Introduction to Containers

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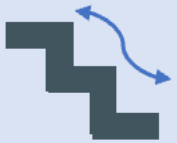
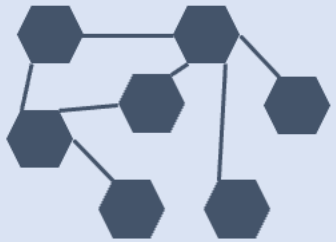
DotNetTricks

Agenda

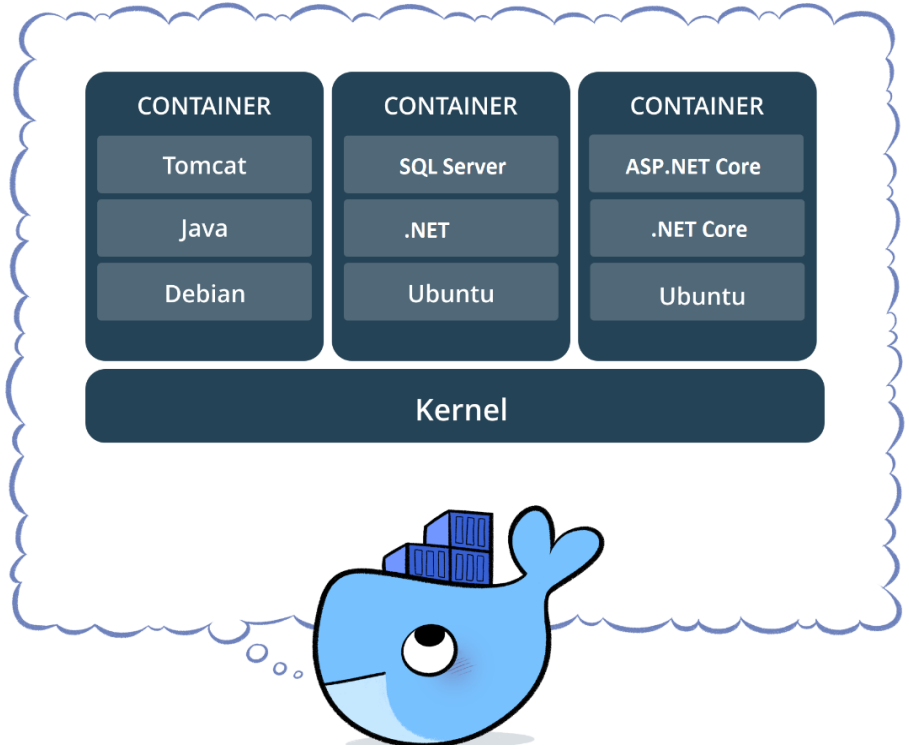
- Multi-Dimensional Evolution of Computing
- What is Container?
- Container Platforms
- Why Containers?
- Virtual Machines vs Containers
- Containers and VMs together

Evolution of Computing

Development Process	Application Architecture	Deployment and Packaging	Application Infrastructure
Waterfall 	Monolithic 	Physical Server 	Datacenter 
Agile 	N-Tier 	Virtual Servers 	Hosted 
DevOps 	Microservices 	Containers 	Cloud 

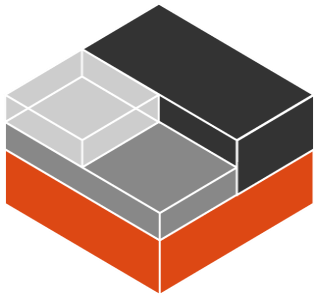
What is Container?

- A container is a software that contains an application code and all its dependencies.
- Enables an application to run quickly in an isolated environment.
- Provide smooth migration from one computing environment to another.
- Share the same OS kernel
- Works with all major Linux & Windows Server



Source : www.docker.com

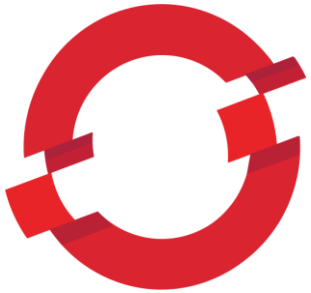
Container Platforms



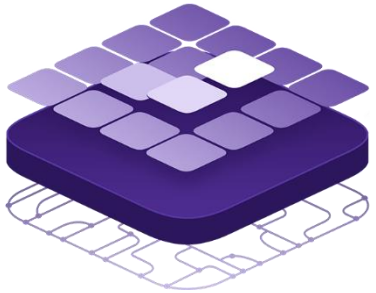
Linux Containers (LXC)

Docker (Docker Swarm)

Kubernetes



RedHat OpenShift



DC/OS

Why Containers?

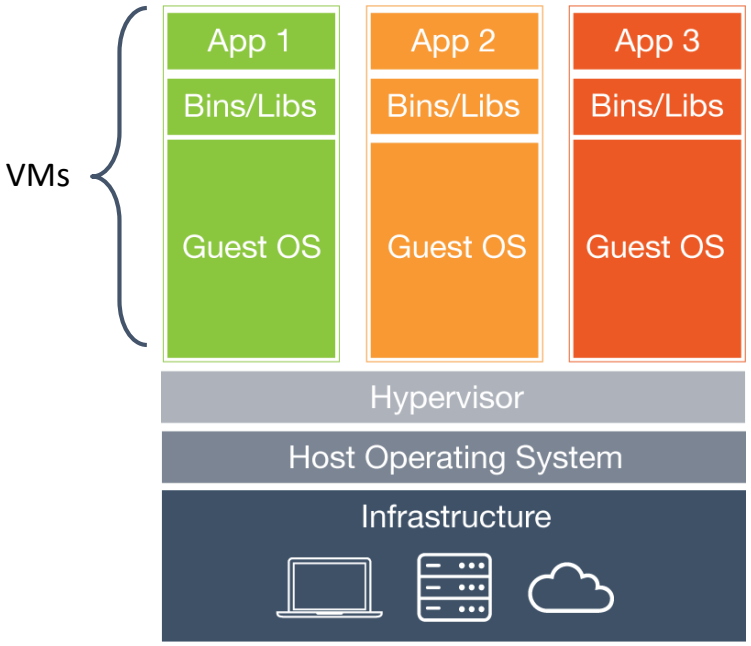
For Developers

- Quickly create ready-to-run packaged applications, low cost deployment
- Automate testing, integration and packaging
- Reduce/eliminate platform compatibility issues
- Supports microservices development

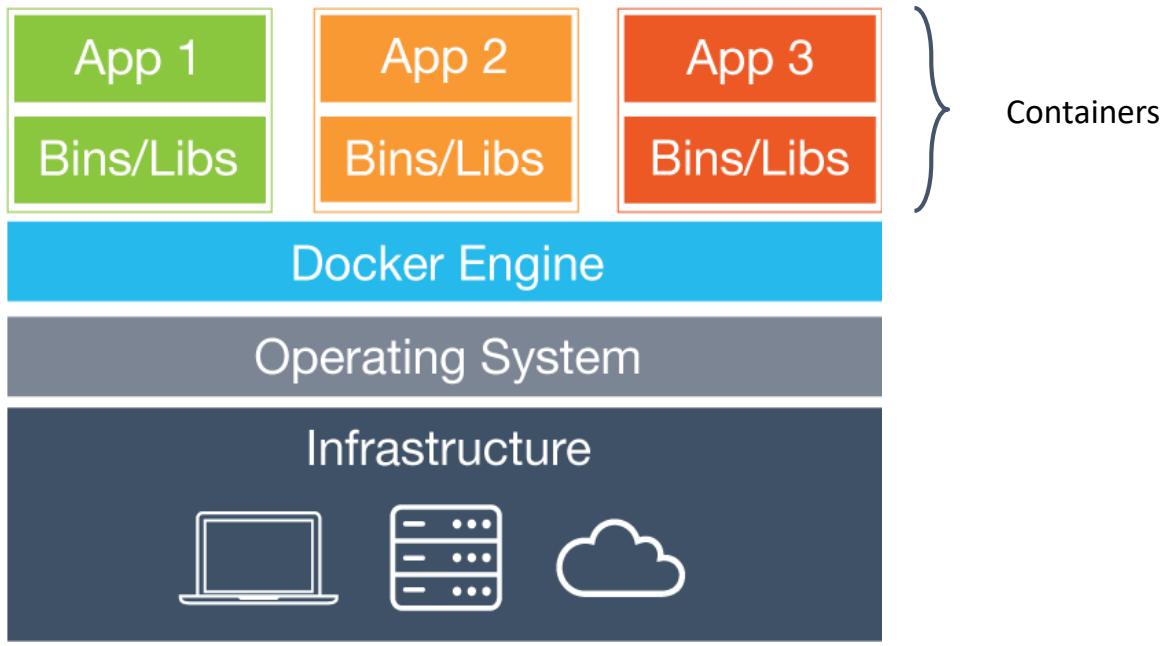
For Administrator

- Improve speed and frequency of releases, reliability of deployments
- Makes app lifecycle efficient, consistent and repeatable-configure once, run many times
- Eliminate environment inconsistencies between dev, test, and production
- Provide Scalability on demand

Virtual Machines vs. Containers



Source : www.docker.com



Source : www.docker.com

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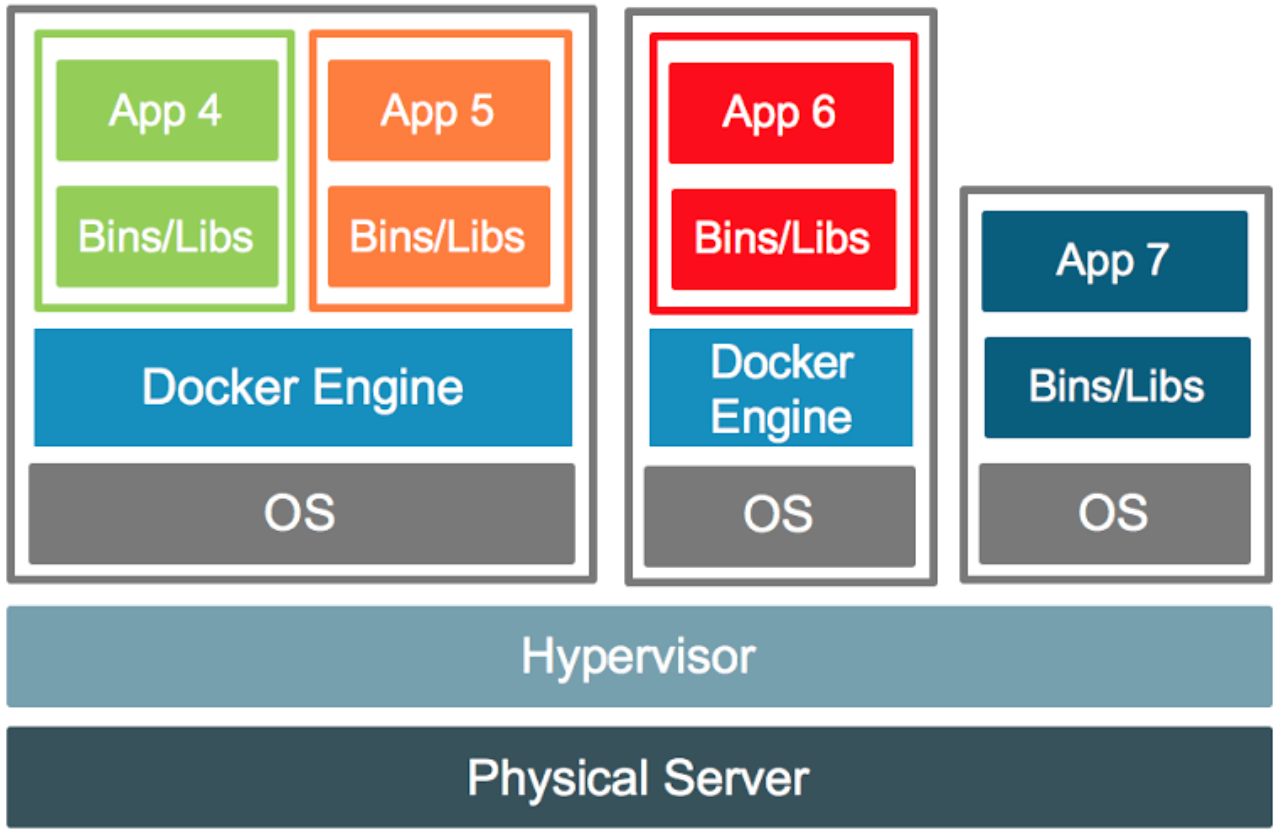
Virtual Machine vs. Containers

- Hardware-level virtualization
- Fully isolated
- Isolated OS
- Having its own kernel
- Slower in start-up
- Many startup process
- Upfront resource allocation

- OS-level virtualization
- Process-level isolation
- Isolated processes/filesystems
- Host machine kernel is used
- Faster in start-up
- Single Start-up process
- No upfront resource allocation

Containers and VMs together



Source : www.docker.com