Operating System (OS) Level Virtualization

Inserts a virtualization layer inside the Operating System

Virtualized Environment is often called VE, VPS or simply Container

Container is look like a real server

Container has its own set of process, file system, user accounts, network interface, IP Address, routing table, firewall rules and other personal settings.

Share the same Operating System Kernel

Also called Single-OS image virtualization

Hypervisor and Container Architecture

Hosted Hypervisor Virtual Machine

Application

Bare Metal Hypervisor Virtual Machine

Bins / Libs

Application

Container

Guest OS

Bins / Libs

Application

Hypervisor

Guest OS

Bins / Libs

Minimal Guest OS

Hypervisor

Container Engine

Host OS

Host OS

Hardware

Hardware Hardware



Linux Docker **Virtual Machines** Containers **Control Groups** Application Application Packages and Libraries Application Packages and Libraries Linux Cgroup Guest OS Docker Container Packages and VM Libraries Docker Engine Hypervisor Host OS Host OS

Architecture of Container

Image 2

Thin Read Write Layer

Custom ENV Variables

2031fcdc6df7

Thin Read Write Layer

Image 1

Configuration (.conf files)

13fef9589eab

Application Binary (Elasticsearch)

b108f9aa98db

apt-get dependencies (Java JDK)

851356ecf618

Base Image (Ubuntu)

4176fe04cefe

Benefits of Container Compare to VM

Containers are lightweight, hence can run more containers per host

Consume less resources

Compatibility issues (different application runs on different platform)

Share resources with underlying Host Machine with user space and process isolations

Container can start nearly instantly

Containers are portable and can regenerate a system environment with required software, irrespective of underlying Host Operating System