K8S Meetup 中国社区
IT大咖说 知识共享平台

基于 Harbor 的企业级镜像仓库高可用实践

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Agenda

- Harbor Overview
- Harbor HA Practice
- Experience and Advices

Enterprise-class registry server for Docker images

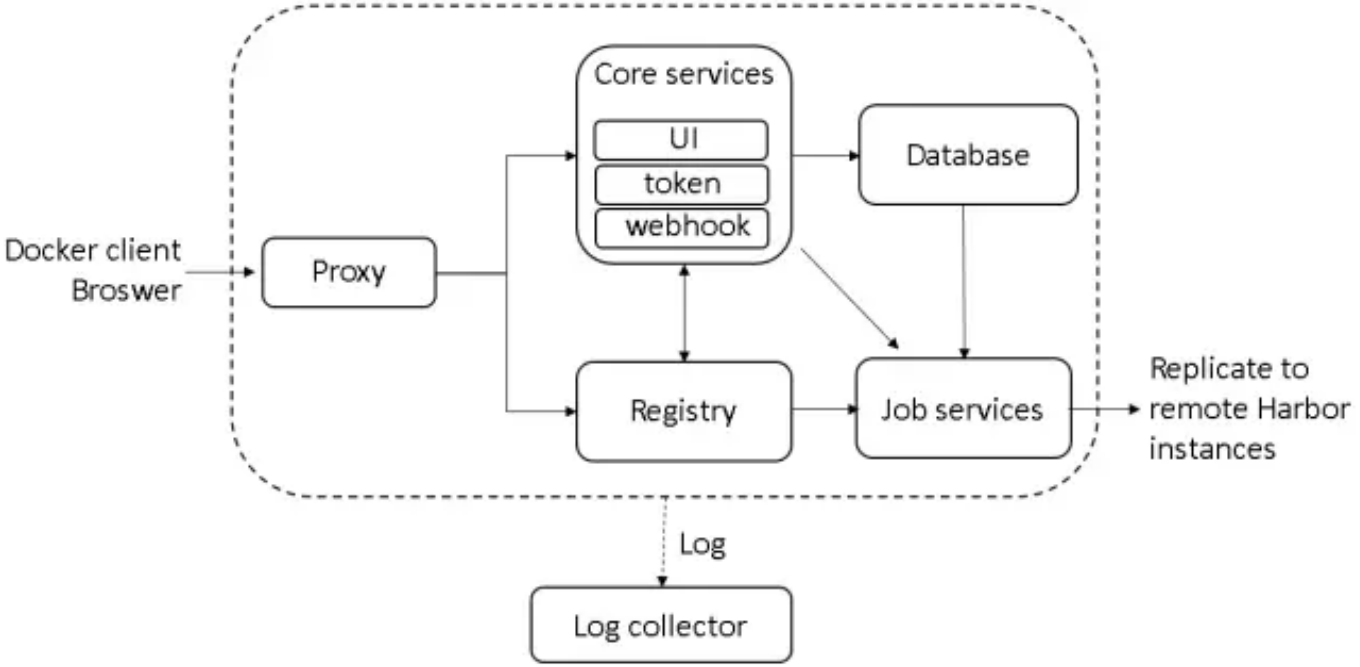
Open source project

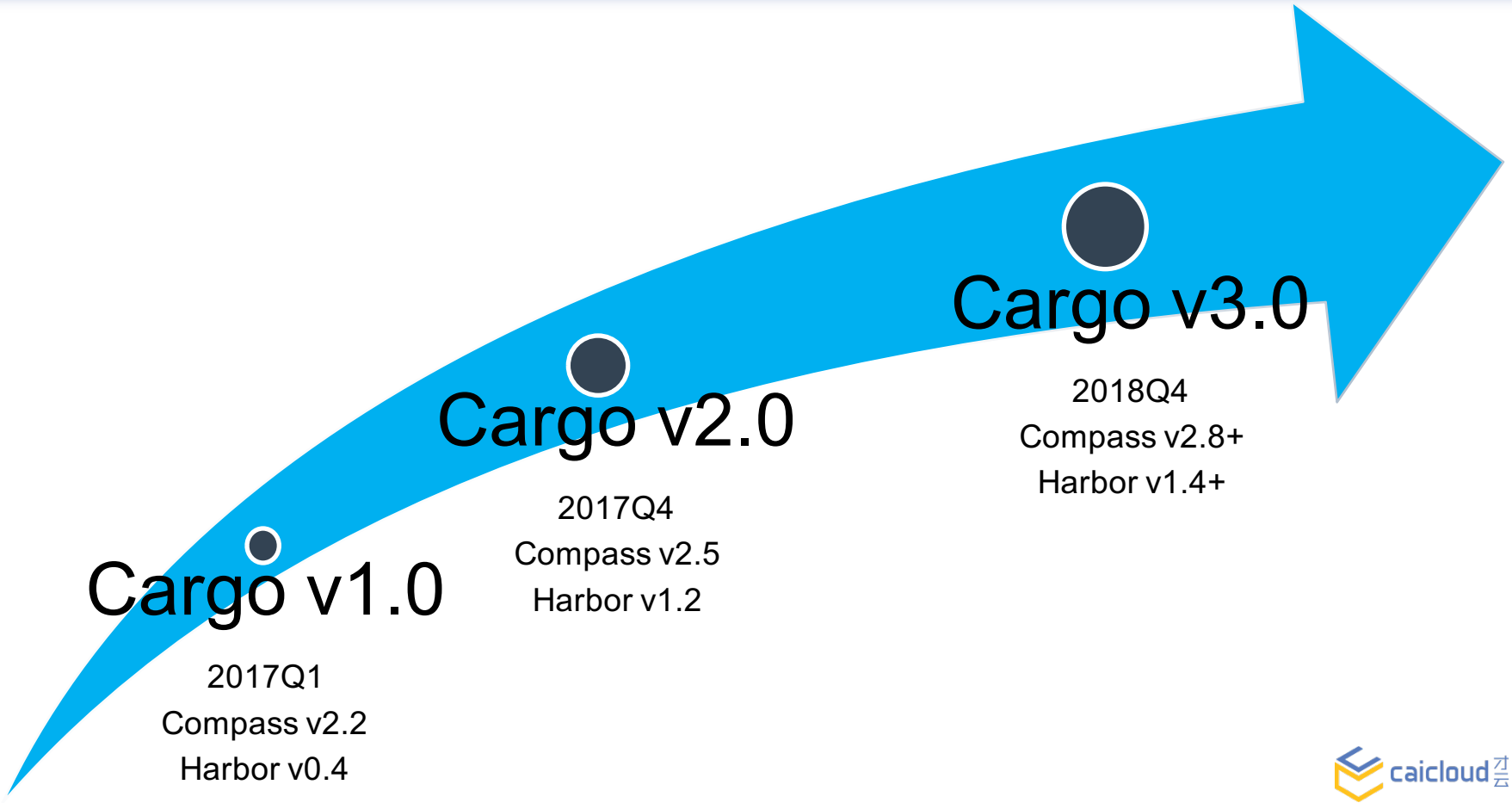
- Developed by VMware
- Started from Jan 31, 2016
- 3.6k+ stars, 1k+ forks

Key features

- Graphical user portal
- Image replication
- Access control
- Operation auditing
- Image vulnerability scanning

Harbor Overview – Architecture

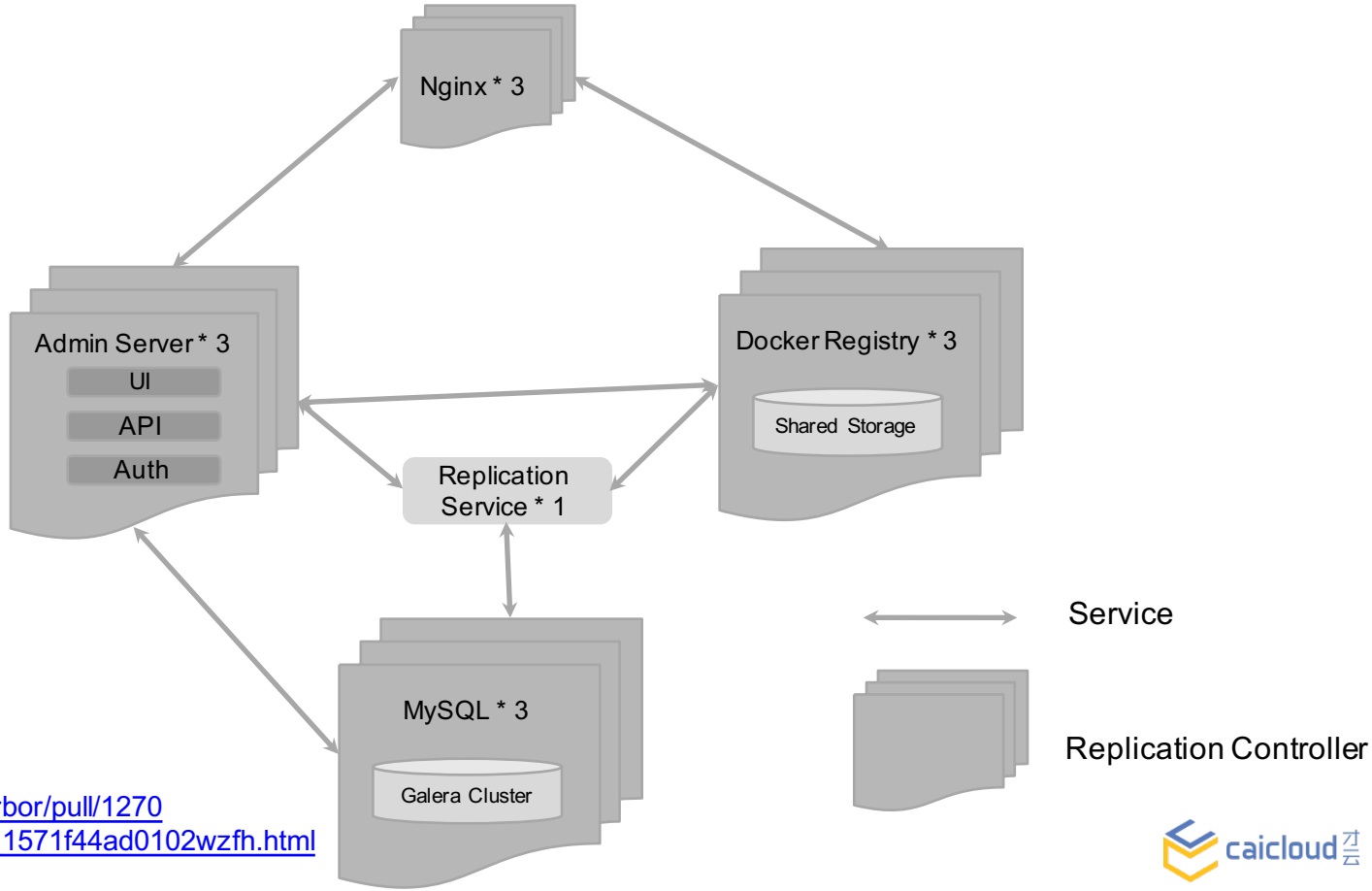



Cargo v1.0
2017Q1
Compass v2.2
Harbor v0.4
Cargo v2.0
2017Q4
Compass v2.5
Harbor v1.2
Cargo v3.0
2018Q4
Compass v2.8+
Harbor v1.4+

Compass
Cargo
HARBOR™

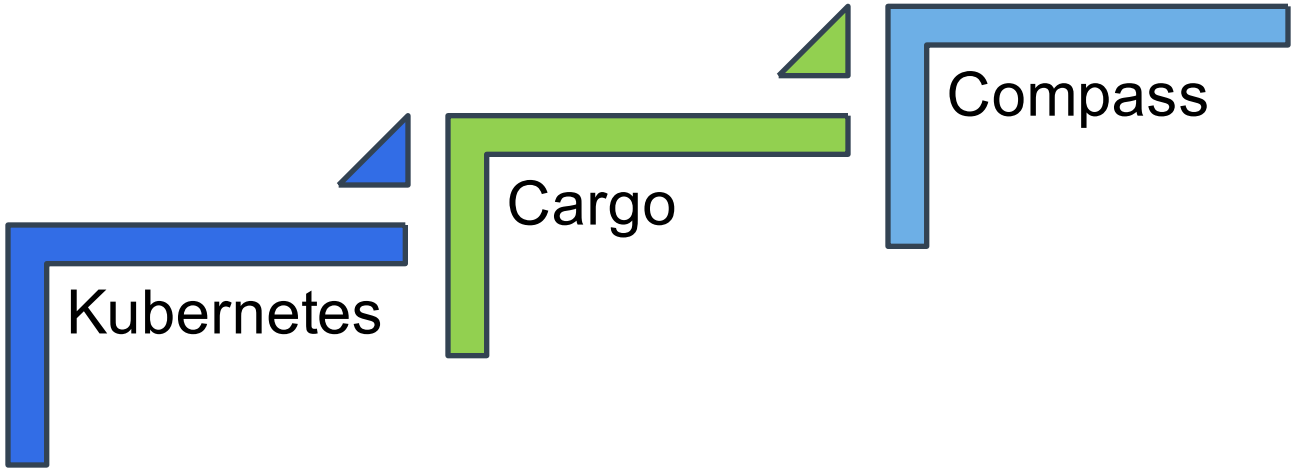
Cargo v1.0: Customized Harbor

- Add label for images
- Support Clair for security
- Performance improvement
- …



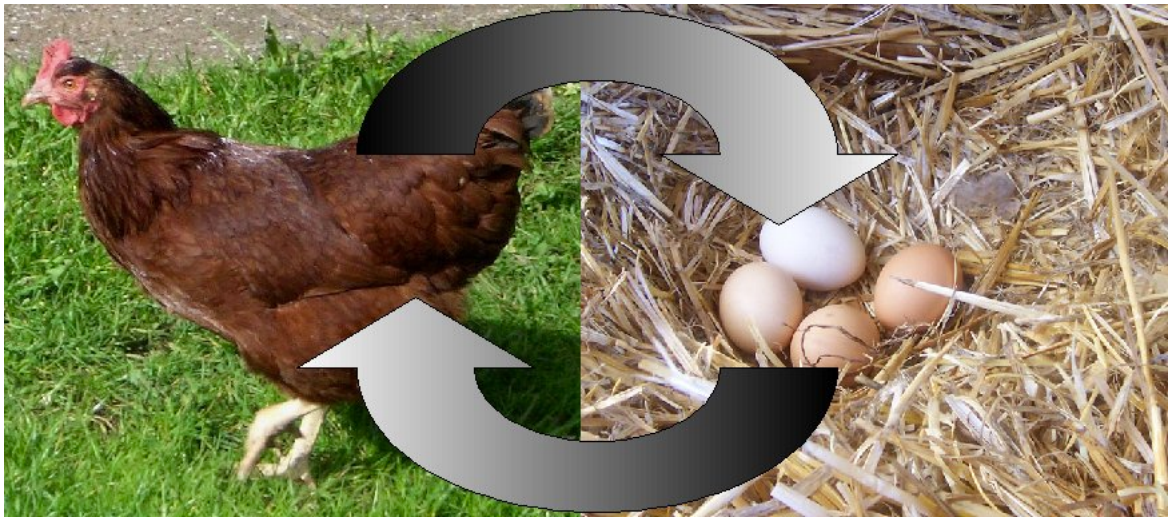
Reference:

- https://github.com/vmware/harbor/pull/1270
- http://blog.sina.com.cn/s/blog_1571f44ad0102wzfh.html


Kubernetes
Cargo
Compass

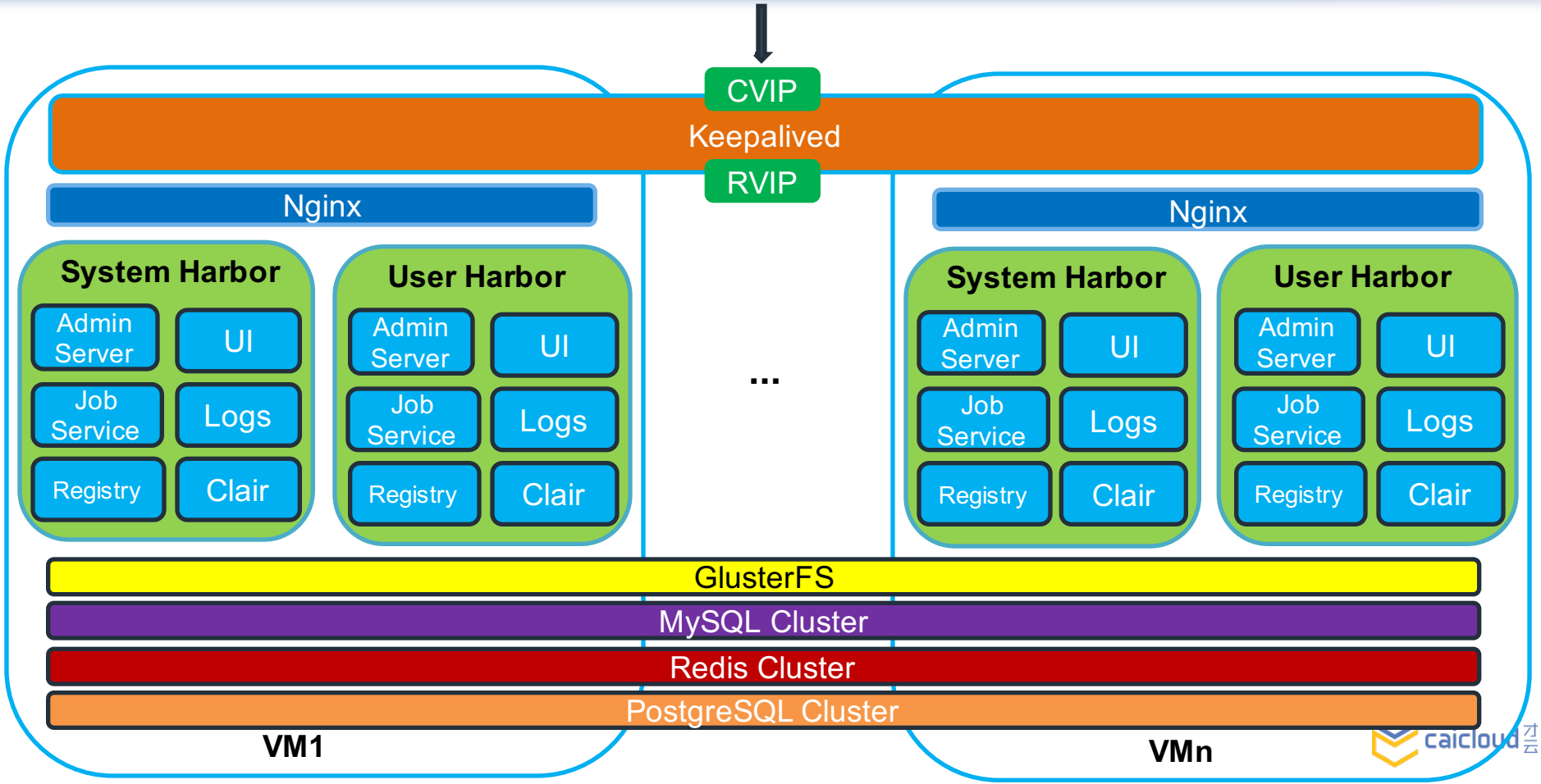
What changes:

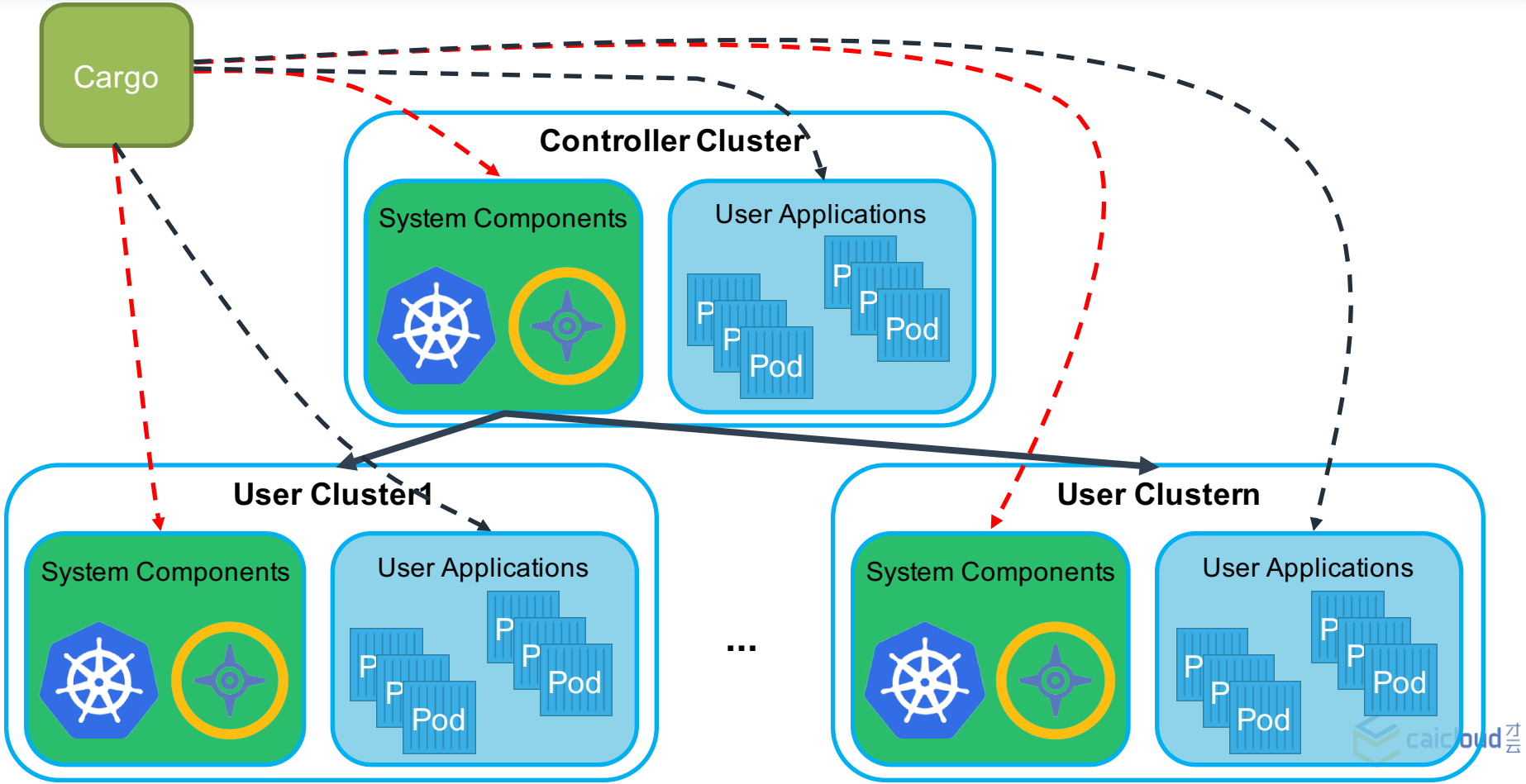
- Harbor releases v1.x
- Harbor supports Clair and Notary
- Containerize K8s components

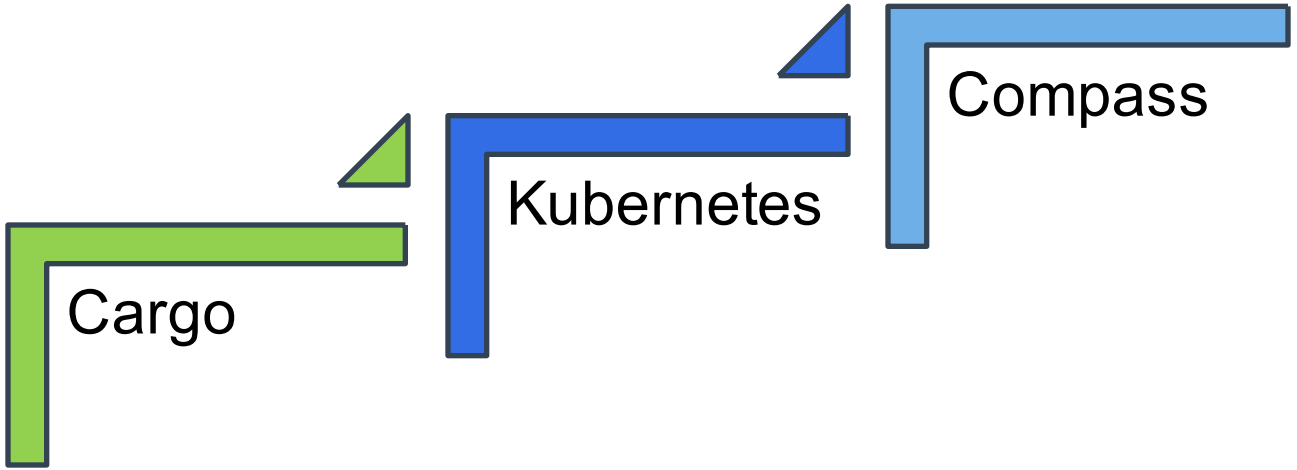


Cargo v2.0: System Harbor + User Harbor

- Harbor v1.2
- System Harbor: For Compass and K8s component images
- User Harbor: For user images


CVIP
Keepalived
RVIP
Nginx
Nginx
System Harbor
Admin Server
UI
Job Service
Logs
Registry
Clair
User Harbor
Admin Server
UI
Job Service
Logs
Registry
Clair
...
System Harbor
Admin Server
UI
Job Service
Logs
Registry
Clair
User Harbor
Admin Server
UI
Job Service
Logs
Registry
Clair
GlusterFS
MySQL Cluster
Redis Cluster
PostgreSQL Cluster
VM1
VMn


Cargo
Controller Cluster
System Components
User Applications
P
P
P
Pod
User Cluster1
System Components
User Applications
...
User Clustern
System Components
User Applications

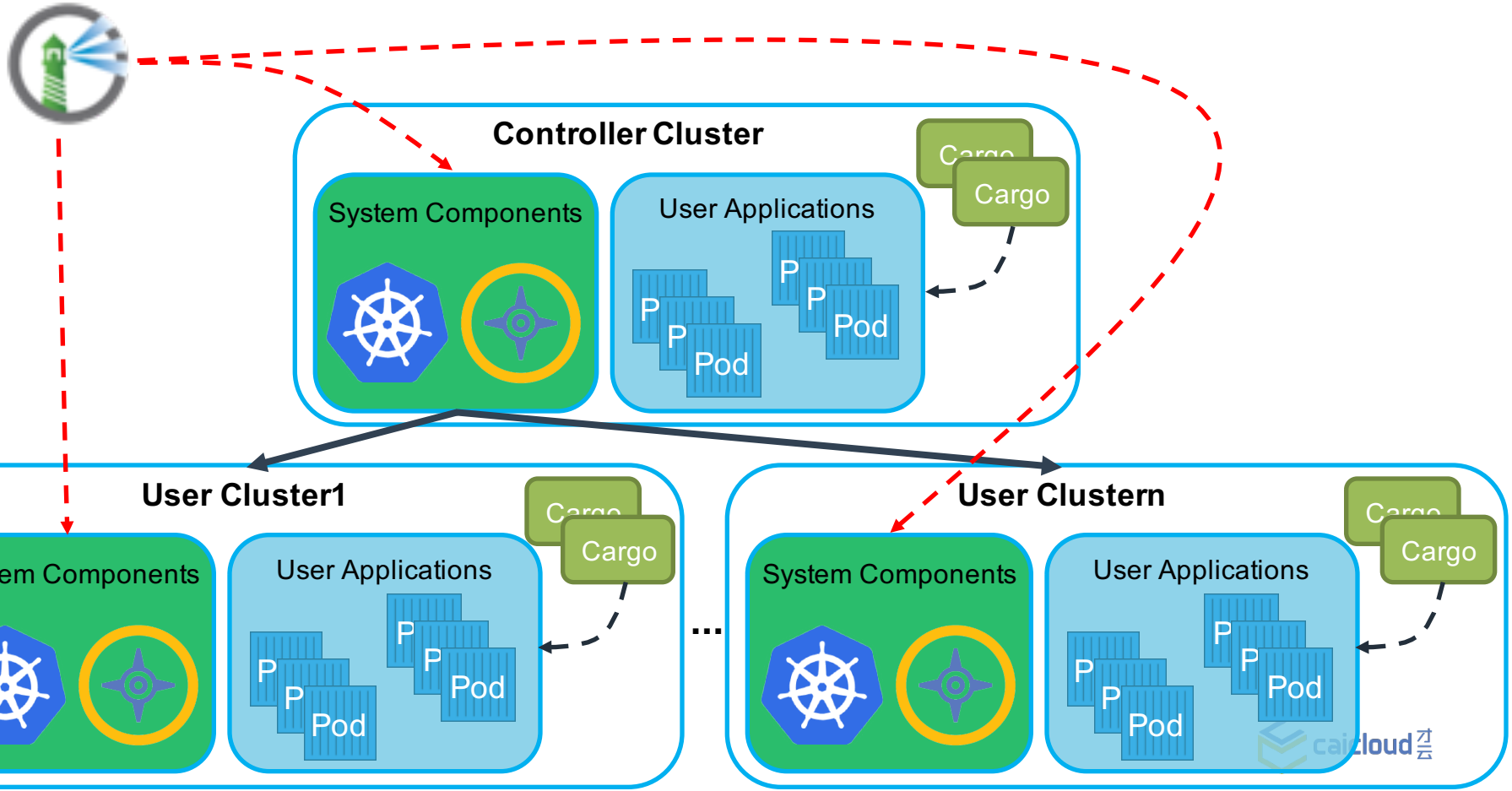

Compass
Kubernetes
Cargo

What changes:

- Improvement of Harbor HA
- Need tenant isolation and multiple environments in Cargo

Cargo v3.0:

- Harbor v1.4+
- Automatically provision in K8s
- Cargo is tenant resource and use tenant resource


Controller Cluster
System Components
User Applications
Cargo
Cargo
P
P
Pod
P
P
Pod
User Cluster1
System Components
User Applications
Cargo
Cargo
P
P
Pod
P
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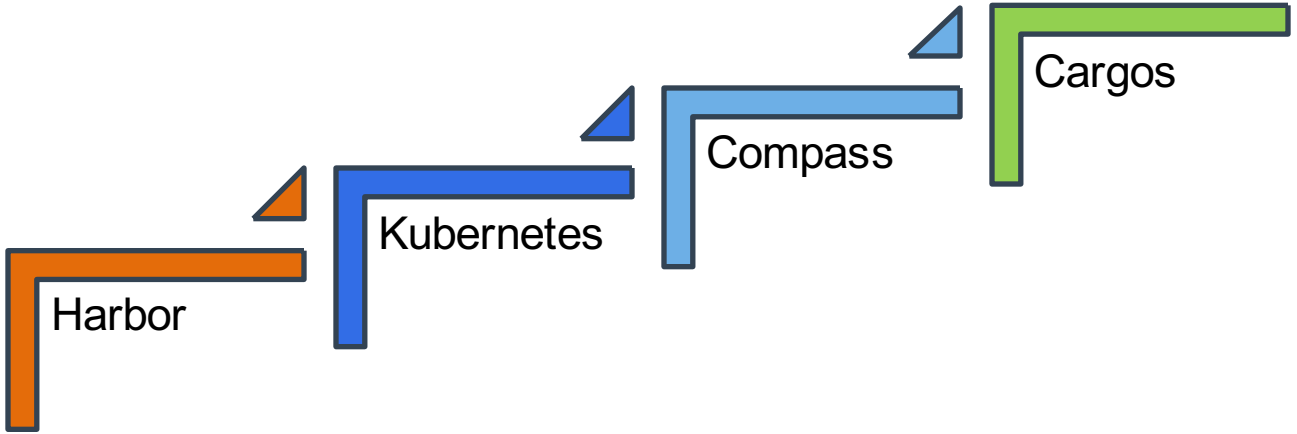
Pod
...
User Clustern
System Components
User Applications
Cargo
Cargo
P
P
Pod
P
P
Pod

Cargo v3.0 HA = Harbor HA + Cargos HA in K8s


Harbor
Kubernetes
Compass
Cargos

P: Do not support configure Redis cluster

S: VIP for the master of Redis cluster

```go
// SessionInit init redis session
// savepath like redis server addr,pool size,password,dbnum
// e.g. 127.0.0.1:6379,100,astaxie,0
func (rp *Provider) SessionInit(maxlifetime int64, savePath string) error {
    rp.maxlifetime = maxlifetime
    configs := strings.Split(savePath, ",")
    if len(configs) > 0 {
        rp.savePath = configs[0]
    }
    if len(configs) > 1 {
        poolsize, err := strconv.Atoi(configs[1])
        if err != nil || poolsize <= 0 {
            rp.poolsize = MaxPoolSize
        } else {
            rp.poolsize = poolsize
        }
    } else {
        rp.poolsize = MaxPoolSize
    }
    if len(configs) > 2 {
        rp.password = configs[2]
    }
    if len(configs) > 3 {
        dbnum, err := strconv.Atoi(configs[3])
```

```
vrrp_script check_redis {
    script "/bin/busybox echo info | /usr/bin/nc KEEPALIVED_REDIS_NODE_IP KEEPALIVED_REDIS_NODE_PORT | /bin/busybox grep role:master > /dev/null"
    interval 1
    timeout 5
    fall 2
    rise 1
}
```

P: Do not support Clair and Notary in Active/Active mode

S: Active/Standby mode

A: Harbor v1.4 has fixed for Clair, but still not for Notary

P: How to do the health check

S: Periodically pull the test image

```
vrrp_script check_cargo {
    script "/usr/local/bin/docker pull cargo.caicloudprivatetest.com/library/hello-world:latest"
    interval 10
    timeout 10
    fall 2
    rise 1
}
```

< 项目

library 项目管理员

镜像仓库 成员 日志 复制

用户名	镜像名称	标签	操作	时间戳
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:21
anonymous	library/hello-world	latest	pull	2018/2/12 下午1:20

caicloud

才云

谢谢大家！