

Hyper 容器云及云上运维

裴彤

Hyper.SH 运维负责人

我们是谁？

- 一家专注于虚拟化容器技术的 startup
- 维护着多个开源项目
 - hyperhq/hyperd
 - hyperhq/runv
 - hyperhq/hypernetes
 - kubernetes/frakti
- 做了一个公有容器云服务
 - <https://hyper.sh>

主要内容

1. 从 Docker 到 Hyper Container
2. Hyper Container 用于公有云
3. Hyper 容器云上运维方式的改变

从 Docker 说起

- 当前最热门的容器技术
- 几年来，从最早的一个相对单纯的runtime，发展成为包含集群管理、容器编排、各种网络/存储插件乃至操作系统打包的复杂的生态系统
- 引发了(.....)变革，各种公司内部实践、开源项目、创业公司、容器云如雨后春笋

Docker 基本原理

 docker =  Container +  Docker Image

轻量级 ✓

快速 ✓

隔离性 ❌

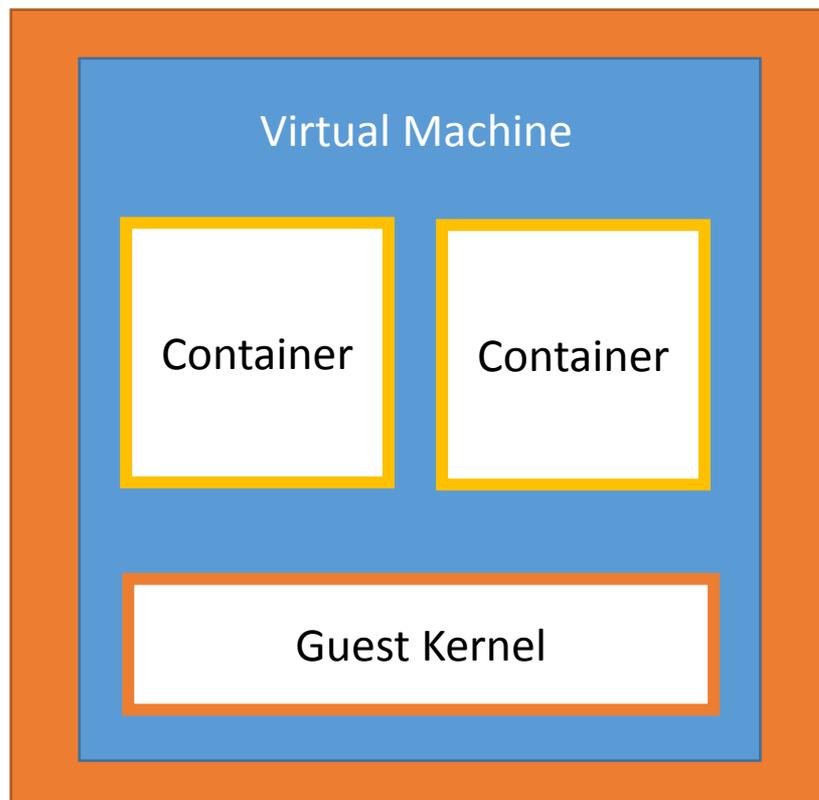
随时随地 ✓

便携 ✓

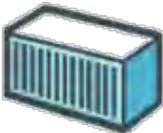
不可变更 ✓

安全顾虑

- 容器的隔离技术已经有很大进步了
- 正常使用应该是安全的
- 但是总归不如虚机的隔离性好
- 如果不放心的话，**放在虚拟机里好了.....**



何不合体？

Hyper Container =  VM +  Docker Image

轻量级



快速



隔离性



随时随地



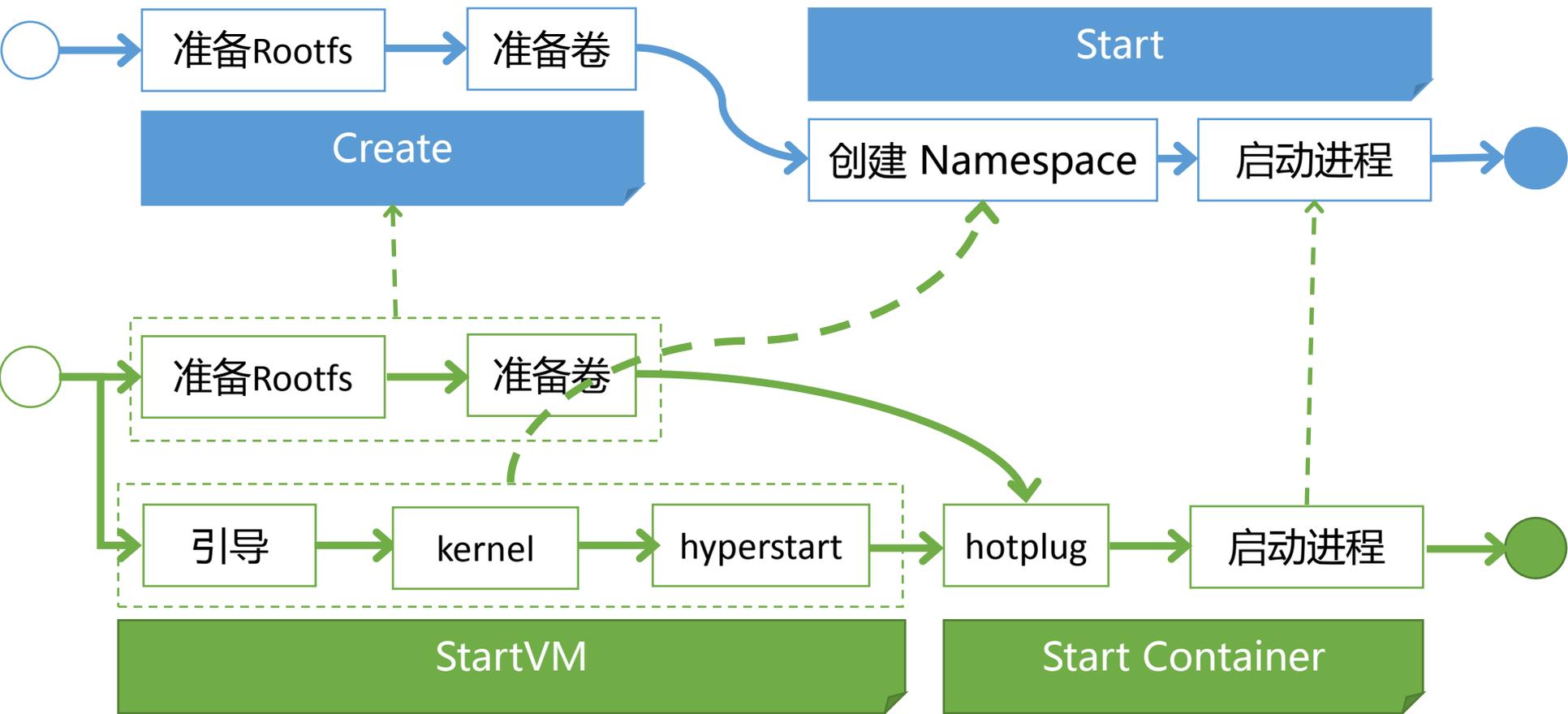
便携



不可变更



Docker/Hyper容器启动过程对比



如何使虚拟机更“轻快”

- 加快启动速度
 - 极度精简VM硬件、内核
 - VM Cache：预先准备虚拟机池（已提给 qemu 社区）
 - 效果：300 多毫秒启动容器
- 减少内存占用
 - 极度精简VM硬件、内核
 - VM Template：所有虚拟机共享内核/initrd（已提给 qemu 社区）
 - 效果：qemu进程实际占用内存 - 虚拟机分配内存 < 10M

Secure as VM, Fast as Container

Hyper Container =  VM +  Docker Image

轻量级 ✓

快速 ✓

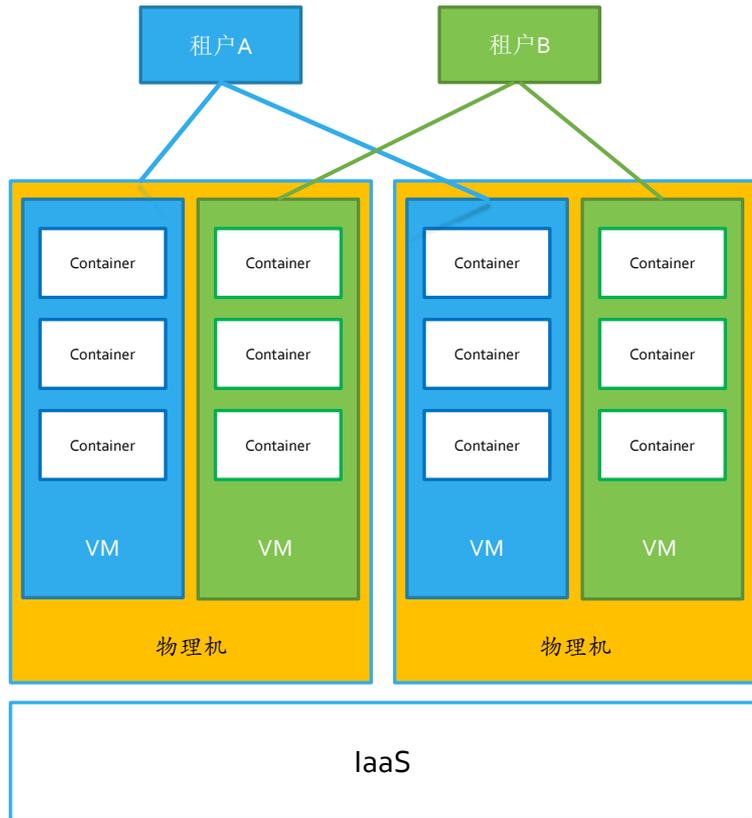
隔离性 ✓

随时随地 ✓

便携 ✓

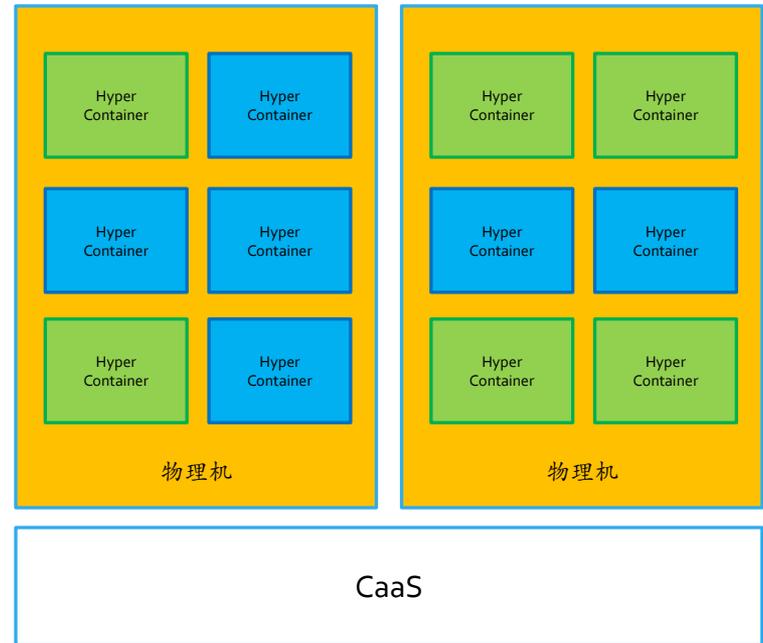
不可变更 ✓

Hyper Container 用于公有云

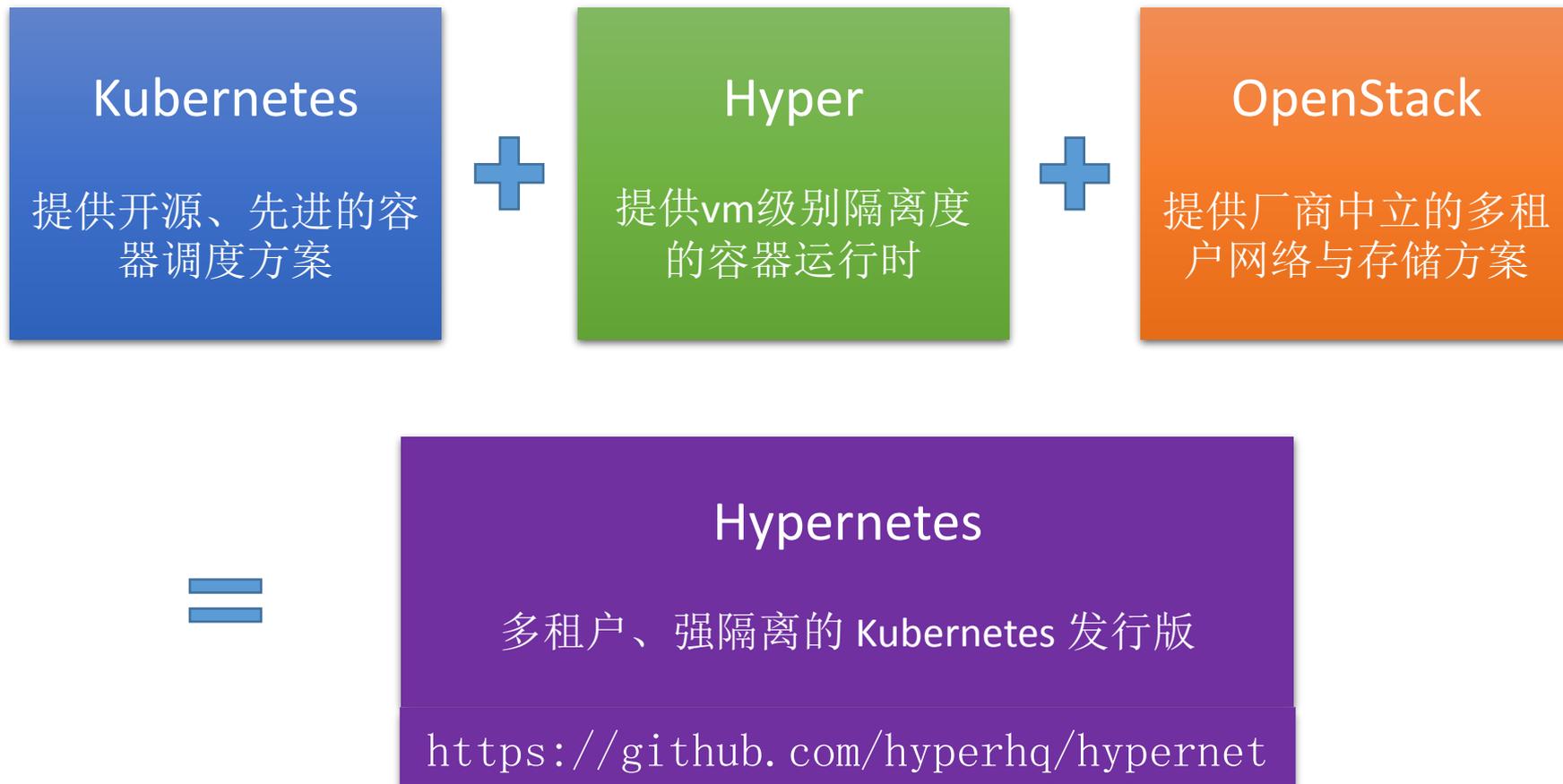


优势：

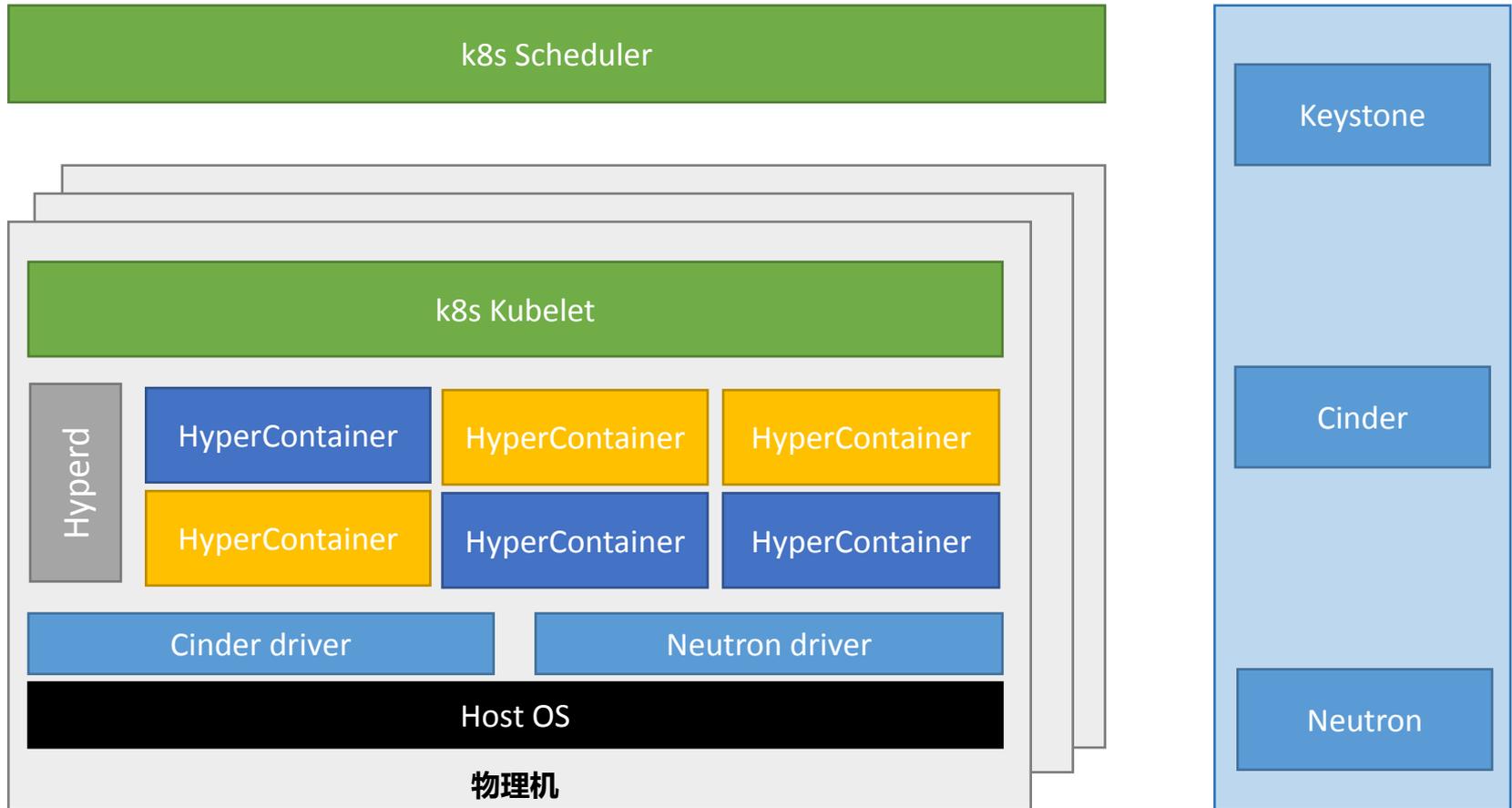
- 1, 调度效率更高；
- 2, 管理复杂度降低。



实践：Hypernetes



Hypernetes 架构



Hyper 容器云

The screenshot shows the Hyper.SH website interface. At the top left is the logo 'h_ HYPER.SH'. A navigation bar includes links for 'FEATURES / HOW TO / PRICING / DOCS / FORUM / CUSTOMERS' and a 'SIGN IN' button with a 'NEW' badge. Below the navigation, a banner reads 'CLUSTERLESS DOCKER HOSTING' with the tagline 'Deploy your container apps in 5 sec!'. A world map highlights 'LOS ANGELES' (2099+ CONTAINERS DEPLOYED) and 'EUROPEAN growing region'. A terminal window displays the following commands and output:

```
$ brew install hyper
$ hyper pull mysql
$ hyper run mysql
MySQL is running...
$ hyper run --link mysql wordpress
WordPress is running...
$ hyper fip attach 22.33.44.55 wordpress
22.33.44.55
```

To the right of the terminal, a diagram illustrates the deployment process. It shows a 'WORDPRESS' container linked to a 'MYSQL' container, both running on top of 'WORDPRESS IMAGE' and 'MYSQL IMAGE' respectively. A 'SIGN UP' button is positioned near the diagram.

基本功能：“云Docker”

```
[peitong@test-1 ~]$ ./hyper run -d -P nginx
716c2f021d20ca02cd16bf4a118fc56db632fecab52e2e48ef060eca03584240

[peitong@test-1 ~]$ ./hyper ps -a
CONTAINER ID      IMAGE      COMMAND                CREATED          STATUS          PORTS                NAMES                PUBLIC IP
716c2f021d20     nginx     "nginx -g 'daemon off'" 15 seconds ago  Up 7 seconds    0.0.0.0:80->80/tcp, 0.0.0.0:443->443/tcp  tender-wescoff

[peitong@test-1 ~]$ ./hyper fip allocate 1
Please note that Floating IP (FIP) is billed monthly. The billing begins when a new IP is allocated, ends when it is released. Partial month is treated as a entire month. Do you want to continue? [y/n]: y
11.22.33.44

[peitong@test-1 ~]$ ./hyper fip attach 11.22.33.44 716c2f021d20

[peitong@test-1 ~]$ ./hyper ps -a
CONTAINER ID      IMAGE      COMMAND                CREATED          STATUS          PORTS                NAMES                PUBLIC IP
716c2f021d20     nginx     "nginx -g 'daemon off'" 1 minutes ago   Up 1 minutes    0.0.0.0:80->80/tcp, 0.0.0.0:443->443/tcp  tender-wescoff     11.22.33.44
```

体验上，与在自己的电脑上使用 Docker 一致，而实际操作的是云端的资源——用户如同拥有一台资源无限的“主机”，只管按需创建/使用/销毁容器即可，而无需为底层的“主机”或“集群”操心。



OVERVIEW

CONTAINERS

IMAGES

STORAGE

FLOATING IP



CLI

Forum



CONTAINERS

Status	Name	Image	ID	Command	Floating IP	Private IP	Ports
	tender-wescoff S4 (1Core/512MB/10GB)	nginx	716c2f021d20	nginx -g 'daemon off;'	11.22.33.44	172.16.0.225	0.0.0.0:80-> 0.0.0.0:443-

高级特性

- Compose
 - 兼容 Docker Compose 规范
- Service
 - 源自 Kubernetes 的 Service 概念
- Cron
 - 在特定时间按用户指定的参数run容器
- Func
 - Docker-centric Serverless solution

思考：容器时代运维的变化

- 资源视角
 - 物理机/虚机 vs. 容器
- 环境/配置管理
 - Puppet vs. 容器镜像
- 应用变更
 - bin文件升级/回滚 vs. 更新镜像/重建容器
- Metrics 信息收集/监控
 - 不同类型的應用，关注点不同
 - 因地制宜 vs. 围绕容器形成标准

谢谢！