

Docker Use Cases Summary

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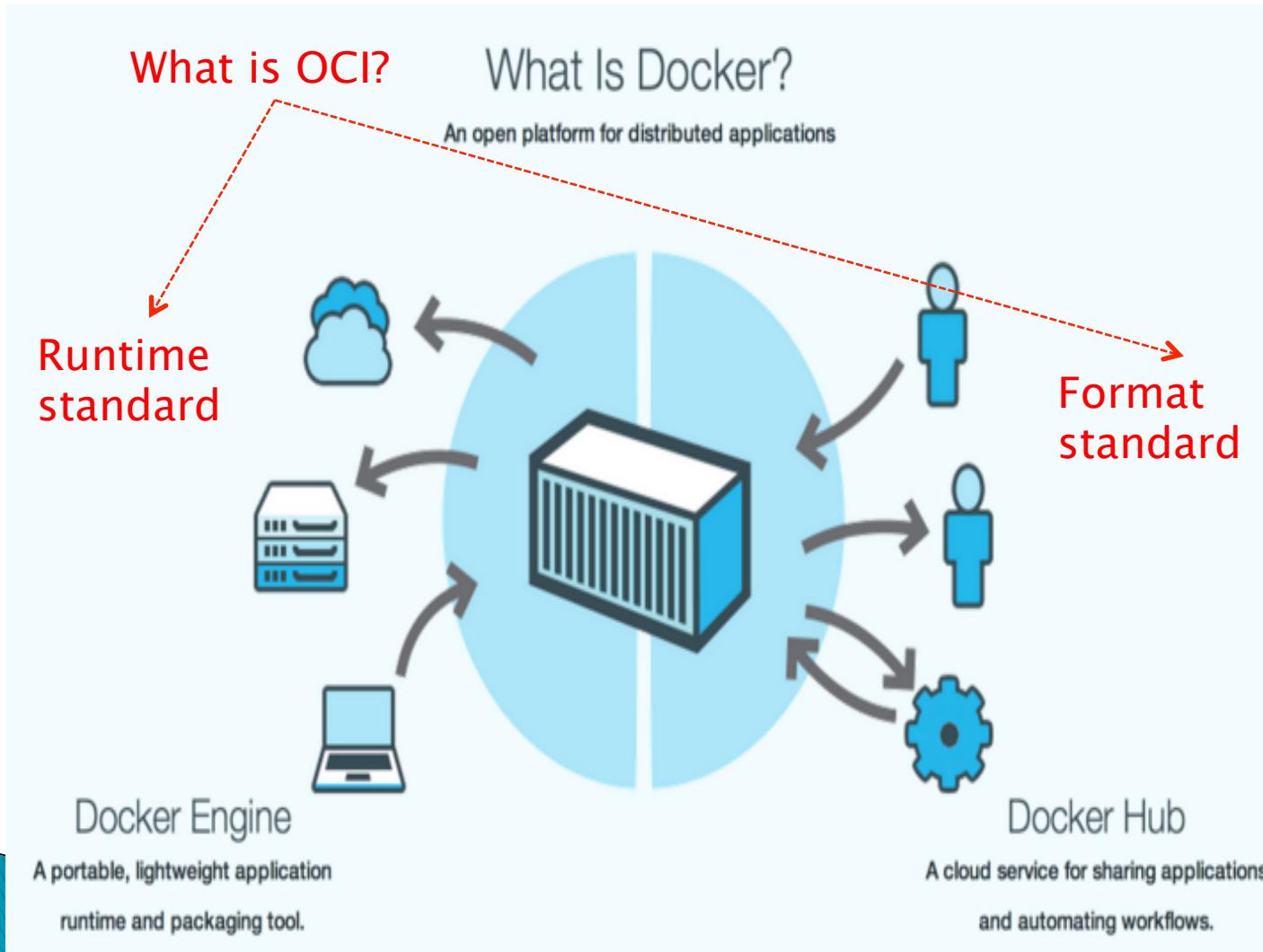
DOCKER = CONTAINER?

QUESTIONS BEFORE START

- ▶ A fact: container is 10+ years old technology
 - Why Docker is hot, instead of LXC (container)?
 - What is the key value of Docker technology?
 - Why does Microsoft also want to integrate with Docker?
 - Why does Linux Foundation operate open container project?

WHAT IS DOCKER

DOCKER HUB & DOCKER ENGINE



DOCKER ECOSYSTEM

DOCKER IMAGES RUNS EVERYWHERE

▶ Open container Initiative

- Container formats and runtime industry standards. (Linux foundation).

▶ Applications

- 1000's of Dockerized applications available at index.docker.io

▶ PaaS & IaaS

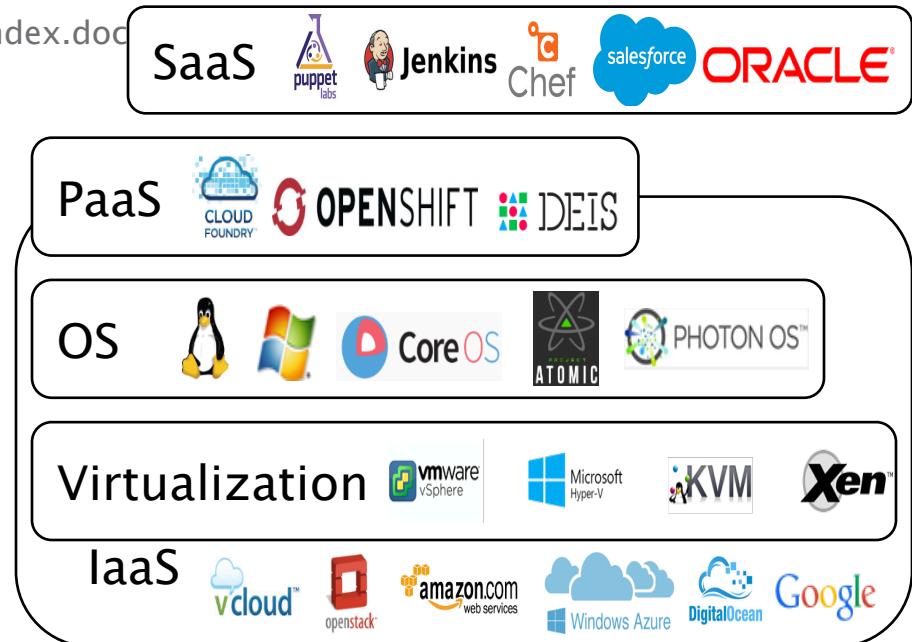
- Private PaaS: OpenShift, Cloudfoundry
- Public PaaS: Deis, Voxoz, Cocaine, Baidu PaaS
- Public IaaS: Amazon, Azure, Digital Ocean
- Private IaaS: vcloud, Openstack

▶ DevOps Tools

- Chef, Puppet, Jenkins, Travis, Salt, Ansible

▶ Orchestration tools

- Kubernetes, Mesos, Heat

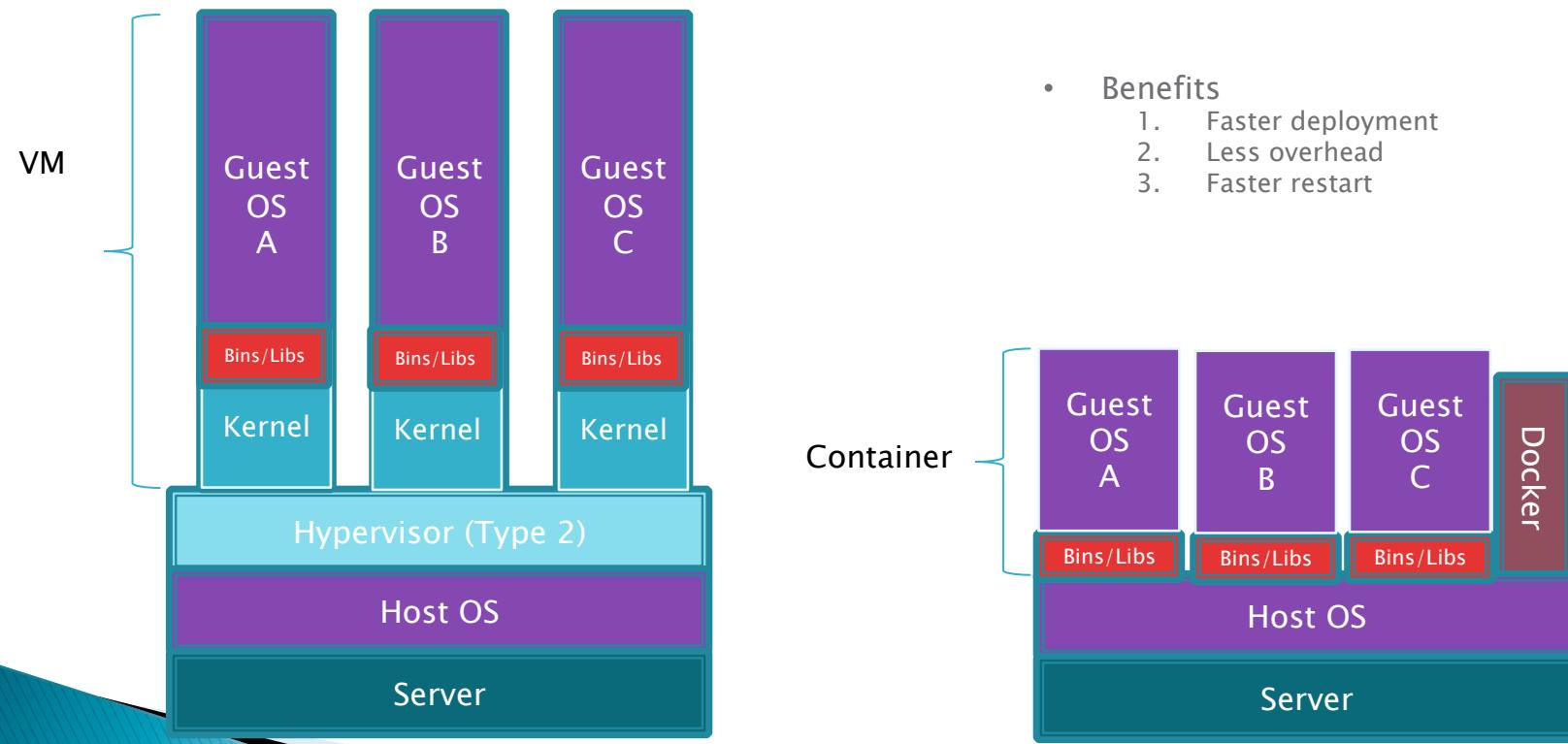


USE CASE I: IAAS MULTI-TENANTS

VM VS. CONTAINER

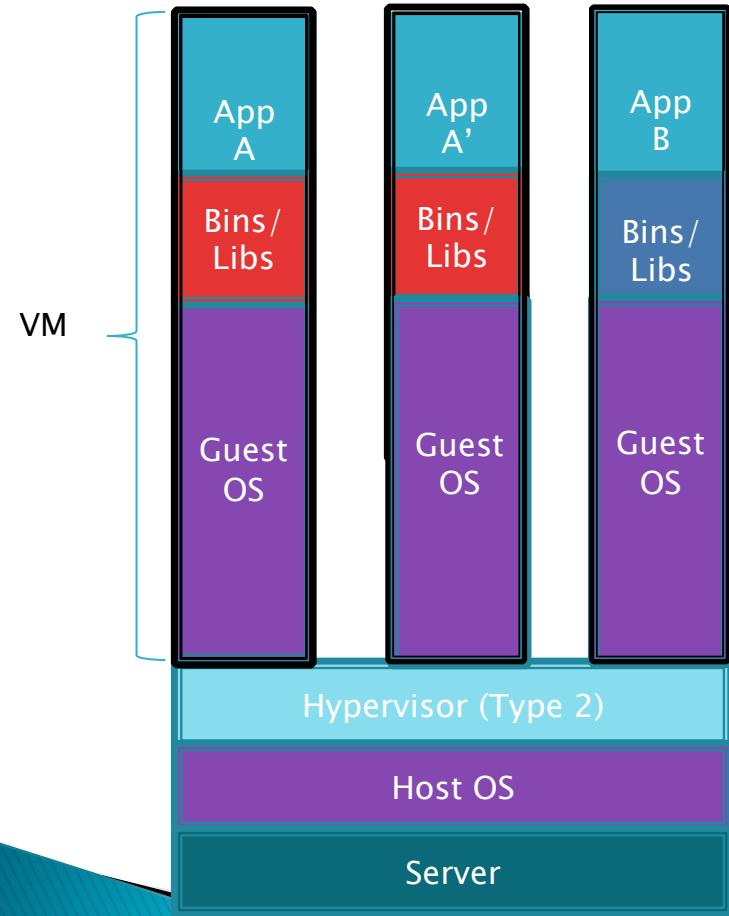
VMs are isolated. Each VM has full OS instance with a separate kernel.

Containers are isolated, but share same kernel.



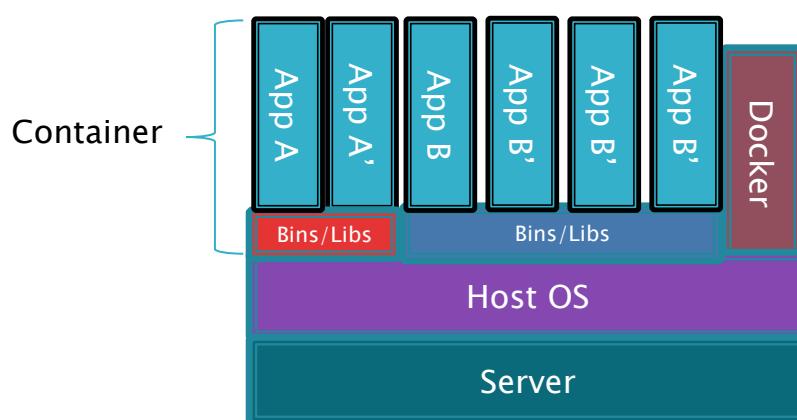
USE CASE 2: APP PACKAGING

VM IMAGES VS. DOCKER IMAGE



Application and all its dependencies could be build, ship and run by a Docker image. Each container may just have one of few of apps, which is more light weight than running a full OS in one container.

- Benefits
 - 1. Easy deployment
 - 2. Easy porting, address dependency pains
 - 3. Light weight, fast start



USE CASE 3: NEW SW RELEASE MODEL

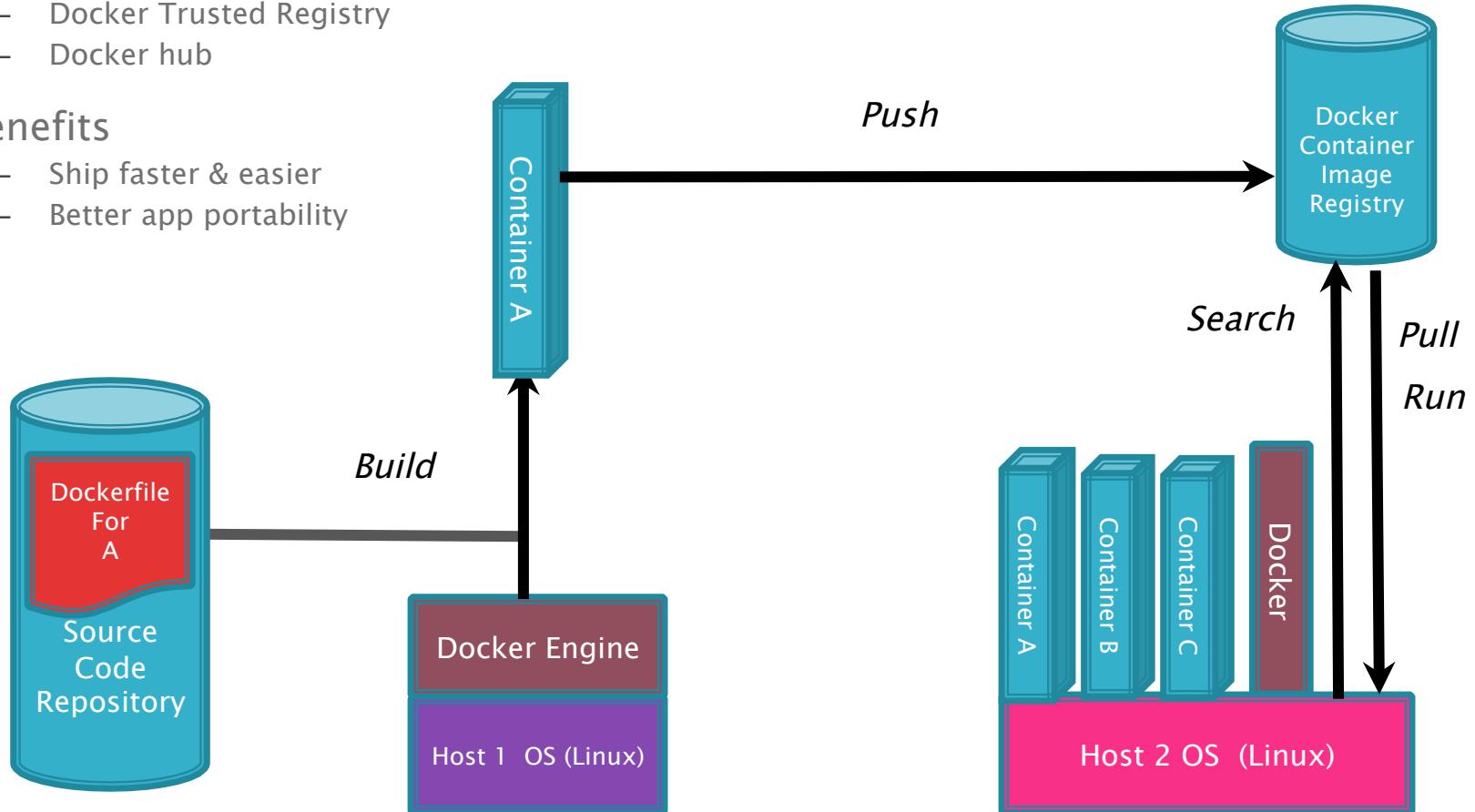
DOCKER REGISTRY & DOCKER HUB

- Continuous Integration and Delivery with...

- Docker Trusted Registry
 - Docker hub

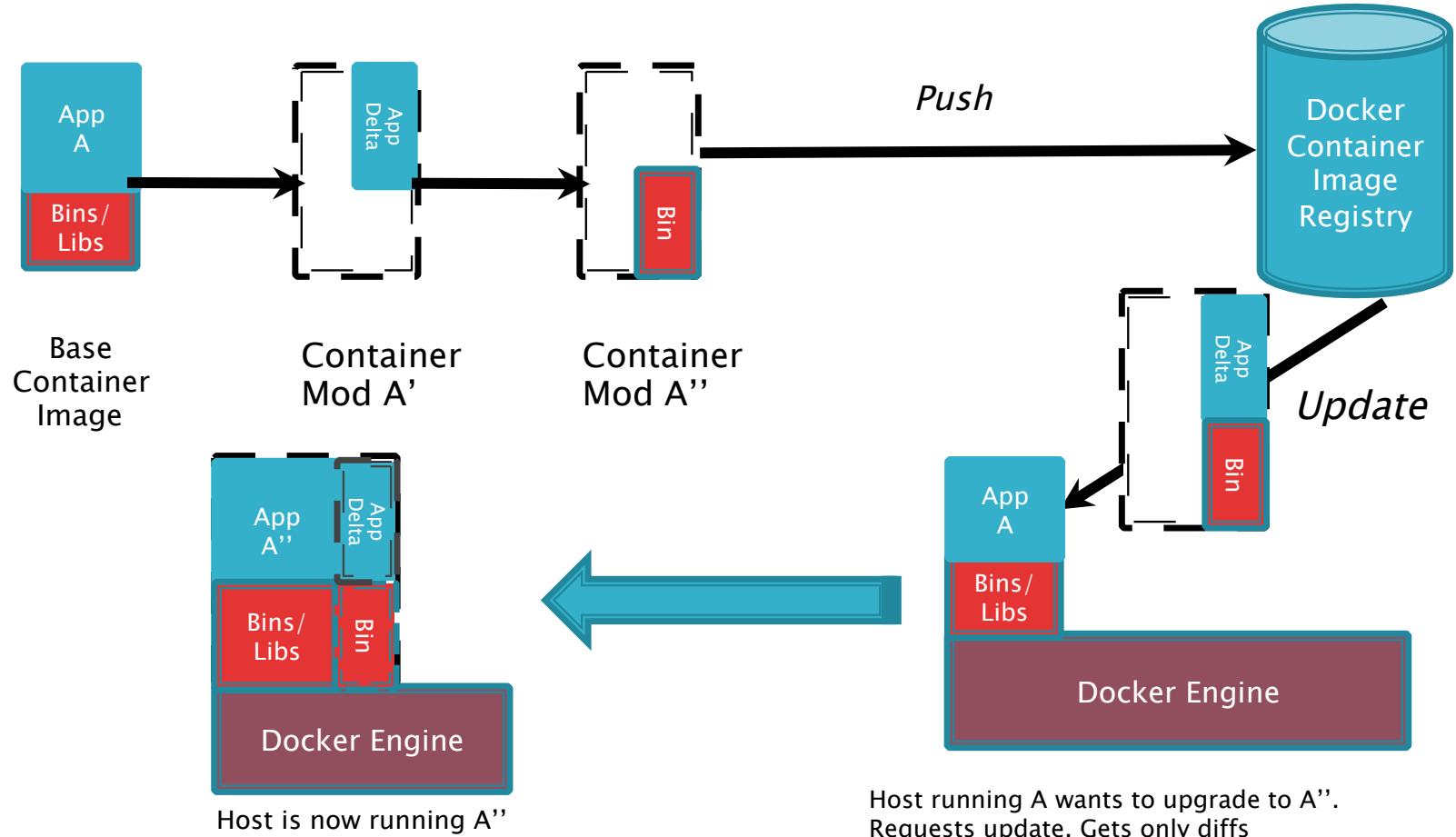
- Benefits

- Ship faster & easier
 - Better app portability



USE CASE 4: SOFTWARE UPDATE

LAYERED IMAGE FORMAT - DOCKER IS BETTER THAN VM



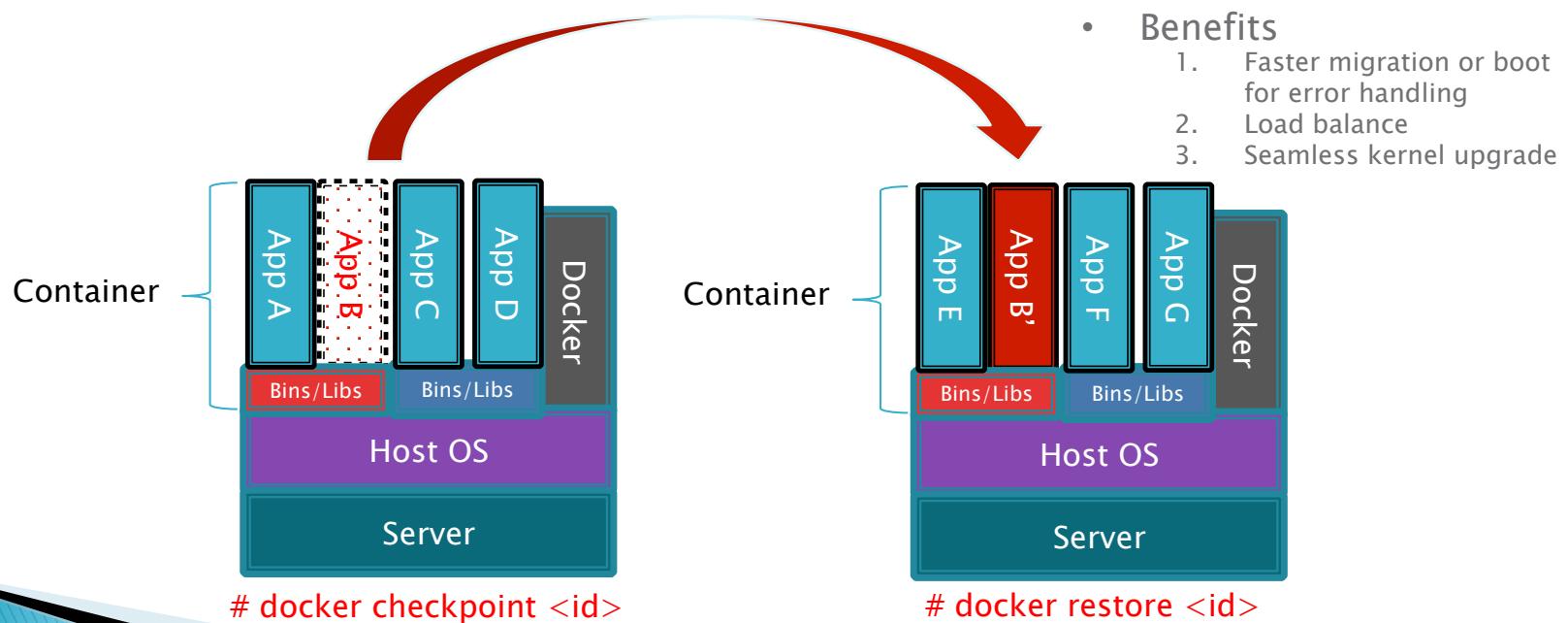
Benefit – Easy upgrade and changes

USE CASE 5: DOCKER MIGRATION

DOCKER WITH CRIU: NATIVE CHECKPOINT AND RESTORE

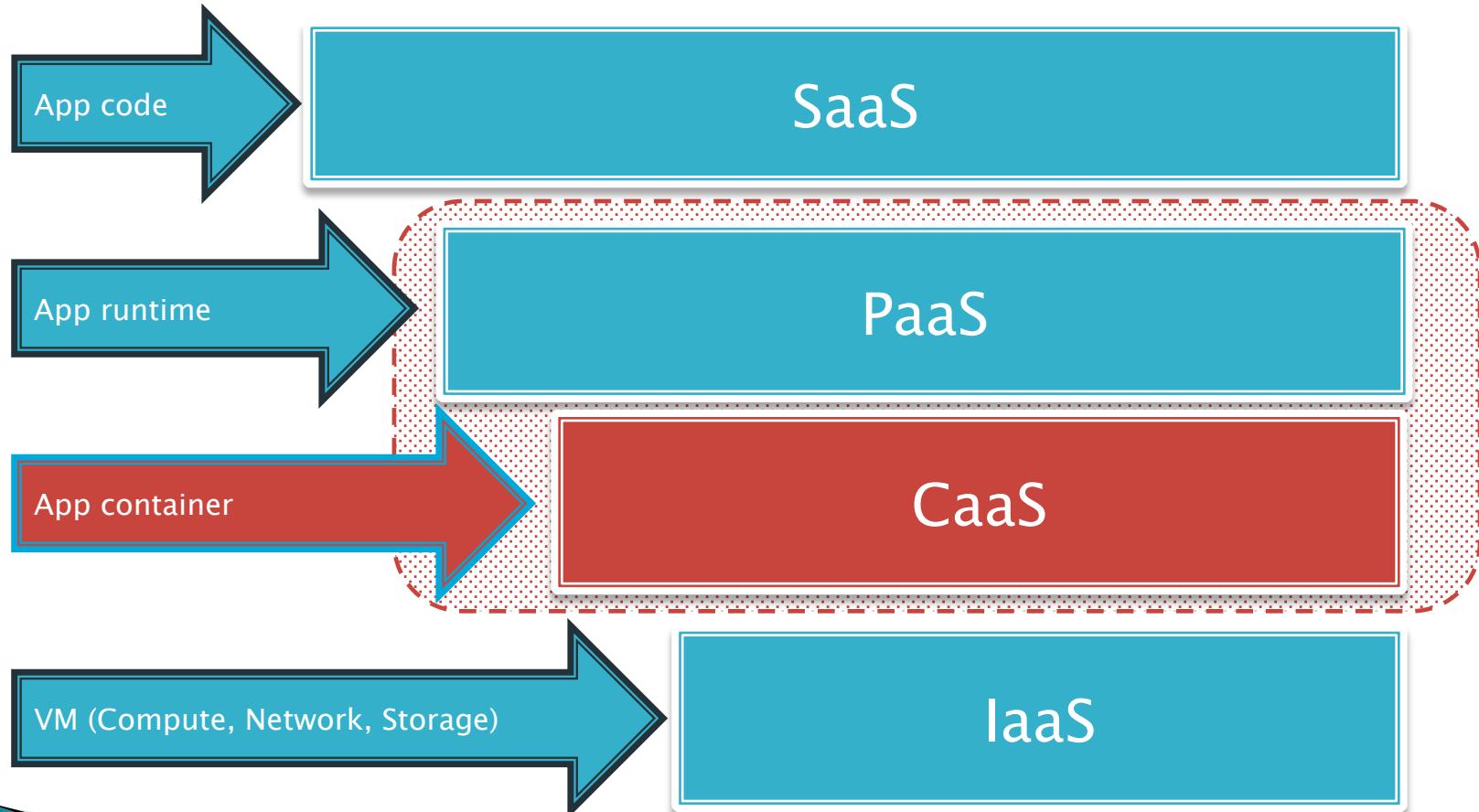
Docker container live migration

- Need CRIU support
- Stateful containers need Flocker support



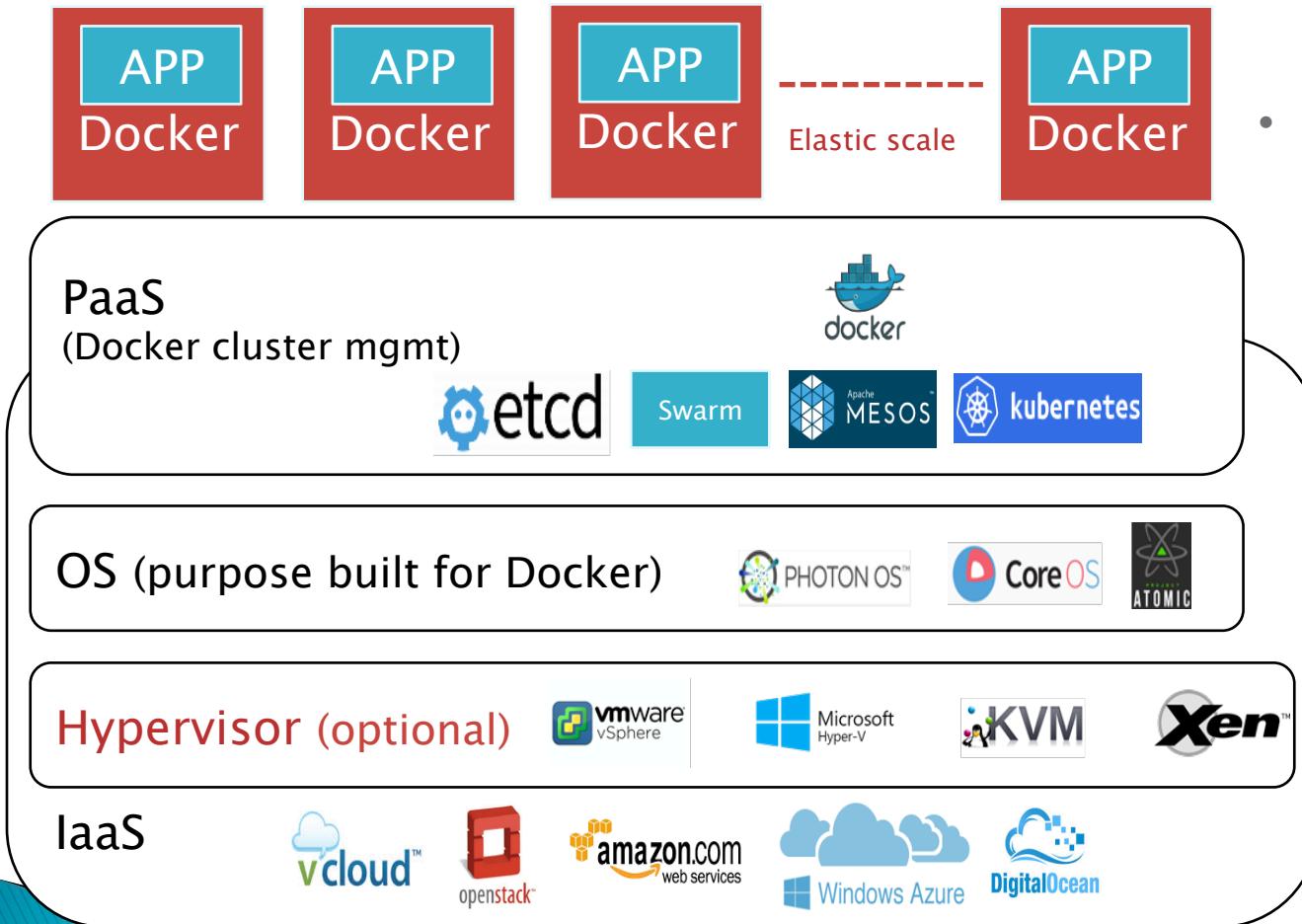
CAAS: CONTAINER AS A SERVICE

NEW CLOUD COMPUTING CONCEPT



USE CASE 6: CAAS BUILDING BLOCKS

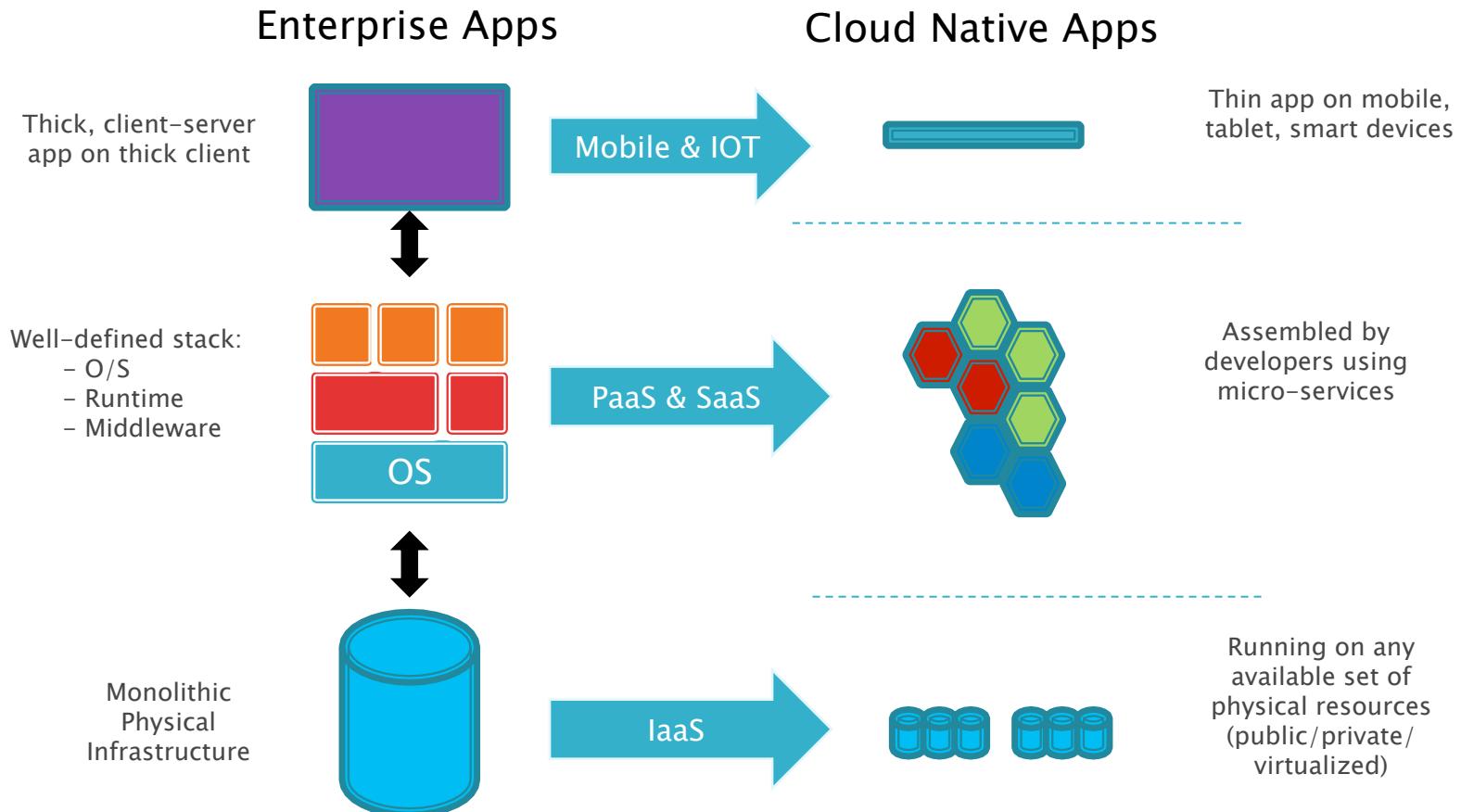
NEW PaaS SOLUTION



- Benefits
 - 1. Fast deployment
 - 2. Elastic scale
 - 3. Performance

CLOUD NATIVE APP

ENTERPRISE APP VS. CLOUD NATIVE APP

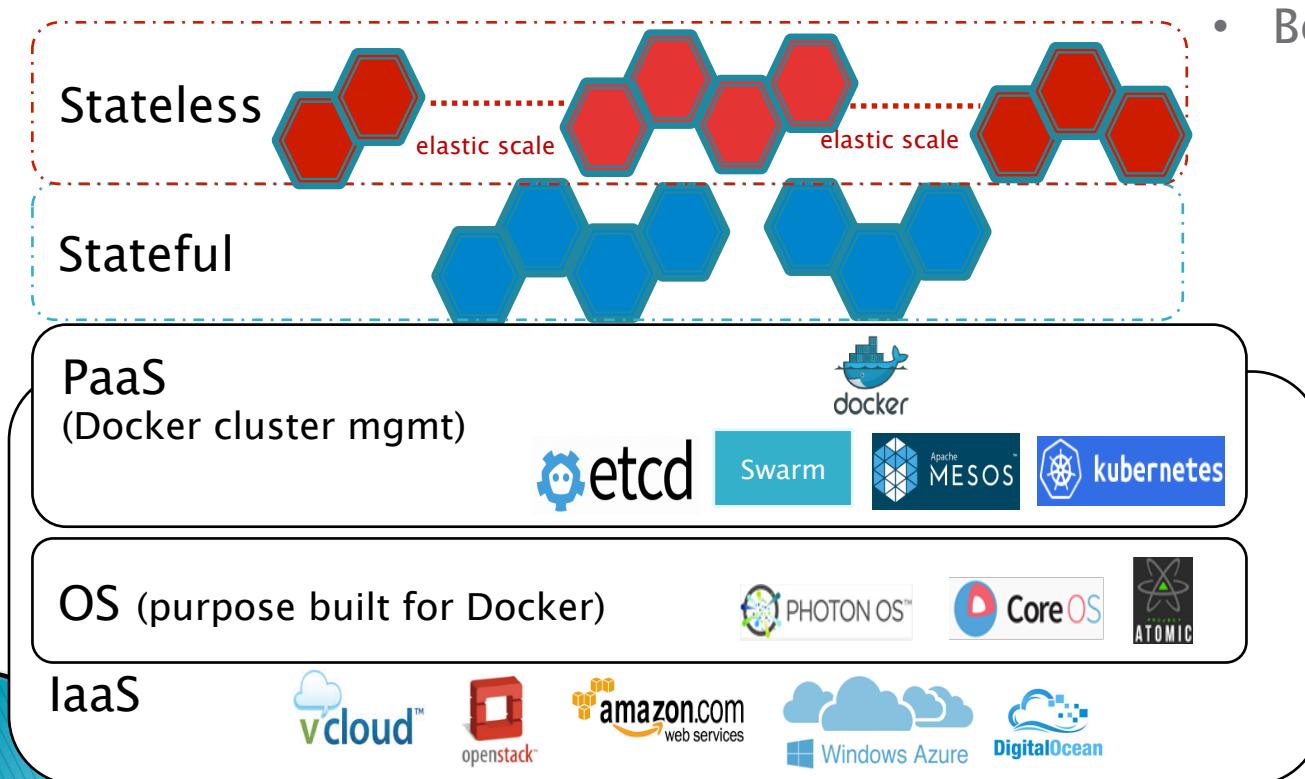


USE CASE 7: MICRO-SERVICE BUILDING BLOCKS

CLOUD NATIVE APP PLATFORM

Cloud computing requirements

- Elastic & On demand computing by cloud native app over webscale infra
- Purpose built solution for cloud native app
 - VMware Photon Platform, other PaaS/IaaS solutions



USE CASE 8: VM AS A SERVICE

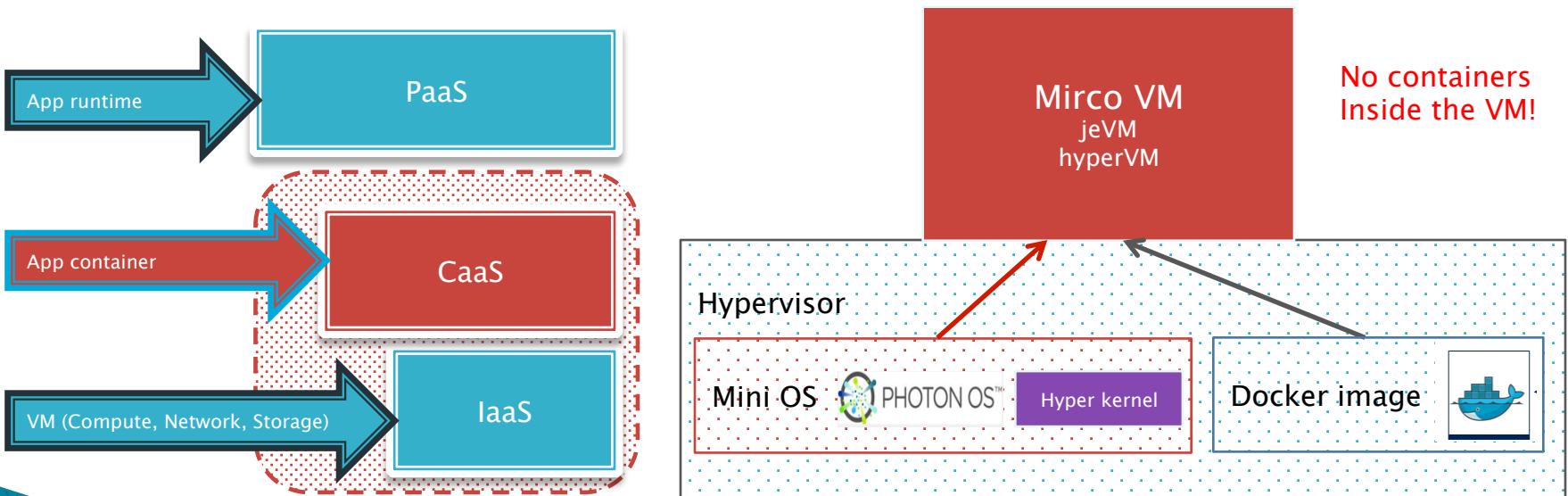
ALTERNATIVE CaaS SOLUTION

► Docker image aware hypervisors

- vSphere Integrated Containers
- Hyper: Kvm, Xen

- Benefits

1. Docker ecosystem
2. Security
3. Performance



USE CASE 9: UNIKEREL AS SERVICE

ALTERNATIVE CaaS SOLUTION

▶ What is the Unikernel?

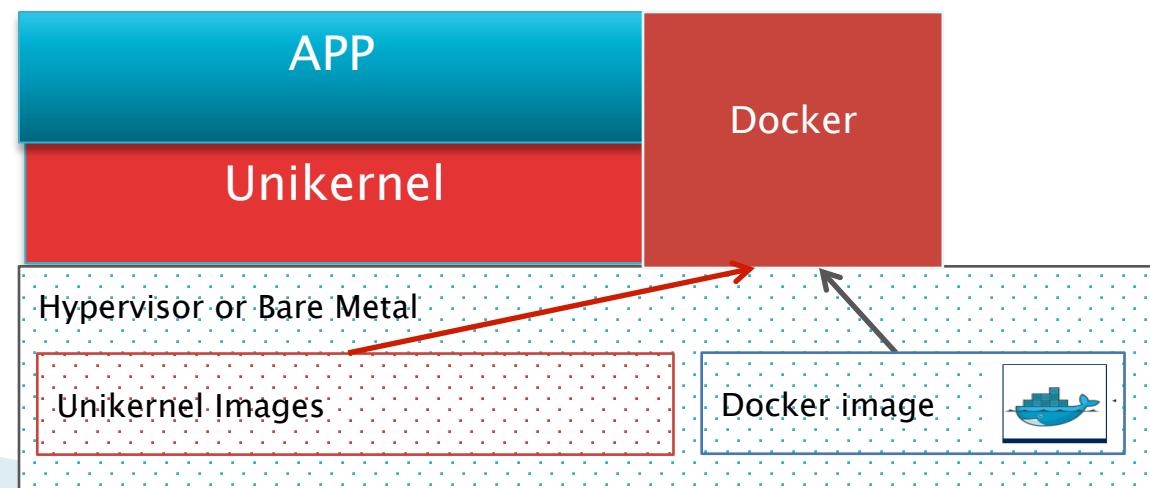
- Library operating systems
 - Specialized, single address space machine images
- Run directly on hypervisor or hardware
- Many different Unikernel projects

▶ Docker image aware Unikernel

- Support Docker CLI
 - Run app over Unikernel by “docker run”

• Benefits

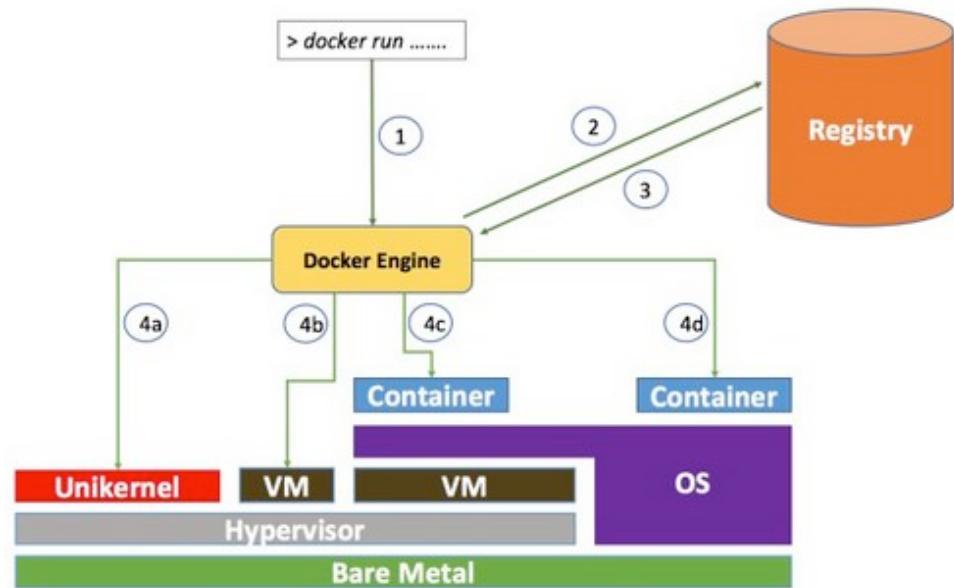
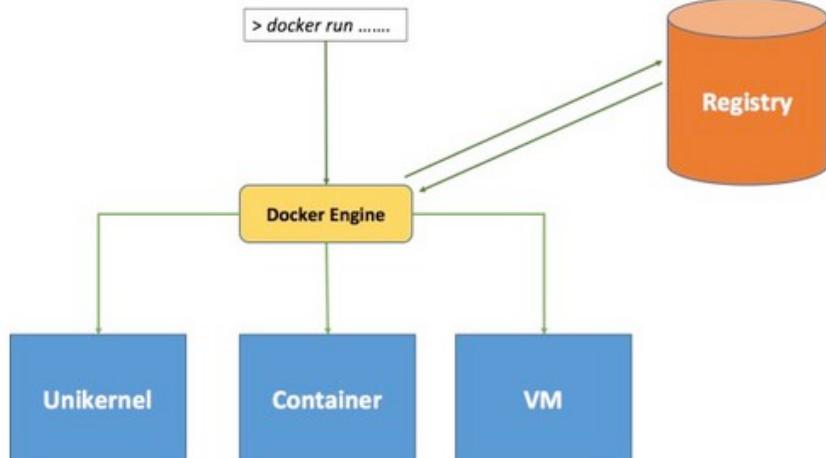
1. Docker ecosystem
2. Security
3. Performance



DOCKER != CONTAINER

CONTAINER, VM, UNIKERNEL

- ▶ Docker is an entry point



DOCKER IS A SOLUTION

CONTAINER VS. DOCKER

- ▶ LXC is machine oriented, Docker is app oriented.
- ▶ Docker's key innovation is Docker image.
- ▶ Docker creates the standards & ecosystem for clouds
 - SaaS – software release standard
 - Container image standards for build, ship and run
 - Ecosystem for Docker hub and registry
 - Cloud native app with micro-service architecture
 - PaaS – next wave of innovations
 - Key building blocks of various PaaS platforms
 - Docker image could be run over PaaS various containers implementation(Eg. Cloud Foundry)
 - IaaS
 - VMWare two container solutions VS. open source solutions (Hyper, Coreos, Atomic)
 - VMware vSphere Integrated Containers: Accelerate PaaS adoption in enterprise market
 - Introducing the Photon Platform: Purpose-Built for Running Cloud-Native Applications