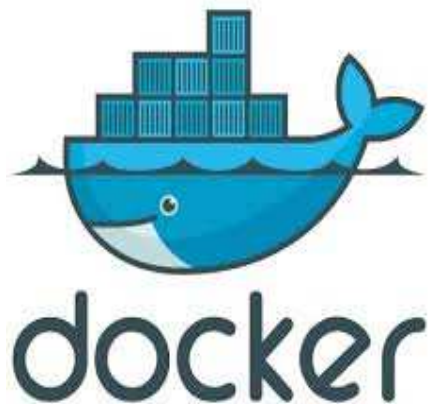


# New Virtualization Trend, Docker

**Open Source Consulting**



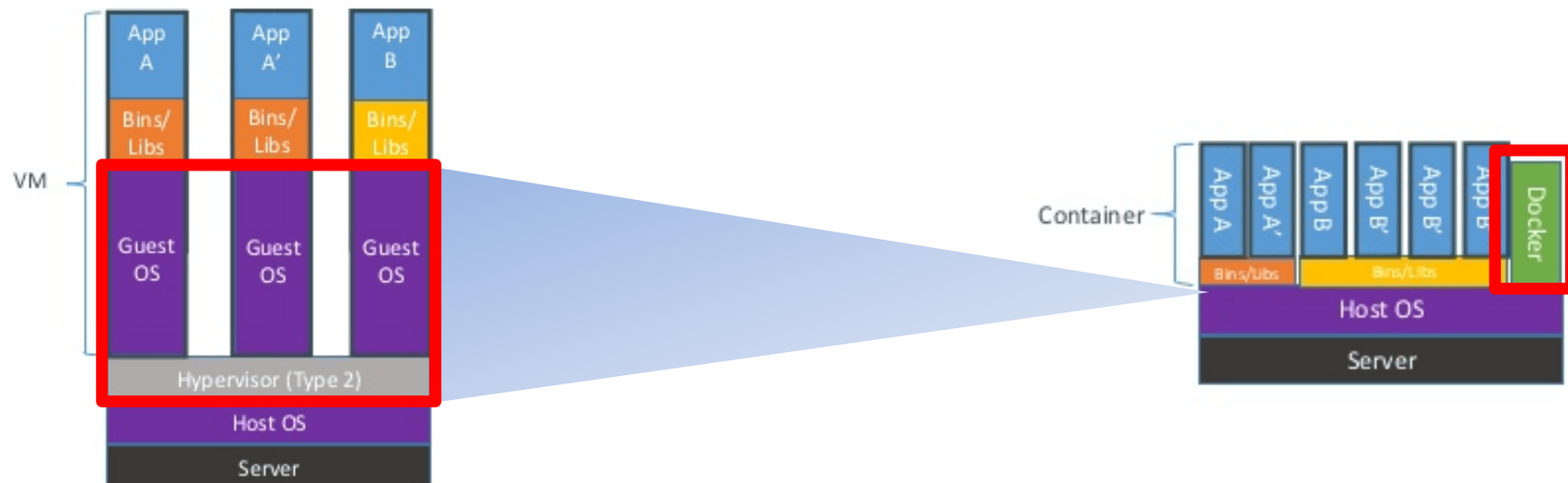
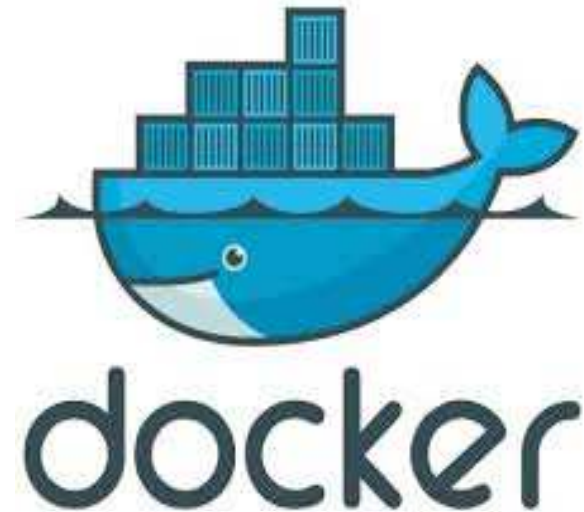
# Virtualization? or Not?



VirtualBox

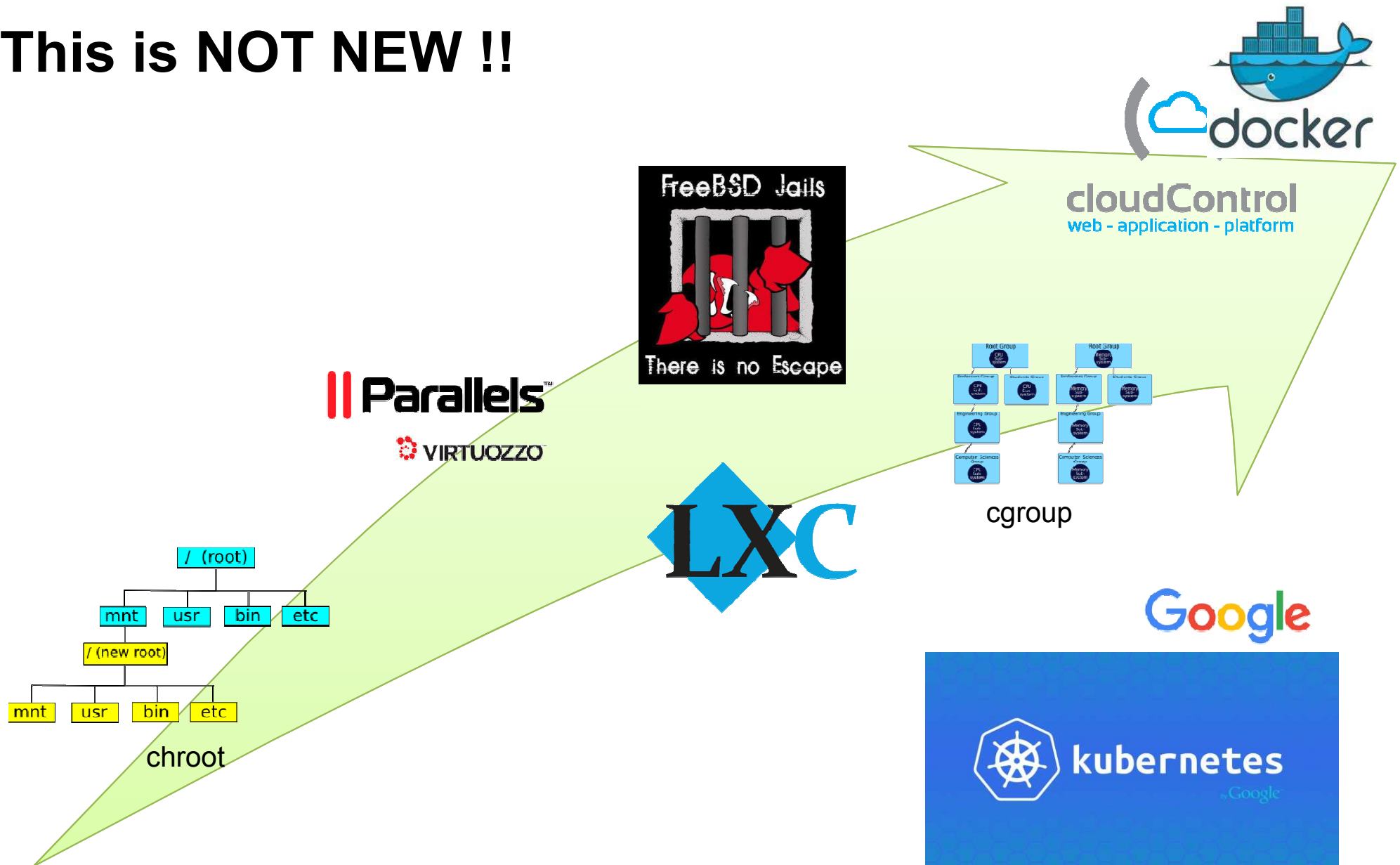
Are we same technology?

Let me think... Hmmm



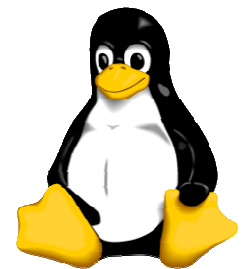
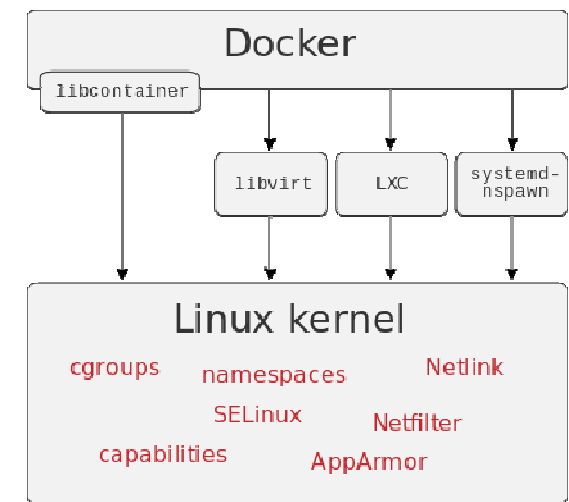
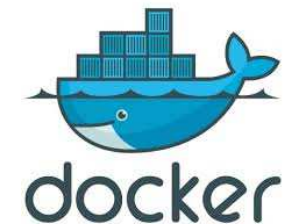
# Container Virtualization

This is NOT NEW !!

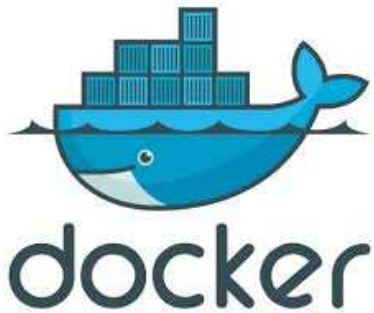


# Container Virtualization, Docker

- What is Container
  - Group of processes contained in an isolated environment
- What is Docker
  - Linux OS isolation tools made easy
  - Automating application deployments inside software containers
  - Additional layer of abstraction and automation of operating-system-level virtualization on Linux.
- Core Technologies of Docker
  - Namespaces – Partition essential kernel structures to create isolated environments, such as pid, net, ipc, mnt, uts, user
  - Cgroups – Limit, account, control, and isolate resource usage(CPU, memory, disk I/O, etc) of process groups
  - SELinux – Protect a host and containers by controlling access to processes

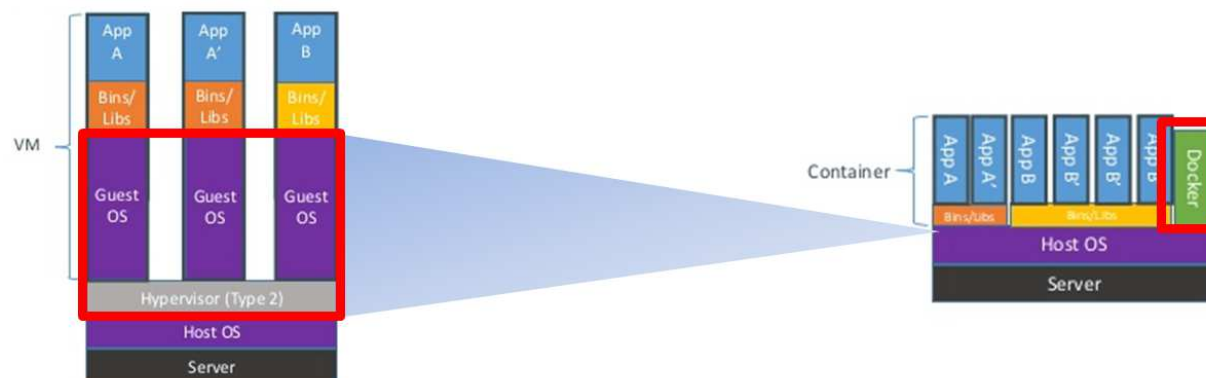


# Why Container Virtualization?



- Consumed resource usage
  - dynamically defined
- Fast start and shutdown
  - no boot process
- Application container
  - containing the process only

- Provisioned resource usage
  - statically defined
- Full initialization process
  - with service initialization
- Complete operating system
  - can be different kernel

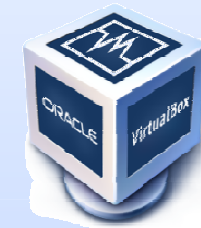


# So Docker is ...

## Native Machine



## Virtualization



VirtualBox



# Cloud Services using Docker





# Ground Technologies

## Resource Isolation and Security

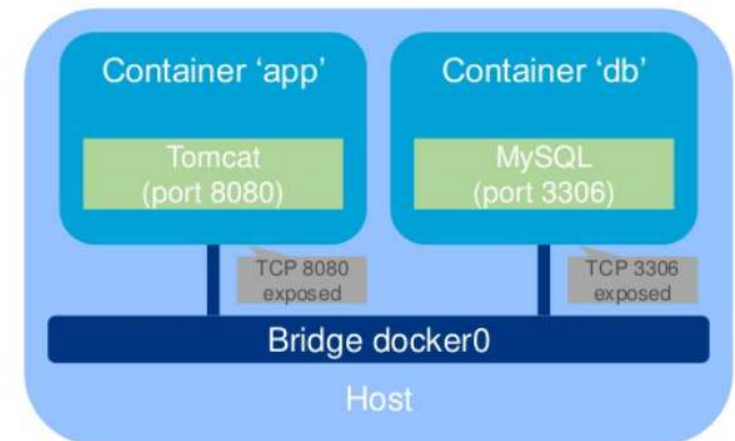
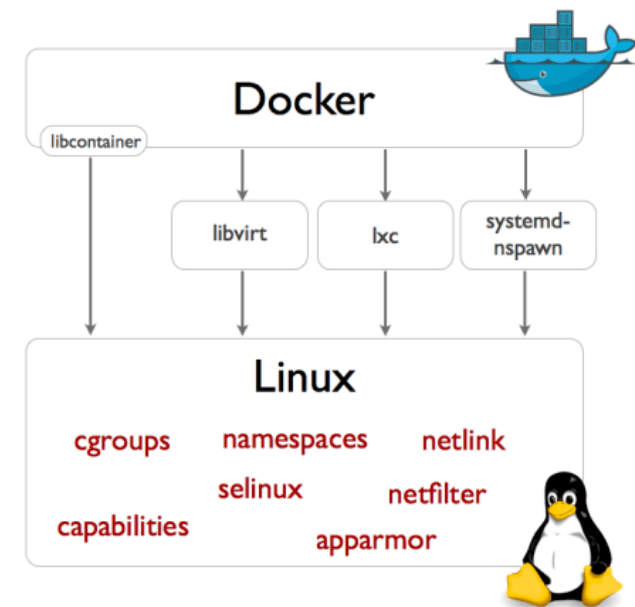
- cgroup, namespace
- lxc
- libcontainer
- selinux

## File System

- chroot(rootfs)
- Layering, CoW
- UnionFS, Snapshot, CoW block device

## Network

- NAT
- Exposing / Linking / Mapping





# Application Deployments – Highlight of Docker

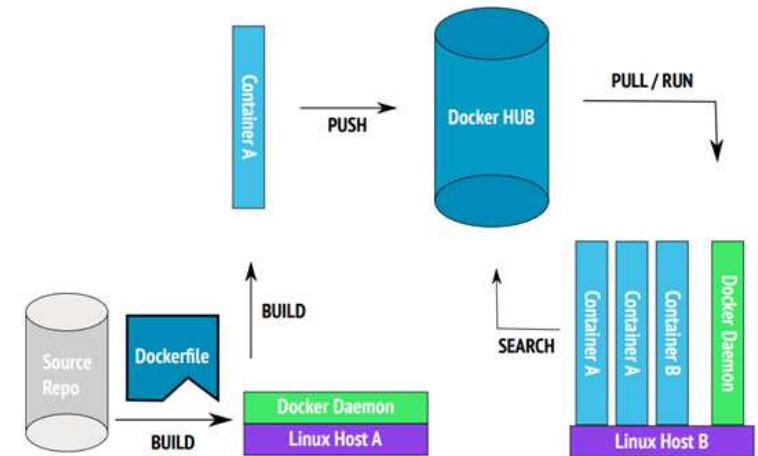
## Deployment Process

- ① Developer create applications
- ② Build a container by deploying the applications with other components such as web server, database
- ③ Push the container to Docker Hub (Ready to be used)
- ④ Download the container and run on production system

## Benefits

- No hassle for creating or migrating development environments to production
- Shipping applications like a container ship
- Easy version management
- Docker Hub is a cloud-based registry service

### Docker: Workflow



# Future of Docker

## One of the hottest open source technology

- 25000+ github stars, 1000+ contributors, 150+ related projects, 1000+ docker based softwares
- Google, RedHat, Microsoft, IBM, Amazon, ...
- 70% of enterprises are either using or evaluating Docker
- Openstack Magnum, Project Atomic, Kubernetes

## Risks

- Security(Isolation)
- Performance
- Stabilization

## Revolution of DevOps

- Dockerized applications
- Microservices
- Bimodal IT(Gartner)

docker Job Trends

