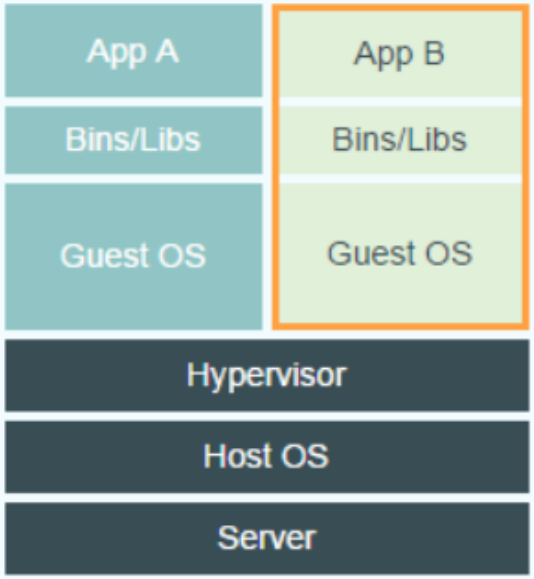
新炬网络
SNC www.shsnc.cn

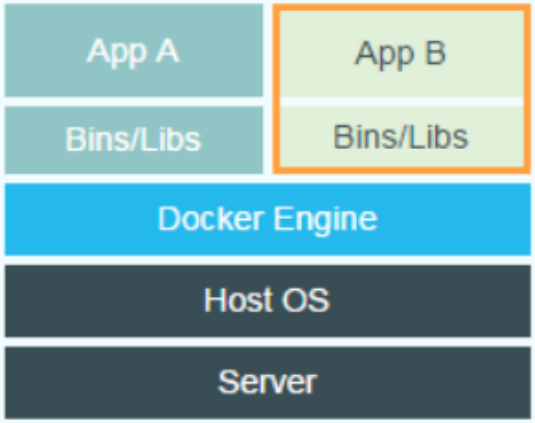
基于Docker容器构建PaaS云平台应用实践

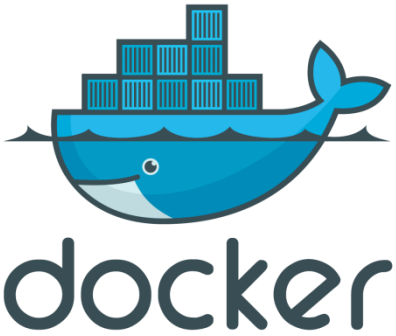
上海新炬网络技术有限公司
shanghai new century network co.ltd

存在的问题

容器时代



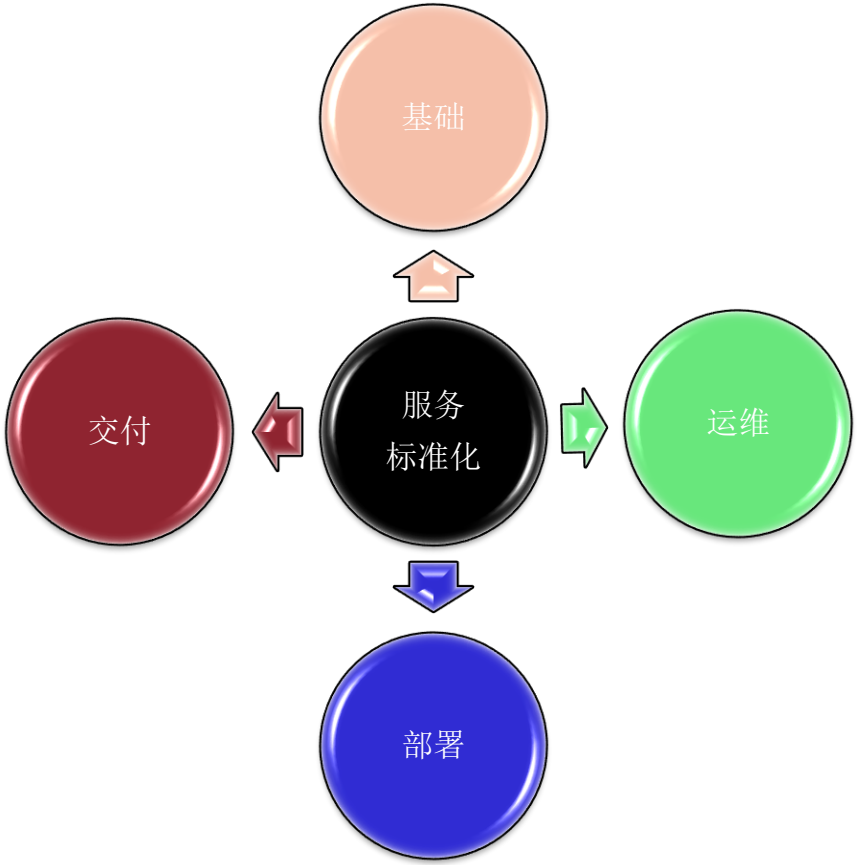




Build, Ship and Run Any App, Anywhere !

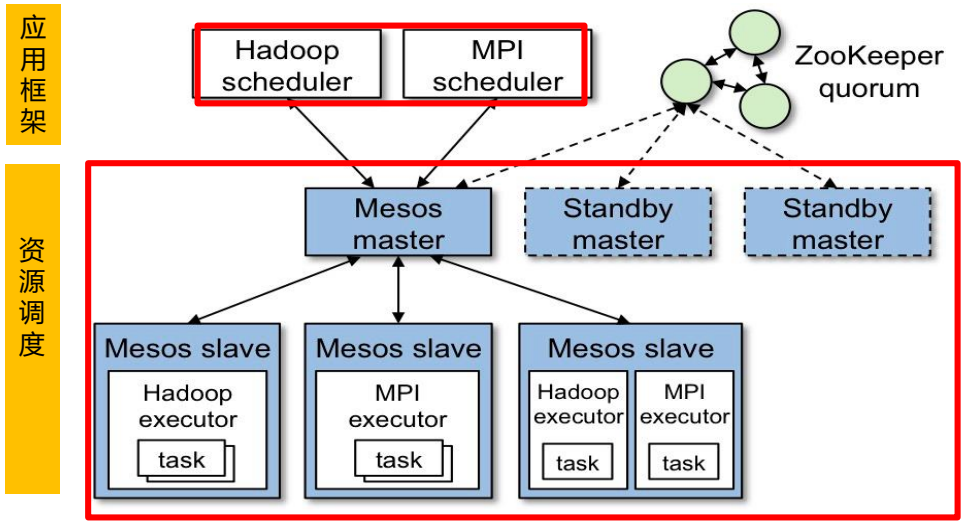
- 容器采用基于linux内核已实现的轻量级高性能资源隔离机制(cgroups, namespace, lxc)
- Docker比虚拟化机 少了两层，取消了hypervisor层和GuestOS层，使用 Docker Engine 进行调度和隔离，所有应用共用缩主机操作系统，更轻量，启动速度更快
- 标准统一的打包/部署/运行方案

服务标准化

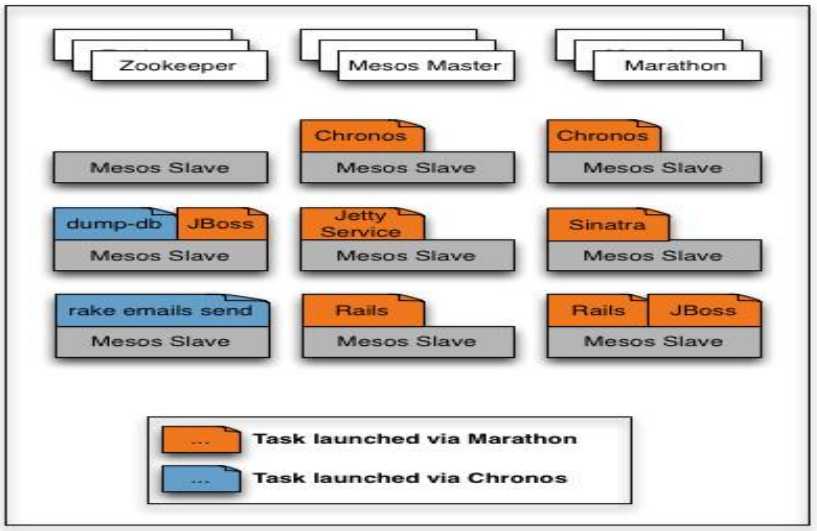


光有docker是不够的

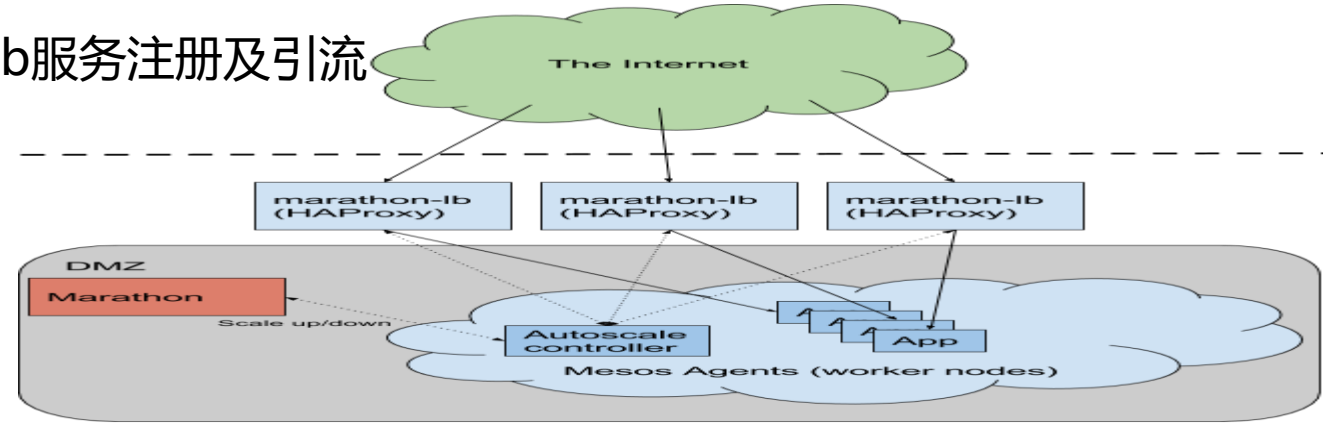
Mesos分布式集群资源分配



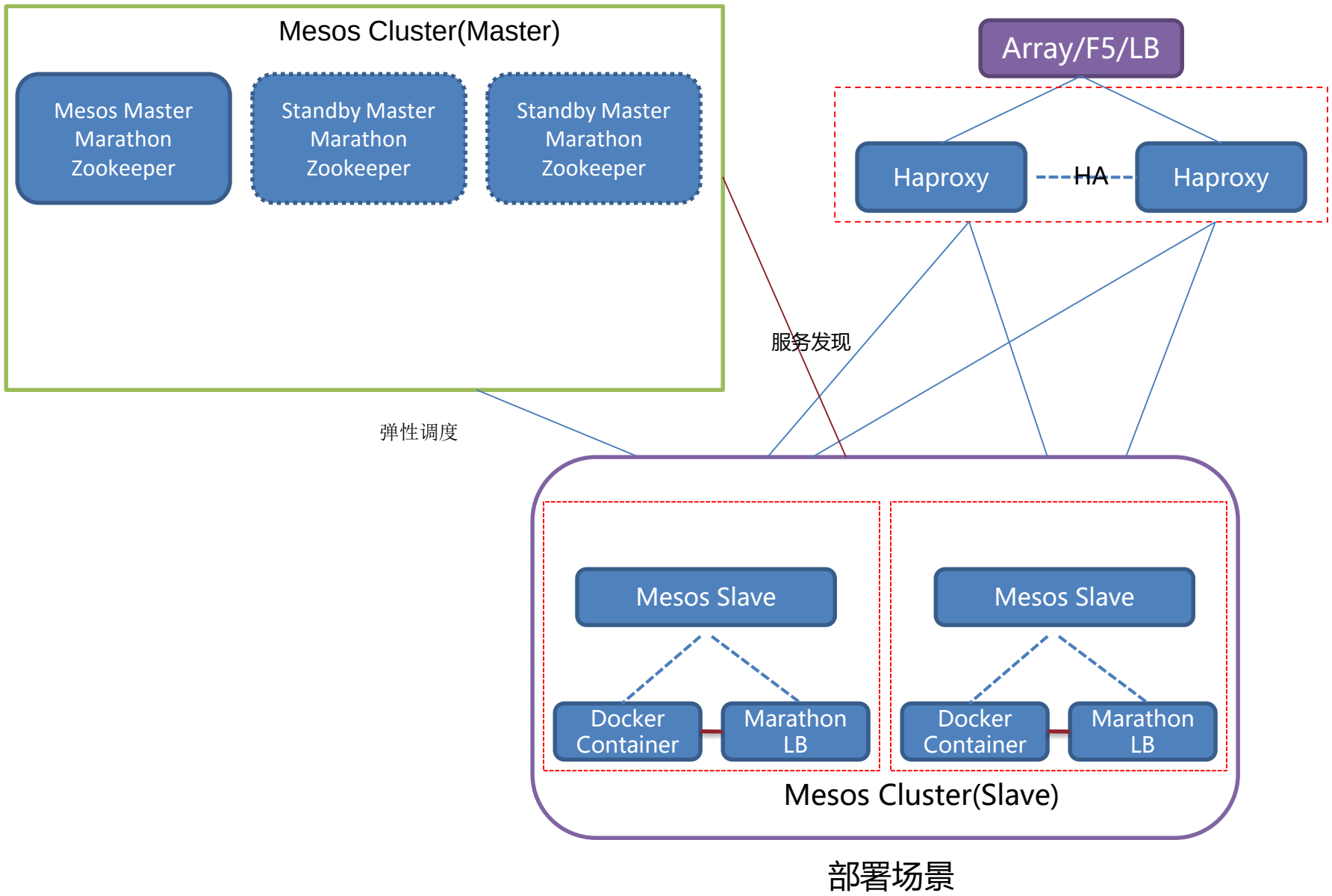
Marathon任务调度/故障转移



Marathon-lb服务注册及引流



PaaS云平台



部署场景

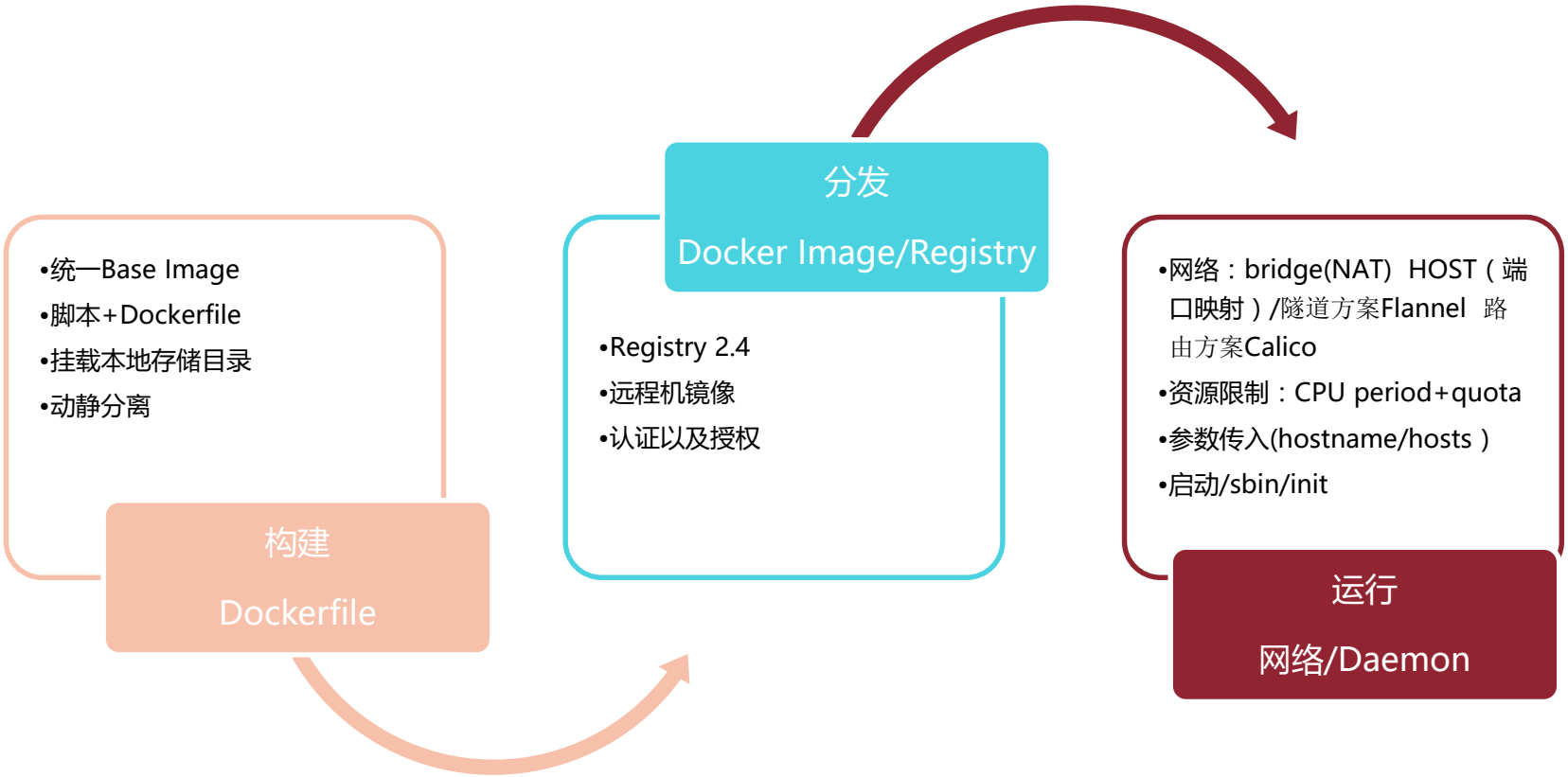
哪一些场景适合docker容器化

1. 无状态应用，建议用
2. 有状态应用，改无状态应用使用
3. 开发测试环境，建议用
4. 数据库等，不建议用

应用改造

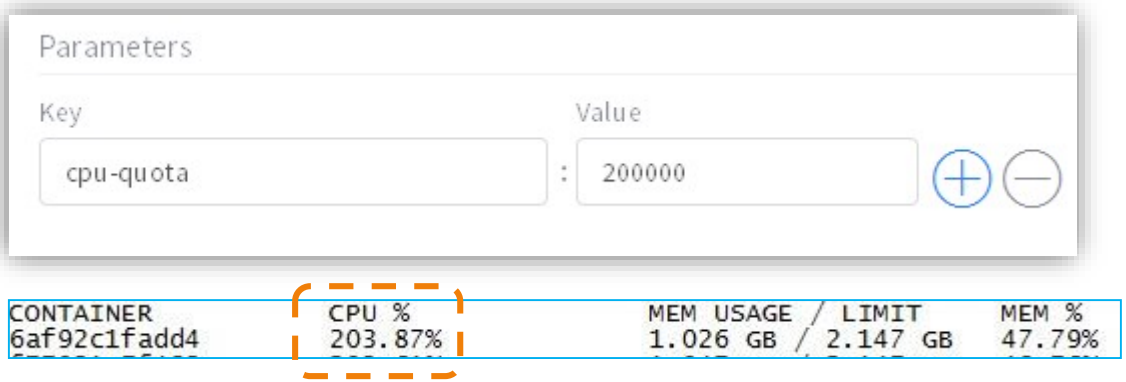
1. **中间件**
   开源中间件，不做集群，单机部署
2. **应用**
   应用无状态改造，如采用Redis或者Memcached共享用户状态及信息。
3. **架构调整**
   微服务， 统一日志。
4. **配置分离**
   解耦代码与配置

生命周期


•统一Base Image
•脚本+Dockerfile
•挂载本地存储目录
•动静分离
构建
Dockerfile
分发
Docker Image/Registry
•Registry 2.4
•远程机镜像
•认证以及授权
•网络：bridge(NAT) HOST（端口映射）/隧道方案Flannel 路由方案Calico
•资源限制：CPU period+quota
•参数传入(hostname/hosts）
•启动/sbin/init
运行
网络/Daemon

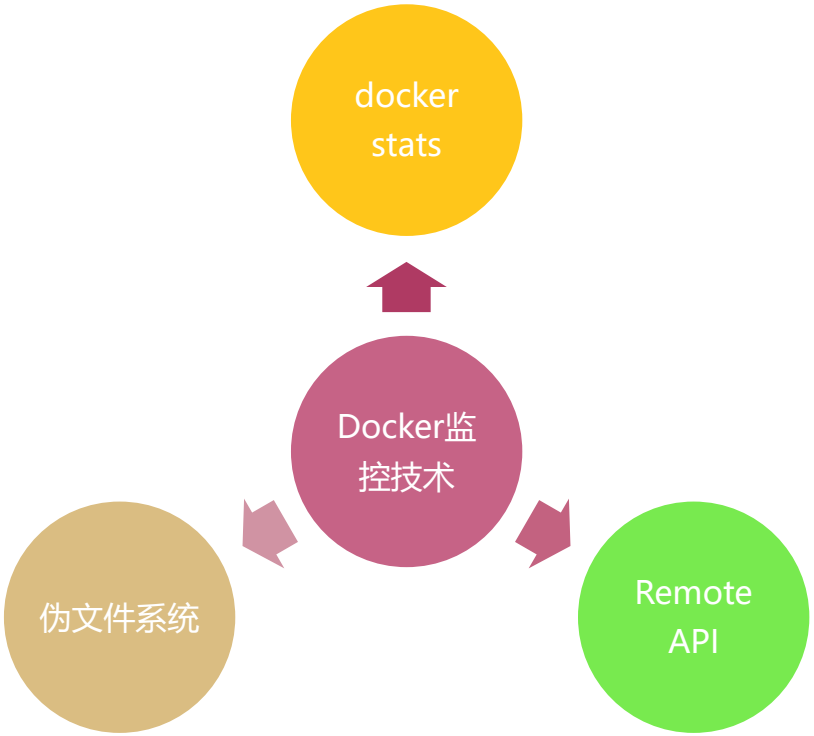
资源隔离

CPU相关参数	内存相关参数	IO 相关参数
-c --cpu-shares	--m/--memory	--blkio-weight
--cpuset-cpus	--memory-swap	--blkio-weight-device
--cpu-period		
--cpu-quota		



https://docs.docker.com/engine/reference/run/

Docker Monitoring

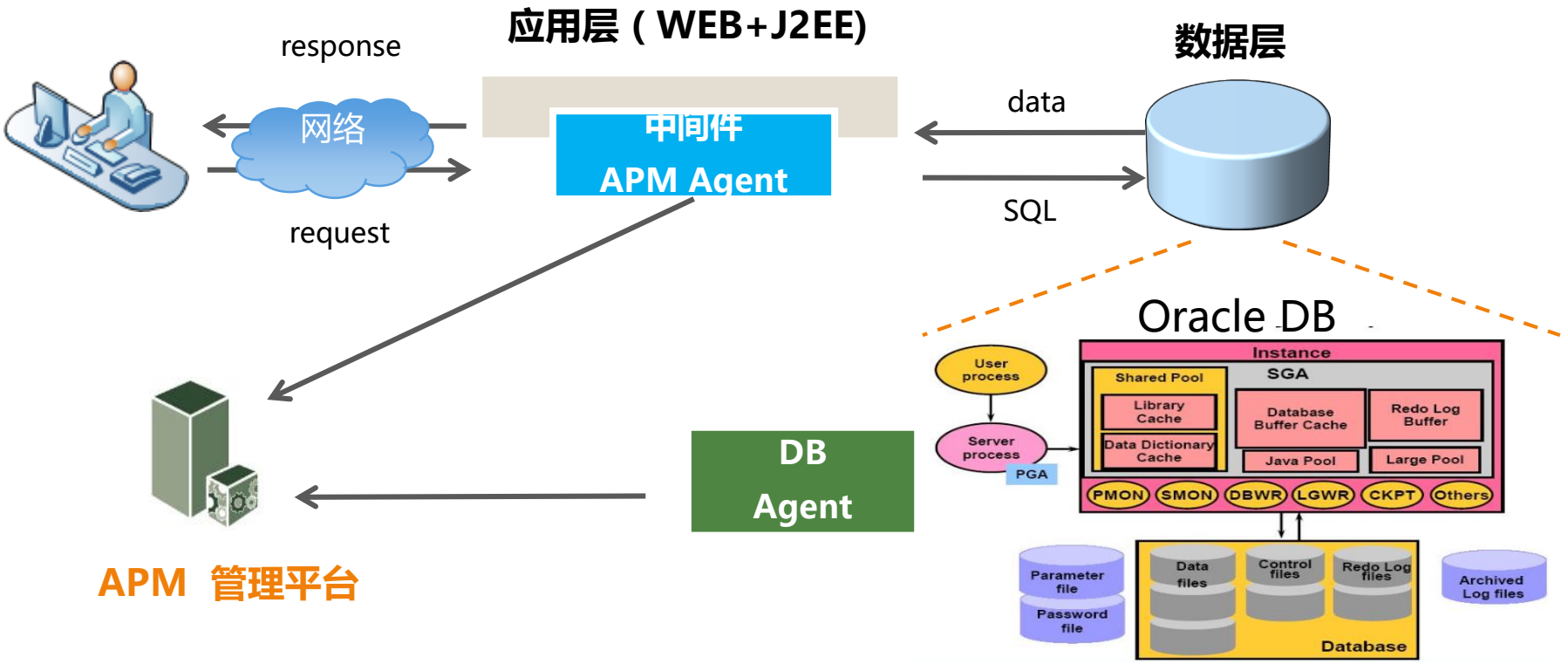


名称	备注
docker stats	字符界面
cAdvisor	开源软件，图形界面
Remote API	性能/安全影响

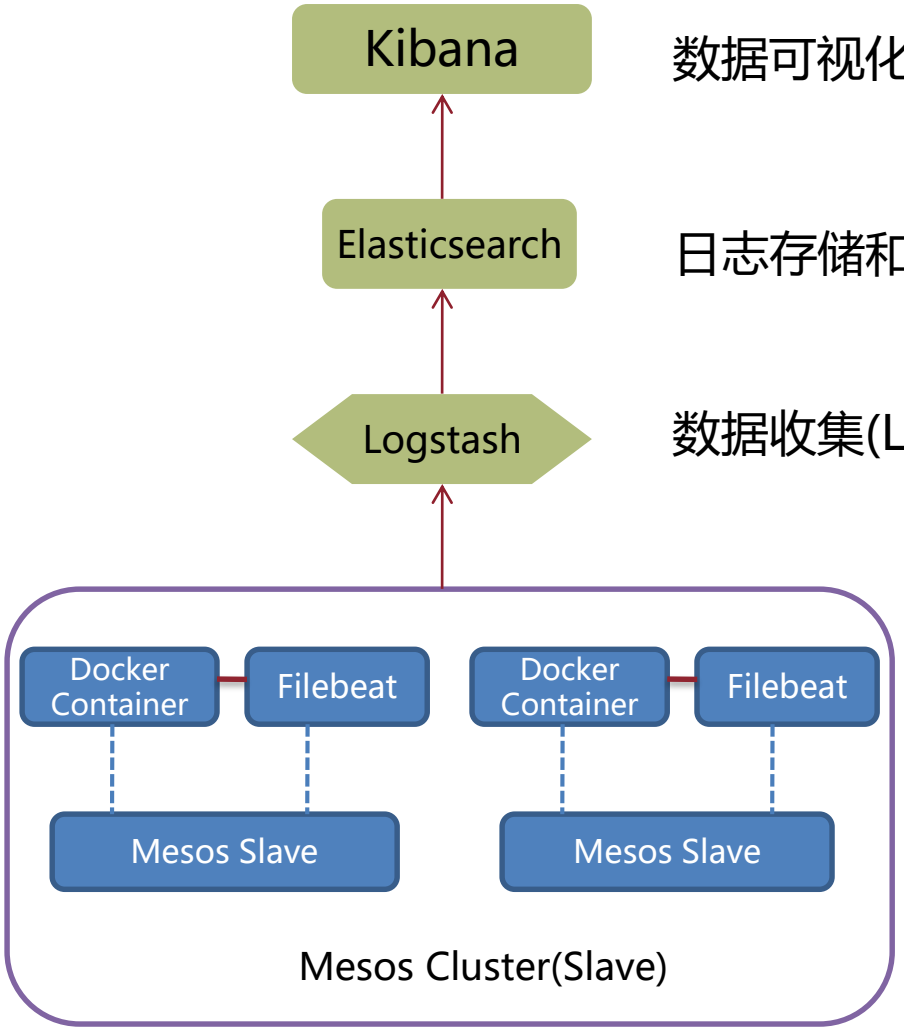
http://dockone.io/article/397

Docker Application Monitoring

应用性能管理（ＡＰＭ）：打造端到端全流程业务监控与分析



统一应用日志中心(ELK)



定制化工作：

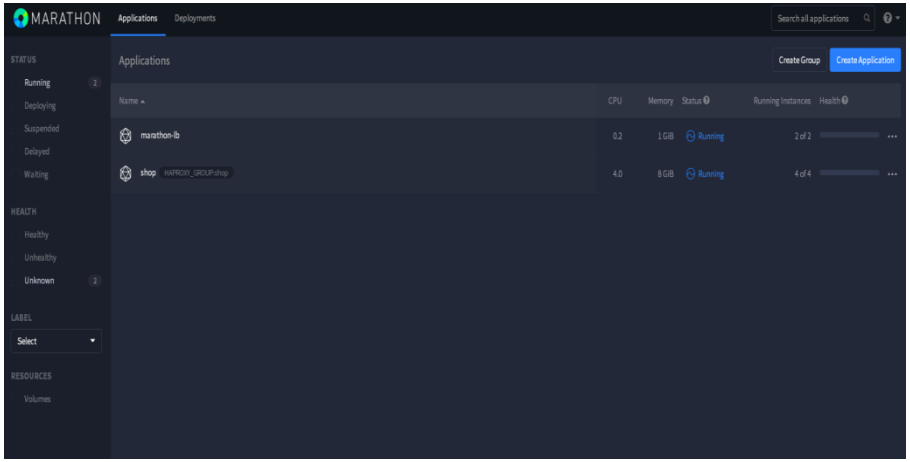
1.容器启动时挂载本地目录

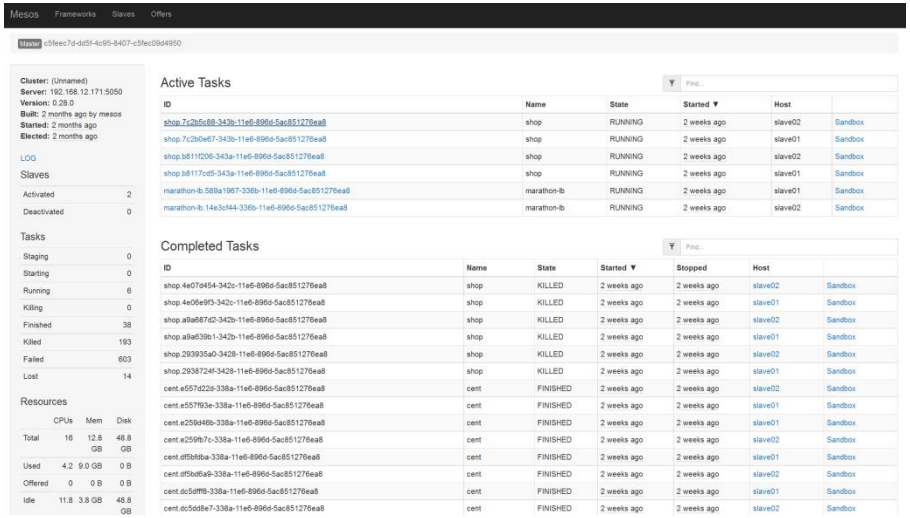
2.修改中间件如 tomcat catalina.sh 脚本，根据主机名生成日志输出到容器挂载目录下

测试实践

组件版本

部署软件	版本
Docker	1.11
Mesos	0.28.0
ZooKeeper	3.4.8
marathon	1.1.0
marathon-lb	1.2.1
haproxy	1.6.4
Docker Registry	2.4





Thank you

为客户创造价值

服务至上

诚信至上