Docker Use Cases Summary

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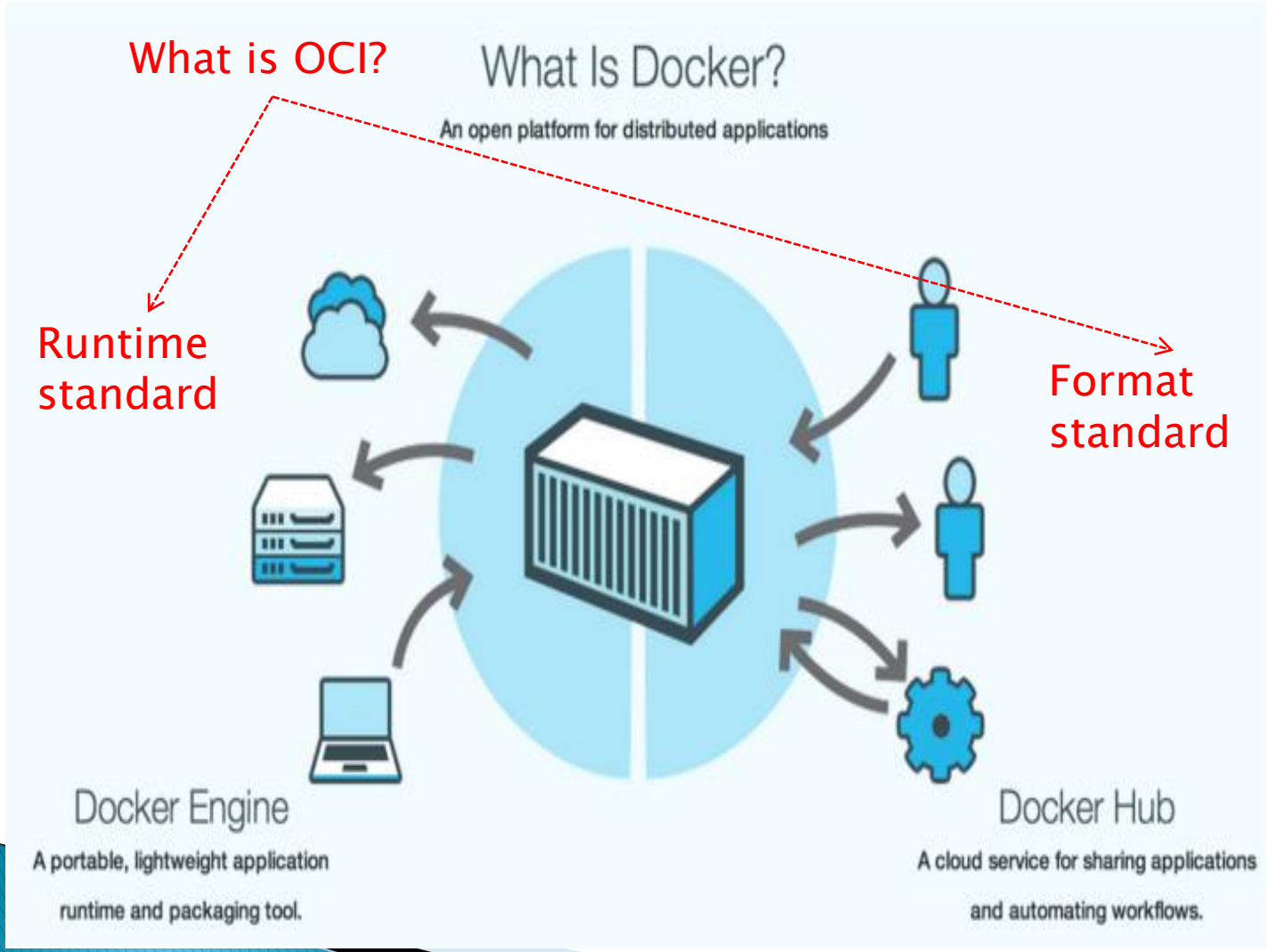
DOCKER = CONTAINER?

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

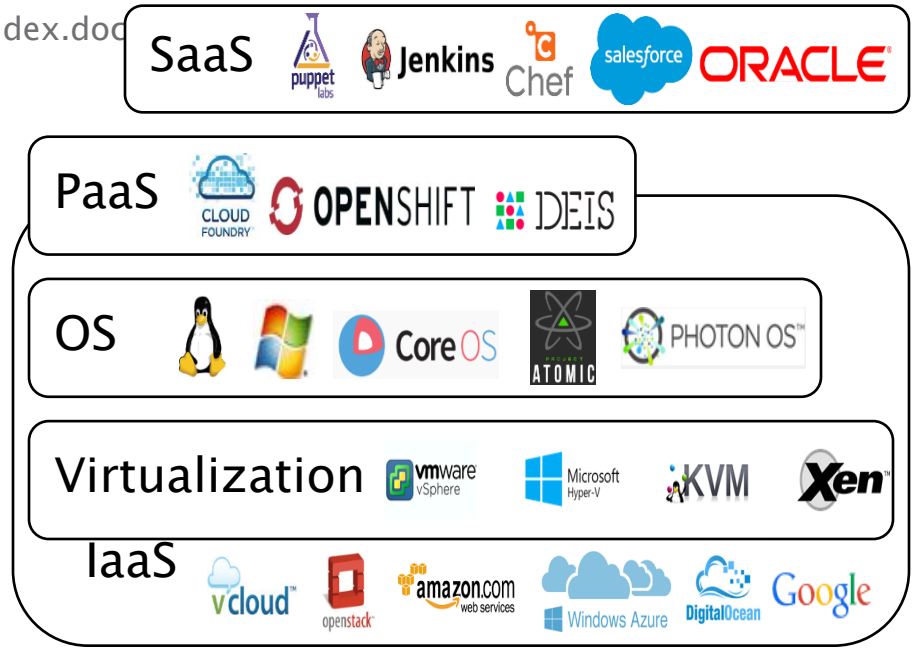
DOCKER HUB & DOCKER ENGINE



DOCKER ECOSYSTEM

DOCKER IMAGES RUNS EVERYWHERE

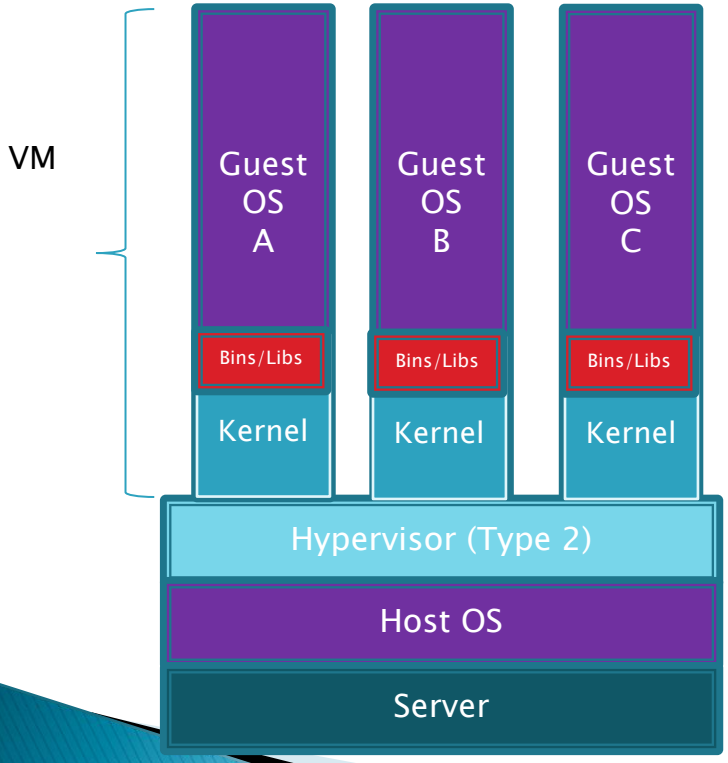
- Open container Initiative
  - Container formats and runtime industry standards. (Linux foundation).
- Applications
  - 1000's of Dockerized applications available at index.doc
- PaaS & IaaS
  - Private PaaS: OpenShift, Cloudfoundry
  - Public PaaS: Deis, Voxoz, Cocaine, Baidu PaaS
  - Public IaaS: Amazon, Azure, Digital Ocean
  - Private IaaS: vcloud, Openstack
- DevOps Tools
  - Chef, Puppet, Jenkins, Travis, Salt, Ansible
- Orchestration tools
  - Kubernetes, Mesos, Heat



USE CASE 1: IAAS MULTI-TENANTS

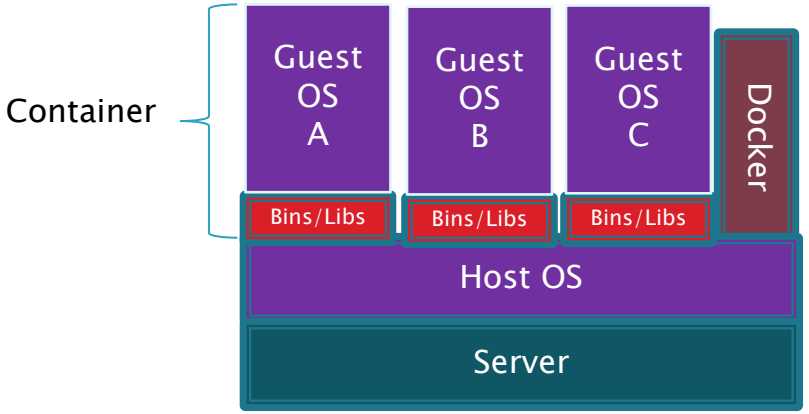
VM VS. CONTAINER

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



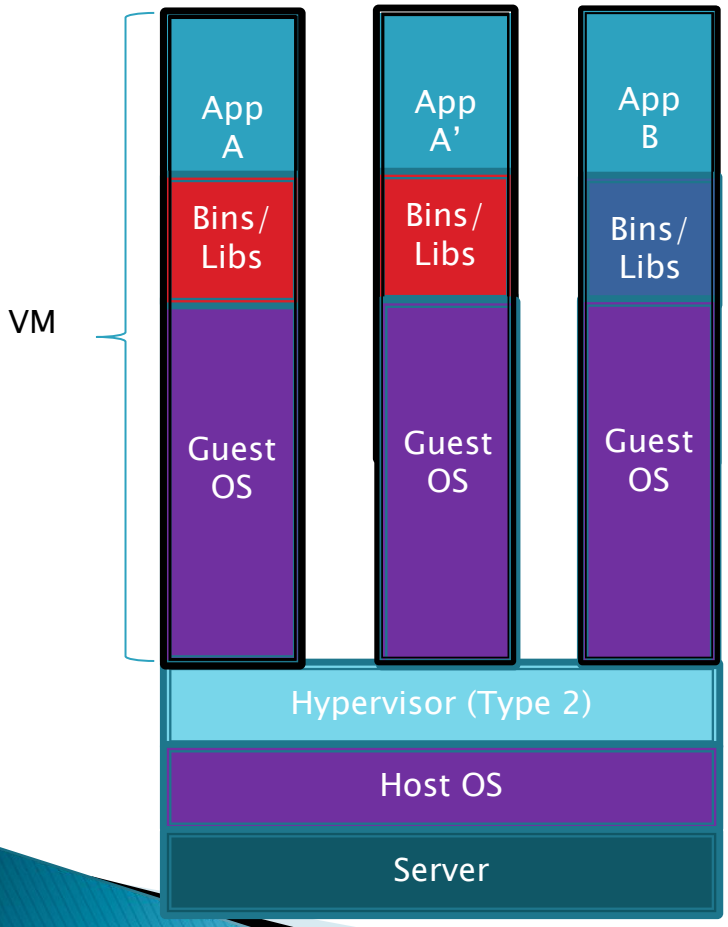
Containers are isolated, but share same kernel.

- Benefits
  1. Faster deployment
  2. Less overhead
  3. Faster restart



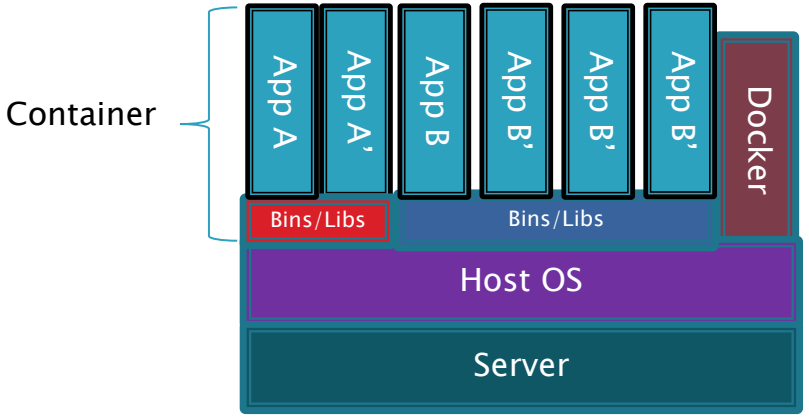
USE CASE 2: APP PACKAGING

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.

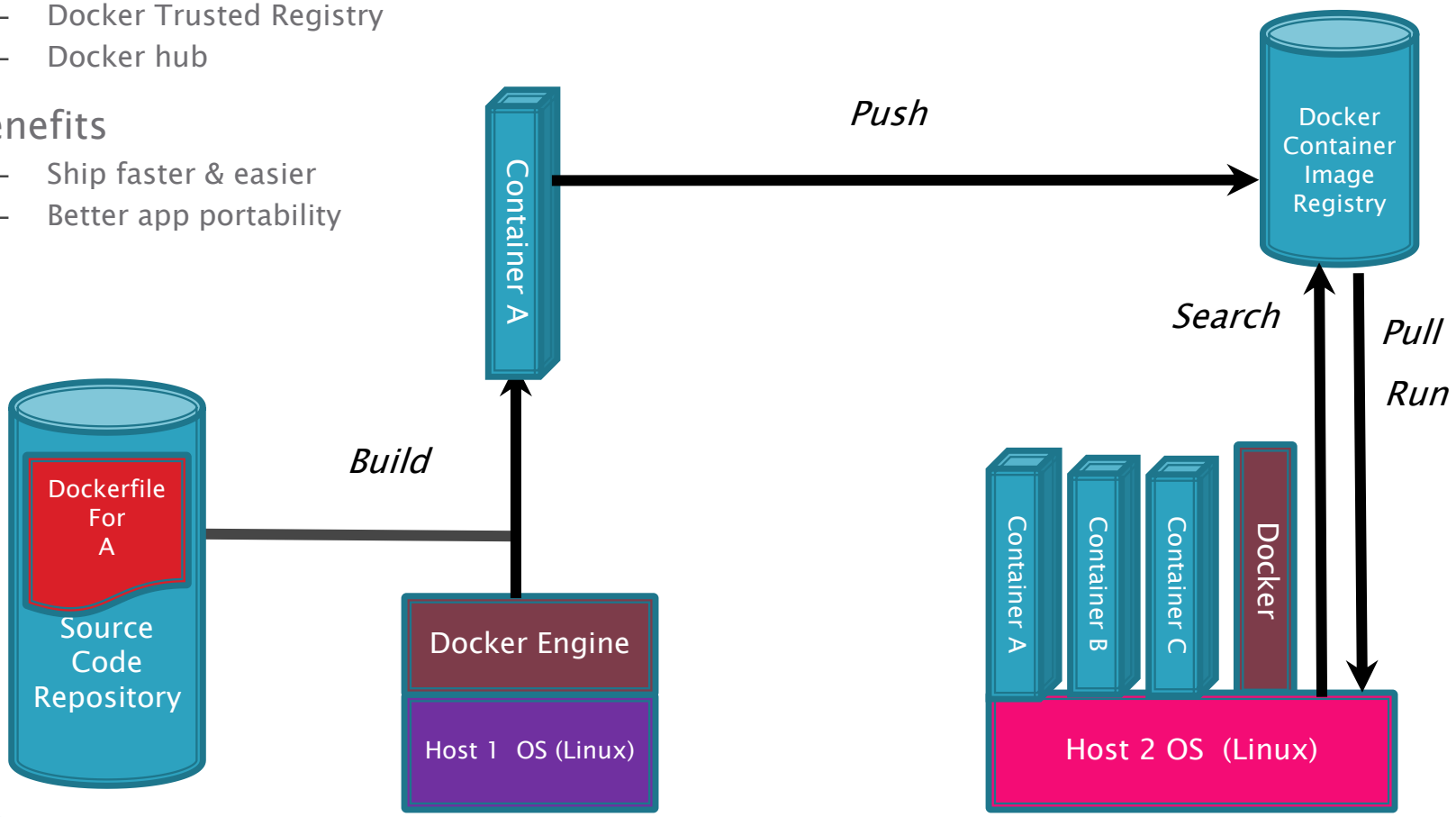
- Benefits
  1. Easy deployment
  2. Easy porting, address dependency pains
  3. Light weight, fast start



USE CASE 3: NEW SW RELEASE MODEL

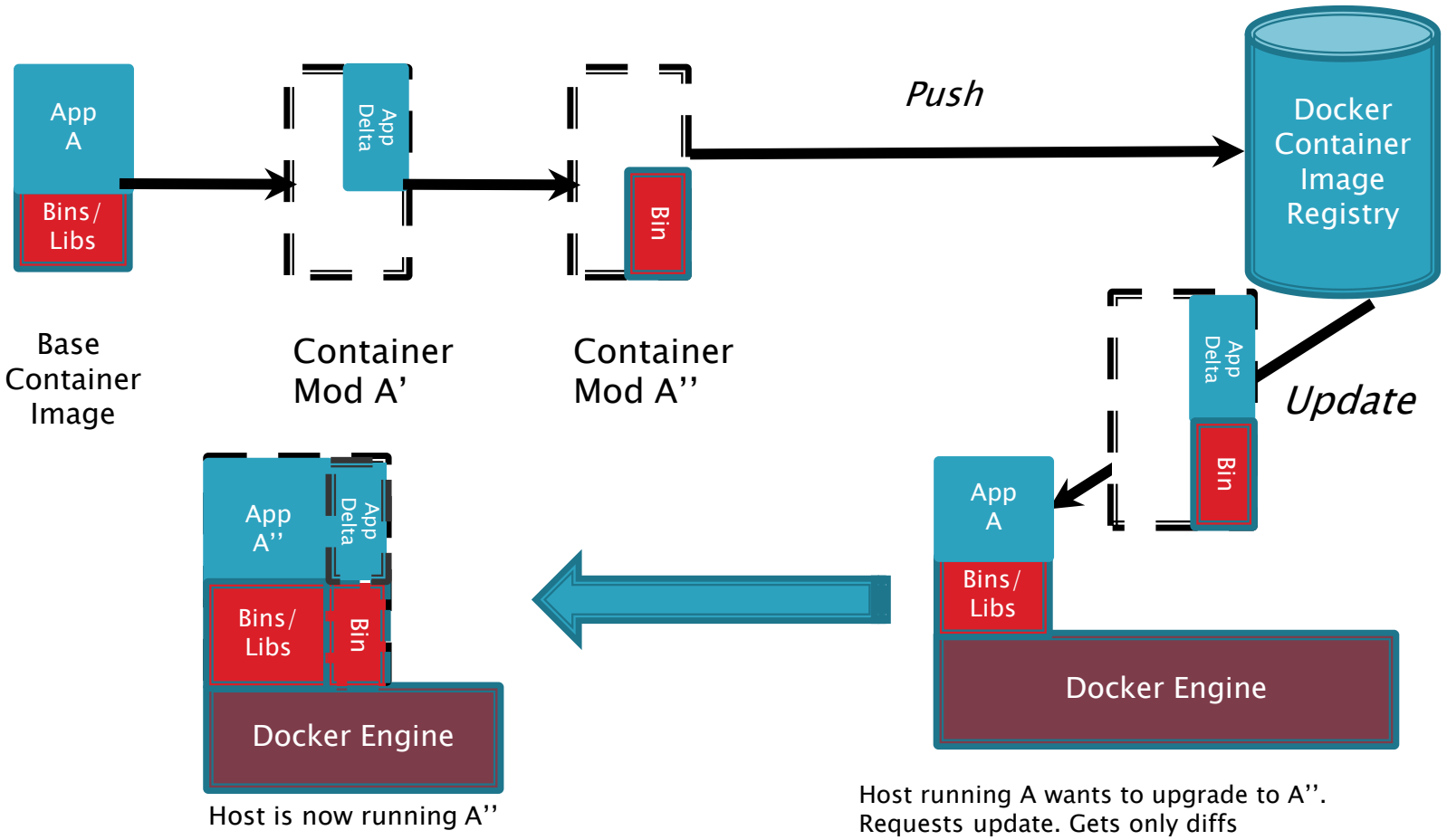
DOCKER REGISTRY & DOCKER HUB

- Continuous Integration and Delivery with…
  - Docker Trusted Registry
  - Docker hub
- Benefits
  - Ship faster & easier
  - Better app portability



USE CASE 4: SOFTWARE UPDATE

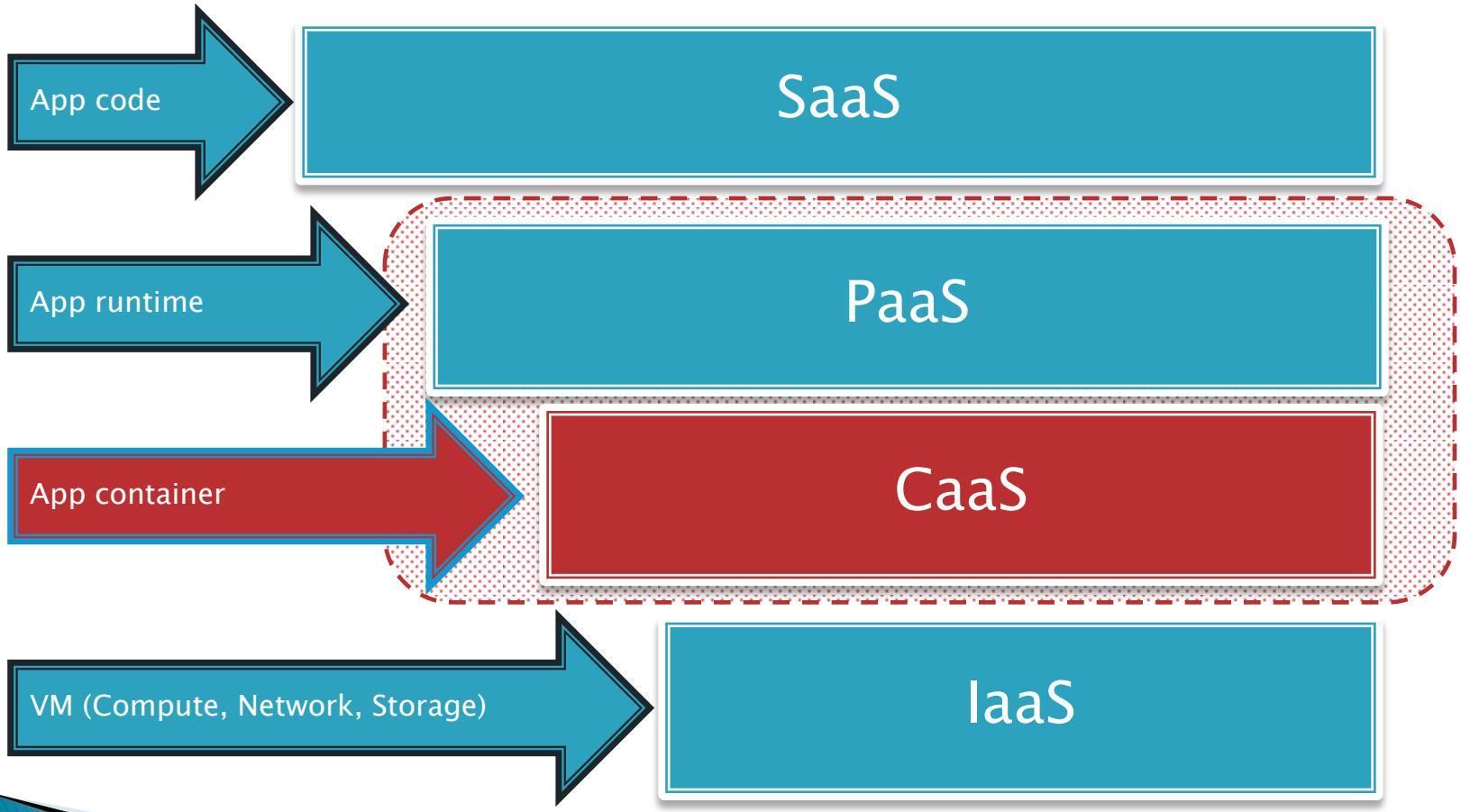
LAYERED IMAGE FORMAT - DOCKER IS BETTER THAN VM



Benefit - Easy upgrade and changes

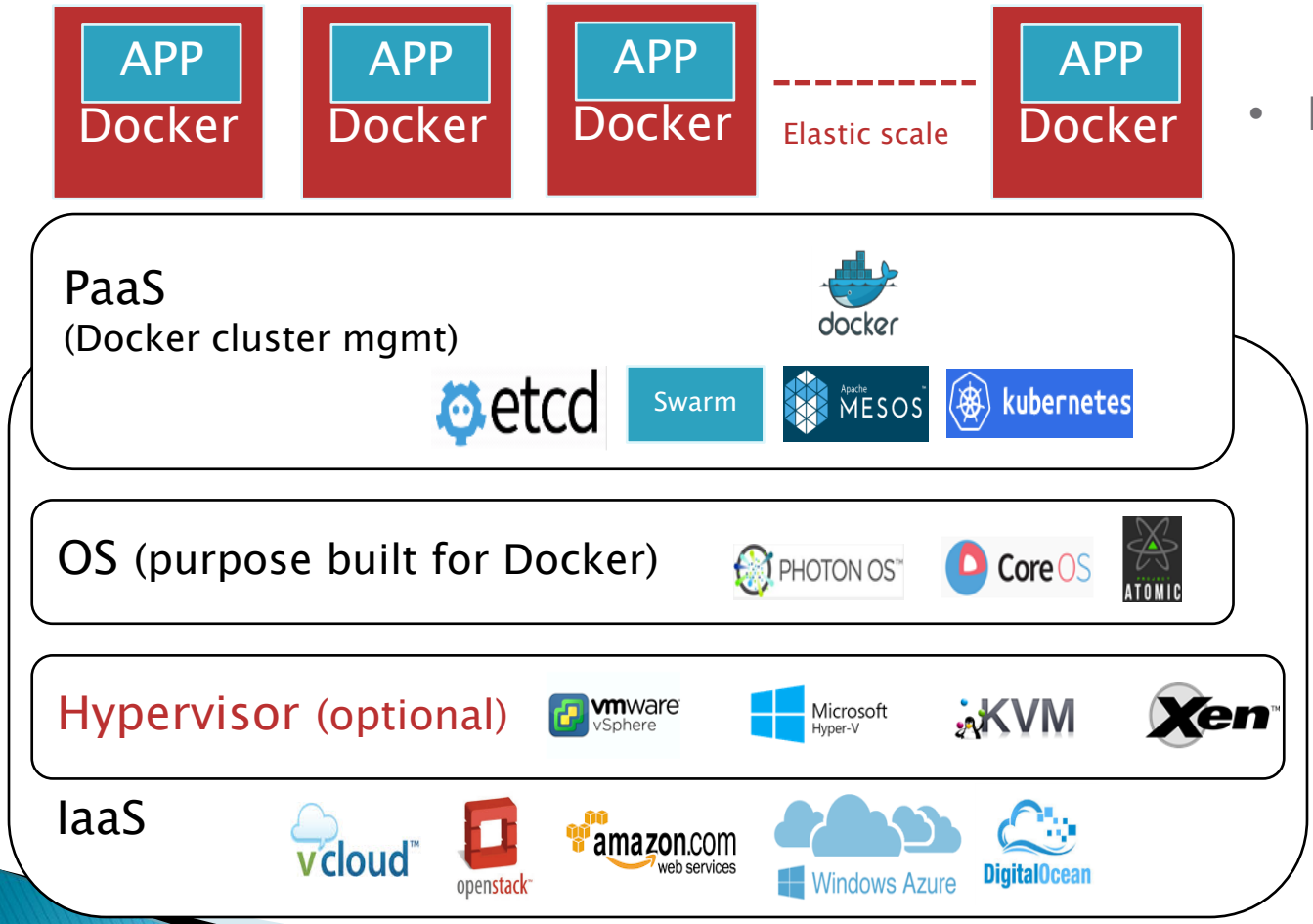
CAAS: CONTAINER AS A SERVICE

NEW CLOUD COMPUTING CONCEPT



USE CASE 5: CAAS BUILDING BLOCKS

NEW PAAS SOLUTION



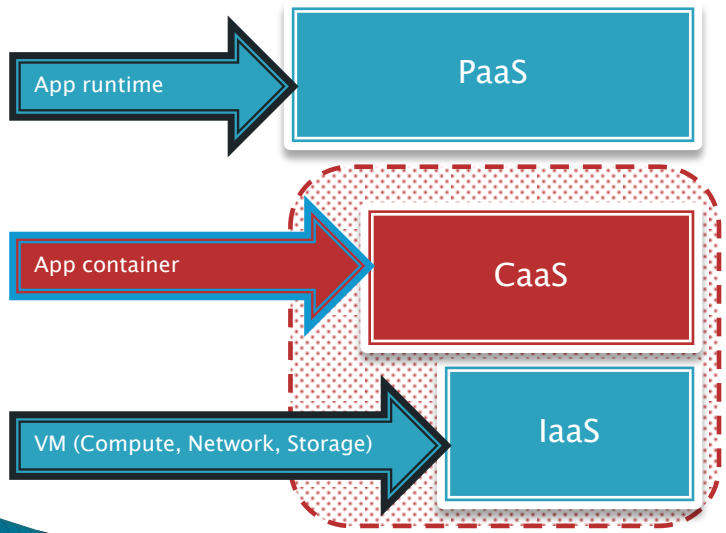
- Benefits
  1. Fast deployment
  2. Elastic scale
  3. Performance

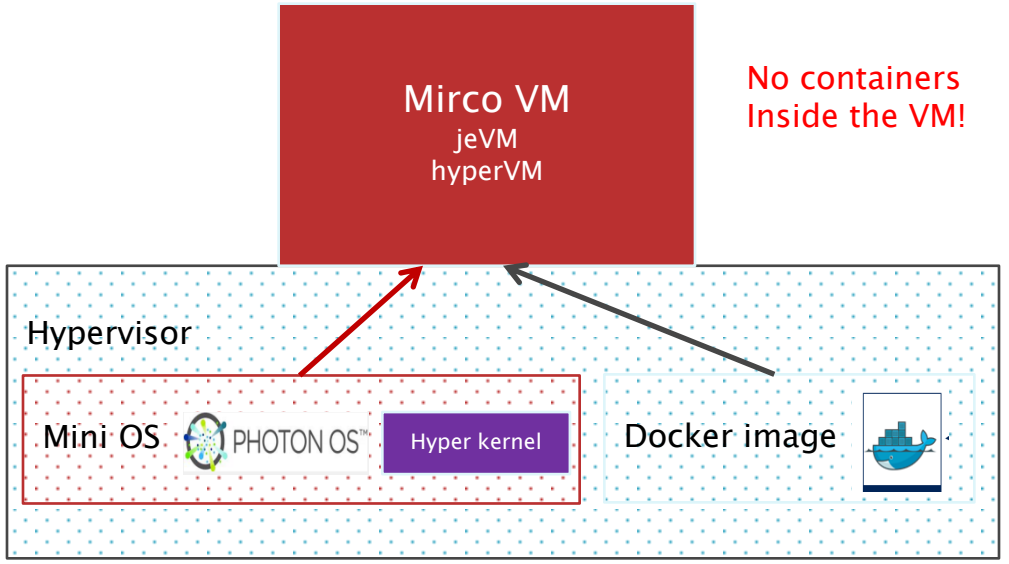
USE CASE 6: VM AS A CONTAINER

ALTERNATIVE CAAS SOLUTION

- Docker image aware hypervisors
  - vSphere Integrated Containers
  - Hyper: Kvm, Xen

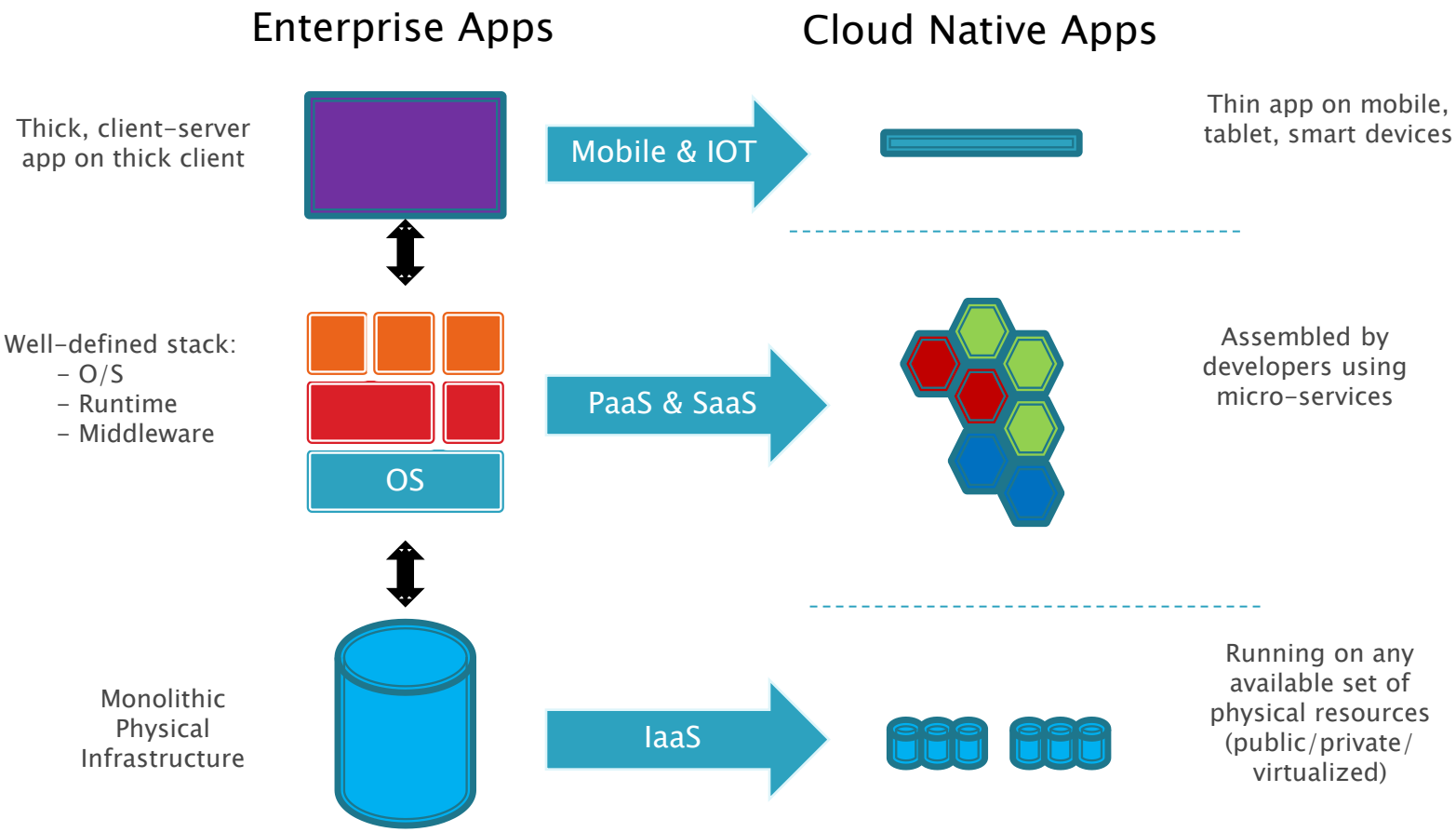
- Benefits
  1. Docker ecosystem
  2. Security
  3. Performance





Cloud Native App

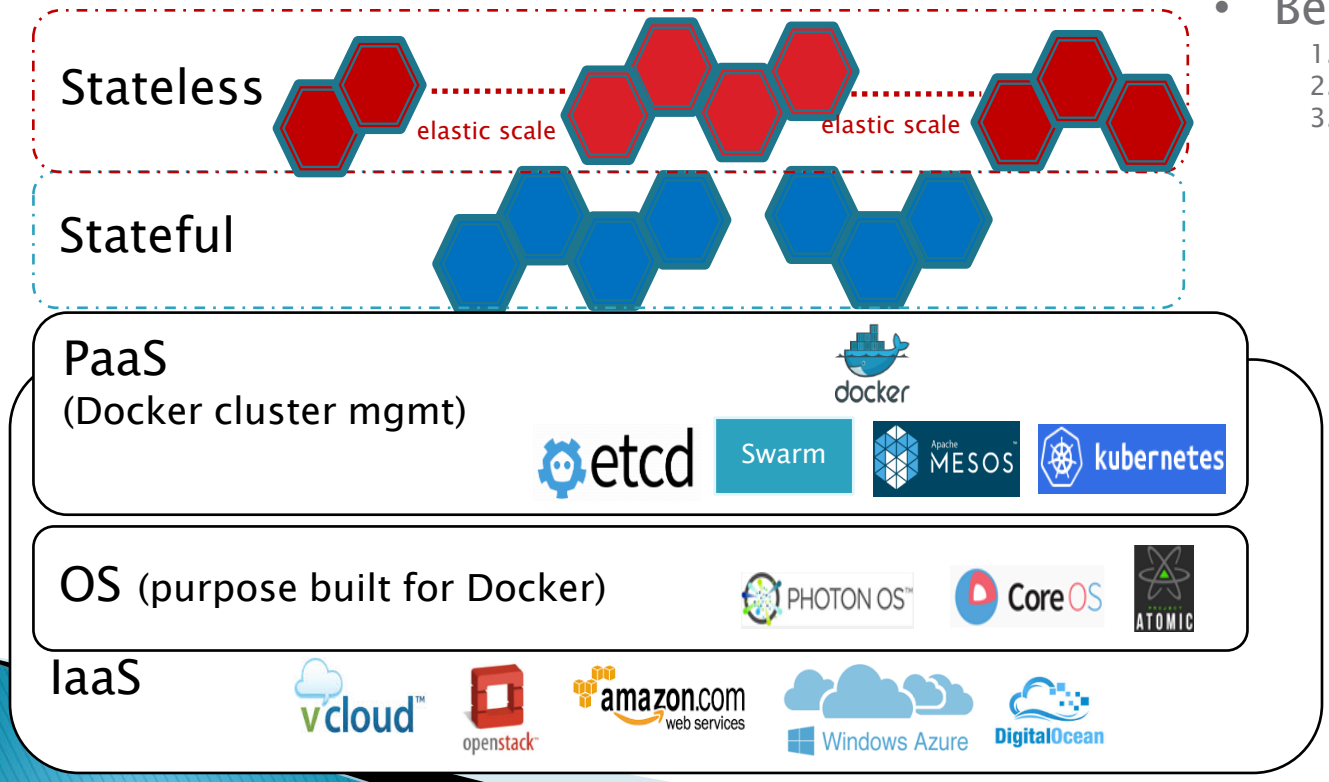
Enterprise App vs. Cloud Native App



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

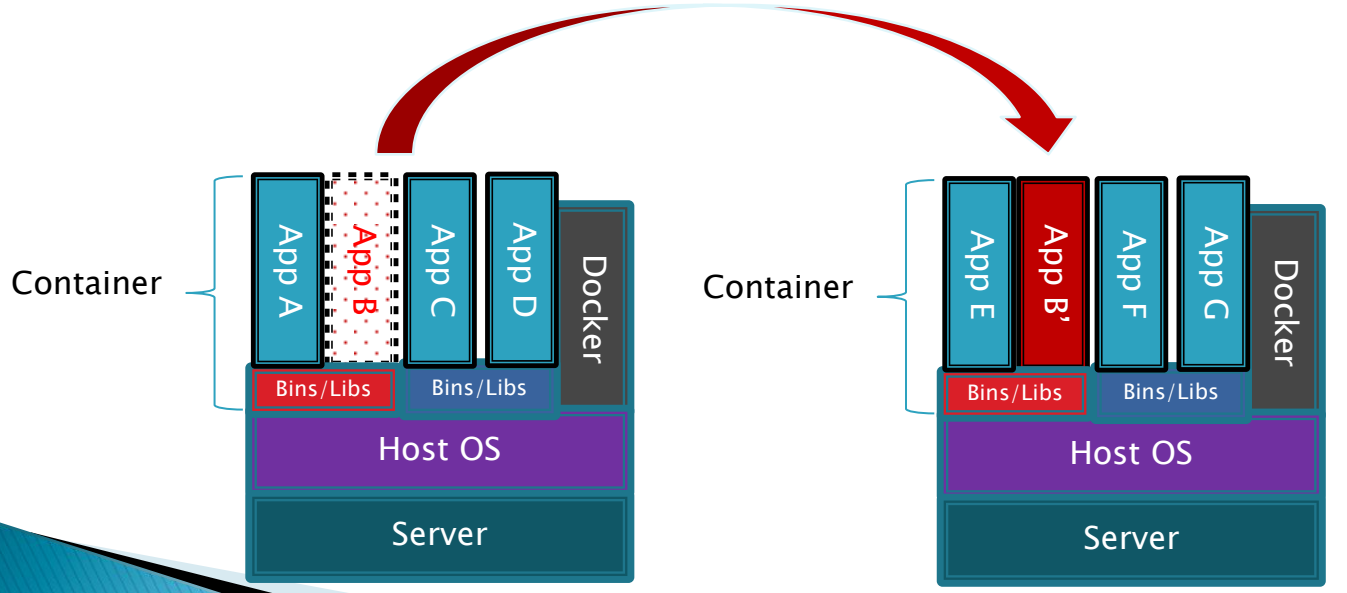


- Benefits
  1. On demand computing
  2. Modularization, isolation
  3. Error detection & resilient

USE CASE 8: DOCKER MIGRATION

DOCKER WITH CRIU: NATIVE CHECKPOINT AND RESTORE

- Docker container live migration
  - Need CRIU support
  - Stateful containers need Flocker support



- Benefits
  1. Faster migration or boot for error handling
  2. Load balance
  3. Seamless kernel upgrade

docker checkpoint <id>

docker restore <id>

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