Containers 101.1

Project Photon OS, Docker, and More!

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Who manages containers? With What?

What about Windows?

Who has used some form of container technology?

What is Docker?

What are MicroServices?

Is it only about DevOps?

Why would you use containers?

Who's heard about Project Photon OS?

Who's heard about Project Bonneville?

What apps can run in containers?

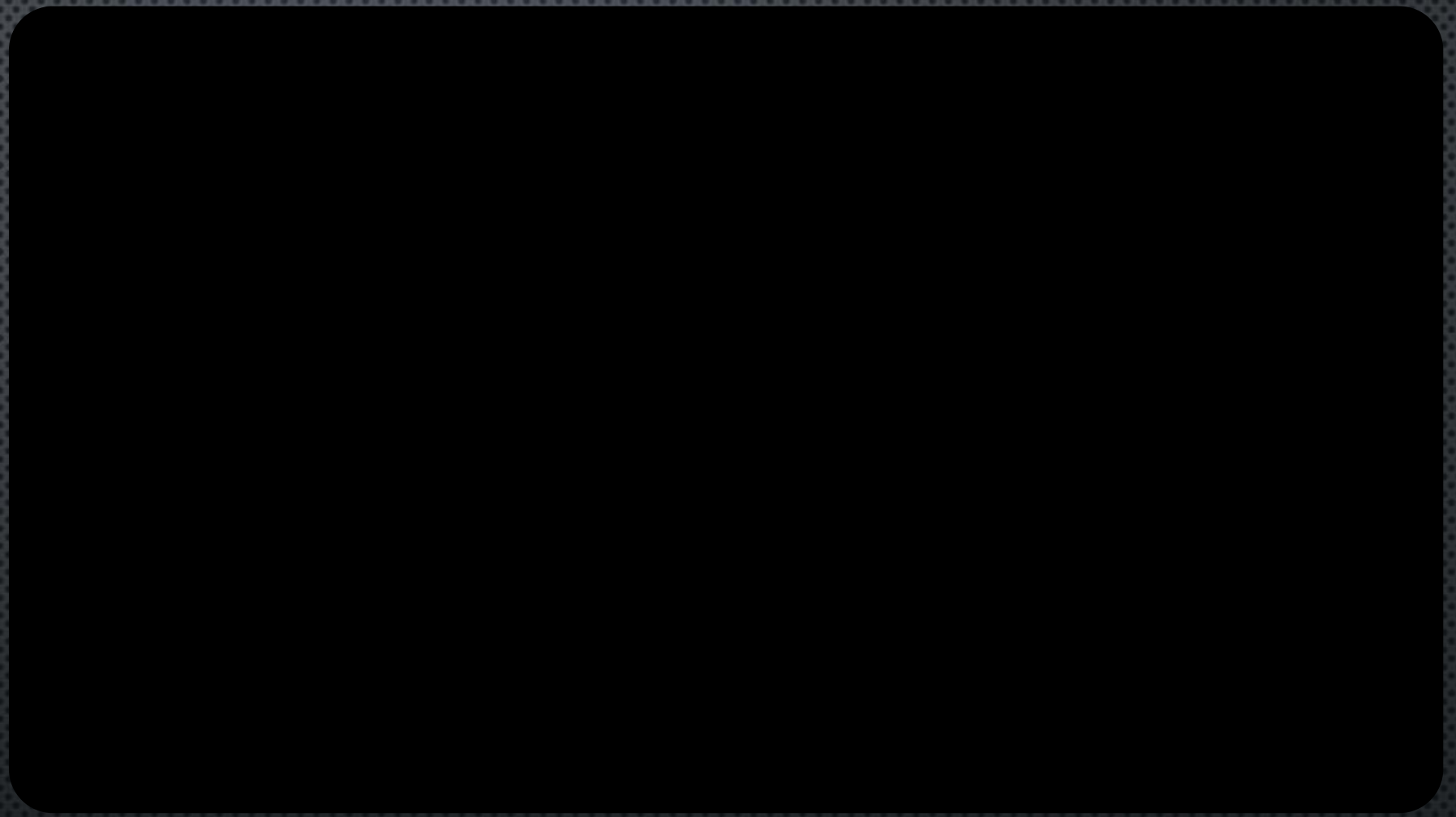
Where can containers be run?

1964

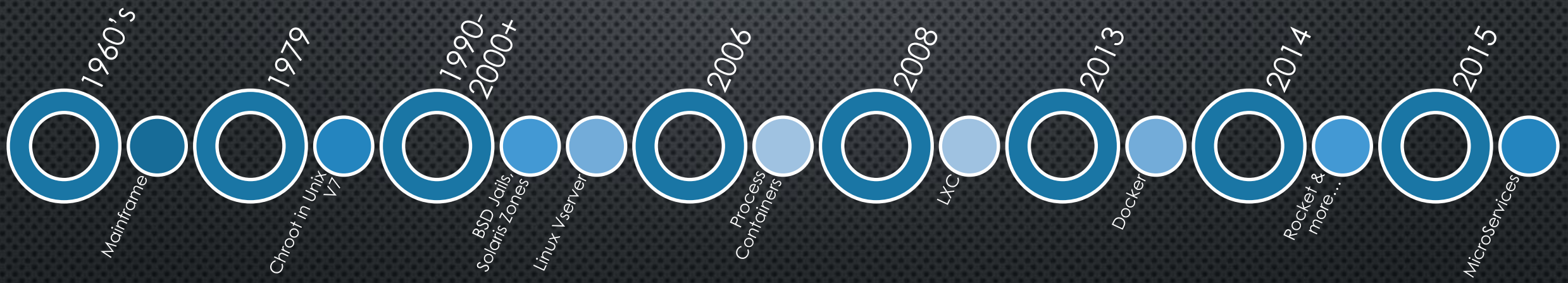
IBM CP-4

IBM z/VM

IBM System/360



A (really) Brief History of Containers



WHAT ARE CONTAINERS?

CONTAINERS ARE OPERATING SYSTEM-LEVEL VIRTUALIZATION.

CONTAINERS ENCAPSULATE APPLICATIONS INTO INDIVIDUAL ISOLATED ENVIRONMENTS ON A SHARED OPERATING SYSTEM WITH THEIR OWN PROCESSES, NETWORK, BINARIES, AND LIBRARIES.

“IT’S ABOUT THE APPLICATIONS.”

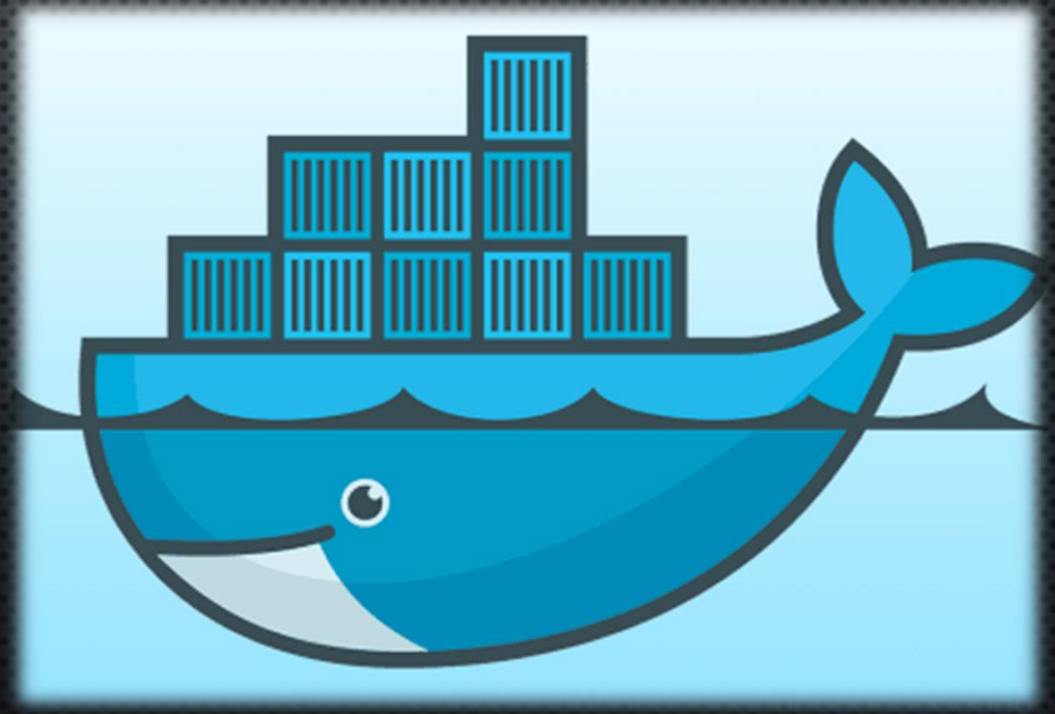
- Containers:
  - Are not just for DevOps anymore!
  - “Throw-away” components
  - Deploy really, really, really fast
  - Are simple to complex to build
  - Are extremely compact & lightweight = very high density
  - Portable. Well, kinda.
  - Have an “Open” Standard. Well, kinda.
  - Management is simple, but mostly CLI for now
  - Have a massive EcoSystem – like really, really big.

WHAT IS DOCKER?

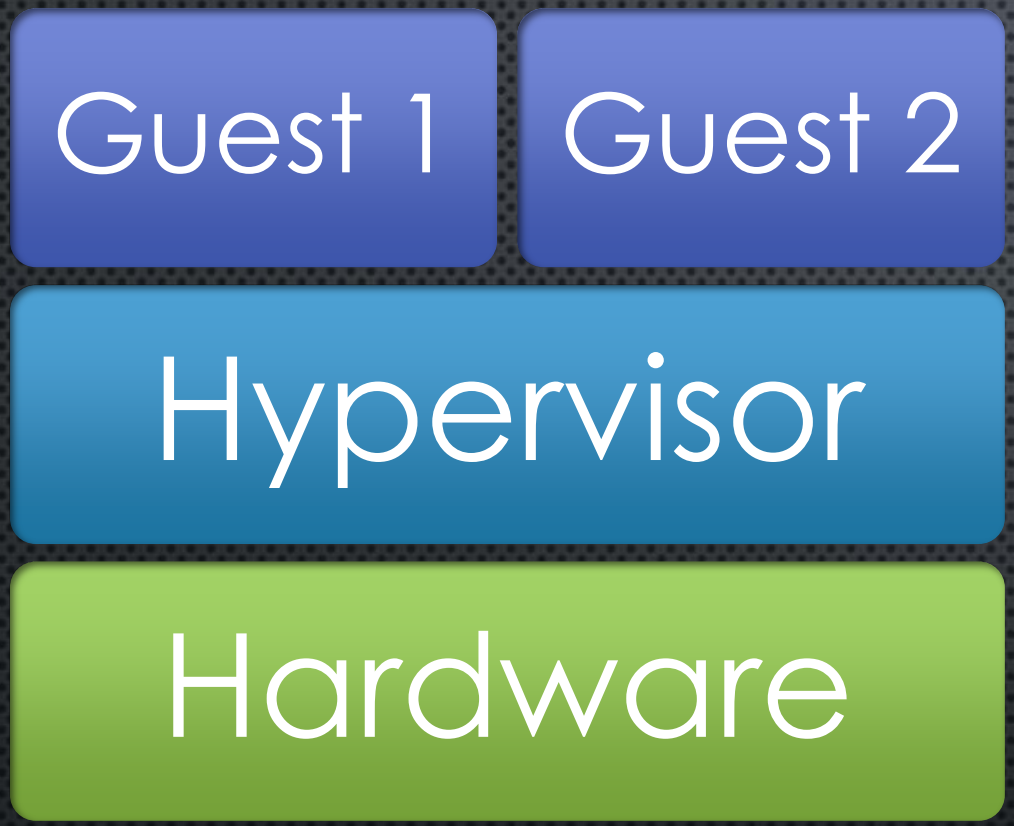
DOCKER IS AN OPEN PLATFORM CONTAINER TECHNOLOGY. IT IS A MANAGEMENT, API, HOST, AND PACKAGING PLATFORM FOR CONTAINERS.

DOCKER HAS A HUGE ECOSYSTEM OF APPLICATIONS & SERVICES THAT ALLOW FOR GROWTH, SCALE, RESILIENCY, AND REDUNDANCY.

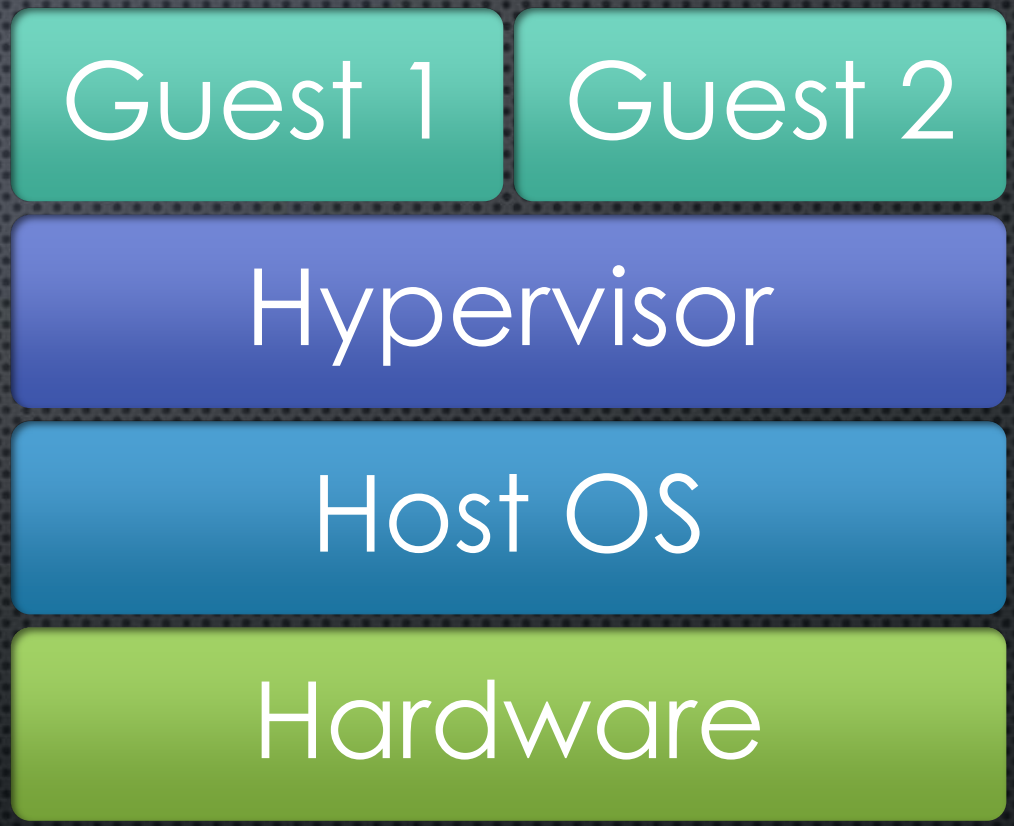
NOT THE ONLY GAME IN TOWN ANYMORE



Hypervisor Architectures

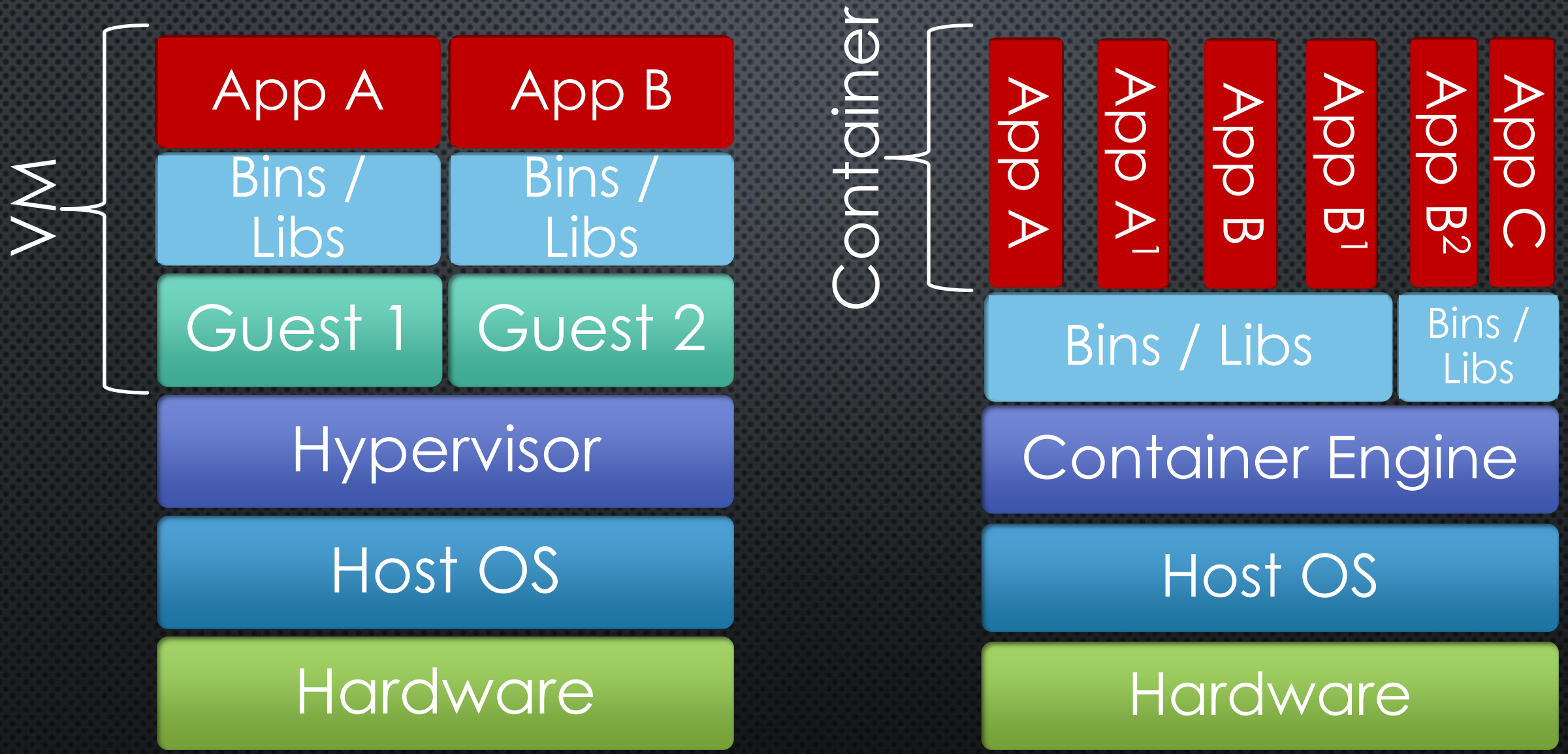


Type 1



Type 2

VM vs Containers Architecture



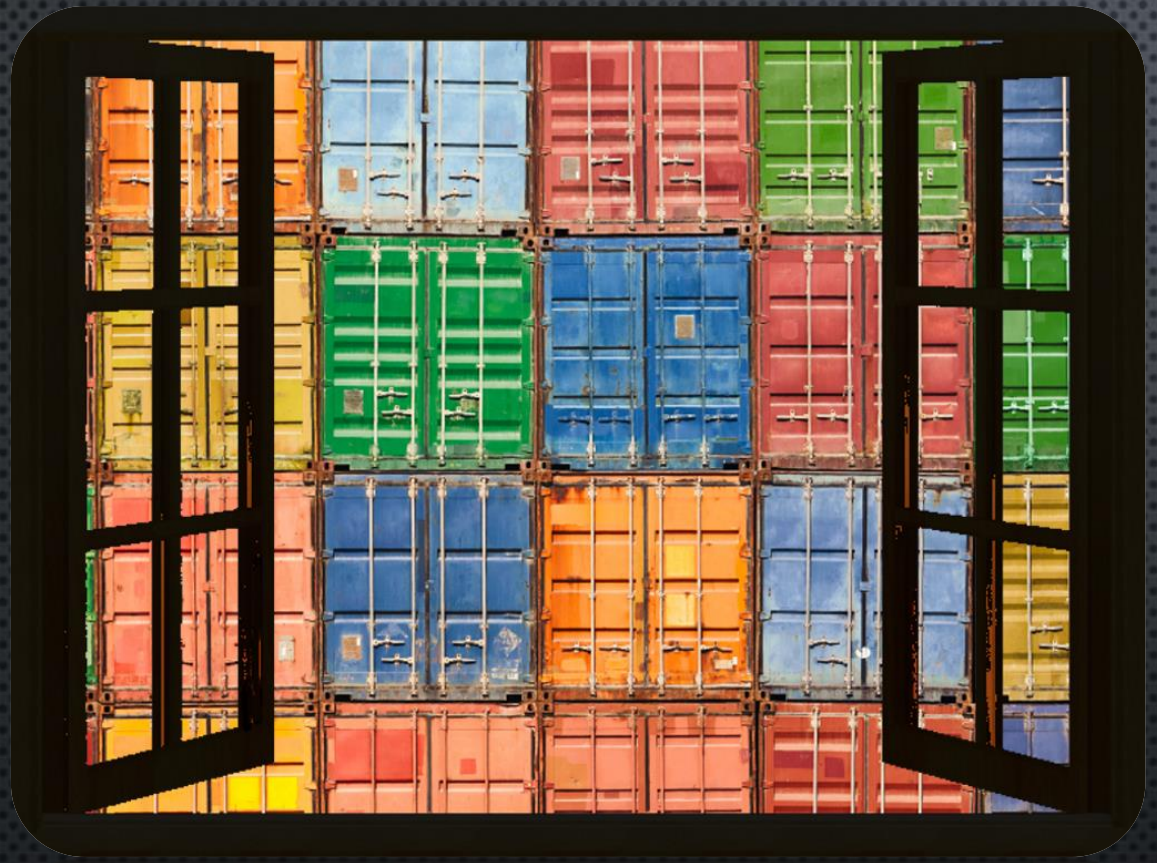
Virtual Machine

Container

Why Containers Matter

- Density
  - 1 to 1K+ on single host
    - DockerCon2015 – 2500 web servers running on Raspberry Pi2
- Performance - Lightweight
  - <50ms start / stop
- Lower cost of OS
- Agnostic – Hardware & Content
- Separation of Duties
- Portability
  - Within kernel revisions*
  - Future OS inter-operability
  - Live migrations now possible with CMT
- Isolation*

Opening Windows to Containers



Linux-

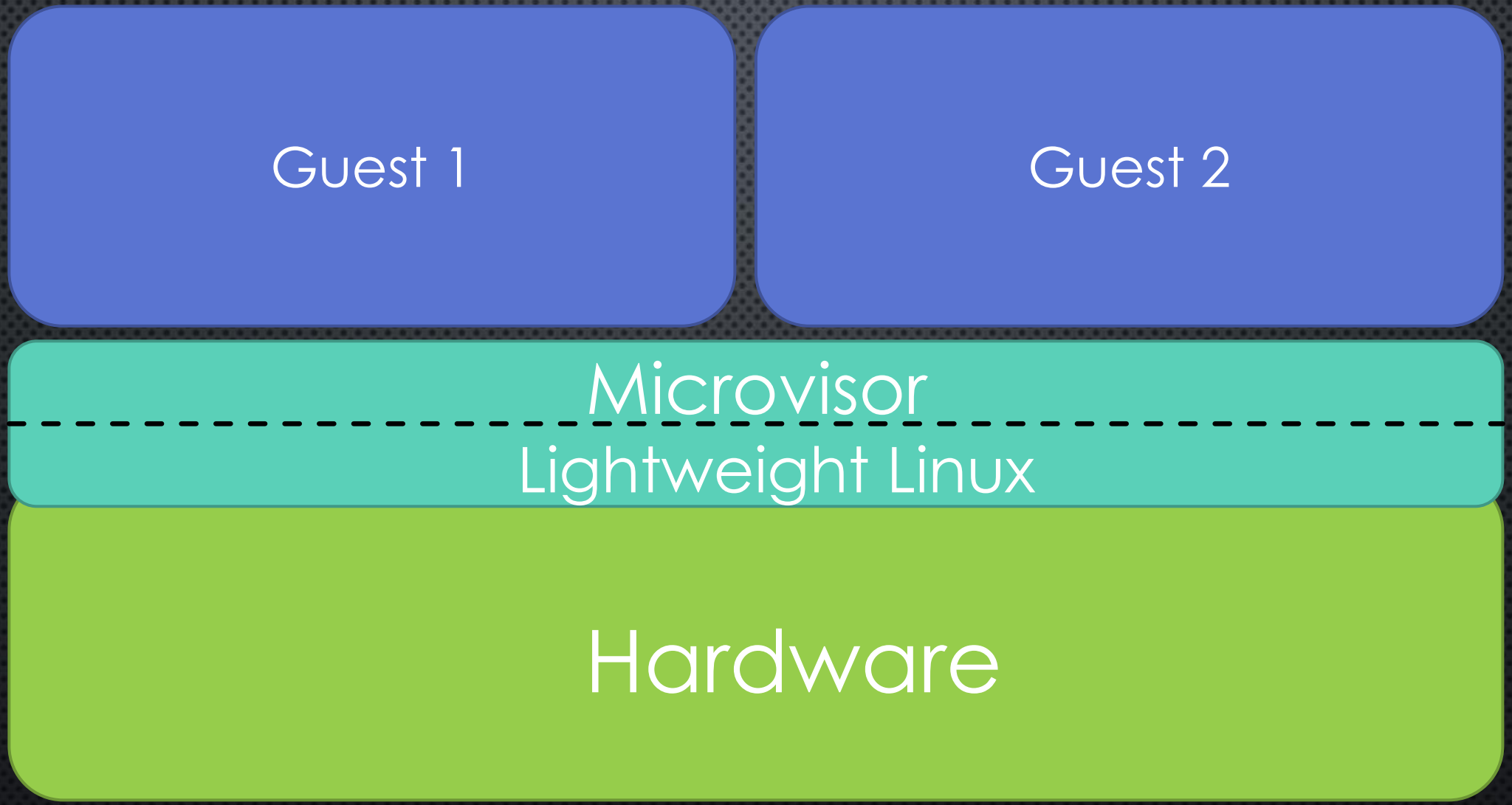
- Azure support for Linux Containers
- Windows Docker Toolbox (OS X, WIN)

Windows-

- Windows Docker Machine (VirtualBox)
- Windows Containers
- Hyper-V Containers
- PowerShell for Containers

Look for portability *between* platforms

Microvisor Architecture



Project Bonneville

- "Native container solution for VMware's hypervisor"
- Docker daemon with custom VMware code & drivers
- Approach:
  - The container is a VM
  - The VM is a container
  - The container is an x86 hardware virtualized VM
- Integrates with Project Fargo – Instant Clones
  - Provision VM's from ROM image with (theoretical) zero footprint
- Can run containers of any kernel version of any OS (again, theoretically)
- Secure & isolated (likely?)
- Portable

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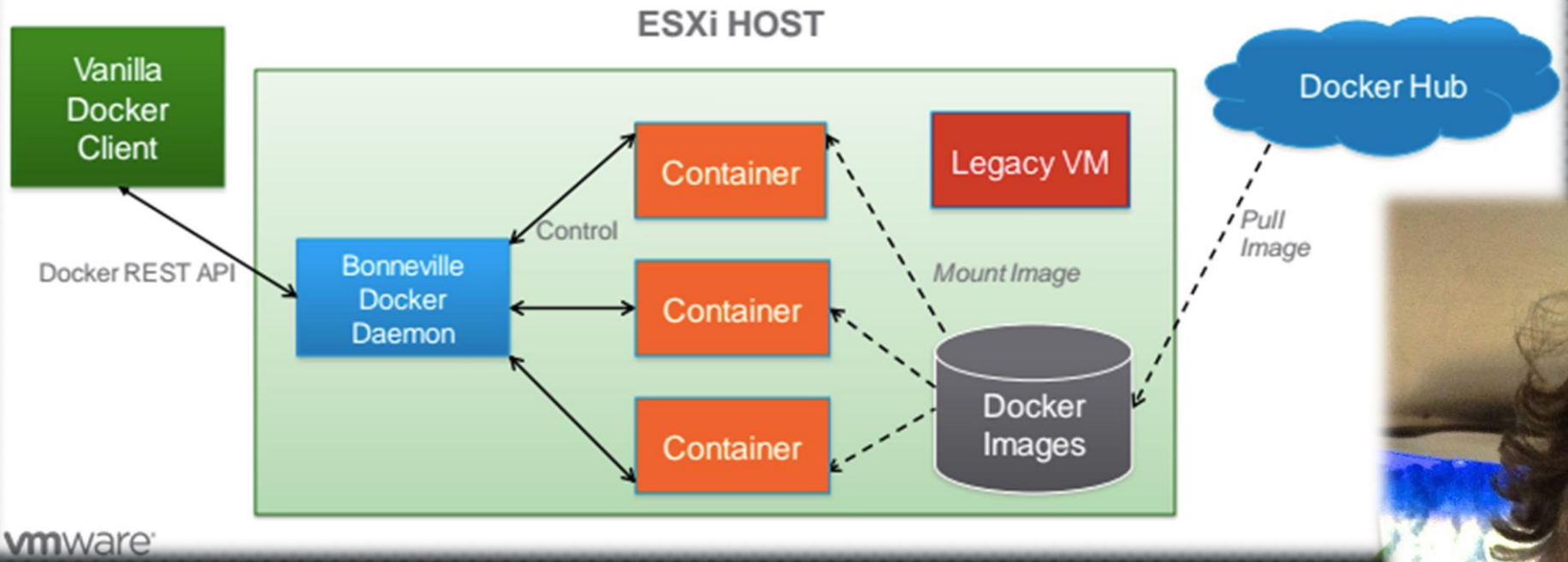
Bonneville Architecture

- Containers are first-class citizens on the hypervisor
- No need for a separately managed Linux container host, ESX is the container host
- Virtualization brings many benefits: security, isolation and multiple-OS support



vmware

Announced June 2015 with AppCatalyst

Project Photon OS

Photon Controller

- Multi-Tenant
- API Driven
- HA
- Open Source

Photon Machine

- Photon OS
  - Pico build of Linux (with Yum!*)
  - ESX core Microvisor
  - ~20MB boot

Project Photon OS – Compatible Containers

docker

Rocket

CF

Pivotal CF™

Cloud Foundry Garden

Project Photon OS – Where Can It Run?

Local

- vSphere ESXi
- Client Hypervisor (Fusion, Workstation)

Cloud

- vCloud Air
- Azure*
- Google Cloud*
- AWS*

Unified Hybrid Platform

- vCenter
- ESXi
- Photon OS
- Bonneville

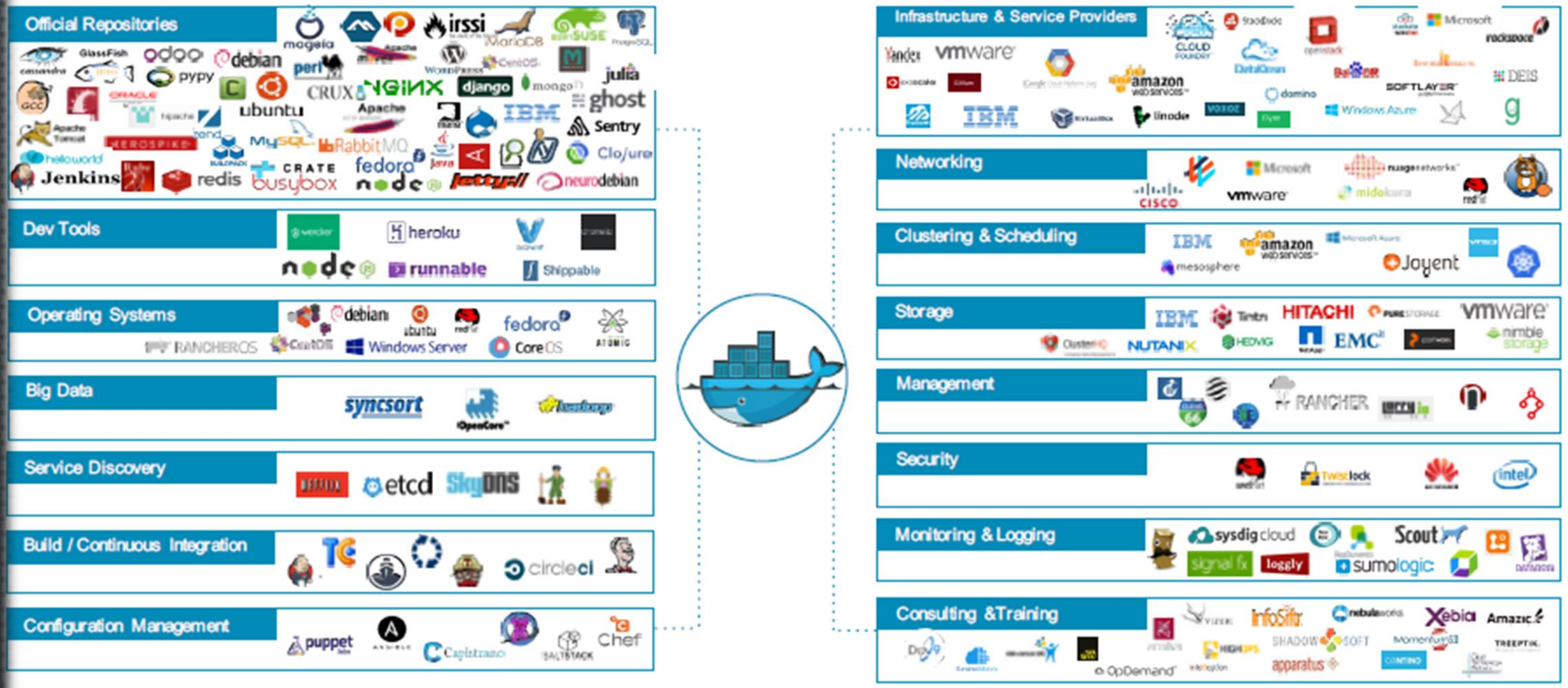
- IT Driven
- Feature set of vMotion, HA, etc.
- All Apps
- Highly Compatible

Photon Platform

- Photon Controller (open source)
- Microvisor
- Photon OS
- Bonneville

- Containers ONLY
- No Single Point of Failure
- High Scale & Density
- API Driven

The Docker ecosystem



Q&A

But first….

March 31st – XenAppBlog.com Virtual Expo Presentation
"Microsoft Application Containers for Geeks"

DEMO