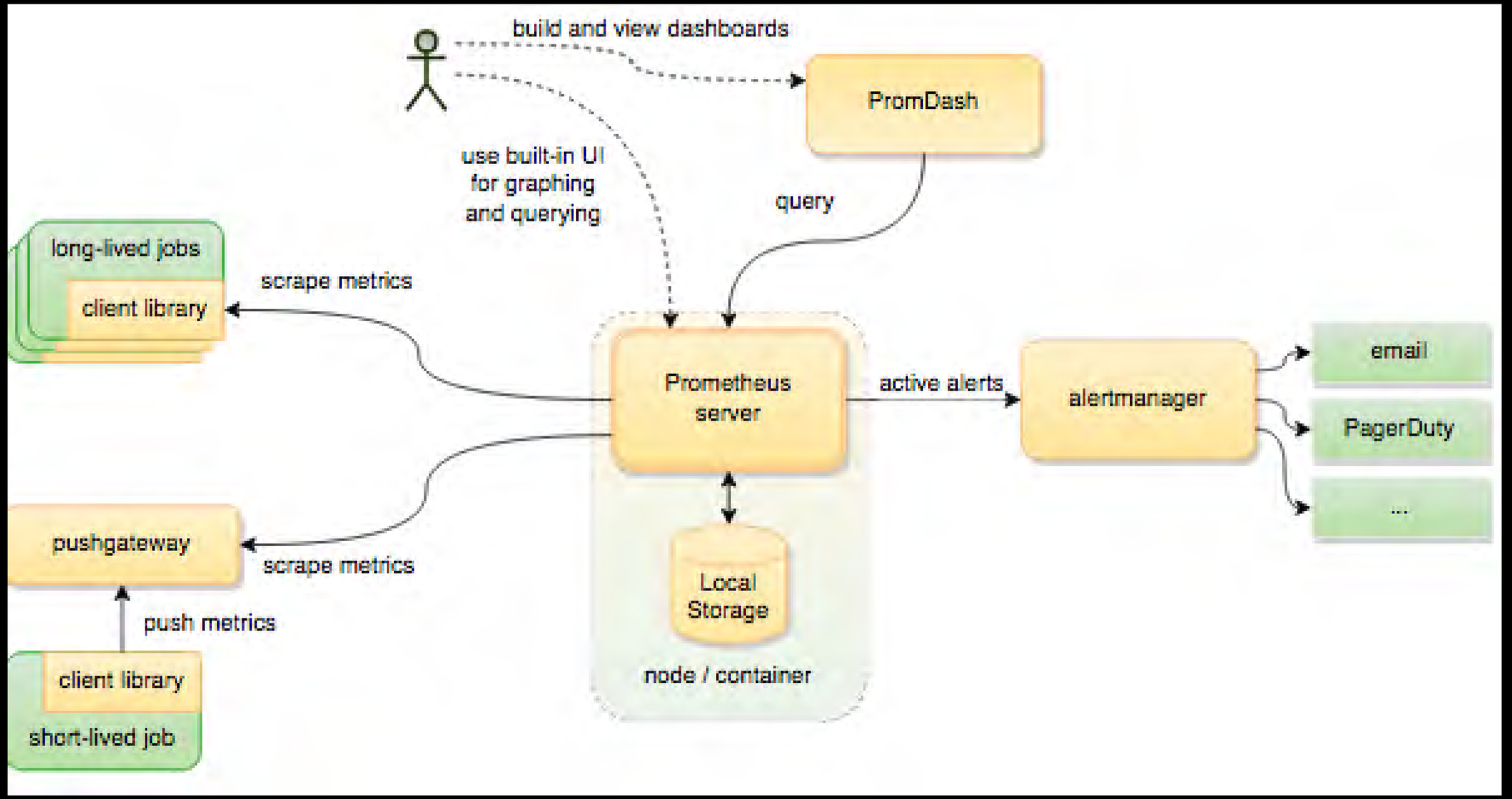
Endless Possibilities: DevOps can create an infinite loop of release and feedback for all your code and deployment targets.

Common Infra: Monitoring

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



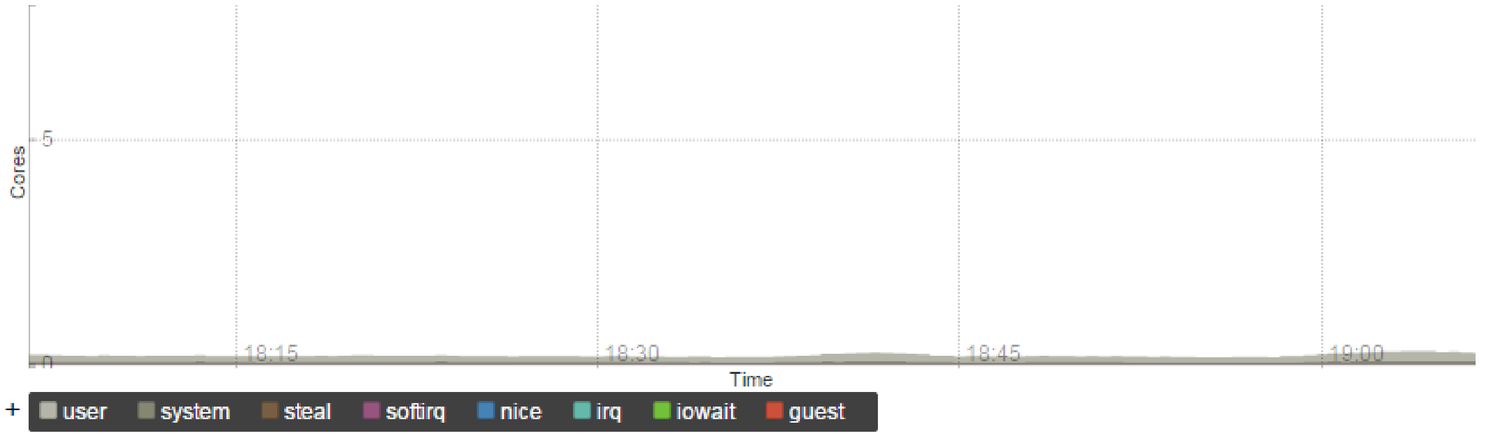
Prometheus Architecture



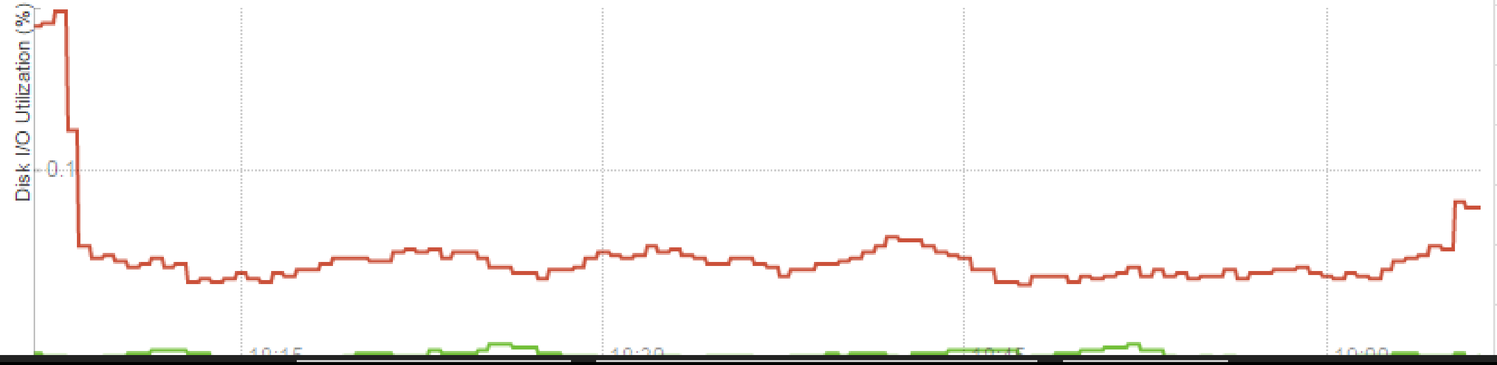
Templated Pretty graphs

Node Overview - core-app-1.coding.local:9100

CPU Usage

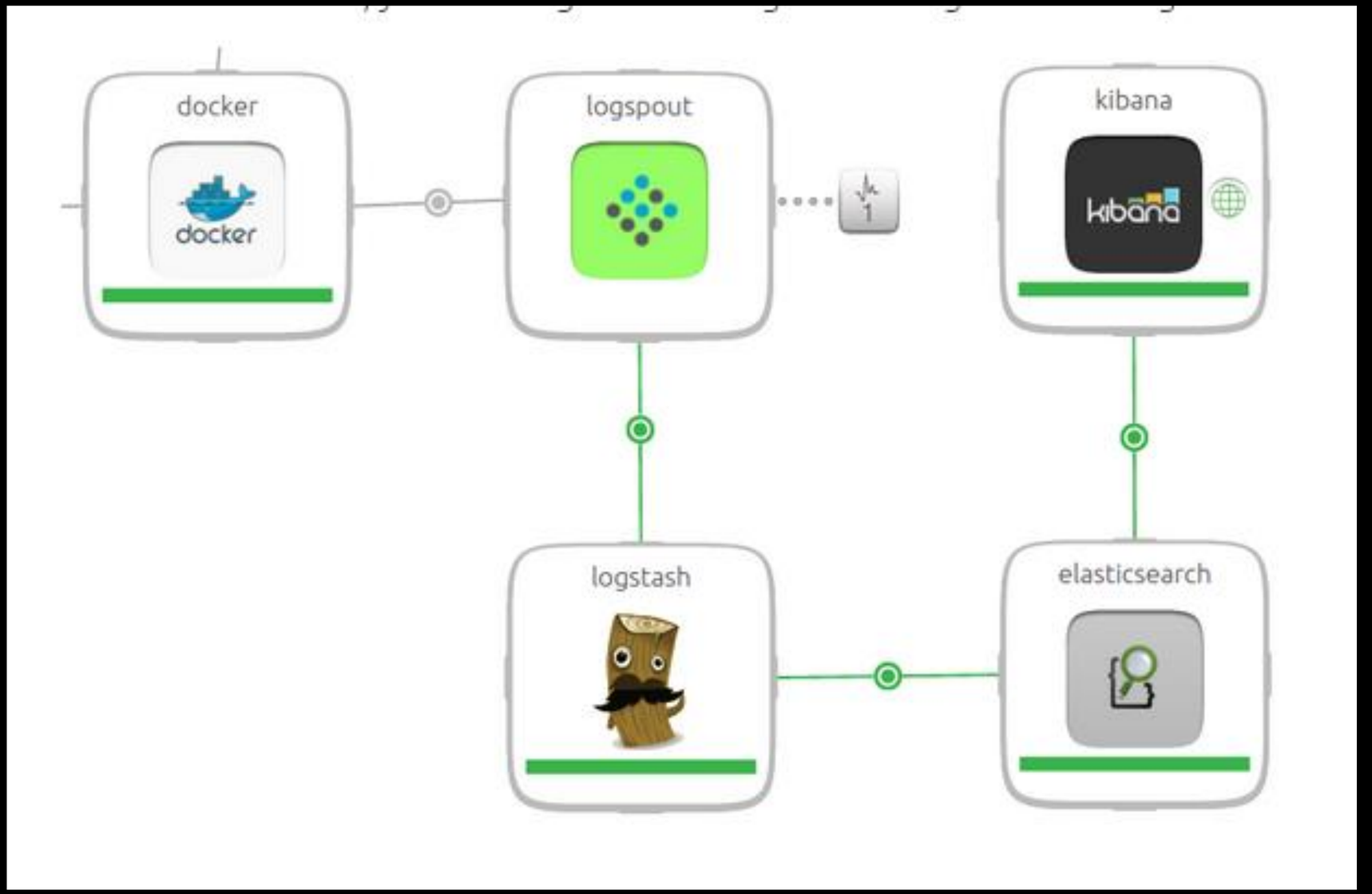


Disk I/O Utilization



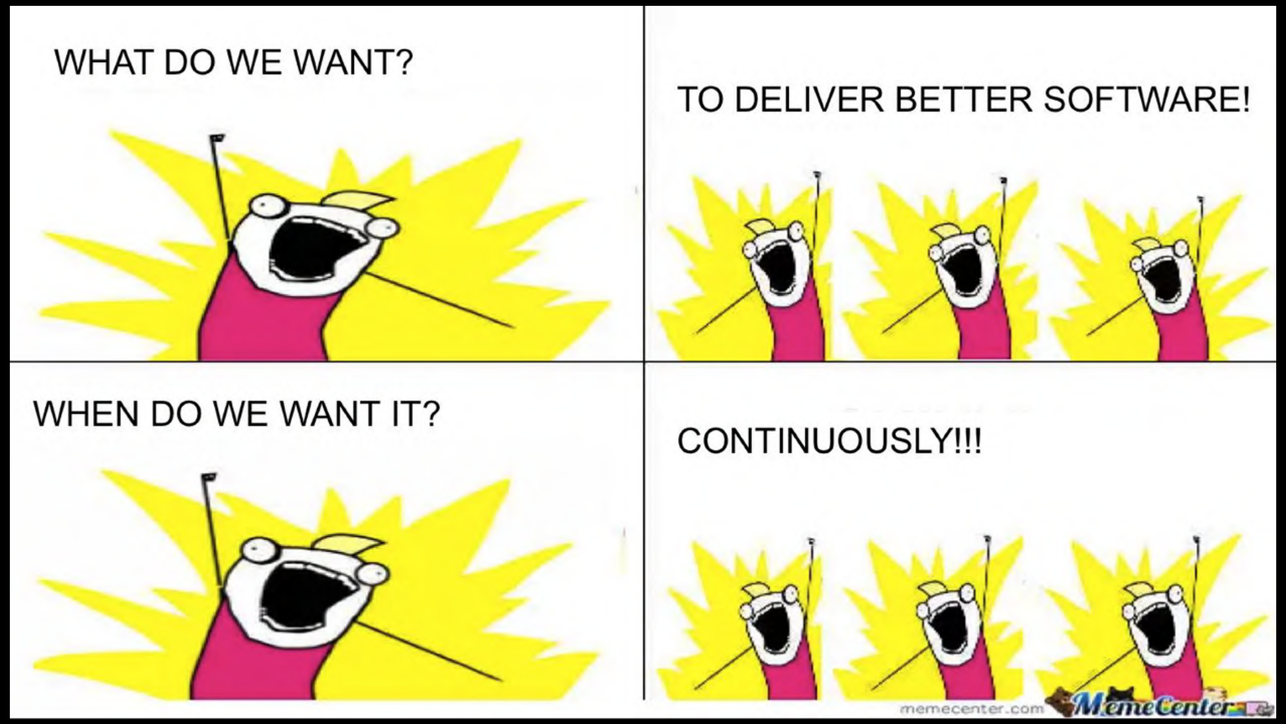
Overview	
User CPU	2.4%
System CPU	0.8%
Memory Total	15.67GiB
Memory Free	3.524GiB
Network	
docker0 Received	0B/s
docker0 Transmitted	0B/s
eth0 Received	159.5kB/s
eth0 Transmitted	157kB/s
Disks	
vda Utilization	0.1%
vdb Utilization	0.0%
vda Throughput	27.12kB/s
vdb Throughput	7.691kB/s
Filesystem Fullness	
/	78.9 %
/etc/hostname	78.9 %

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