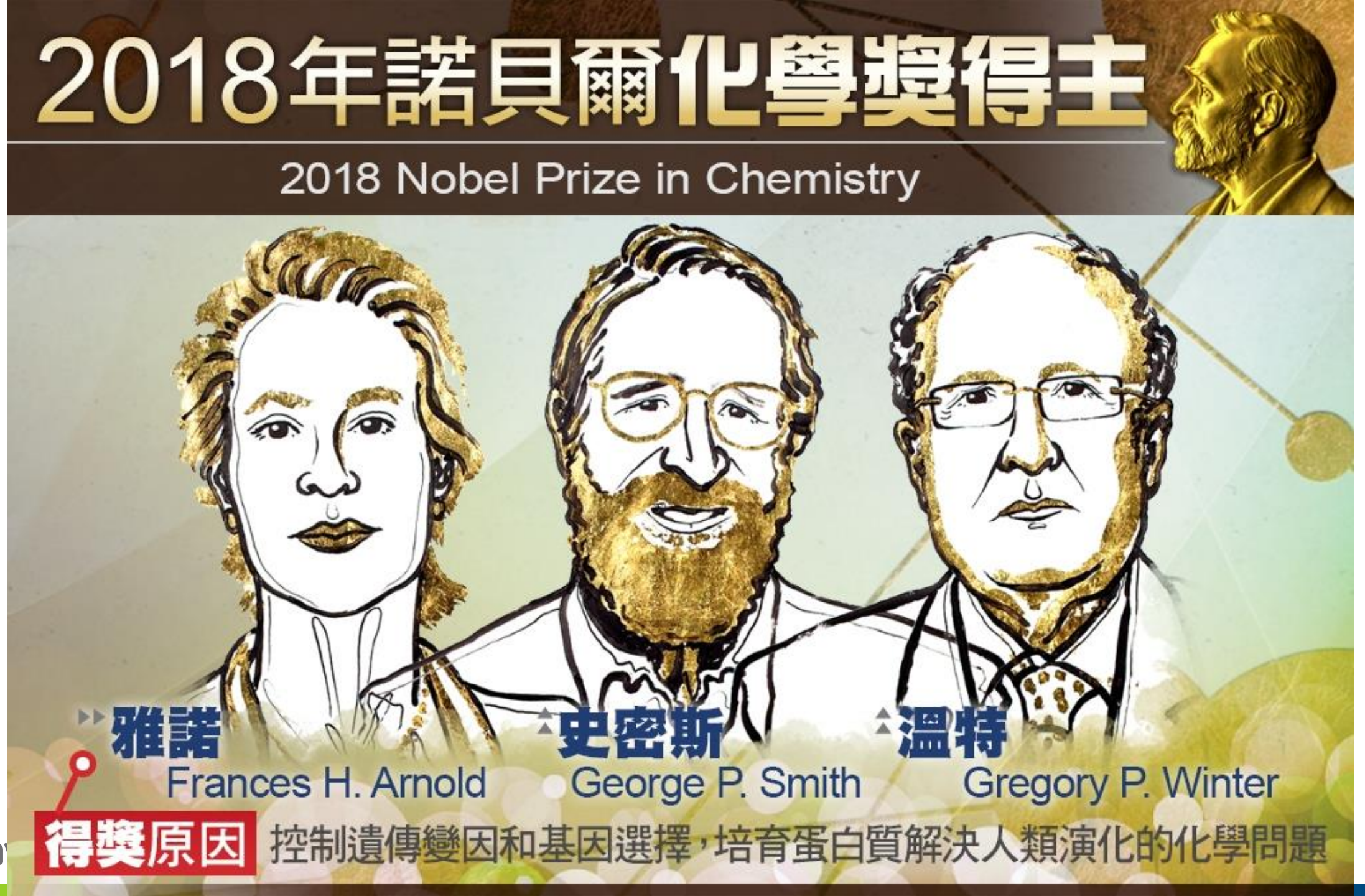
駕馭進化的力量

基礎架構8,000倍的演化力量

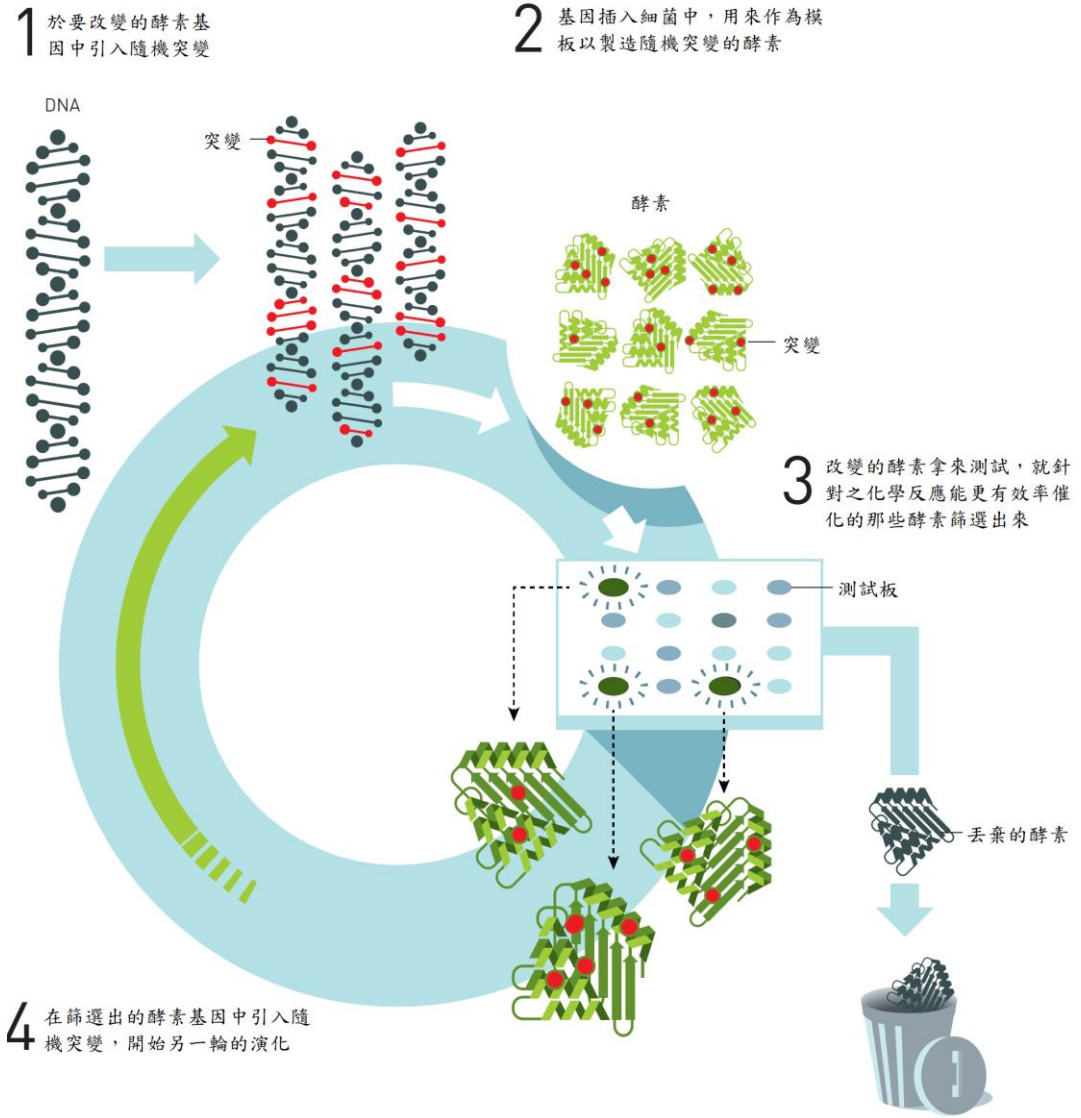
Dr. Tzung-Hsien (Shawn) Ho

Solution Architect @ VMware


2018年諾貝爾化學獎得主
2018 Nobel Prize in Chemistry
雅諾
Frances H. Arnold
史密斯
George P. Smith
溫特
Gregory P. Winter
得獎原因
控制遺傳變因和基因選擇，培育蛋白質解決人類演化的化學問題

提供快速迭代平台，隨機突變酵素

生物基因工程



『若要掌控新酵素的研發，僅憑藉人的推理能力，將遠遜於讓機率以及定向(人為)選汰來運作的力量』。

這是我們現在所見證的革命性發展之第一個，也是最具決定性的一步

三個構成進化的要素

快速、控制、分析

三個構成進化的要素：快速

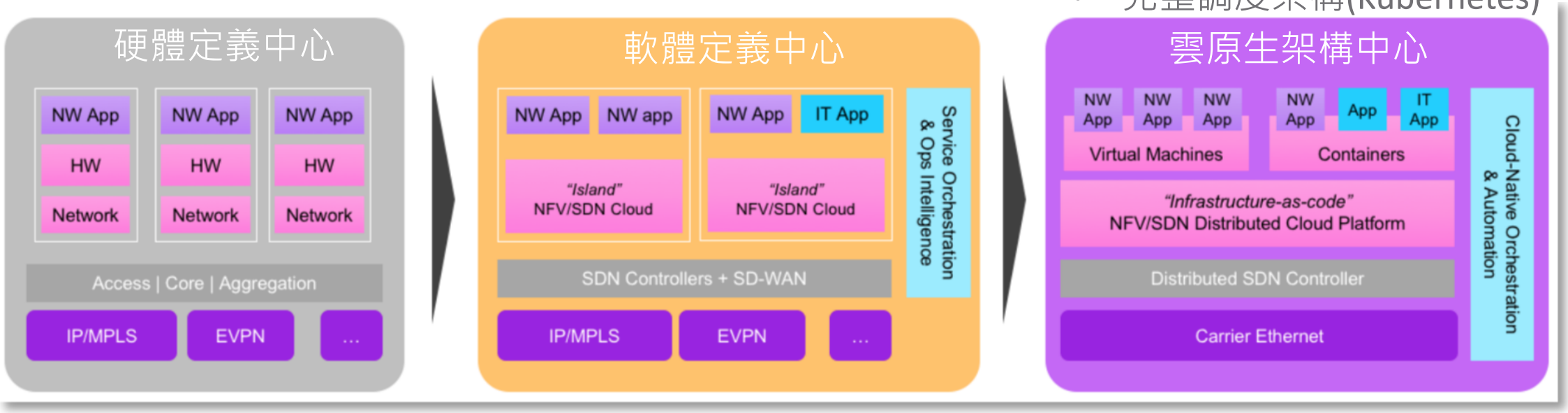
IT的架構：一路走來（開發者視角）

生成單台機器時間	~1天	~3分鐘 X 480	~10秒鐘 X 8,640

- 硬體與服務綁定
- 特化硬體
- 採購與維護困難
- 佈建速度緩慢

- 虛擬機統一調度
  - CPU與記憶體
  - 網路元件隨選
  - 存儲空間生成
- 完整的API支援

- 虛擬機 + 容器統一調度
- 跨虛擬機 + 容器的整體網路元件調度
- 容器與虛擬機存儲共享
- 完整調度架構(Kubernetes)



IT的架構：一路走來（開發者視角）

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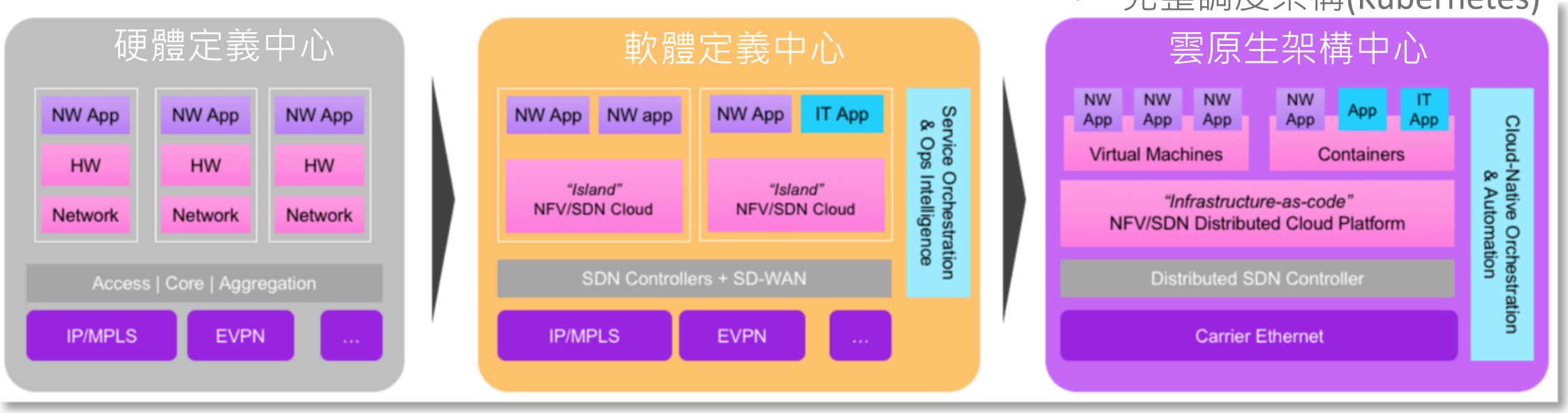
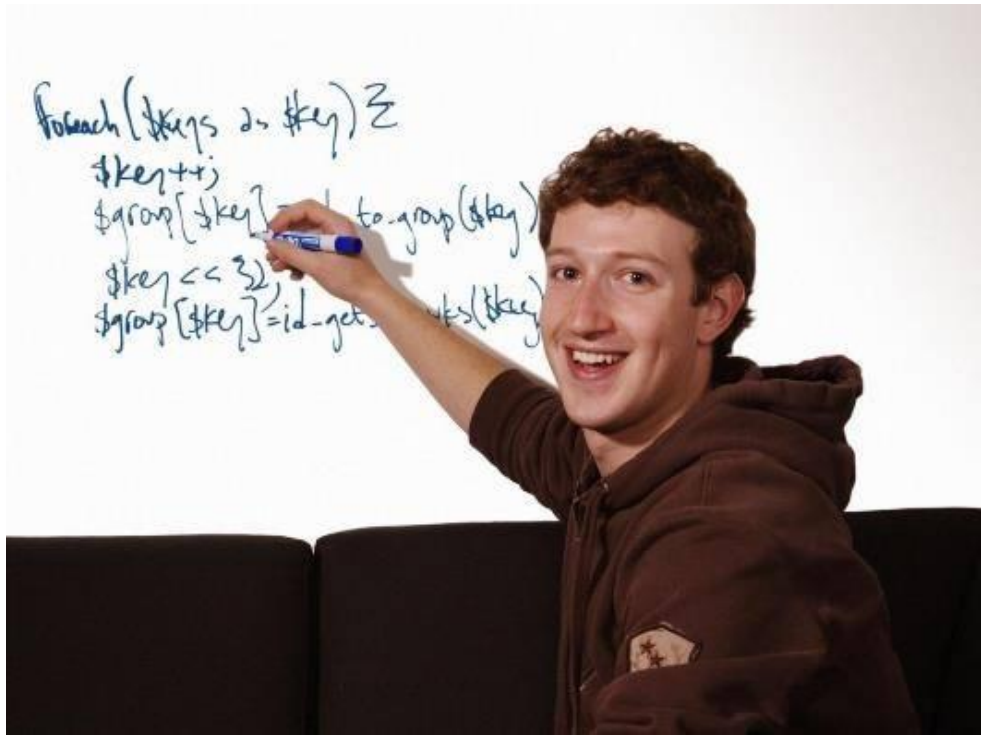


Software 的最佳開發策略：Facebook and Google

『快速』的『持續迭代』



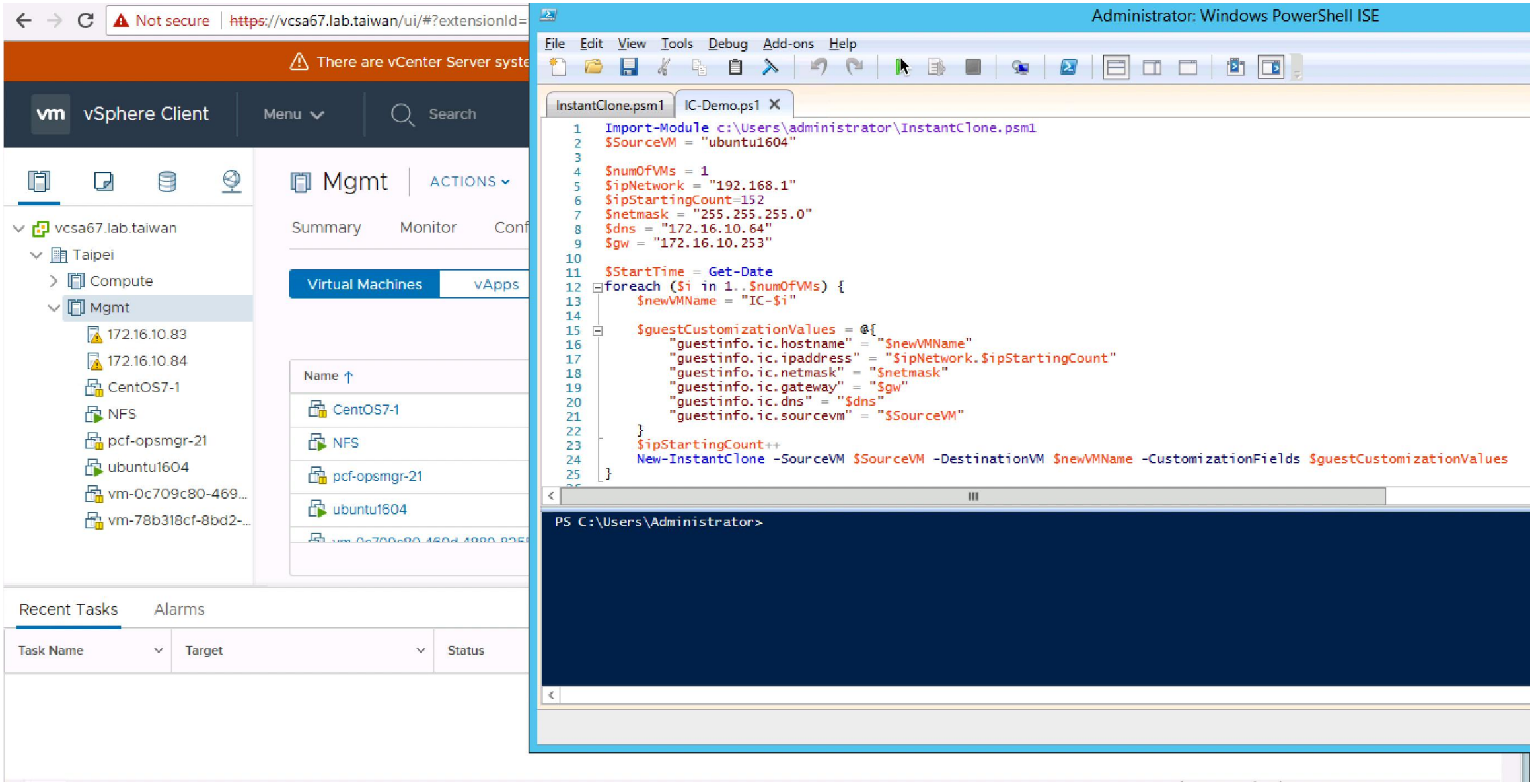
"Move fast and break things." The idea is that if you never break anything, you're probably not moving fast enough.

Chromium Blog

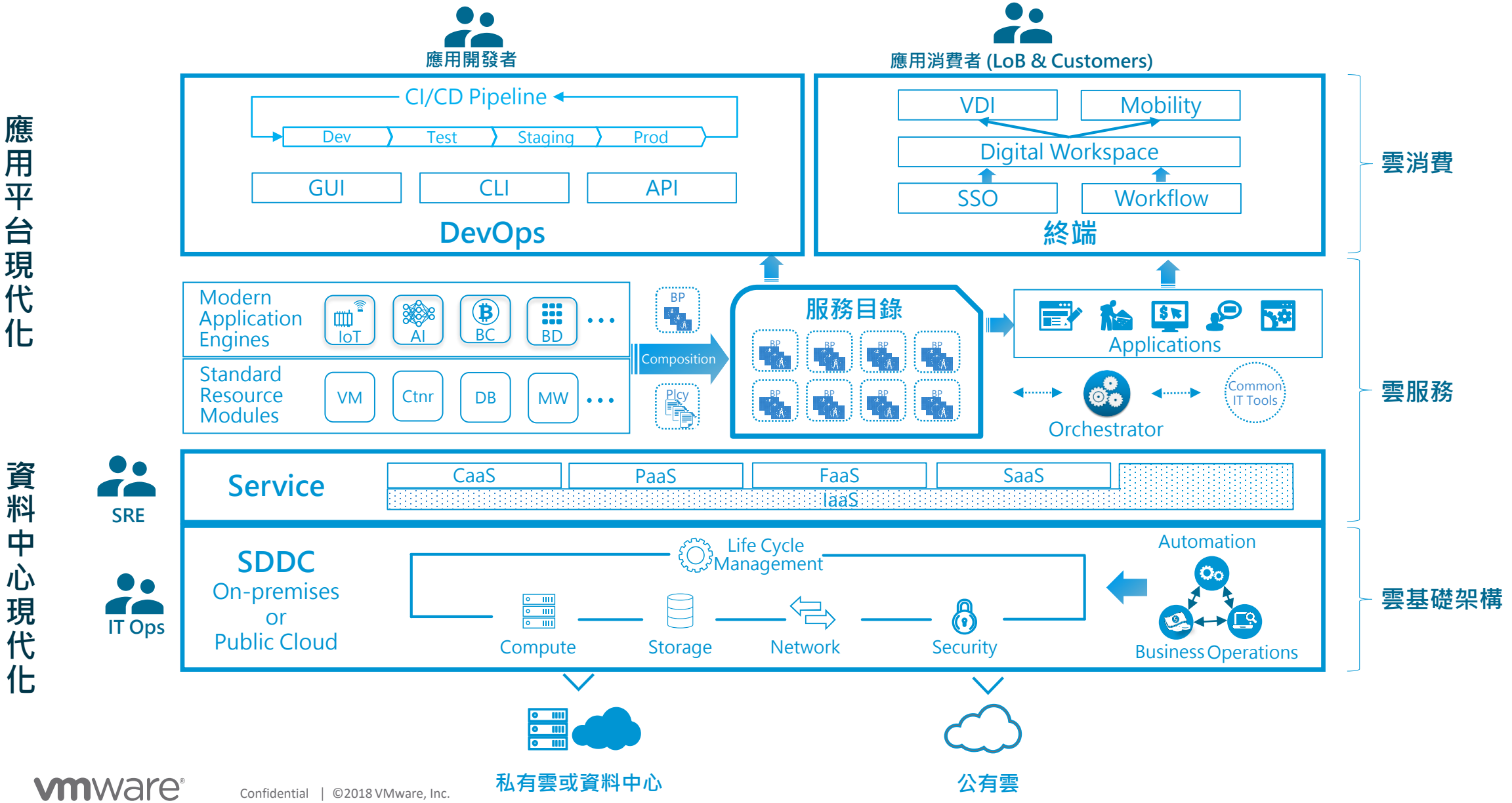
News and developments from the open source browser project

Release early, release often. We think that's the best way to develop software that delights people.

展示：虛擬機的Instant Clone技術 （秒級的開展）



完整的千倍速開發平台：透過CI/CD還可以更加速



Pivotal Container Solution (PKS)：

Pivotal

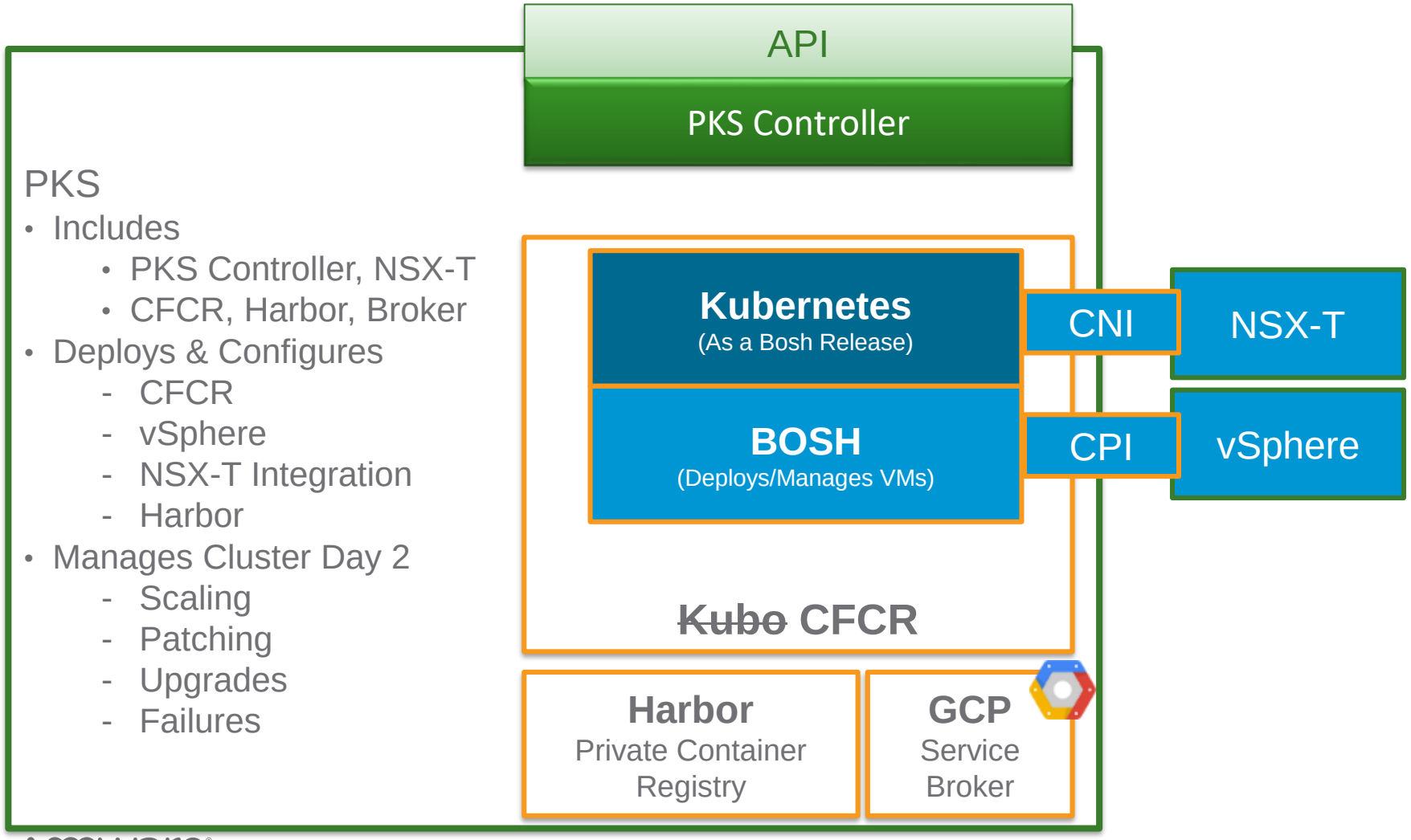
展示：在PKS中使用JX做CI/CD開展

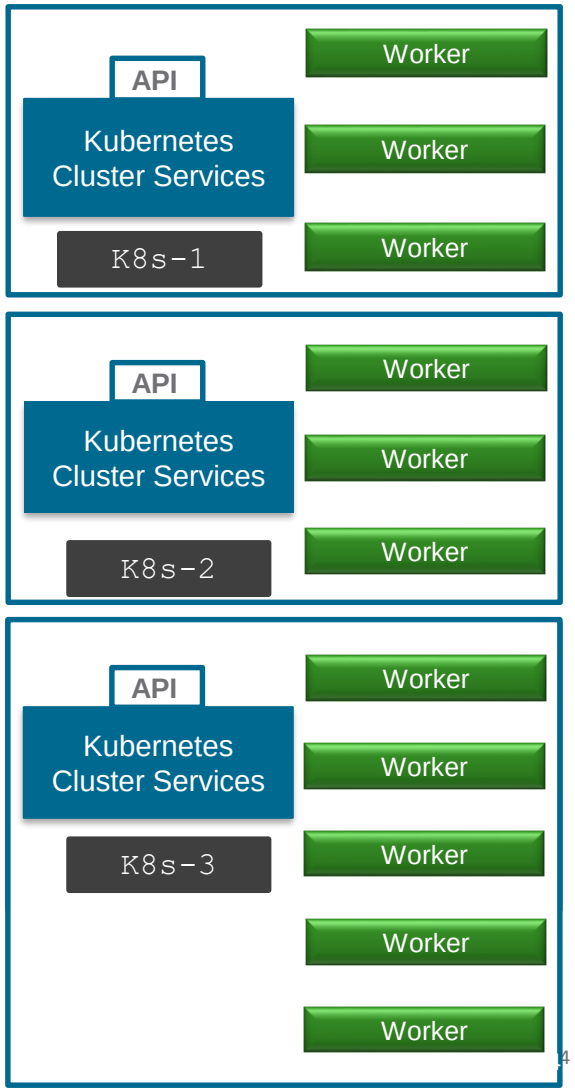
三個構成進化的要素：控制

PKS強大的隔離防護，提供多租戶的CaaS環境

```
#pks resize K8s-3 n=5
```

PKS
- Includes
  - PKS Controller, NSX-T
  - CFCR, Harbor, Broker
- Deploys & Configures
  - CFCR
  - vSphere
  - NSX-T Integration
  - Harbor
- Manages Cluster Day 2
  - Scaling
  - Patching
  - Upgrades
  - Failures

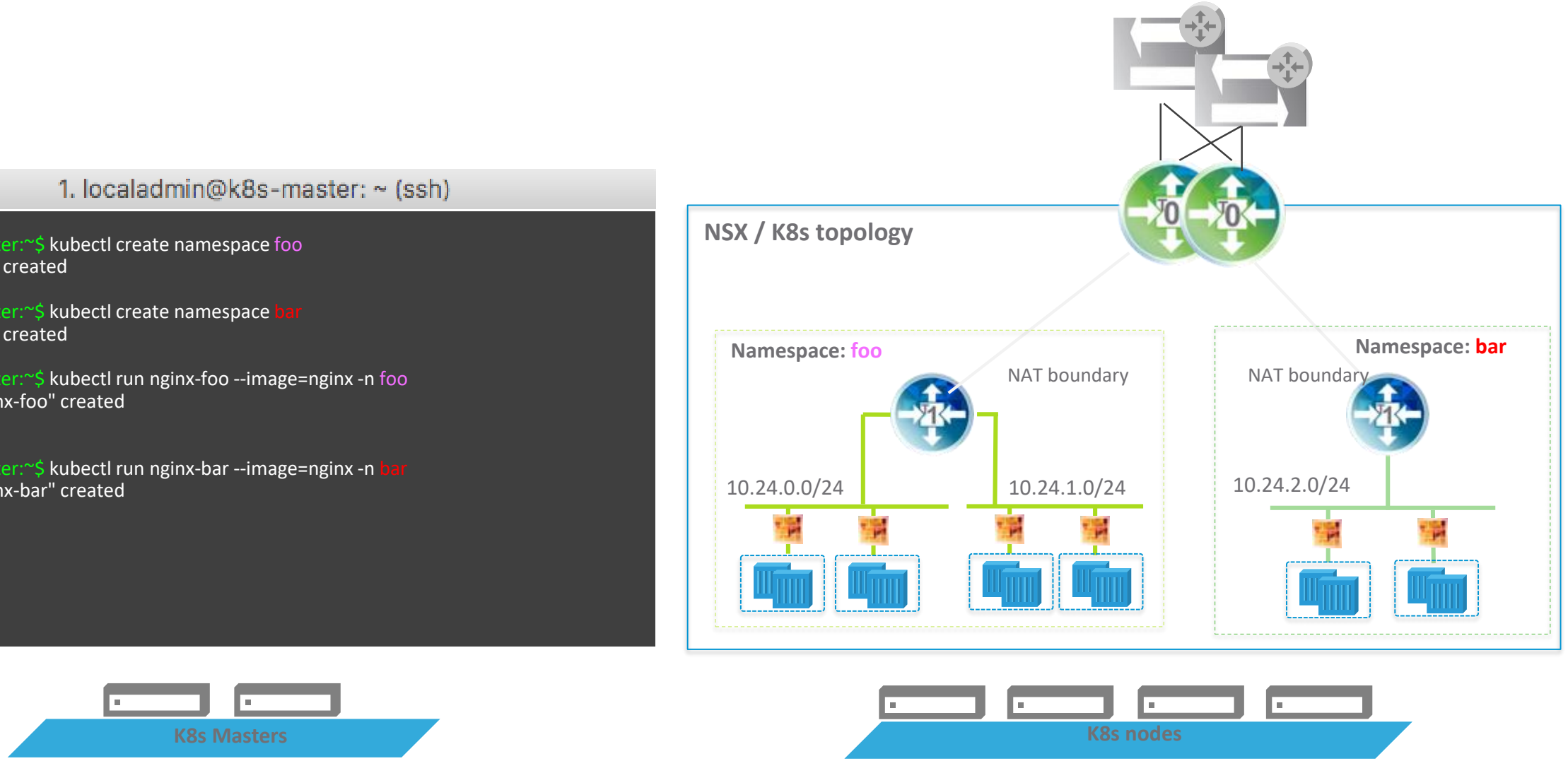




即使在K8S叢集中：PKS也透過CNI，實踐完整的NAMESPACE隔離

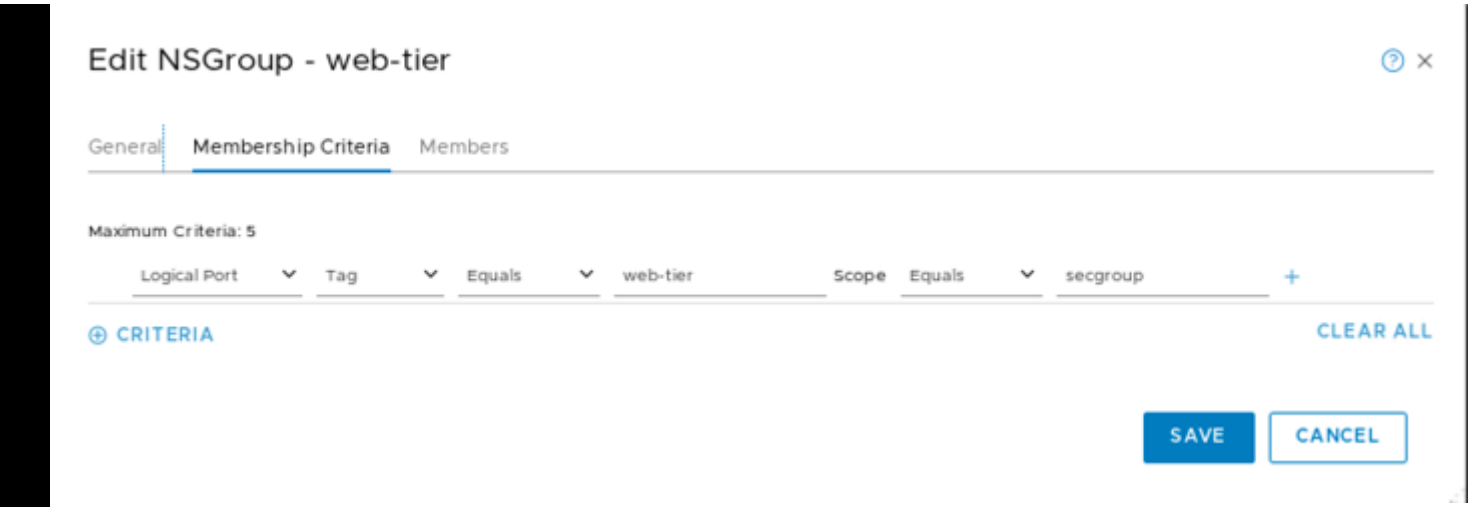
1. localadmin@k8s-master: ~ (ssh)

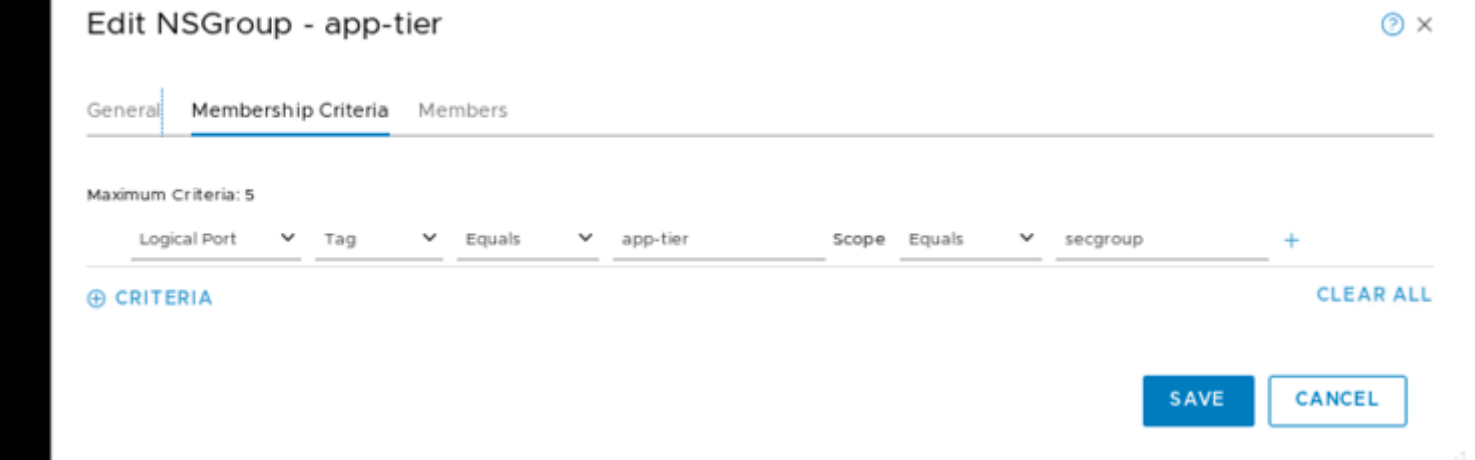
```
admin@k8s-master:~$ kubectl create namespace foo
namespace ”foo" created

admin@k8s-master:~$ kubectl create namespace bar
namespace ”bar" created

admin@k8s-master:~$ kubectl run nginx-foo --image=nginx -n foo
deployment "nginx-foo" created


admin@k8s-master:~$ kubectl run nginx-bar --image=nginx -n bar
deployment "nginx-bar" created
```



PKS產生出的 K8S Pod：也帶著完整的隔離機制

```yaml
  name: yelb-ui
spec:
  replicas: 3
  template:
    metadata:
      labels:
        app: yelb-ui
        tier: frontend
        secgroup: web-tier
    spec:
      containers:
      - name: yelb-ui
        image: harbor.lab.taiwan/yelb/yelb-ui:V2
        ports:
        - name: web
          containerPort: 80
          protocol: TCP
        resources:
          requests:
            cpu: 200m
---
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: yelb-appserver
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: yelb-appserver
        tier: middletier
        secgroup: app-tier
```





PKS產生出的 K8S Pod：也帶著完整的隔離機制

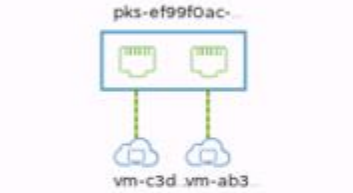
23	Web-App	1079	web-t...	app-t...	HTTPS	Allow	All	No	packets: 57 bytes: 6416 sessions: 15
24	App-DB		app-ti...	db-tier	MyS...	Allow	All	No	
25	Default Layer3 Rule	1208	Any	Any	Any	Reject	All	No	packets: 359 bytes: 37663 sessions: 130

Traceflow

Source		Destination	
Port	pks-ef99f0ac-e00f-4e7b-bb2d-1052ce0e956-yelb-ui-56b94588c8-mvwrt	Port	pks-ef99f0ac-e00f-4e7b-bb2d-1052ce0e956-yelb-ui-56b94588c8-gk7p4
IP/MAC	10.1.2.0.5/02:50:56:00:70:1c	IP/MAC	10.1.2.0.3/02:50:56:00:70:1a

RE-TRACE EDIT NEW TRACE

Trace Results

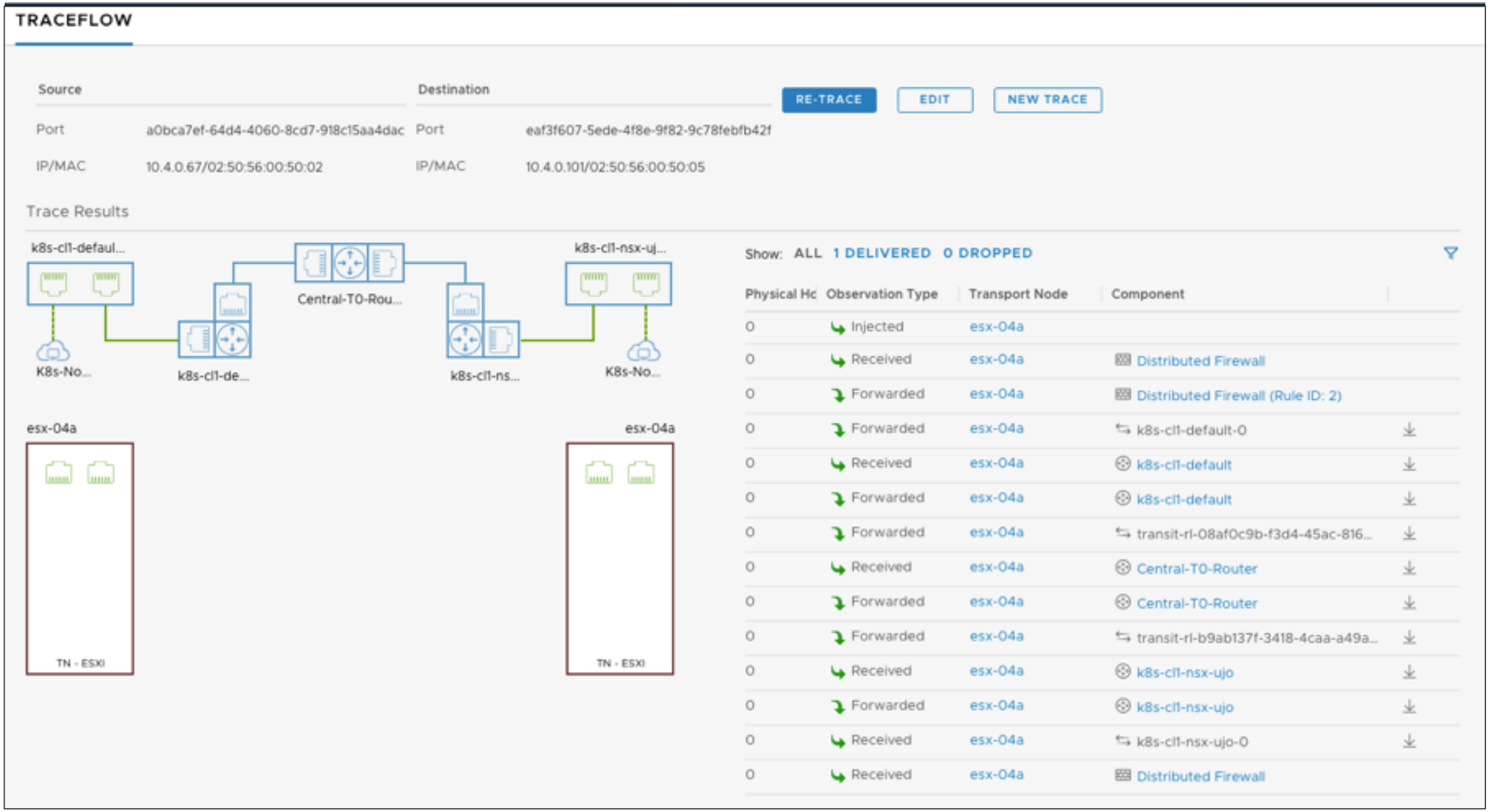


Show: ALL 0 DELIVERED 1 DROPPED

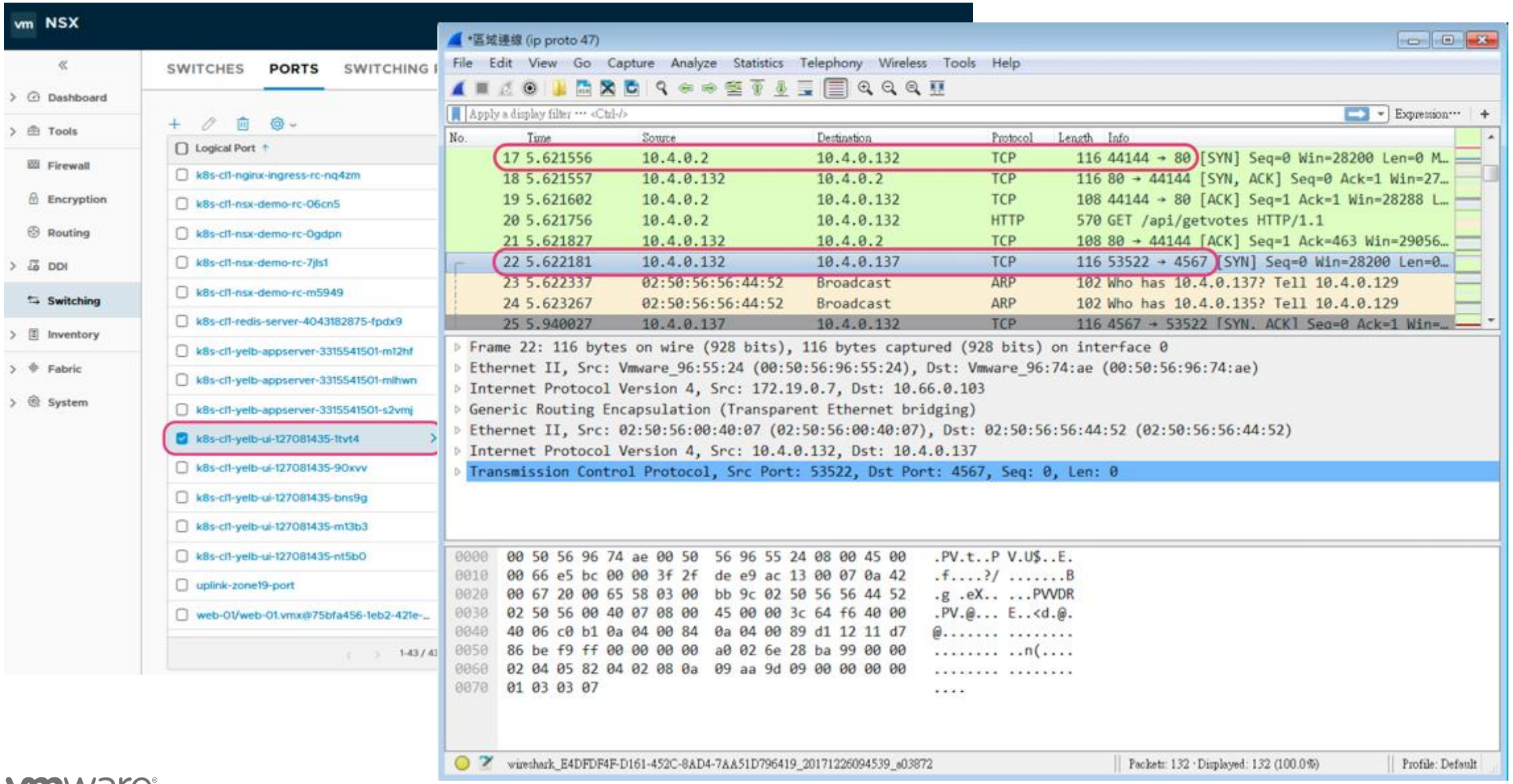
Physical	Observation Type	Transport Node	Component
0	Dropped by Firewall: 1208	ESXi-Compu...	pks-ef99f0ac-e00f-4e7b-...

三個構成進化的要素：分析

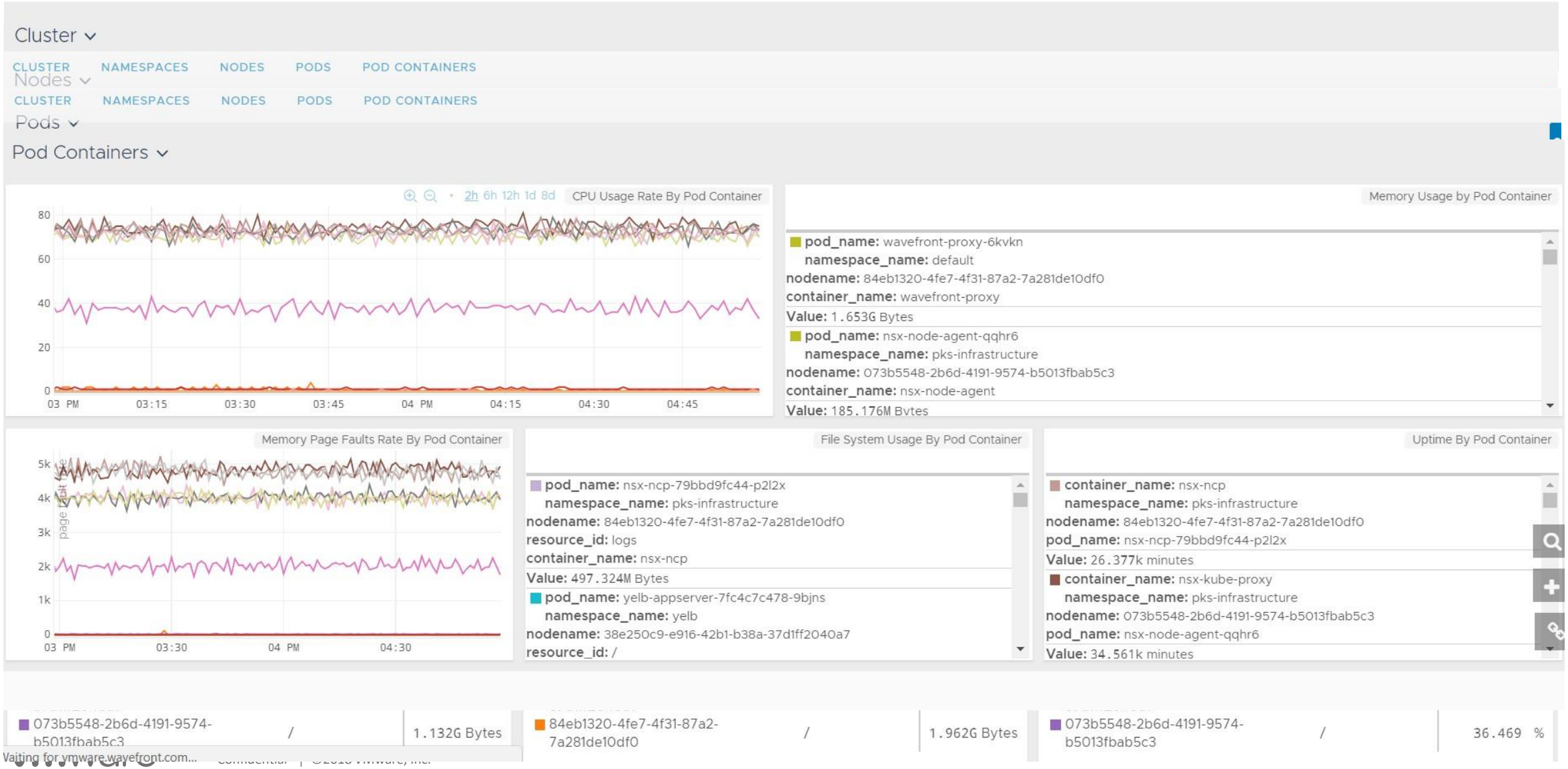
PKS提供網路顯微鏡：『容器到容器 + 容器到虛擬機』的End-to-End 網路流



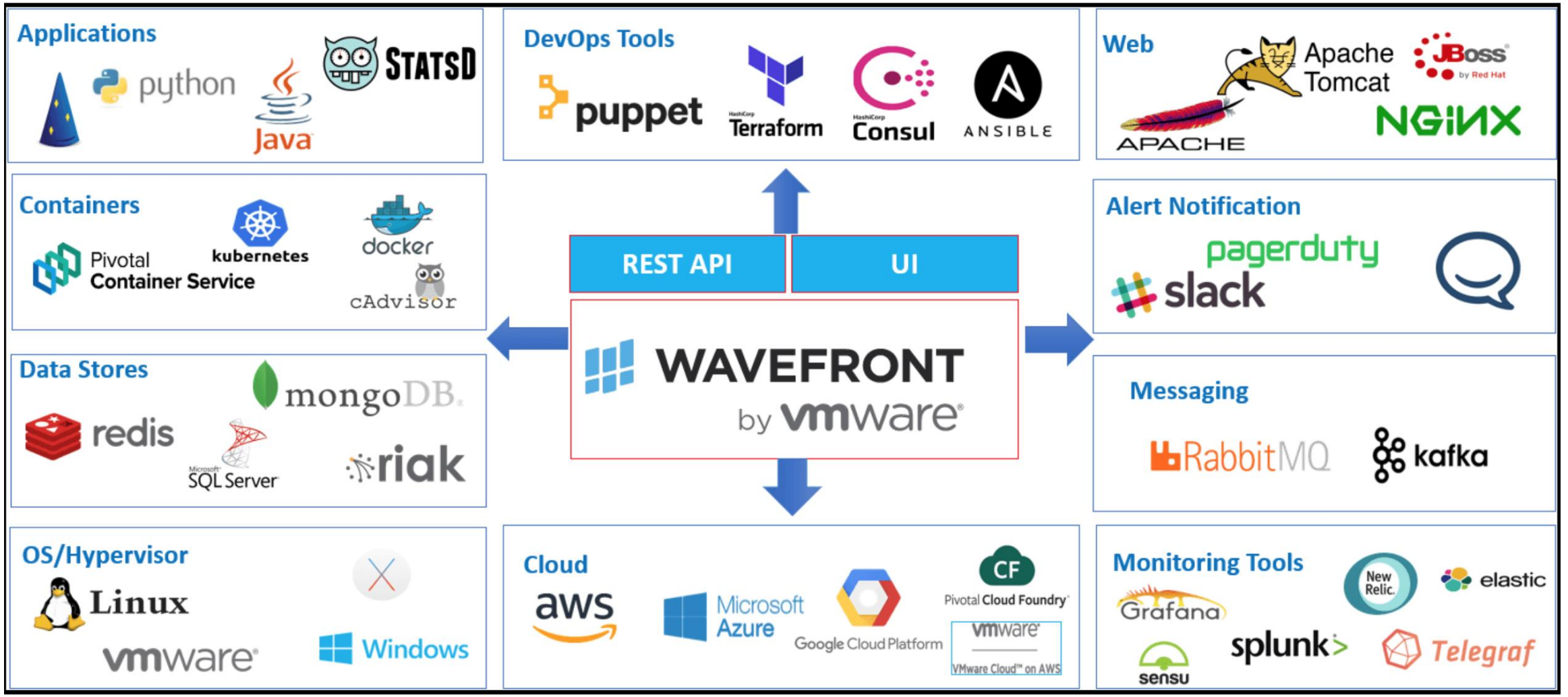
PKS提供網路顯微鏡：觀察每個Pod內封包的狀況



WaveFront提供的放大鏡：整個叢集、POD、甚至POD Container的效能



WaveFront提供的放大鏡：容器內所執行Application的完整效能

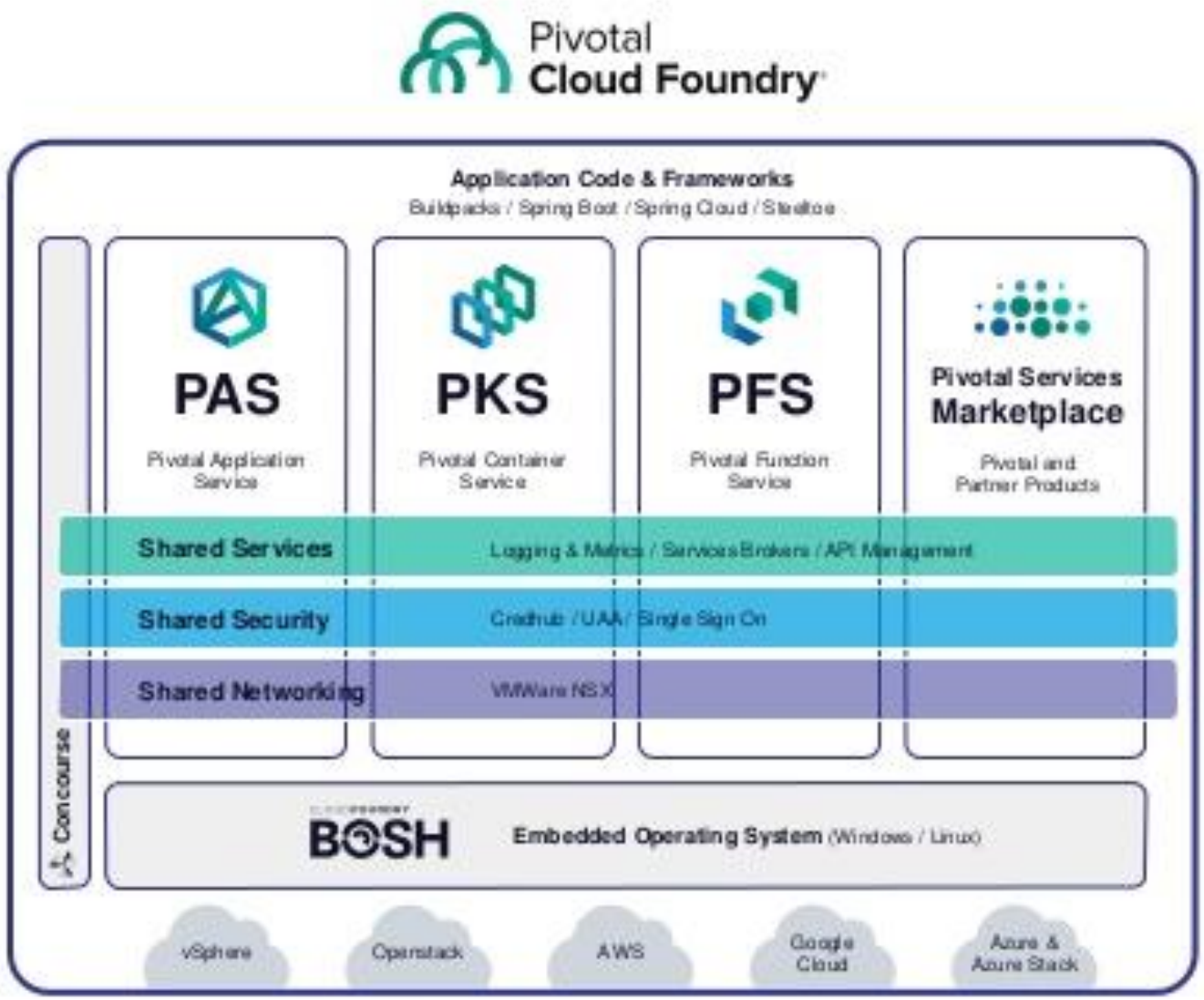


LET'S MEET for OUR LAST HERO TODAY：SYNDROME

VMware對企業客戶的承諾：打造GCP-Like的私有雲服務

Any App
Every Cloud
One Platform

PCF 2.0 — for everything that matters



vmware

GKE-ONPREM WILL RESIDE in vSPHERE ON GOOGLE NEXT

LET'S EVOLVE TOGETHER……..IN > 8,000 TIMES SPEED