LIVE! 360
TECH EVENTS WITH PERSPECTIVE

Rocking Your Clouds with Docker

The Ultimate Education Destination
2015 Orlando
ROYAL PACIFIC RESORT AT UNIVERSAL

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ATLANTIS

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http://1drv.ms/1LdJyA0

Discuss

- Containers
- Docker
- Linux
- Azure, Windows, and Hyper-V containers
- Managing It All
- Let’s do some demo

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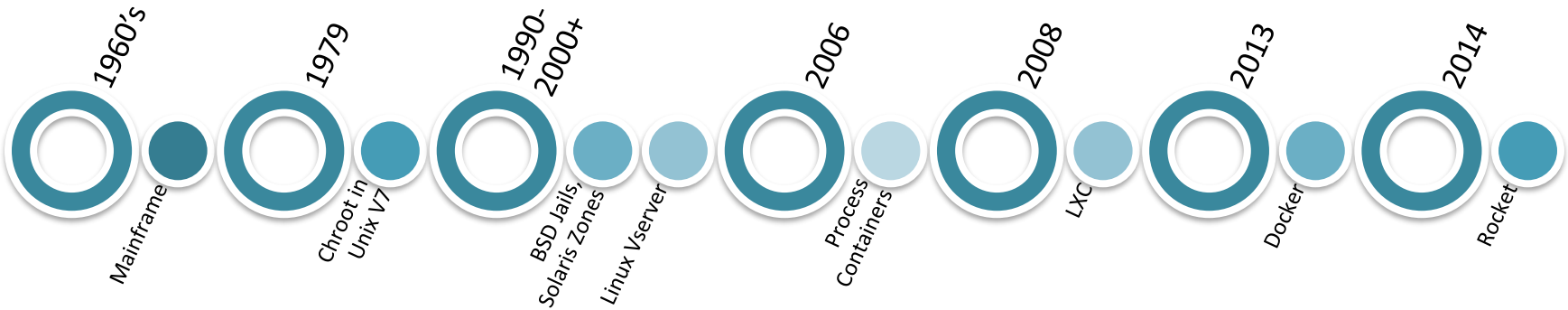
A (really) Brief History of Containers



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.

What is Docker?

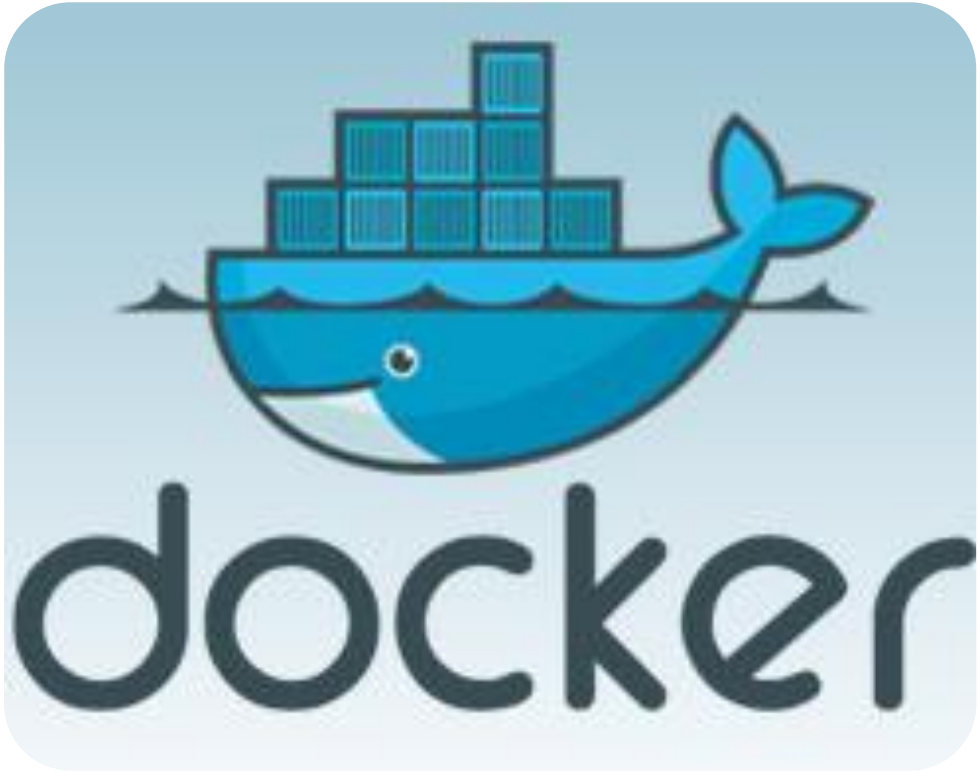
Docker is a container technology. It is also a management, API, and packaging platform for containers.

“

Docker is a runtime for Linux Containers. It enables "separation of concern" between devs and ops,

“

Jerome Petazzoni – “Tinkerer Extraodinaire” at Docker

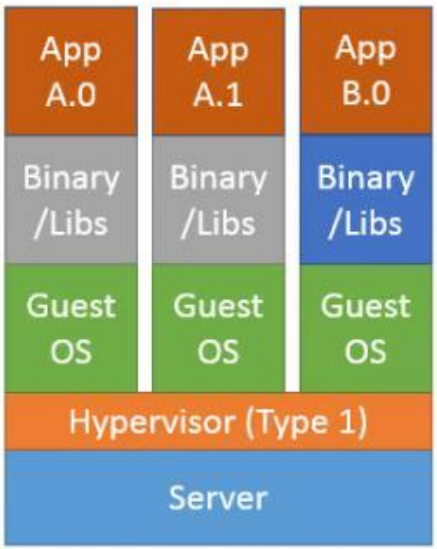


“

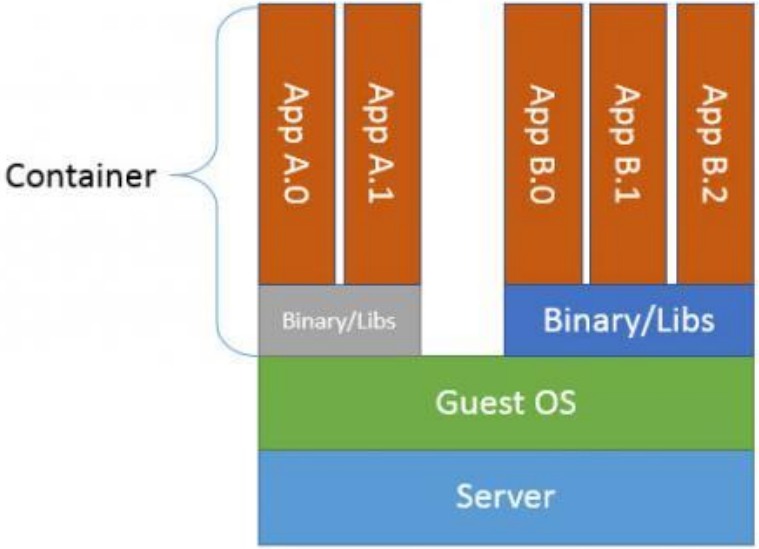
It’s about the applications

”

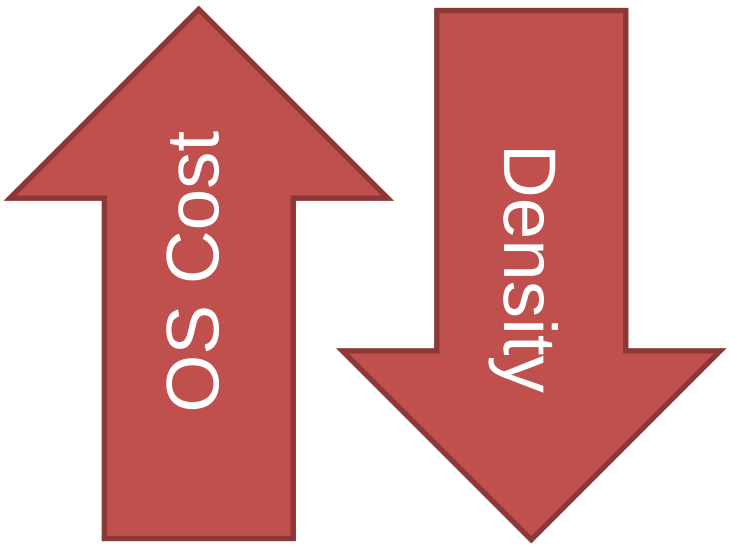
VM’s VS Containers



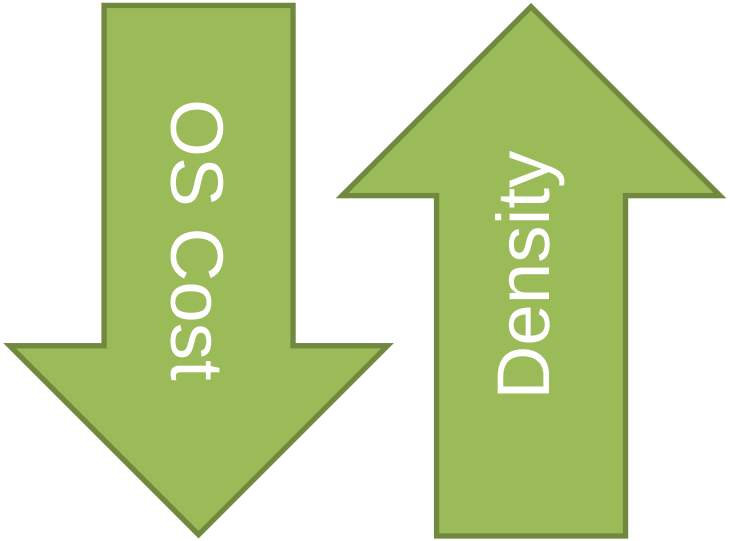
Traditional Virtualization



Docker



Virtual Machine

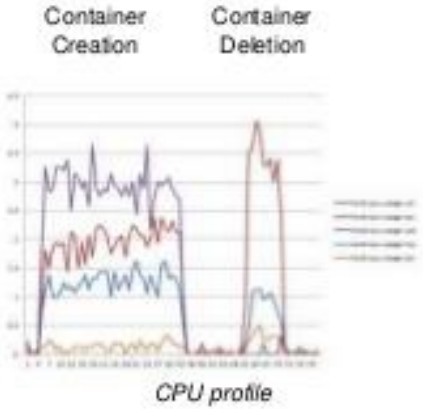


Container

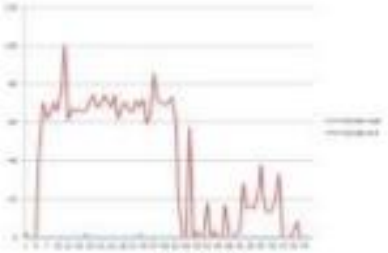
Density & Footprint – Docker

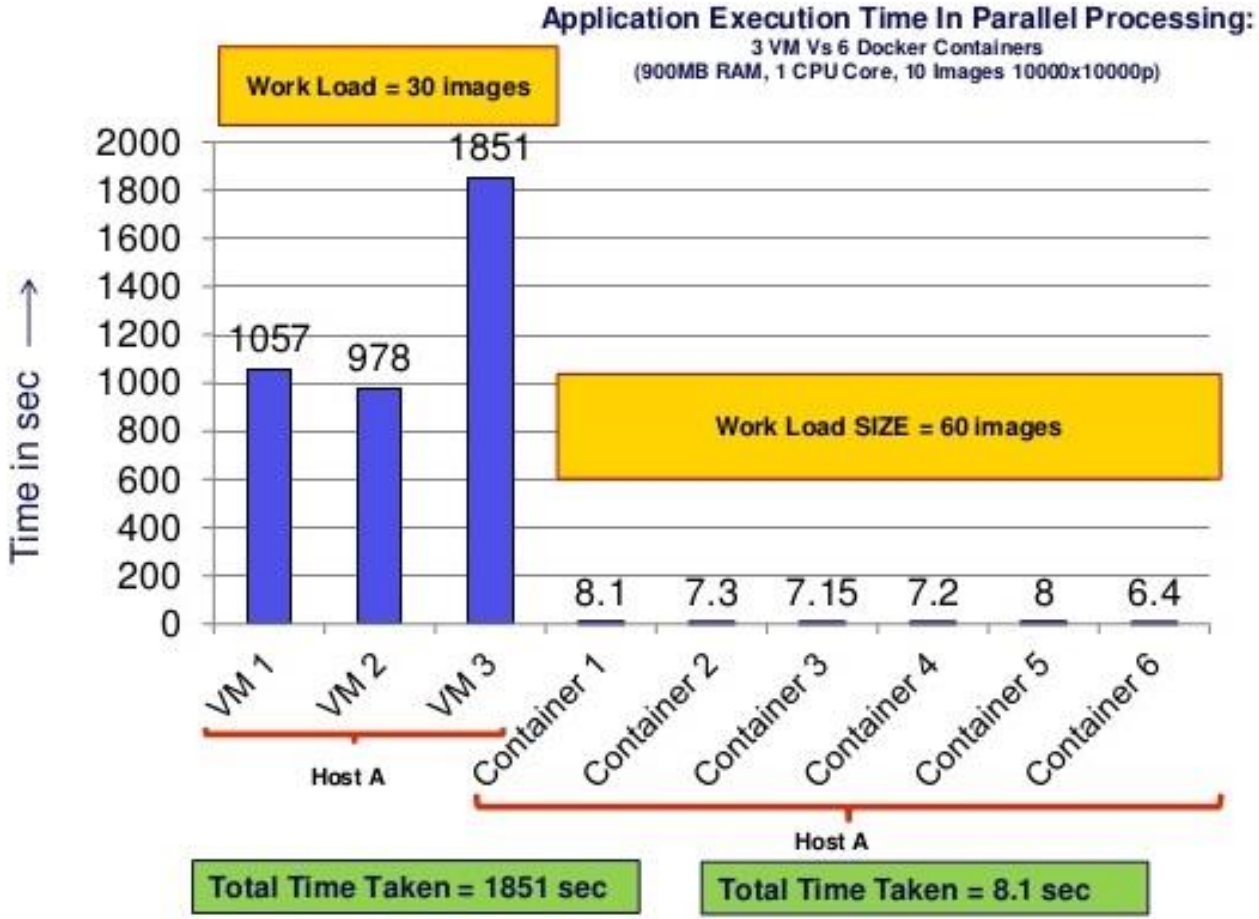
- *In this test, we created 150 Docker containers with CentOS, started apache & then removed them*
- *Average footprint was ~10MB per container*
- *Average start time was 240ms*

- **Serially booting 150 containers which run apache**
  - Takes on average 36 seconds
  - Consumes about 2% of the CPU
  - Negligible HDD space
  - Spawns around 225 processes for create
  - Around 1.5 GB of memory ~ 10 MB per container
  - Expect faster results once docker addresses performance topics in the next few months
- **Serially destroying 150 containers running apache**
  - On average takes 9 seconds
  - We would expect destroy to be faster – likely a docker bug and will triage with the docker community



CPU profile


I/O profile



Why Containers Matter

- Density
- Lower cost of OS
- Agnostic – Hardware & Content
- Separation of Duties
- Portability
- Isolation
- Efficient & Lightweight

Opening Windows to Containers

Linux-

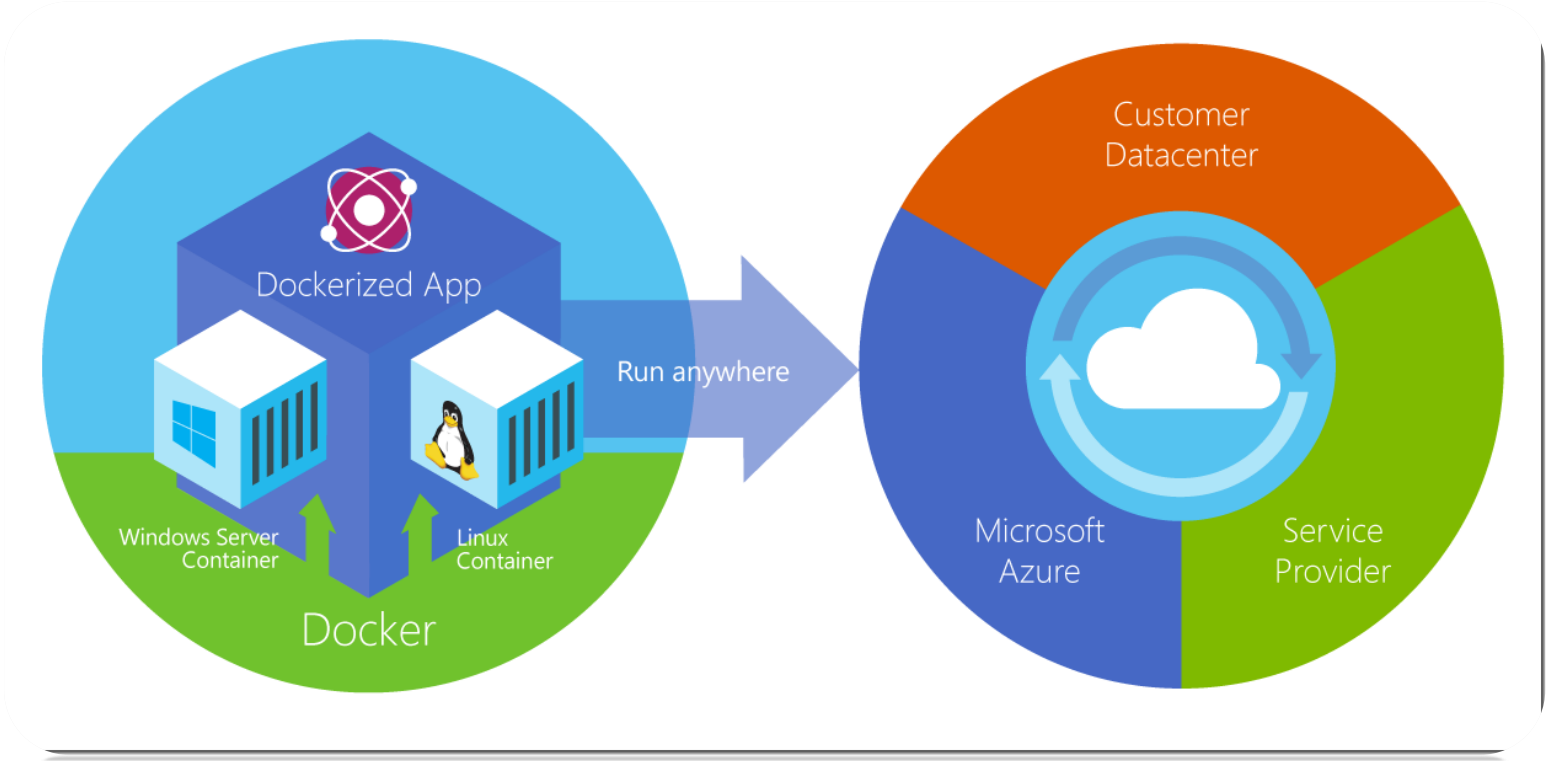
- Azure support for Linux Containers
- Windows Docker Toolbox (OS X, WIN)

Windows-

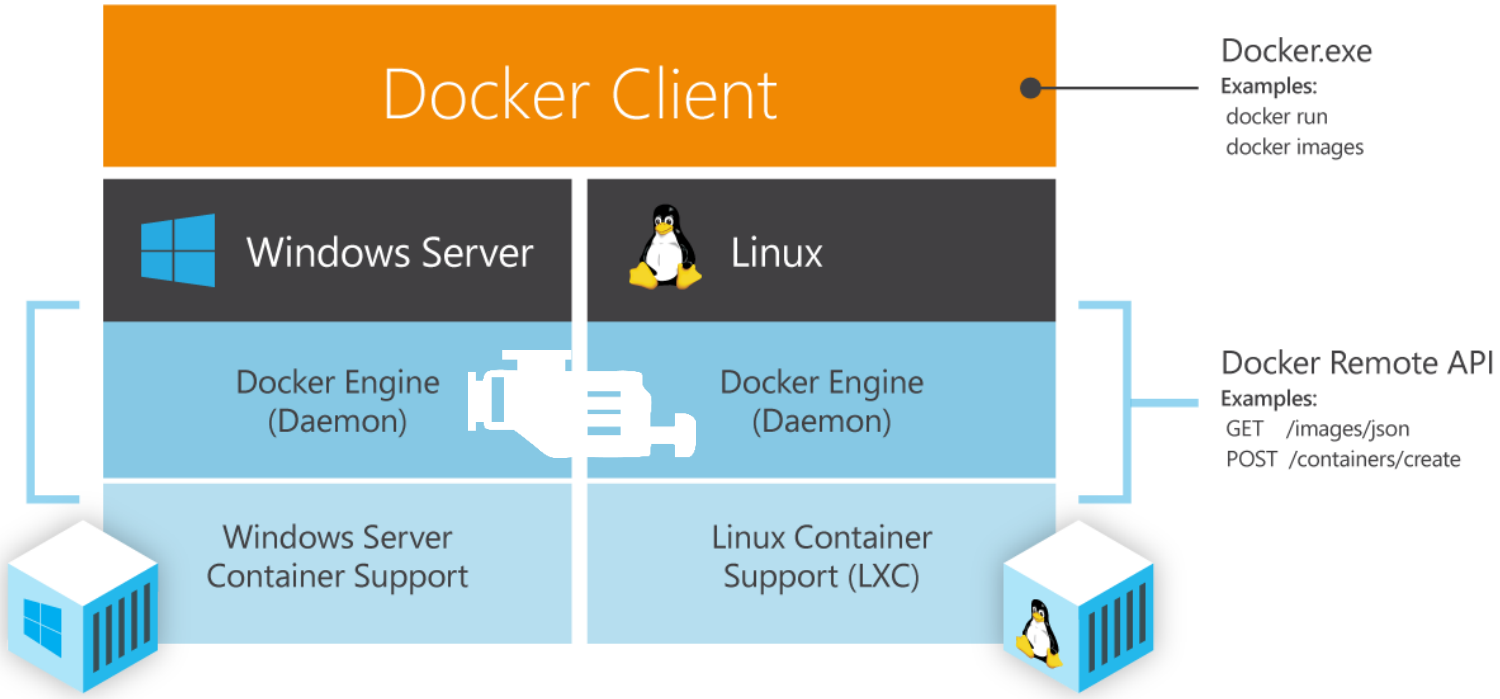
- Windows Docker Machine (VirtualBox)
- Windows Containers
- Hyper-V Containers
- PowerShell for Containers

Look for portability *between* platforms

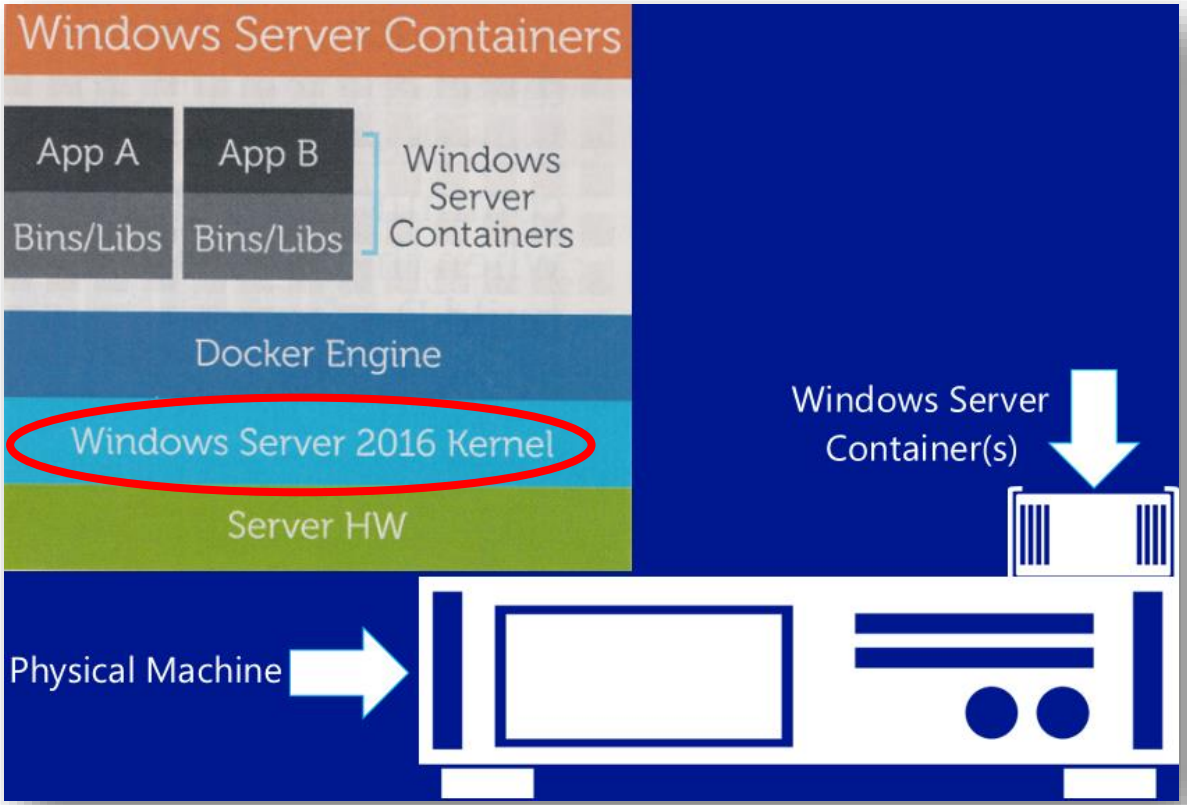
How Azure Sees It



Not Much Difference Between Windows & Linux… Except the Obvious



Architecture of a Windows Container

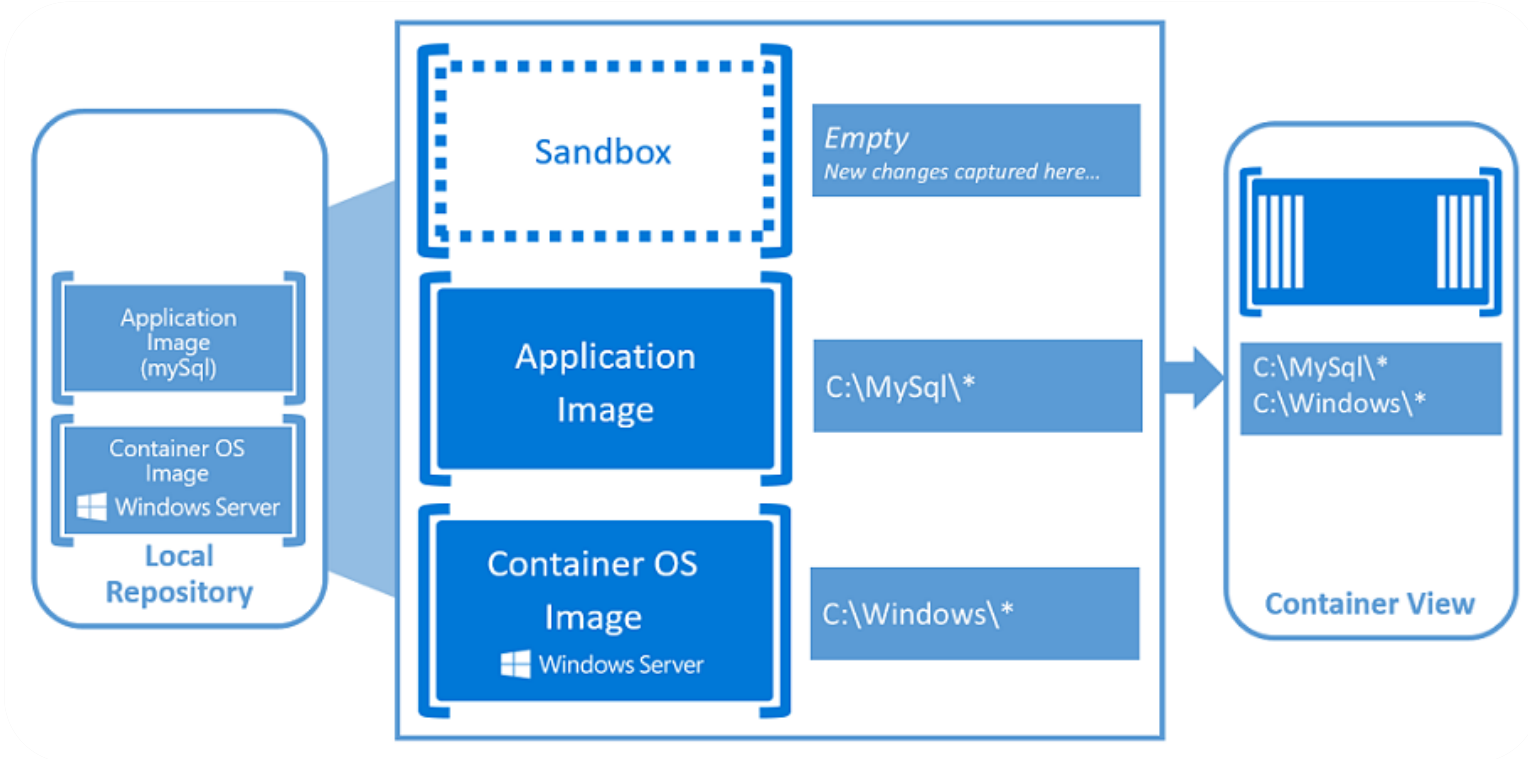


Windows Server Core

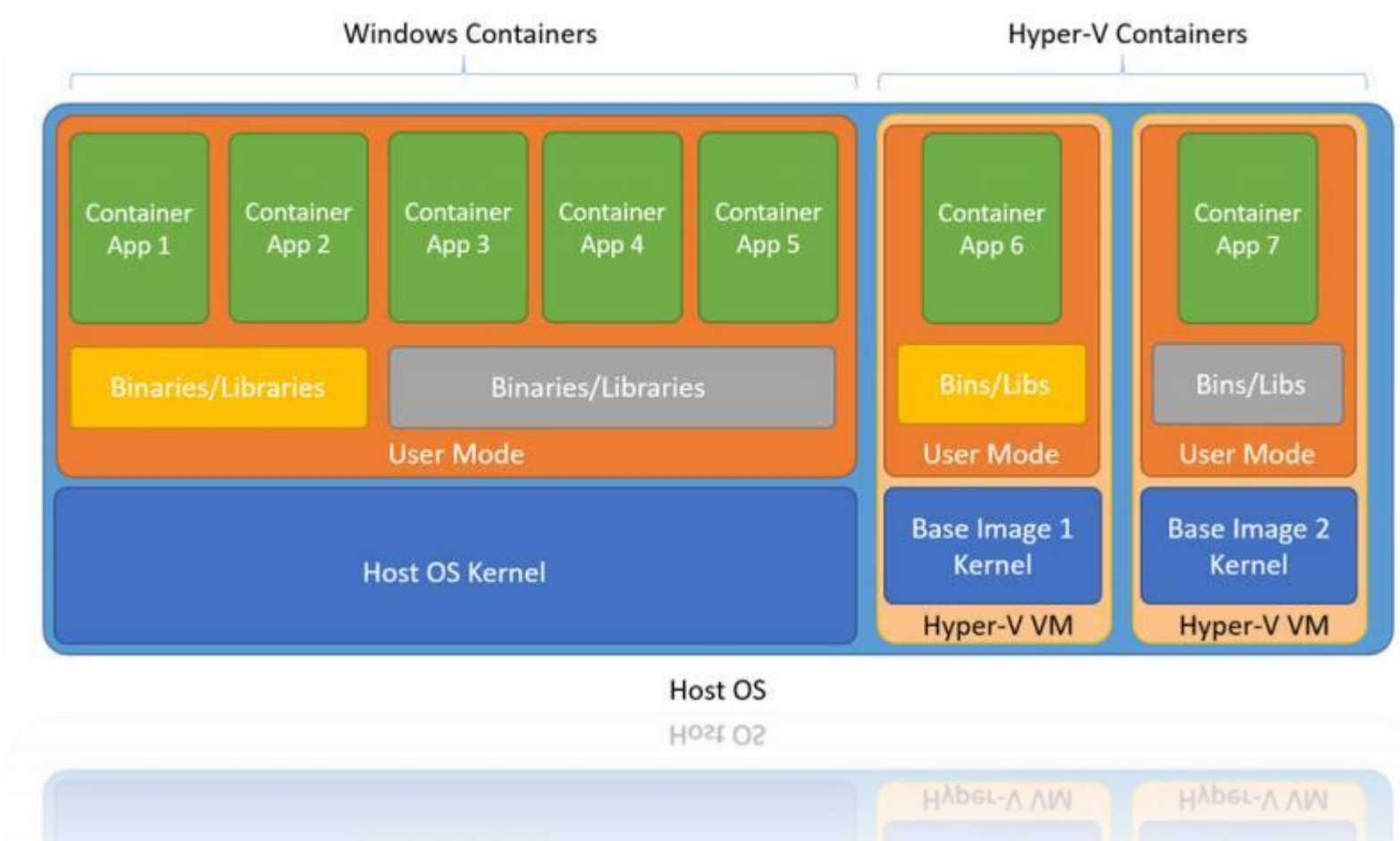
0.000.000.001
One Billionth

No login
No GUI
No RDP
No 32bit support
No MSI installer

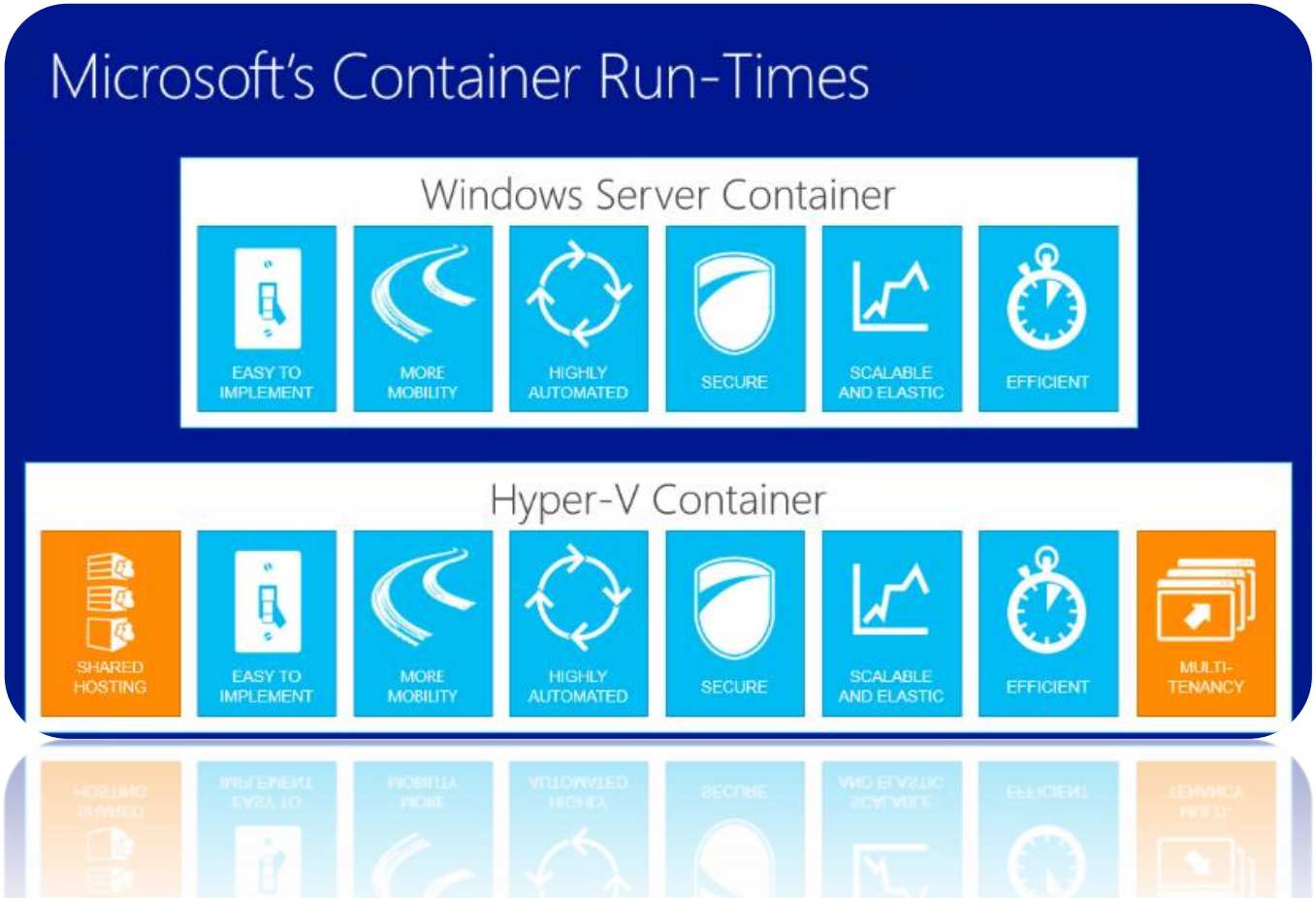
WMI / PowerShell / DSC / …more
Patches - < twice a year (Hmm)
Fast boot
Core? Oh yeah, it'll stick around



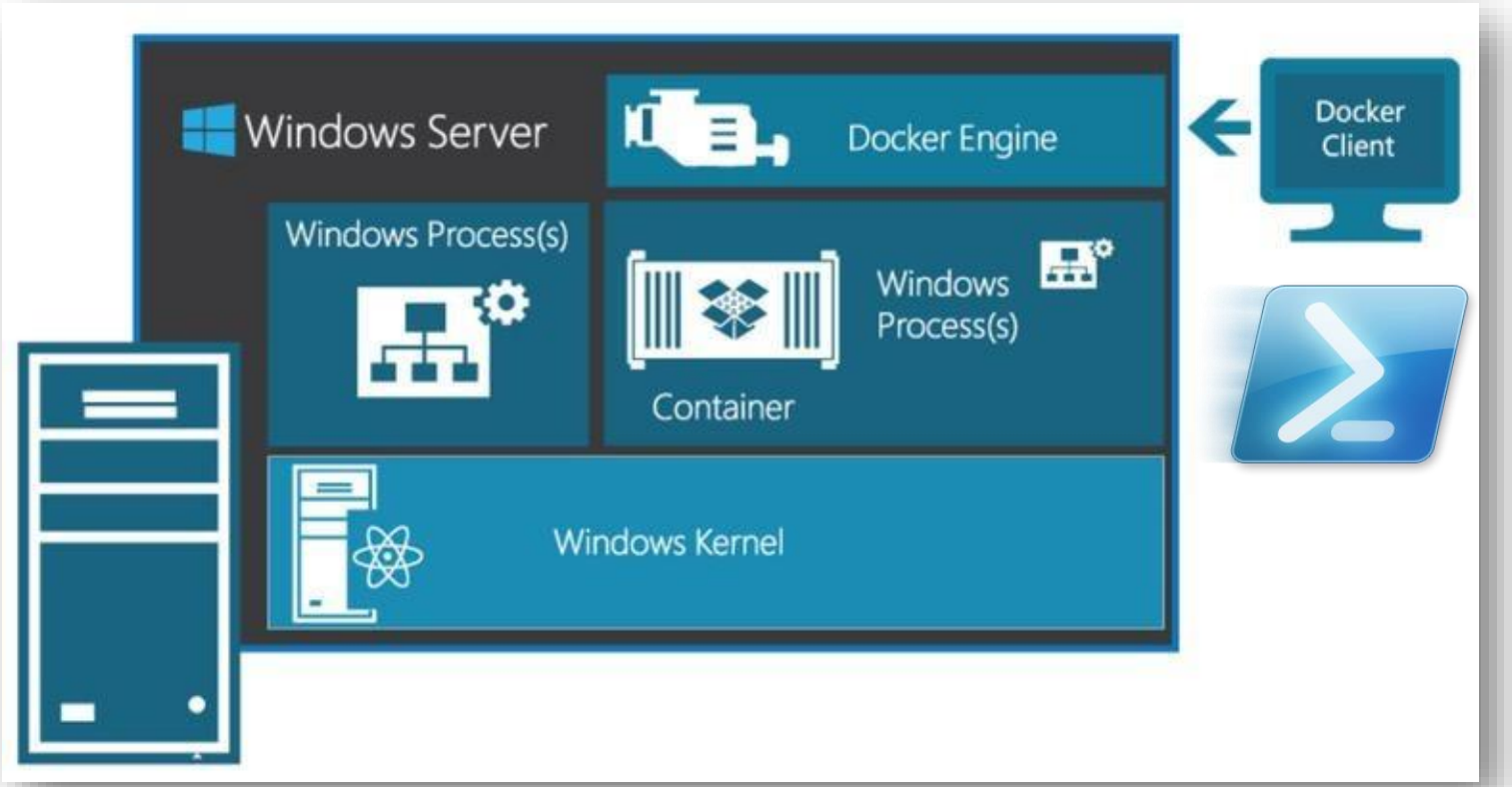
Differences Between Windows & Hyper-V Containers



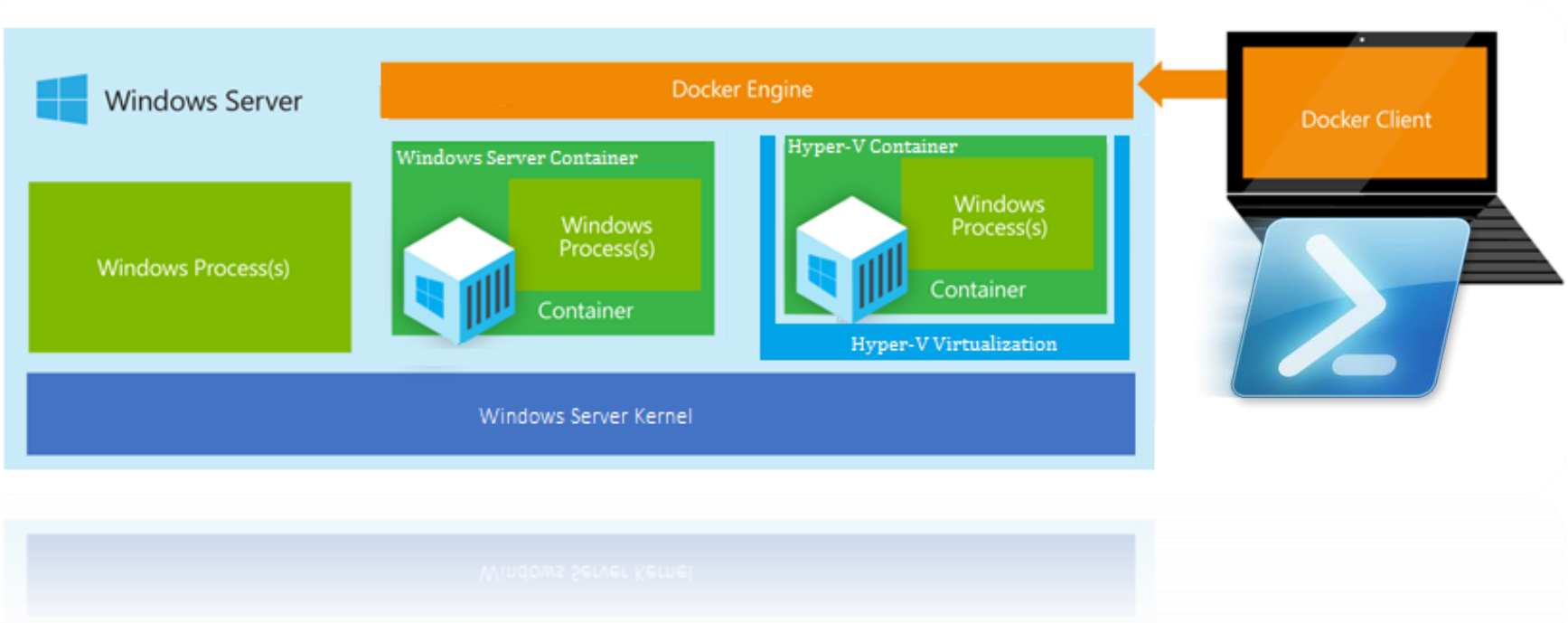
What's the Difference?

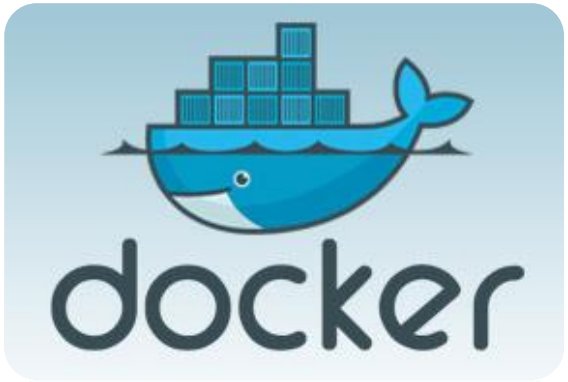


How It All Stacks Up in Windows



….As Well as Hyper-V



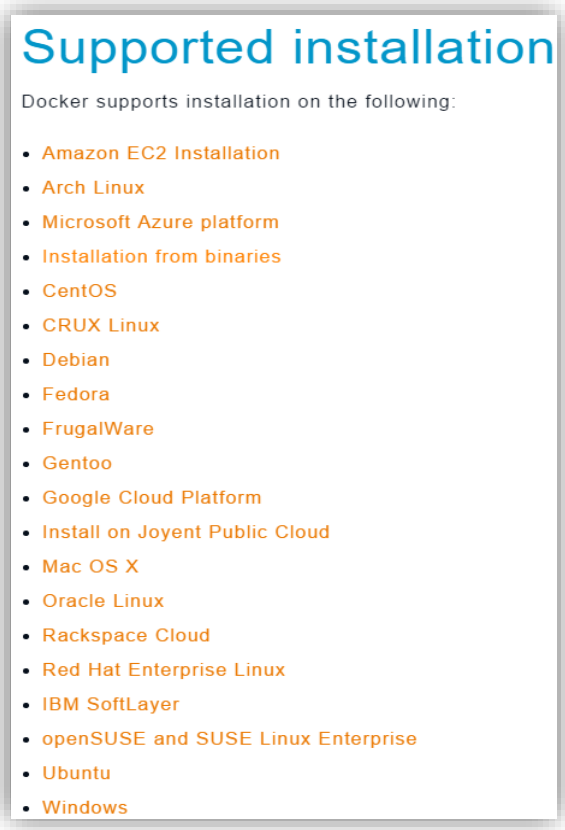


https://msdn.microsoft.com/en-us/virtualization/windowscontainers/reference/ps_docker_comparison

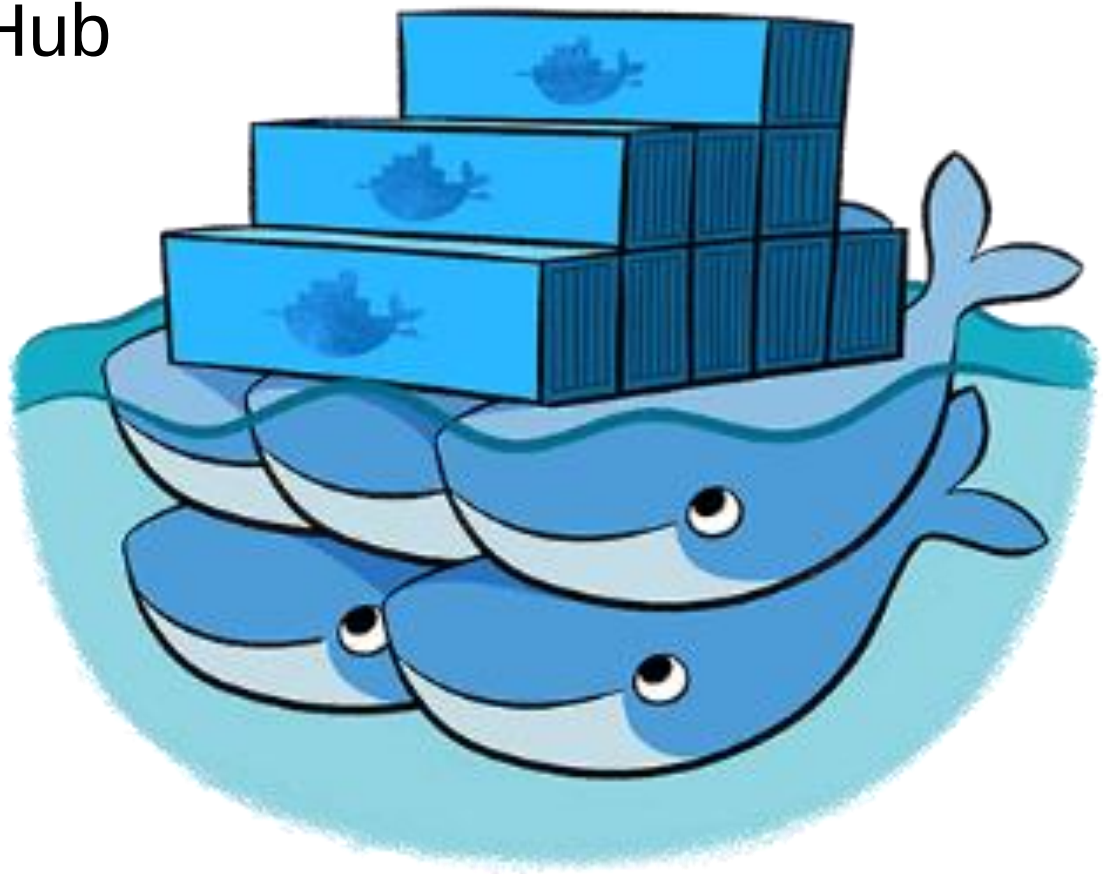
The Many Ways to the Docker Client

Linux – OS X - Windows

- Repository install (apt, yum, etc)
- curl D/L direct from Docker (latest)
- Docker Toolbox
- Azure CLI, templates
- PowerShell
- Server Feature
- Chocolately
- Visual Studio Extension
- Kitematic
- Vagrant
- … and more

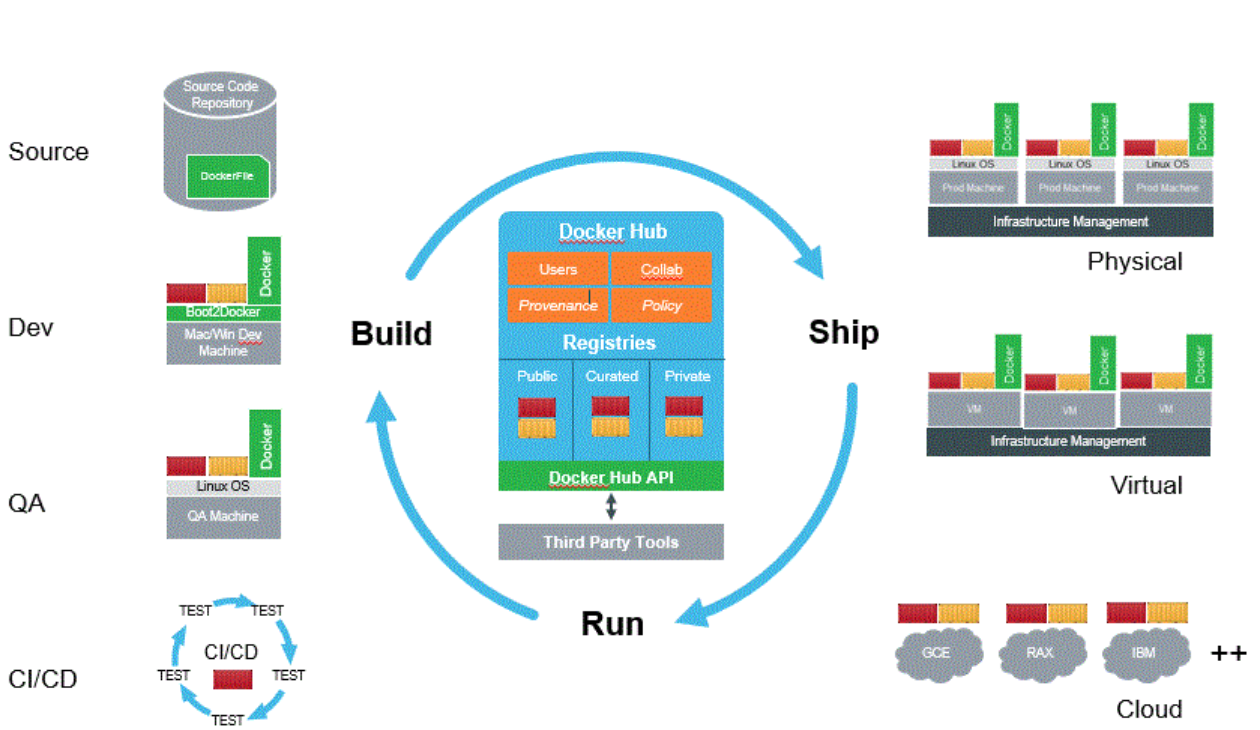


Docker Hub



Repositories (Registries – “Hub”)

- Push, Pull, Share, and Store
- Official ones:
  - Hub
  - MySQL
  - mongoDB
  - PostgreSQL
  - Rails
  - Ruby
  - Java
  - WordPress
  - Redis
  - nGinx
  - Node
  - Ubuntu
  - Debian
  - CentOS
  - ….. More



Docker Swarm

Clustering Docker containers into a single point of management & control

Docker Compose

Define and run multi-container Docker applications

DEMO

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Thank You!
Please fill out the surveys!

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